

**An investigation into the subjective wellbeing  
of people with an intellectual disability**

by

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**DEAKIN UNIVERSITY**  
**CANDIDATE DECLARATION**



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## Abstract

Over the past thirty years, subjective wellbeing (SWB) has emerged as a major theoretical construct within the quality of life literature. Moreover, it is now clear that understanding the SWB of people with intellectual disability is vital to our ability to plan and deliver quality services to such people. The theory of homeostatic control of SWB has not had extensive empirical testing among people with intellectual disability. This is despite such people having a far greater risk of homeostatic defeat than their non-disabled counterparts, due to greater levels of discrimination, abuse, victimisation and health issues. The purpose of this thesis is to test the theory of SWB homeostatic control for a sample of New Zealand people with mild to moderate intellectual disability, compared to non-disabled people. This involves three linked quantitative studies that investigate the internal buffers of self-esteem, control and optimism. The dependent variable is SWB as reported by participants.

Study 1 explores the level of response scale complexity that people with intellectual disability can reliably use. Using a split-reversal research design participants were randomly assigned to two groups. Group A used a 7-point version of scales on Trial 1 and an 11-point version on Trial 2. Group B participants used the scales in reverse order. Results revealed a non-significant response difference between the two scale formats. The meaningfulness of participant's responses to both formats came from the finding that total mean scores obtained were within the normative range obtained for general population. It is concluded people with mild to moderate intellectual disability can respond to SWB scales at a level of complexity that is sensitive enough to record changes in SWB.

Study 2 explores the maintenance of homeostatic control for people with mild to moderate intellectual disability compared to non-disabled people. This involves investigating the buffers of self-esteem, optimism and perceived control, which maintains a steady output of SWB. Results indicate the buffering system works differently for each group. People with intellectual disability use more avoidant control strategies, while non-disabled people used more approach control strategies. It is concluded that these different approaches to the maintenance of SWB are likely to be appropriate to the living circumstances of each group.

Study 3 replicates and extends Study 2, to also determine whether the composition of homeostatically protected mood (HPMood), as parsimoniously represented by the affects content, happy and alert, is the same for intellectually disabled as it is for non-disabled people. Results generally confirm and extend Study 2 findings. The idea that SWB predominantly comprises positive affect was supported. Moreover, while the composition of HPMood differs somewhat between the two groups, the amount of variance explained in SWB by HPMood is comparable for both.

In conclusion, normative SWB reported by people with intellectual disability suggests that due to the operation of HPMood and homeostasis, they generally feel good about themselves despite experiencing difficult life circumstances. Additionally, understanding the buffering system and SWB homeostatic control for people with intellectual disability, increases service providers and caregivers understanding of the type of conditions that are necessary to ensure homeostatic control of SWB remains undefeated, thus enhancing their life quality.

## Chapter One

### Introduction

#### 1.1 Background of Thesis

The deinstitutionalisation of people with disability has meant that provision and planning of residential services now occurs within a community integration perspective. That is, people with disabilities are now generally living in community settings as opposed to large segregated institutions, with naturalistic and generic support systems. This change in residential settings and planning had led to an interest by researchers and workers in the disability field to question the quality of life (QOL) of people with disability. Particularly, as it became apparent that simply changing the living environments for people did not necessarily change the quality of their life or experiences (Schalock, 1996b). While quality of life is not a new concept in social sciences, it has emerged strongly in the disability field over the past three decades and has taken over from deinstitutionalisation, normalisation, and mainstreaming as a significant driving force in the provision and evaluation of services for people with disabilities. As noted by Schalock and Verdugo (2002), quality of life is a complex and multidimensional concept that has emerged as a critical philosophical and theoretical construct, underpinning services for people with disabilities.

However, it is the subjective indicators of QOL that are the focus of this thesis. Over the past thirty years, reports have emerged that subjective quality of life (SQOL), or subjective wellbeing (SWB) is a major theoretical construct in the general literature of QOL research. Subjective evaluations can most simply be made by asking the question “How satisfied are you with your life?” or “How happy are you?”. This can be asked from the point of view of “life-as-a-whole”, as well as how it relates to specific life domains (e.g., emotional, interpersonal, material, personal development, physical, self-determinism, social inclusion and rights) (D. Felce & Perry, 1996; Schalock, 1996b; N. Schwartz & Strack, 1991). While research into SWB has been asked of a wide range of groups within society (Diener & Lucas, 1999; Headey & Wearing, 1992), research relating to SWB of people with intellectual disability is fewer in number, although a growing body of studies are emerging (Hartley & MacLean Jr, 2005; Keith & Bonham,

2005; Lachapelle, et al., 2005; Schalock, Bonham, & Marchand, 2000). The reason for the slow adoption of this methodological technique in the field of intellectual disability, is partly due to the difficulty of asking questions of life satisfaction that are within the cognitive capacity of respondents. That is, for people with cognitive impairments the comprehension of abstract ideas, inherent in SWB becomes difficult, or even impossible (Cummins, 1997d). Findings from this thesis build on and contribute to past work in the intellectual disability field, to understanding more fully the SWB of this group.

Addressing issues pertaining to understanding more fully the SWB of people with intellectual disability is vital to our ability to plan and deliver quality services, which not only meet the needs of service recipients but also ensure personal fulfilment and life satisfaction. This point was made 17 years ago by Cummins and Baxter (1993), who argue that the use of broad-based QOL measures, must be incorporated into a framework of human service delivery evaluations; a viewpoint that still has strong currency. In particular, such measures need to incorporate subjective responding to QOL domains, where service recipients report for themselves their levels of perceived satisfaction or happiness with “life-as-a-whole” or within specific domains of life (e.g., health, personal relationships, achievements, safety, material wellbeing). Further, Schalock (1996a) strongly argues for the use of satisfaction measurement within the disability field as it provides a common understanding that is shared by service recipients, policy makers, service providers and researchers in the assessment of consumer needs and satisfaction.

As QOL theory matures and a greater understanding of the constructs of life satisfaction and SWB is gained at a theoretical level, many problems related to the measurement of SWB of people with intellectual disability are being overcome. This is evident with the development and refinement of test construction, such as the use of simple questions, sentences kept to a minimum length, avoidance of negatives and/or any mechanism that generally inhibits comprehension (Cummins, 2001a). In addition to attending to these issues, there still remains the problem of whether the respondents are able to validly respond to the questionnaire or not. This issue, argues Cummins (1997c; Cummins & Lau, 2004b) can be partly resolved with the use of a pre-testing protocol to establish the cognitive capacity of the respondent to answer questionnaires or survey schedules, such as used in the Comprehensive Quality of Life Scale–Intellectual Disability (ComQOL-



15) (Cummins, 1997c) and later the Personality Wellbeing Index (PWI) (Cummins & Lau, 2004b).

## 1.2 Purpose of study

In a series of research papers, Cummins (1995, 1998b, 2000b, 2003) outlined a model for the homeostatic maintenance of SWB. A review of a number of large-scale empirical studies indicate that data obtained through a variation of the question “How satisfied are you with your life-as-a-whole?” or by satisfaction averaged across a number of domains, show levels of satisfaction that are remarkably similar. That is, when responses are standardised onto a scale with a range of 0% (minimum) to a maximum of 100%, then Western populations have a mean and standard deviation of  $75 \pm 2.5$  percentage of scale maximum (%SM). Thus, when two standard deviations are used to define the normative range, it can be reliably predicted that the mean SWB of Western population samples occur within the narrow range 70 to 80%SM, while the normative range for individuals lies between 40 to 100%SM (Cummins, 2003). More recently, new data suggest that set-point ranges for individuals lie between 55 to 95, with a mean of 75 points (Cummins, 2010).

From these findings, Cummins (2003) proposes that life satisfaction, and more generally SWB, is not free to vary over the possible 0 to 100%SM range, in response to changing external conditions. Rather, SWB is held within an idiosyncratic range under a system of homeostasis (a notion similar to how the body maintains optimum blood pressure or temperature levels), the maintenance of which appears to be managed by cognitive mechanisms with the express purpose of maintaining a positive outlook on life. Consequently, from the perspective of homeostatic theory, people are able to achieve a normative range of life satisfaction and SWB under what could be described as diverse personal circumstances, provided those circumstances are not so severe that homeostasis is defeated (when the strength of an extrinsic influence exceeds the adaptive capacity of the homeostatic system).

The theory of SWB and homeostatic control has not had extensive empirical testing among people with intellectual disability. It can be argued that such people have a far greater risk of homeostatic defeat than non-disabled people. People with disabilities are more likely to encounter discrimination, unemployment, health-related issues, disrupted

social relationships, and have low social status. Such experiences can severely test the limits of adaptive capacity for the maintenance of SWB (Cummins, 2001a). As a consequence, developing an understanding of the maintenance of SWB is an important issue for the disability field in general. But more so for service providers and caregivers in their attempts to provide inclusive support and services that enhance the QOL and/or life satisfaction of service users.

This thesis investigates the processes of homeostatic control and the influence of internal buffers or cognitive mechanisms, as the three linked processes of perceived control, self-esteem, and optimism for the maintenance of SWB. These linked processes provide a conscious cognitive process designed to absorb the impact of changing need states to maintain the steady output of SWB, within the set-range as reported by Cummins (2003). While these three processes have a predominantly positive bias in terms information processes (which is imparted by affect), each can be influenced by experience with external conditions (Cummins & Cahill, 2000). According to homeostatic theory, interactions with the environment that challenge the buffer system to absorb the impact, can reduce or drive down the individual's SWB. If the challenge is minor, the buffers will evidence only a minor reduction in SWB levels, where as strong and sustained challenges will defeat the homeostatic system completely, resulting in a loss of subjective QOL and possible entry into depression (Cummins & Nistico, 2002). The buffers also act as a regulatory system that aims to integrate affect, personality, and cognition concerning experiences in the external environment, and the resulting output from the buffer system of homeostasis comprises SWB (Cummins & Cahill, 2000).

It is expected that by understanding the internal buffering system and the homeostatic maintenance of SWB for people with intellectual disability, this will enhance an understanding by service providers and caregivers in regard to the type of conditions that have to be met in order for homeostatic control of SWB to remain undefeated.

In summary, the overall aims of this thesis are:

- To extend the theory of homeostasis of SWB to the population of people with intellectual disability and to provide empirical evidence for, and to explain more

fully, the proposed internal buffering system of control, self-esteem and optimism.

- To provide comparative data, between people with intellectual disability and non-disabled people on their levels of reported SWB within a New Zealand context.
- To identify the conditions that must be met in order for homeostatic control of SWB of people with intellectual disability to remain undefeated.
- In addition specific hypotheses regarding variables of interest will be presented prior to each study in Chapters 4, 5, and 6.

### 1.3 Rationale for thesis

This thesis explores the components and determinants of SWB for people with mild intellectual disability compared to non-disabled people. This will involve three linked studies that investigate the independent variables of control, self-esteem and optimism in terms of their ability to buffer SWB and maintain a steady output of reported levels of satisfaction.

As mentioned, the theory of SWB and homeostatic control has not had extensive empirical testing among people with intellectual disability. This is despite people with an intellectual disability having a far greater risk of homeostatic defeat than their non-disabled counterparts, due to greater levels of discrimination, abuse, victimisation and health issues. They are also more likely to experience unemployment and poverty, and to be socially excluded, to have few or no intimate close friends or partners, to have low social status and experience disempowerment, than non-disabled people (Cummins, 2001a; Emerson & Hatton, 2008). These experiences may severely test the limits of adaptive capacity for the maintenance of SWB (Cummins, 2001a), possibly resulting in lower levels of both self-esteem and optimism and experience less control in their lives. This thesis will address these issues by comparing SWB, self-esteem, optimism and control in a sample of intellectually disabled people compared to non-disabled people, in a series of linked studies.

Developing an understanding of the maintenance of SWB is an important issue for service providers and caregivers, in their attempts to provide inclusive support and services that enhance the life quality and life satisfaction of service users. To my knowledge, from searching library databases and indexes there is no indication of studies in New Zealand that examines the maintenance of SWB of people with intellectual disability. Thus, there are no data to indicate, whether levels of SWB conform to levels reported in other countries such as, Australia, United States and the United Kingdom.

#### 1.4 The Structure of this Thesis

Chapter 2 reviews the literature regarding the constructs of QOL and SWB. Definitions of constructs related to this thesis are outlined along with a discussion on the processes underlying SWB. A description of the development of the homeostatic theory of SWB, and its maintenance is presented. The cognitive mechanisms of control, self-esteem and optimism are examined with a particular focus on their relationship to SWB. This chapter provides a conceptual framework for the thesis.

Chapter 3 provides the context for this research, with a discussion on QOL and SWB, in relation to people with intellectual disability. It first provides a brief overview of what intellectual disability means, the definitions and terminology used when discussing this group, and how people in this group have been viewed by society. The chapter then elaborates on the link between disability and SWB.

Chapter 4 presents the first of three linked studies. Study 1, is a pilot investigation into the response discrimination competence of people with mild intellectual disability, in order to determine which response scale level (e.g., End-point defined scales, either 7- or 11-point response categories) is the most appropriate to use in Studies 2 and 3 of this thesis. While the ComQol-I and the PWI-ID scales have been specifically designed for use with people with an intellectual disability, whether the respondent is able to validly respond to a questionnaire that is sufficiently sensitive to assess actual changes in the phenomenon under investigation remains unknown. Study 1, provides evidence to address this gap in understanding. Before results from Study 1, are presented a review of literature pertaining to response scales and response discrimination, including issues of reliability and sensitivity of scales, the optimal number of response categories to use,

and the sensitivity of scales to measure SWB, will be presented. The chapter concludes with a discussion on measuring SWB of intellectually disabled people.

Chapter 5 presents the findings and discussion of Study 2. The purpose of this study is to examine the psychological factors and process involved in the maintenance of SWB for people with intellectual disability compared to non-disabled people. This involved an investigation into the independent variables that have been proposed to buffer SWB and maintain levels of SWB within a normative range.

Chapter 6 presents the third study, which is a replication and further extension of the investigation into SWB homeostasis theory in people with intellectual disability. An additional objective of Study 3 is to investigate the core affect component of SWB, as outlined in Davern's (2004) "Subjective wellbeing as an affective construct" unpublished Doctoral thesis. The contribution that core affect makes to SWB has not been investigated in terms of people with intellectual disability. Literature addressing core affect, models of affect and core affect SWB homeostasis are examined. Core affect is proposed as a possible explanation for normative range of SWB reported by people with intellectual disability.

Finally, Chapter 7 reconciles the findings from the three studies with the extant literature. This chapter explores the implications of the findings for service providers and caregivers of people with intellectual disability and the conditions required in-order that SWB homeostatic control is not defeated. Limitations of the current research and future research possibilities are discussed and conclusions regarding this thesis are presented.

## Chapter Two

### Review of Subjective Quality of Life, Life Satisfaction and Subjective Wellbeing Literature

#### 2.1 Introduction

This chapter reviews the literature regarding the constructs of QOL and SWB. Definitions of constructs related to this thesis are outlined along with a description of the development of the homeostatic theory of SWB, the processes underlying SWB and its maintenance, cognitive mechanisms, affect and SWB.

Quality of life is a complex multidimensional concept that has emerged as a critical philosophical and theoretical construct (Schalock & Verdugo, 2002). While the term QOL has been conceptualised in the literature in a variety of ways, it is commonly used as a generic term when evaluating or asking questions concerning “the good life or satisfaction with life”, relative to a commonly held or implied standard of comparison experienced by most people in a particular society. Consequently, QOL from this perspective centres on the degree of excellence of life that extend beyond the notions of mere survival or longevity, to focus on those aspects that make life particularly enjoyable, happy, fulfilling or meaningful (e.g., close relationships, achievements, self worth, work, sense of belonging...) (Frisch, 2000).

Questions regarding the good life have been used at varying levels of generality, from the assessment of societal or community wellbeing to the specific evaluation of self. That is, in some context the term QOL refers to the quality of society as a whole while in other instance it refers to the happiness of individuals within society. President, Lyndon Johnson highlighted in his speech on the Great Society, the role of societal and community wellbeing in promoting quality of life and the pursuit of such goals when he said, “...Thus the Great Society, is concerned not with how much, but with how good - not with the quantity of the goods but with the quality of their lives” (Campbell, 1981, p. 441). In contrast, questions regarding the good life that focus on the specific evaluation of self, are concerned with the experience of the person whose life is being assessed and their perception or subjective experiences in relation to levels of perceived

satisfaction with life-as-whole or satisfaction across a number of life domains. This distinction is best understood from the perspective of objective and subjective indicators of QOL, which is elaborated on in the following section.

## 2.2 Social indicators

The term QOL and social indicators was linked by Andrews and Withey (1976), who suggested that QOL arose out of investigations into social conditions of human societies such as, employment, housing, life expectancy, health and so on, that began in the 1960s. This link was further made by Land (1996) who used the terms QOL and social indicators interchangeably. In a review on satisfaction research Veenhoven (1996) asserted that the main concern of social indicator research is the measurement of QOL in society, with a focus on both the *level of living* that citizens experience or the quantities of one's life and the *progress of living*, which is a measure of whether life gets better or not. Investigations in the early 1970s, into the lived experiences of people in society resulted in QOL being viewed as comprising both objective and subjective indicators of wellbeing. The publication of two classic QOL studies, by Andrew and Withey (1976) and Campbell, Converse and Rodgers (1976) help to firmly establish the objective and subjective dimension to the QOL construct.

Objective social indicators were defined by The US Department of Health, Education and Welfare as "...statistic of direct normative interest which facilitates concise, comprehensive and balanced judgments about the condition of major aspects of society" (U.S. Department of Health, 1969, p. 97). From this definition objective social indicators are used within statistical time series analyses to measure change in a variable over time. This permits the monitoring of trends in social conditions to identify changes in society and guide interventions for future social change (Land, 1983). They may serve the same function for monitoring progress in social policy that indicators such as growth in Gross National Product serve in economic policy (Headey & Wearing, 1992).

Objective indicators generally refer to the measured environmental conditions that provide normative values of the lived conditions of any given group or society (Andrews & Withey, 1976). They are easy to define and quantify and do not rely on an individual's perception; rather they reflect the objective circumstances of their life within a given culture (Diener & Suh, 1997; Schallock & Felce, 2004; Schallock &

Verdugo, 2002). The range of such measures is unlimited and includes measures such as, employment, life expectancy, school enrolments, leisure, cost of housing, health, and rates of voting. Objective indices are norm-referenced statistics used to make informed judgements about the life conditions of a given society, as well as provide norm-referenced comparisons to other communities (Andrews & Withey, 1976). Objective social indicators can be applied to populations and also applied to individuals as indicators of physical health, standard of living, employment, and can all be personal objective indicator of QOL and as a social indicator when applied to a population (Diener & Suh, 1997).

By the 1970s, research into objective social indicators was well established and became known as the Social Indicator Movement (Land, 1996). However, limitations of objective social indicators as a measure of wellbeing began to emerge. Questions were raised regarding the appropriateness of economic growth as a major goal of societal progress. As increases in material wealth, also resulted with increases in rates of violence, crime and public disorder, this suggests that there was more to society than just economic growth (Land, 1996). Another limitation had to do with the nature of the objectively oriented information being collected that focused on external factors, which were then presumed to measure QOL (Day & Jankey, 1996). Various investigators argued that objective indicators alone do not accurately reflect people's experience of wellbeing, because they overlook how the experiences measured alter how people feel about their circumstances (Campbell, et al., 1976). An outcome of this was, in addition to investigating objective conditions under which people live, it was deemed important to have a measure of how satisfied or dissatisfied people are with programmes and services as well as all aspects of their personal lives and their life-as-a-whole. This led to the development of subjective QOL indicator's based on sample surveys. Pioneering research into subjective QOL by Campbell and Rodgers (1972), Andrew and Withey (1976), and Campbell, Converse, and Rodgers (1976) led the way in measuring the subjective aspect of QOL. Findings from these studies indicated that objective factors were only modestly correlated with people's reported levels of SWB. Further, objective indicators only serve as indirect measures of the quality of a person's life (as they do not measure the individuals' perception of their lived conditions), while subjective indicators were viewed as direct measures as they were seen to account for additional variance not predicted by objective measures (Campbell, et al., 1976). Research cited



by Schwartz and Stack (1991) indicates that most objective life circumstances account for less than 5% of the variance in measures of SWB. This finding was supported in a study by Cummins (1998b) who reported on population surveys of quality of life and life satisfaction published between 1953 and 1995 and found that objective indicators are very poor predictors of subjective quality of life.

Further research into the relationship between income and SWB, by Diener et al. (1993) found that while income has some effect on levels of SWB the effect was very small and that relative standards (i.e., some variable standard for the good life) had no influence on the effects of income and on SWB. This positive but small effect of income on SWB was highlighted by Argyle (1999), whose review of cross-sectional studies highlighted this positive but small effect of income on SWB. The author suggests that income has a complex and generally weak effect on happiness and that any positive effects occur at the lower end of the income scales rather than at the higher income levels. That is, people in the low-income bracket are more likely to report increased levels of SWB with increased wealth.

In a review on the relationship between personal income and SWB Cummins (2000c) came to a similar view, but argues that money did matter when it comes to SWB. However having more money did not make people happier or more satisfied. Using the homeostatic theory and empirical data, Cummins concludes that a ceiling effect occurs in which there is a point beyond which money has no further influence on levels of SWB. On the other hand if people do not have money/wealth then more income will have an influence on levels of SWB.

These and other findings suggested that QOL could not adequately be defined by physical variables alone, as there appears to be more to QOL than simply the objective circumstances in which people live. For example, while crime statistics or income levels can be considered relevant to quality of life, (i.e., measure objective QOL) the subjective element (i.e., how people feel about crime statistics or level of income) is essential for an extensive understanding of life quality. Thus people's subjective evaluations of life satisfaction became a focus of investigation within the Social Indicators Movement (Land, 2000). Chapter 3 of this thesis includes a review of how deinstitutionalisation and community living also contributed to the growth of subjective

quality of life literature and highlights the perspective that questions pertaining to QOL are best answered subjectively by the person concerned.

In conclusion, the concept QOL emerged from extensive empirical investigation over the years in various social science disciplines, such as psychology, sociology and political science, and with parallel development in health (i.e., Health-related QOL) and economics (i.e., social indicators). It is a construct that encompasses aspects of physical, social, emotional and spiritual wellbeing and defined in terms of cultural standards and norms, with reference to the desires, needs, experiences and aspirations of the individual (McVilly & Rawlinson, 1998). The QOL construct has been used at varying levels of generality from the assessment of societal or community wellbeing to the specific evaluation of the situation of individuals and groups in society, resulting with the conceptualisation of QOL reflecting such variation in use (D. Felce & Perry, 1995). However while there exists a wide variation in use of QOL construct, within the literature there is broad agreement that QOL is a multidimensional or global construct comprising two separate but related components; objective descriptors and subjective (life satisfaction) variables of wellbeing (Cummins, 1995, 2005d). It is the subjective indices of quality of life that this thesis will be mostly concerned with.

### 2.3 Definitions of Subjective Quality of Life, Life satisfaction and Subjective Wellbeing.

The study of SWB is embedded in the new field of investigation known as positive psychology. Positive psychology focuses on the positive end of psychological wellbeing and provides a counterbalance to the negative affect and pathology dominance found in psychology until the mid 1970s (Frisch, 2000). This approach is concerned with the study and investigation of what makes experiences of life pleasant. Positive psychology attempts to look at issues such as pleasure, interest, joy, happiness and satisfaction in a range of circumstances ranging from the biological level of the individual through to the societal level (Kahneman, Diener, & Schwarz, 1999). Furthermore, as mentioned in the previous section SWB researchers argued that objective social indicators on their own are not enough to define QOL as people react differently to the same circumstances, and evaluate life conditions based on their unique expectations, values, and previous experiences (Diener & Suh, 1997). For this reason, the investigation of SWB is built on the presumption that to understand an individual's

experiential wellbeing, then one must directly examine how that individual feels about their life in the context of his or her own standards.

### *2.3.1 Subjective wellbeing*

Subjective wellbeing is the most global term used to describe how people generally feel about their life. It captures the experiences of a person's life that are important to them rather than merely the indirect measure of satisfaction that objective social indicators provide. There is general consensus that SWB comprises two components, a cognitive judgement of life satisfaction and an evaluation of affect (Diener, Suh, & Oishi, 1997; Veenhoven, 1991). Early attempts to conceptualise SWB focused on the affective component, as illustrated in the work of Bradburn (1969) who proposed that SWB refers to the overall evaluations that people make about their life, in which they sum up essential life experiences along a continuum of positive and negative affect. From this perspective, SWB is seen as the balance or discrepancy between negative and positive affect. Put differently, SWB may be viewed as either positive affect alone, or as a dominance of positive affect (e.g., joy, contentment or pleasure) over negative affect (e.g., sadness, depression, anxiety or anger) in an individual's experience. Many studies assessing the affective component of SWB have included measures of affect with scales such as the Affective Balance Scale (Bradburn, 1969) and the Positive and Negative Affect Schedule (PANAS) (Watson, Clark, & Tellegen, 1988).

The most common term used for the affective component of SWB is happiness. This is measured either with a single question, "How happy are you with your life-as-a-whole", or with the use of affective scales based on the assumption that positive and negative affect are separate and independent bipolar dimensions (Cummins, Gullone, & Lau, 2002). The inadequacy of this position has recently been questioned by Cummins et al. (2002) in the context of an ongoing debate over whether positive affect and negative affect are bipolar opposites of the same construct or should be viewed as independent constructs (J. A. Russell & Carroll, 1999; Watson & Clark, 1997). A more detailed discussion of affect and SWB will follow in Chapter 6.

In their later investigations into SWB, Diener and Lucas (1999) argue that SWB consists of three interrelated components: life satisfaction, pleasant affect and unpleasant affect. Subjective wellbeing therefore refers to the evaluations that individuals make about their lives, either cognitive judgments of life satisfaction or

affective evaluations of moods and emotions, or a combination of both, that individuals make about their lives. Life satisfaction, pleasant affect, and unpleasant affect are related but they are also conceptually separate and need to be studied independently for a complete overall picture of SWB. Consistent with this view, Diener et al. (1999, p. 277) defined SWB as “a general area of scientific interest rather than a single specific construct”. They argue that, as a general construct, SWB could be divided into a number of components. Satisfaction can be divided into satisfaction with one’s current life, with past life and with future expected life. Satisfaction can be studied as satisfaction with specific domains of life (e.g., marriage, work, recreation, friendship...). Pleasant affect can be divided into specific emotions, such as joy, happiness, and affection. Similarly, unpleasant affect can be divided into specific negative emotions such as, guilt, sadness and anger (Diener, et al., 1999). Subjective wellbeing can be assessed at a global level, with a single question of “How satisfied are you with your life-as-a-whole” (Andrews & Withey, 1976) and also more explicitly by asking satisfaction questions about various life domains (e.g., marital satisfaction, work satisfaction...).

### 2.3.2 *Life satisfaction*

The cognitive component of SWB is conceptualised as life satisfaction (LS) (Andrews & Withey, 1976). Life satisfaction is defined by Pavot et al. (1991) as “a global evaluation by the person on his or her life” (p. 150). As a global measure LS has been found to be both reliable (Larsen, Diener, & Emmons, 1985) and consistent when measured in Western countries (Cummins, 1995), a point that will be elaborated on more fully in a later section. Life satisfaction is viewed as a conscious process in which an individual makes judgements about their life quality based on their own unique set of criteria and experiences (Larsen, et al., 1985). That is, an individual has a particular standard that they perceive as appropriate to them and when making LS judgements they compare the circumstances of their life to that standard. The degree to which life conditions match their own unique set of standards, the greater the level of life satisfaction experienced. Thus, LS is a subjective judgement, rather than a judgement based on externally imposed or objective standards.

The congruence between an individual’s perceived satisfaction and their life circumstances has generally been described using discrepancy theory. The most

comprehensive discrepancy model developed was proposed by Michalos (1985) with his multiple discrepancy theory (MDT). This theory proposes that satisfaction is a function of the discrepancy between seven gaps or comparisons. These are the perceived difference between what one has versus, what one wants, what others have, the best one has had in the past, what one expected to have in the past, what one expects to have in the future, what one deserves and what one needs. Individual differences of personality and life experiences produce different desired circumstances and self-standards and thus discrepancies between these aspects will differ greatly from one individual to another.

In discussing life satisfaction Lucas et al. (1996) argue that while the concept of LS is theoretically different from the amount of positive or negative affect a person experiences, the constructs affect and life satisfaction are inter-related in that, during the process of making LS judgements, individuals tend to rely on their mood as an indicator of overall satisfaction (Schwartz & Strack, 1991). Questions tapping into LS judgements are asked by a single question “How do you feel about your life-as-a-whole?” and provide a global measure of how people feel about their life.

Inconsistent use of terminology in the field of SWB research is evident with the use of the term happiness to explain both the affective and cognitive components of SWB. The term LS is also used interchangeably with happiness. For example, Veenhoven (1991) used the term happiness as a synonym for life satisfaction, which he defines as “the degree to which an individual judges the overall quality of his life-as-a-whole favorably” (p. 10). However, the use of happiness as a synonym for satisfaction is not without its difficulties. Happiness is generally viewed as an emotional or feeling state but this is not the case for satisfaction, which is usually regarded as a cognitive judgemental process (Lewinsohn, Redner, & Seeley, 1991). This approach is one that Campbell et al. (1976) took in their now classic investigation of SWB. These authors argued that happiness does not have the same meaning as satisfaction, in that happiness refers to feeling of “gaiety and elation” (p. 8), while satisfaction is the combination of cognitive judgement and affective responses necessary for the assessment of life satisfaction. Support for the view that happiness is not a good measure of satisfaction comes from the work of Andrews and Robinson (1991) who argue that while some measures of happiness reflect relatively large amount of affect in particular positive affect, they generally show little cognition. In contrast, measures of satisfaction reflect

relatively more cognition. For this reason the term LS in this thesis is used to mean a mostly cognitive judgemental process that is made on an affective background.

### *2.3.3 Subjective quality of life*

Subjective quality of life (SQOL) is the third term used interchangeably with other wellbeing measures in the literature. While agreeing with the general consensus that measures of LS describe a judgemental process that is cognitive in nature, Cummins and Nistico (2002) propose that SWB can be viewed as different in nature from SQOL, in that an emphasis on the cognitive element clearly differentiates LS and SQOL from SWB. Thus, SQOL can be defined as an aggregate of satisfaction across a number of life domains that represent a person's life experience (Cummins, 1997b, 1999). An advantage of using the SQOL construct is that while LS is assessed with a single question concerning life-as-a-whole, SQOL is measured as an aggregate of satisfaction across a number of life domains (e.g., health, income, intimacy, work and so forth). Thus, a domain-based SQOL measure provides a greater variety of information than the unitary approach to measuring LS, therefore making the construct SQOL a more favourable term to use. This thesis is concerned with SQOL, as a wellbeing measure that potentially provides the greatest amount of information regarding various aspects of satisfaction with life. The use of the term SQOL in this study will consequently increase our understanding on how people with and without disabilities maintain levels of life satisfaction across a number of life domains that are considered to make up life-as-a-whole.

Another advantage of using SQOL term is that while it is similar in nature to SWB it does not have the same problems of operationalisation, in that, SQOL avoids the problems of measuring separately positive and negative affect. As noted by Cousins (2001), SQOL can provide a construct that is similar in nature to SWB with the inclusion of satisfaction with emotional wellbeing domain, whereby making it unnecessary to include additional measures of affect. This means that the number of variables being measured will be fewer, and take less time to administer. Furthermore, the measurement and definition of positive and negative affect in SWB measure typically has a limited range of emotions included as it often only measures positive affect/high activation and negative affect/high activation.

Despite little prior agreement concerning which life domains comprise SQOL, recent research concurs that life domains must include both an objective and subjective description. Life domains must also be underpinned by parsimonious constructs and describe generic life areas (Cummins, et al., 2002), as well as some commonly agreed central domains, such as health, wealth, and relationships (e.g., D. Felce & Perry, 1996; Schalock, 1996b). In a review of the life domains that should be included in any definition and measurement of SQOL Cummins (1996) concludes that the seven life domains; material wellbeing, health, productivity, intimacy, safety, community, and emotional wellbeing not only represent the common areas of life-as-a-whole, but are also consistently used in the literature. In addition these seven domains of life comprise the first-level deconstruction of life-as-a-whole, which have been shown to perform well in this regard. Consistent with this view Cummins (1997a) developed the following definition of subjective quality of life

Quality of life is both objective and subjective, each axis being the aggregate of seven domains: material wellbeing, health, productivity, intimacy, safety, community and emotional wellbeing. Objective domains comprise culturally relevant measures of objective wellbeing. Subjective domains comprise domain satisfaction weighted by their importance to the individual. (p. 132)

In this thesis, the terms SWB, is used to acknowledge both the cognitive and affective aspect of wellbeing and to refer to a composite measure of life satisfaction and affect. The term SQOL is used to refer to the aggregate of satisfaction with various life domains. Life satisfaction refers to measures of LS resulting from a global question. Measures of SQOL in this study used the Personal Wellbeing Index (PWI), as it is a measure of cognitive and affective components of SWB in that it provides both a single gestalt measure regarding one's life-as-a-whole (i.e., life satisfaction) and also the sum of LS across a number of domains considered to represent component areas of life experience (SQOL). While the constructs life satisfaction, subjective quality of life and subjective wellbeing are related in particular ways the major focus of this thesis will be subjective wellbeing.

## 2.4 Processes Underlying Subjective Wellbeing

A number of theories have been developed to explain the underlying processes of SWB. These include theories such as, adaptation level theory, multiple discrepancy theory and top-down and bottom-up theories, and the homeostatic theory of SWB.

### 2.4.1 *Set-point range*

Subjective wellbeing and its importance to optimal human functioning is described by Headey and Wearing (1992) as being a fundamental objective of life, in which people exhibit a strong desire to both attain and experience high levels of wellbeing. Consequently, as previously mentioned, research indicates that regardless of objective social and economic conditions most people report high levels of SWB (Diener, et al., 1993). Furthermore, Headey and Wearing argue that SWB operates within an equilibrium state, so that within a stable life situation (i.e., without the presence of recent major life changes) people achieve an equilibrium state of wellbeing in which their present life is viewed as considerably better than the worst previous period and better than the life of the average person in the country. In addition, SWB is maintained by stable personality traits of neuroticism, extraversion, and openness to experience that predispose people to experience stable levels of favourable and/or adverse life events (Headey & Wearing, 1989).

To account for the consistently stable levels of SWB found in population surveys, Headey and Wearing (1989) proposed a dynamic equilibrium model. The authors argue that provided an individual's normal or equilibrium pattern is maintained, SWB will not be affected by pleasant or unpleasant events. However, when events and experiences deviate from the equilibrium pattern, then a person's level of SWB changes. Such changes are most often temporary, as stable personality traits exert a vital equilibrating function, and the person will revert to their previous normal level, referred to an idiosyncratic *set-point* baseline for SWB. This set-point represents the normal moment-to-moment range of SWB functioning that is particular to each individual and therefore can be thought of as involving some form of genetic determination. Thus, according to Headey and Wearing, while people are responsive to life events, they return to their previous set-point level of pleasant or unpleasant affect some time after the occurrence of such events.



Reverting to a normal or set-point level of SWB was demonstrated by Brickman, Coates and Janoff-Bulman (1978). In their widely cited study, they reported that a group of lottery winners did not have significantly higher SWB than a control group, and a group of individuals with spinal cord injuries did not have significantly lower SWB. They argue from the perspective of adaptation level theory (Helson, 1964), that dramatic life events, in this case winning a lottery or experiencing a spinal cord injury, appears to have short-term effect on people's SWB. The authors coined the term "hedonic treadmill" for this effect, in which the impact of good events temporarily affects SWB, as people adapted to their changed circumstances and then return to their pre-event level due to the process of habituation.

In light of more contemporary research, the findings of (Brickman, et al., 1978) should be interpreted with some caution. As Heady and Wearing (1989) point out, there were a number of methodological limitations of the study that are frequently overlooked by those who cite these findings. These limitations include, the small sample size, low response rates and while lottery winners had higher mean SWB scores than the controls, the small sample size means that the reported differences were not statistically significant.

#### *2.4.2 Adaptation level theory*

The notion that adaptation is an essential component for a theory of SWB has been made by a number of authors (e.g., Andrews & Withey, 1976; Costa & McCrae, 1980; Diener & Lucas, 1999; Fujita & Diener, 2005). In this context adaptation is considered to be a psychological process in which people experience reduced reaction to some change in life circumstances over time (Helson, 1964).

In order to function at an optimal level, the human body is required to make adaptations to accommodate changes in the external environment, such as changes in heat, cold, or high altitude. In a similar manner adjustments are made to both good and bad life events, so that people are not in a constant state of either depression or joy (Diener & Lucas, 1999). Adaptation to stimuli that is affective in nature is known as hedonic adaptation. In a review of hedonic adaptation, Frederick and Loewenstein (1999) suggest that adaptation is "any action, process or mechanism that reduces the effects (perceptual, physiological, attentional, motivational hedonic, and so on) of a constant or repeated stimuli" (p. 302). A related process involved with adaptation is habituation,

which is a simple form of learning, to not respond to unchanging stimuli and only pay attention to novel stimuli or relevant changes in the environment (Carlson & Buskit, 2007).

Adaptation level theory, described by Helson (1964) functions in the following manner. An individual's judgement of their current level of stimulation depends upon whether this stimulation is lower or higher than the level to which they have become accustomed. For any event to have an effect it must deviate from the adaptation level in respect to the relevance of discrepancy between an individual's current level of stimulation and past level. Furthermore, the impact of an event will cause the adaptation level to reset to a new level of comparison. For example, winning a large amount of money can be viewed as a distinctive event that has relevance to many other life experiences, as well as providing an extremely positive comparison point, which then results in an upward shift in adaptation level (i.e., the novel level has been added to the accustomed level of stimulation). Consequently, ordinary events may seem less pleasurable, since they compare less favourably with past experience (i.e., winning money). Thus, while winning a million dollars makes new pleasures available, it also has the effect of making old pleasures less enjoyable.

The process of adaptation and habituation applies for both positive and negative events (Brickman, et al., 1978). In the short term, people who suffer extreme ill fortune (e.g., stroke, accidental paralysis, or loss of wealth), will over time, have their SWB mitigated by a contrast effect that enhances mundane pleasures (i.e., loss of positive stimulation causes the adaptation level to fall), which are now contrasted with the extreme negative anchor of their misfortune. In the long term, the process of habituation, which works to erode the impact of the negative event, should mitigate the individual's unhappiness. With the change in adaptation levels, peoples' levels of SWB returns close to the levels they had experienced prior to the life event (Cummins & Lau, 2004a).

Studies investigating adaptation and SWB have typically examined the impact of life events on SWB from a single-occasion, cross-sectional design (Frederick & Loewenstein, 1999). However, a problem with this methodology is that the pre-event level of participant's SWB is unknown and therefore, it is not possible to know whether individuals experiencing an event were more or less happy than average, prior to the event. Adaptation has also been studied using longitudinal research designs, which

follow large groups of people over a long period of time. The panel study by Headey and Wearing (1989) followed a large group of people over an eight-year period. While their findings provide support that adaptation occurs, a number of issues regarding adaptation were not answered by this study. Questions not answered, include whether adaptation to events is complete and whether people always return to the same baseline or whether new baselines are created following a major life event. In addition, Headey and Wearing did not examine whether there are individual differences in the extent to which people adapt, whether there are people who do not adapt to certain changes in life events and which events these are likely to be (Lucas, Clark, Georgellis, & Diener, 2003). The findings supporting adaptation level theory are mixed.

#### *2.4.3 Recent development in adaptation level theory*

More recent studies have extended this earlier work. Research on the effect of life events on SWB found over a two-year period that, only recent life events (i.e., during the previous three months) influenced satisfaction and positive and negative affect (Suh, Diener, & Fujita, 1996). In a large sample study of adaptation of marital transition (became married or widowed) on life satisfaction over a 15-year period Lucas et al. (2003) found that while individuals reacted to events and then adapted back towards baseline levels, there were substantial individual differences. Individuals who initially reacted strongly to marriage or widowhood remained a long way from baseline years later and many people exhibited trajectories in the opposite direction to that predicted by adaptation theory. After marriage not all people revert to baseline levels of satisfaction, as many people reported higher levels of satisfaction after marriage, as those who reported being less satisfied than when they started. People who had strong reactions to marriage or widowhood did not adapt back and revert to their set-point level of satisfaction but rather established a new baseline following the event. The authors argued that long-term levels of SWB are not solely determined by personality and genetic dispositions but that changes in life events, in this case marital status, produces a new baseline level of life satisfaction for individuals.

In a follow-on study examining adaptation to unemployment as a life event, Lucas et al. (2004) found that on average, the experience of unemployment altered people's levels of life satisfaction. In the years following unemployment people were less satisfied than before becoming unemployed and this decline occurred even when individuals

regained employment. Similar to their previous study, Lucas et al. found that individuals, who experienced a large reduction in satisfaction (or who had a strong reaction to it), were more likely to be far from their baseline for many years following the event. The authors concluded that while unemployment was one of those life events that appear to have an effect on an individual's LS, the findings were not necessarily incompatible with the large body of literature supporting set-point theory and adaptation. Rather, they concluded that their findings point to the importance of examining and understanding that there are clear individual differences in reactions to life events; some people adapt quickly, while others never seem to adapt or return to their pre-event levels. However, reduced life satisfaction does not necessarily indicate that permanent change to set-point has occurred. An alternative explanation could be the person is reporting their internal mood is dominated by negative affect.

More recent publications from Morzek and Spiro (2005) and Fujita and Diener (2005) suggest that life satisfaction changes substantially over time for some individuals but not for everyone. Findings from Morzek and Spiro (2005) found significant individual differences in changes to life satisfaction over a 22-year period. Additionally, Fujita and Diener (2005), found that almost 10% of participants LS scores over a 16-year period, changed three or more scale points on a 10-point scale from the first five years of the study to the last five years. They concluded that there appears to be a soft baseline for life satisfaction and people move around a stable set point. Moreover, from their research Diener, Lucas and Scollon (2006) argue for a revision of the adaptation theory, suggesting that individuals' set-points are not hedonically neutral, set-points are specific to each person, a person may have multiple happiness set-points (i.e., pleasant emotions, unpleasant emotions and LS can move in different directions), set-points can change under some conditions (i.e., unemployment, widowhood) and finally, individuals differ in their adaptation to events.

Despite the varied findings on adaptation, there appears to be a reasonable level of acceptance in the literature for adaptation level theory and while some issues have been addressed in more recent studies, limitations in understanding this process still exist. For example, it is still unclear as to the types of experiences people adapt to or do not adapt to, the time taken for successful adaptation to occur, whether people habituate to steadily worsening conditions, and whether adaptation represent a decrease in emotional reaction (Diener, et al., 1999). Furthermore, adaptation level theory does not provide a

comprehensive explanation of SWB, as it only deals with external influences on SWB. Consequently, it overlooks the influence of personality (Diener & Lucas, 1999; Diener, Oishi, & Lucas, 2003), and the cognitive variables of self-esteem, optimism and control (Cummins, et al., 2002; Cummins & Nistico, 2002), which are shown to be strongly correlated with SWB. Despite these unresolved issues, adaptation level theory remains a central component of current theories of SWB. The usefulness of adaptation as an explanation for stability of SWB, is such that Cummins (1998b, 2000b) incorporated adaptation level theory into the SWB homeostatic model, which takes into account both external and internal events and cognitive variables, self-esteem, optimism and control.

#### 2.4.4 *Normative subjective quality of life values*

The idea people showing a set-point range for SWB was more recently supported by a series of empirical investigations conducted by Cummins (1995, 1998, 2003). Using Western population surveys of SWB studies, in which different measurement scales had been used, Cummins converted the data to a statistic called percentage scale maximum (%SM). This measurement standardised Likert scale data to a range of 0 (minimum) to 100 (maximum). Using the scale conversion, Cummins showed that responses of satisfaction or wellbeing were negatively skewed, in that people reliably rated their level of life satisfaction as three quarters (or 75%SM) of a scale. Furthermore, when using population mean scores Western populations have a mean and standard deviation of 75(2.5)%SM. Thus, two standard deviations are used to define the normative range, which reliably predicts that the mean SWB of Western population samples will be found within the narrow range of 70–80%SM. The combination of Western and non-Western population means generate a score of 70(5)% SM (Cummins, 2003).

The data from individuals also display a restricted range of responses. Individuals' scores, as measured from the Comprehensive Quality of Life Scale (ComQoL) show a standard mean of 75%SM and a standard deviation of 12%SM. Thus, the LS of individuals can be expressed as lying within the normative range of 50–100%SM (Cummins, 2003). This level of uniformity in reported LS and SWB values suggests that an international or *gold standard* statistic for normative life satisfaction in Western and non-Western populations, while also allowing for both group and individual life satisfaction data to be referenced to normative distributions (Cummins, 1998b).

The suggestion of a normative standard for SWB data appears reasonable in the light of continuing evidence. Support for the gold standard of 75%SM for LS was supplied by Mellor, Cummins and Loquet (1999) who collected life satisfaction data using three measurement approaches; a single-item global life satisfaction question anchored by *delighted* and *terrible*, the aggregate seven domains of Cummins (1997b) ComQol scale, and an imaginary *best life* and *worst life* scale. They confirmed that the gold standard 75%SM for life satisfaction was not an artefact of scale construction but constitutes normative values for reported life satisfaction and SWB. These and previous findings discussed led Cummins (1998b) to conclude that SWB is not free to vary as an outcome of personal circumstances, rather SWB is kept within a normative, and narrow range by an active internal system he calls homeostasis. This model will be elaborated on in Section 2.5. Model of Homeostasis Subjective Wellbeing.

More recently, Cummins and colleagues (2010; Cummins, Woerner, Tomy, Gibson, & Knapp, 2007) looked at the stability of SWB data by comparing his earlier analysis of the 16 satisfaction surveys from Western populations with 16 satisfaction surveys conducted between 2001 to 2006 through the Australian Unity Wellbeing Index project. The findings from the 16 Australian Unity Wellbeing Index surveys showed that SWB varied over a total range of 3.1 points with a mean and standard deviation of 74.93 (0.75) points and a range of 73.43–76.43 points. This variance in SWB matched the normative range found by Cummins in his earlier analysis of 16 Westerns population mean scores. The findings from the Australian Unity Wellbeing Index project strongly support the notion of a normative gold standard for SWB as it has shown to be a highly stable measure.

#### 2.4.5 *Multiple discrepancy theory*

Life satisfaction assessments are commonly assumed to involve cognitive judgments. This view is central to multiple discrepancies theory (MDT) developed by Michalos (1985). He proposes that life satisfaction is a function of evaluations that an individual makes of their present self in relation to multiple standards of comparisons. This is conceptualised as a series of perceived gaps or discrepancies, between what one has and wants, what one believes that relevant others have, the best one has had in the past, what one expected to have now, what one expects to have in the future, what one deserves, and what one needs. Thus, MDT predicts that a set of perceived discrepancies directly

influences SWB, such that high discrepancies will lead to low SWB and vice versa. From his study, Michalos demonstrated that perceived discrepancies explained 49% of the variance in ratings of happiness and 53% of the variance of global life satisfaction. This framework has been successfully tested in many populations, across different satisfaction domains and remains a widely accepted theory of individual satisfaction judgements (Mallard, Lance, & Michalos, 1997; Schulz, 1995). As a consequence, there is growing acceptance that the cognitive component of wellbeing is measured through questions of 'satisfaction'. However, much like adaptation level theory, MDT does not recognise the influence of personality, control, self-esteem and optimism in the prediction of SWB.

#### *2.4.6 Top-down, bottom-up theories*

While MDT is an elaborate theoretical framework to account for some underlying processes of SWB, it does not fully explain how satisfaction associated with various life domains relates to overall life satisfaction, and vice versa. That is, it does not address the issue of whether satisfaction with life-as-a-whole or global LS is the result of subjectively weighted aggregate of satisfaction (i.e., cumulative satisfaction) in relevant life domains, or whether domain satisfaction arises from the influence of overall life satisfaction, or whether the two influence each other. Thus, one focus of SWB research has been to unravel the uncertainty about which variables cause SWB and which variables are consequences. Some of the variables that have been proposed as causes of SWB are domain satisfaction, social support, major life events and referenced standards (e.g., expectations, aspirations, and sense of equity) (Headey, Veenhoven, & Wearing, 1991). However, whether these are correlates of SWB, consequences or both is uncertain.

The bottom-up approach attempts to identify the external situational factors that are proposed to account for SWB (Diener, 1984). Much of the early research into causes of SWB has used a bottom-up framework (e.g., Headey, Holmstrom, & Wearing, 1985; McKennell & Andrews, 1983), with the rationale that changes in overall SWB can be achieved by addressing concerns within specific life domains (Lance, Mallard, & Michalos, 1995). From this perspective, judgments of satisfaction are made from a mental calculation that sums all passing pleasures and pains to produce a final

judgment. Thus, satisfaction in domains such as, marriage, work, leisure, finances, and so forth, all contribute or cause satisfaction with life-as-a-whole.

The bottom-up framework, however, only explains some of the SWB findings. For example, Kozma, Stone and Stones (2000) note that bottom-up approaches does not explain the above-median rating on SWB rating scales across all populations studied, the presence of only minor differences in SWB scores across different environments, and the small amount of SWB variance explained by environmental factors. These authors provide evidence for a top-down (i.e., personality predisposes a person to experience and react to life events in either a positive or negative manner) explanation of SWB, which indicate when looking at long-term SWB measures, bottom-up models were a very poor fit. Rather, the top-down models provide a better fit for the data; supporting a dispositional explanation of SWB.

The top-down approach identifies factors that influence overall SWB and focuses on processes within the individual, such as personality traits of extraversion and neuroticism (Costa & McCrae, 1980), positive and negative affectivity (Watson, et al., 1988), and self-esteem (Lucas, Diener, & Suh, 1996), particularly within Western society. The top-down perspective proposes that the individual has a propensity to experience life events in a positive way (Diener, 1984). This means, the individual's personality is considered to influence how they will react to events they experience. Individuals experience pleasure and satisfaction with life because they have a happy disposition, not because positive events occur in their life.

To obtain evidence for the top-down approach, researchers have used results from studies where happiness and satisfaction are stable for individuals across situations and time, and studies in which groups of people with dramatically different financial status report similar levels of SWB. For example the study by Andrew and Withey (1976) found that when predicting LS the type of domain satisfaction used as predictors did not matter and that weighting the life domains did not produce better predictions. This suggests that satisfaction with life domains results from global life satisfaction, rather than cause it. Additionally, Diener (1984) argued that as demographic variables account for very little variance in SWB, and personality variables (i.e., self-esteem) show consistent relationship with SWB, this provides further evidence for a top-down explanation of SWB.



However, most of the research into personality, external events and subjective indices of SWB has been correlational and therefore, any conclusions about the direction of causal relations is unclear. A third approach to explain a causal direction for SWB has been proposed by Costa and McCrae (1980), who argued that any causal relationship between domain satisfaction and measures of SWB are spurious as both sets of variables are dependent on stable personality traits of extraversion and neuroticism. Despite supporting a top-down approach Diener (1984) also suggested a bidirectional approach, arguing that his findings indicate some portion of happiness is due to personality but important life (environmental or external) events cannot be over-looked. The bidirectional model proposes that reciprocal causal relationships exists between overall LS and life domain satisfaction, in which they influence each other simultaneously (Lance, et al., 1995). That is, overall LS results from satisfaction in life domains and also influences satisfaction in those domains, at the same time.

A number of studies have tested the bidirectional model (Headey, et al., 1991; Kozma, et al., 2000; Lance, et al., 1995). Drawing on earlier research (Schmitt & Bedeian, 1982), which reported reciprocal causal relationships between job satisfaction and overall life satisfaction, Lance et al. (1989) compared the fit of all three models; bottom-up, top-down and bidirectionality of overall LS-life domain satisfaction relationships. The three life domains investigated were job satisfaction, marital satisfaction and social activity satisfaction. The authors found that generally the bidirectional model had the strongest support, due to the direction of overall LS-life domain satisfaction relationships showing variation across the three domains. That is, they found a bottom-up relationship for marital life domain, a top-down relationship for social activities domain and a bidirectional relationship for job domain. The authors concluded that overall LS-life domain satisfaction relationships varies across different life domains, supporting the argument that bottom-up relations between overall LS-life domain satisfaction may be the exception rather than the rule. The findings of this study, however, are limited due to the small number of life domains used to investigate this relationship.

To further investigate this issue, Heady and colleagues (1991) tested top-down, bottom-up relations between overall LS and satisfaction using six life domains (marriage, work, material standard of living, leisure, friendship and health) with an Australian sample. In spite of using an increased number of life domains, the results of this study were very

similar to those of the previously discussed study indicating support for the bidirectional relations between overall LS and marital satisfaction, but a top-down relations for the domains of work, standard of living and leisure, and spurious (i.e., neither top-down or bottom-up) relations for the domains of friendship and health. While Lance et al. (1989) and Heady et al. (1991) found different life domains supporting a bidirectional model of SWB, these two studies clearly indicate that the direction of overall LS and life domain satisfaction relationships vary as a function of the particular domain being investigated. As noted by Lance, Mallard, and Michalos (1995) these studies further develop an understanding of the causal relationship between overall LS and life domain satisfaction, as they indicate that these relationships are not exclusively bottom-up or top-down but are reciprocal. However, both studies findings are limited by the lack of a strong theoretical context and the restricted number of life domains studied.

More recently, Mallard, Lance and Michalos (1997) reported overwhelming support for a bidirectional model of SWB and while the top-down model was supported in three of the 32 samples, the bottom-up model was the least supported. The authors argue that these findings run counter to the majority of satisfaction research, which has had an underlying assumption of bottom-up approach, and indicates a need to revise current SWB models that better fit the data. This call has been addressed by Cummins (1998b) who proposed a homeostatic model of SWB, which has a bidirectional approach and also incorporates the processes of adaptation and habituation to life events. This model will now be discussed.

## 2.5 Model of Homeostasis Subjective Wellbeing

### 2.5.1 *Homeostasis model*

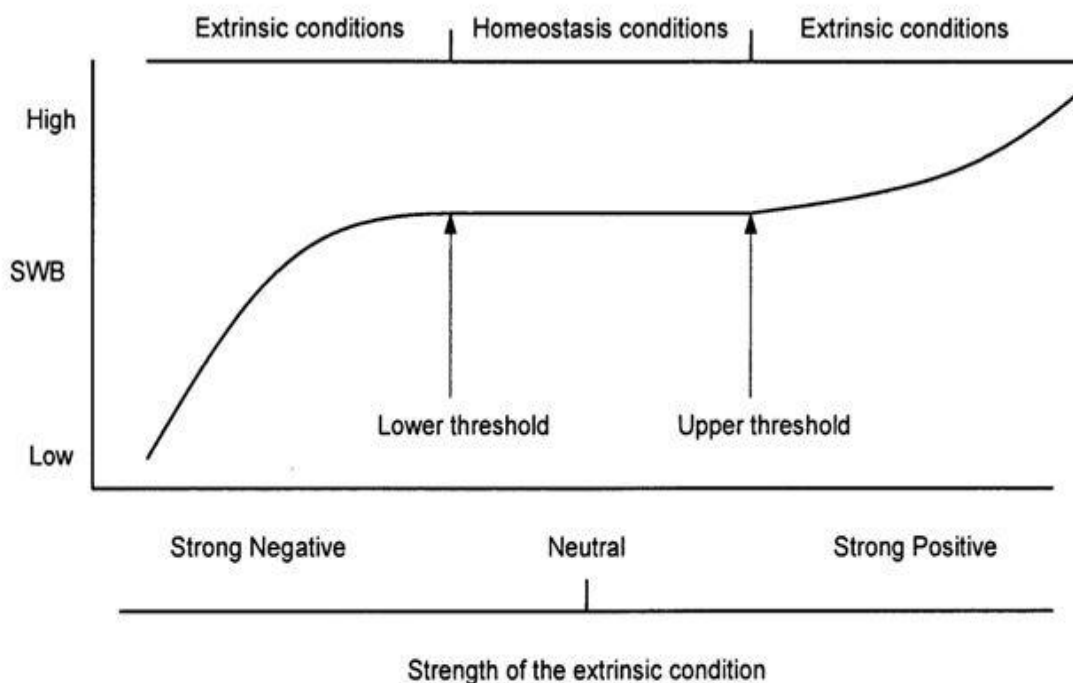
It is clear that research into SWB over the past two decades has progressed the field considerably. In an attempt to revise current SWB models to better fit the data Cummins (1995, 1996) developed a model based around the idea of homeostatic maintenance (a notion similar to how the body maintains optimum blood pressure or temperature levels), which suggests that SWB is controlled and maintained by a set of psychological devices. He called this the homeostasis model of SWB. Findings (previously discussed), concerning normative standard for life satisfaction provided evidence for Cummins (1998b) to propose that life satisfaction and more generally

SWB, is not free to vary over the possible 0–100%SM range. Rather, it appears that SWB is held under some form of homeostatic control managed to a large degree by three cognitive mechanisms; sense of control, self-esteem, and optimism that act to restrict the actual range of SWB within a set-point range for each individual (Cummins & Nistico, 2002). These three cognitive mechanisms will be discussed more fully in section 2.6.

The notion of a set-point range was extended from earlier work by Headey and Wearing (1989) who observed that levels of SWB were relatively stable. Moreover, when events occurred which caused SWB to change, over time people reverted back to their previous level. This observation led Headey and Wearing to propose a dynamic equilibrium model of SWB to account for the stability of SWB data, in which the management of SWB (i.e., maintaining stable levels of SWB) was due to a genetically determined psychological system linked to the personality characteristics of extraversion and neuroticism. They propose that this system has the primary role of maintaining self-esteem. The idea that SWB is managed neurologically in a state of dynamic equilibrium has been proposed by a number of other authors. For example, Ormel and Schaufeli (1991) developed a stability and change model and Stone and Kozma (1991) developed a magical model of happiness also based on the notion that SWB is managed neurologically in a state of dynamic equilibrium.

The feature that distinguishes the homeostasis model from others, is that it predicts the management of SWB will evidence the same essential characteristics as any homeostatic systems, and central to this is the concept of threshold. The threshold exists at the narrow margins of the set-point range with 80%SM for the upper threshold range and 70% for the lower range. The function of homeostasis processes is to defend these threshold ranges from external threats or challenges, so that when these threshold values are approached (both upper and lower) the system works hard to maintain control and therefore maintain levels of SWB (Cummins, et al., 2002). As outlined in Figure 2.1, if the strength of an extrinsic influence (conditions outside the homeostatic system) exceeds the adaptive capacity of the homeostatic system, SWB will come under control of the extrinsic condition, causing SWB to raise or fall. For example, a strong negative extrinsic condition leads to the lower threshold being exceeded, homeostasis is defeated, resulting in reduced SWB. Strong positive extrinsic conditions work in reverse causing

SWB to rise until the homeostatic system regains control and SWB is brought back to the normal set-point range for the individual.



*Figure 2.1.* A schematic representation of homeostatic control of subjective wellbeing. Taken from “A model of subjective homeostasis: the role of personality”, by R.A. Cummins et al., 2002, in “The universality of subjective wellbeing indicators: a multi-disciplinary and multi-national perspective” (Eds. E. Gullone & R.A. Cummins) p. 13. Copyright 2002 by Kluwer Academic Publishers.

Empirical evidence for this threshold has been provided by Cummins (2003), who found systematic increases in variance as sample means fall below 70%SM. Thus from the perspective of homeostatic theory, people are able to maintain normative levels of LS and SWB under diverse personal circumstances provided those circumstances are not so severe that homeostasis is defeated. Consequently, it can be predicted for general population samples that there will be very little congruity between objective living conditions and SWB (see, Schkade & Kahneman, 1998). However, should homeostasis be defeated (i.e., the threshold for adaptation has been exceeded) then the relationship between objective and subjective quality of life shows increased covariation (Cummins, 2003). That is, extreme objective life circumstances will drive down SWB below its set-point range, thus defeating homeostasis.

Several researchers have proposed that the maintenance of such a positive outlook on life and self is an evolved psychological mechanism that allows for the maintenance of life satisfaction within a range that is optimal for the survival of human populations (Peterson, 2000), and is essential to promote motivation and the avoidance of negative states such as depression, anxiety and stress (Cummins, 2000b). This suggestion makes sense of the apparent uniformity of reported life satisfaction, within a narrow range across a range of populations (Cummins, 1995, 1998b).

### 2.5.2 *Homeostatic mechanisms*

In the homeostatic model of SWB, Cummins (2000b) and Cummins and Cahill (2000) suggest that life satisfaction and SWB are held under homeostatic control by the influence of both personality factors and a cognitive buffering system. The first order of determinants (i.e., primary level of influence) of SWB involves the personality dimensions of extraversion and neuroticism, which act to create the set-point range for each individual and provide the affective component of SWB. The link between extraversion and neuroticism as primary determinants of SWB has been demonstrated in numerous studies (e.g., Costa & McCrae, 1980; Headey & Wearing, 1989).

The second order determinant of the homeostatic model is the genetically programmed internal buffering system, designed to protect and maintain levels of SWB within the individual's set-point range. Internal buffers included the related processes of perceived control, self-esteem and optimism (Cummins & Nistico, 2002). These processes are conscious and act as cognitive schemata that have a predominantly positive bias in terms of information processing that is conveyed by personality (Cummins & Cahill, 2000). At the same time these three processes can be influenced by experience with the external environment (which is the third level of determination). The output from the cognitive buffering system is SWB, which reflects both affect and cognition. A fuller discussion of the internal buffering system follows in section 2.6.

The homeostatic system functions in the follow manner. The personality dimensions of extraversion and neuroticism together provide an affective balance to produce the set-point range for SWB. The affective balance provides a steady influence on the second order buffers to also produce an average set-point of 75%SM, while at the same time acting as regulators to integrate affect from personality, with cognition regarding conditions of the external environment. Consequently, the system deals successfully

with an environment that submits to control, is self-enhancing for the individual and is suggestive of a positive future. On the other hand, the system will be unsuccessful when control has failed, a sense of self has diminished, and where the future appears desolate. When this situation occurs, the maintenance of SWB is threatened and the buffering system has to play the dual role of retaining both a reasonable degree of accuracy and protection of wellbeing (Cummins & Cahill, 2000).

Wellbeing is therefore achieved through the use of various cognitive devices that essentially put a positive bias on failure. For example, a person who has experienced negative environmental input (such as being rejected in a job interview) may simply react by reflecting on thoughts such as “what can I learn from the situation” (i.e., sense of control), or “I am successful in many other things in my life,” (self-esteem), or “tomorrow will be better” (optimism). Environmental input that produces failure, challenges the buffering system to absorb the impact.

Where such challenges are minor, the buffers exhibit a small reduction in SWB, as they homeostatically adjust to the challenge. Such adjustments will not affect overall levels of SWB. Equally if a negative life change is gradual then there is likely to be no noticeable impact on SWB, due to processes of habituation, as discussed in an earlier section (2.4.2) (Cummins & Lau, 2004a). However, strong and sustained challenges will defeat the homeostatic system and result in loss of SWB and the development of possible negative states, such as depression. Loss of SWB means that the homeostatic system has been defeated, with the dominant source of control moving from the homeostatic processes to the challenging agent and resulting in SWB falling below the set-point range for the individual. If homeostatic defeat has occurred due to some sort of extraneous challenge and the individual’s level of SWB falls below their set-point range, the good news is that over time the homeostatic system will attempt to regain control resulting in the return to a stable level of SWB within the individual’s own set-point range (Cummins, 2010). This process is very consistent with research data on stability of SWB.

The model of homeostasis is an initial step towards an understanding of how SWB is effectively maintained, as supported with the evidence of a normative gold standard of life satisfaction and subjective QOL scores (Cummins, 1998b). However, while the homeostasis model of SWB is consistent with current data and provides a sound

analytical tool in which to investigate the dimensions and influences on the maintenance of SWB, it is still in the early stage of development and therefore in need of further investigation.

Three factors have been suggested by Cummins and Cahill (2000) which need to be investigated in relation to this model. The first involves the processes of adaptation and habituation. While these two processes are consistent with the concept of homeostatic control, it is unclear whether they are part of the cognitive buffering system outlined in the model. Thus, questions regarding the nature and interaction of adaptation or habituation to the maintenance of SWB need to be asked and empirically determined.

In addition, adaptation and habituation are important issues to address, in particular for sub-groups in the population for whom the maintenance of SWB is likely to be at risk of homeostatic defeat. This could be the situation for people with intellectual disability and other marginalised groups in society. Thus, according to the model of homeostasis, the extent to which people recover their SWB, will depend on the extent to which they can adapt to enforced change in their lives and allow homeostasis to regain control (Cummins, 2000b). It is also dependent on the resources (e.g., money and relationships) at their command to defend themselves against a hostile world. It seems reasonable to suggest that the process of adaptation or habituation may be an important aspect to the efficient functioning of a person's emotional system and thus play a role in the maintenance of homeostatic control of SWB. If one of the important functions of this system is to provide information to an individual for the purpose of guiding their behaviour, the adaptation process may allow new events, which provide new information, to take priority over past events (Carver & Scheier, 1990).

At the same time the possibility of other complex coping processes may be responsible for adaptation. For example, an individual may disengage from their negative experience by redirecting their attention and resources to more easily attainable goals, or they may reinterpret negative events in a more positive light, or seek to find new meaning in their adverse experience (Suh, et al., 1996). These issues need further refinement before a clear idea of what the homeostatic mechanisms are and how they work to maintain SWB within the set-point range particular to the individual.

The second factor suggested by Cummins and Cahill (2000) that still requires investigation is the precise nature of the cognitive buffering system (to be discussed in the Cognitive mechanisms section). Clarification is required to the adequacy of the three linked cognitive processes of control, self-esteem and optimism to account for and fully describe the system. Moreover, the precise nature of interaction between the three processes requires further empirical clarification. It is the nature of this interaction and the testing of the homeostasis model of SWB that will be investigated in this study. With a particular focus on how the cognitive buffering system works for people with intellectual disability, as they represent a group in society for whom homeostatic defeat of SWB is more likely to occur. A full discussion of the reasons surrounding why people with intellectual disability are more likely to experience homeostatic defeat will be discussed in Chapter 3.

Finally, an entirely different process for the maintenance of homeostatic control may be involved. In their investigation of the quality of rural and metropolitan life, Best et al., (2000) provided evidence that SWB was maintained through domain compensation. Here, the loss of satisfaction in one life domain appears to be compensated by an increase in satisfaction with one or more other domains without showing an overall loss of SWB. Thus, it is of interest to determine if the SWB of people with intellectual disability, whose SWB scores fall within the normative range, indicate the presence of domain compensation to account for the maintenance of SWB and also how does their domain satisfaction scores differ (if they do differ) from those of the general population.

### *2.5.3 Current perspective on the homeostatic model of subjective wellbeing*

Notwithstanding the above discussion on the need for further refinement and development of the SWB homeostasis model, the past decade has seen substantial progress and evidence building for the idea that SWB is actively controlled and maintained by a core affective and cognitive homeostatic system (Cummins, 2005a, 2005d; Davern, 2004). Research efforts have identified a number of characteristics about this system, which are summarised by Cummins (2005d): (a) SWB is stable and represents a normal state of positive wellbeing rather than a state of excellence, (b) levels of SWB are maintained within a narrow positive range of values—set-point for individuals' SWB 50–100%SM and population level (at least for Western societies) 70–



80%SM, and (c) core affect is homeostatically managed. A discussion of core affect will be elaborated on in Chapter 6.

More recently Cummins and colleagues (Cummins, et al., 2009; Cummins, Woerner, Tomy, Lai, & Collard, 2007) have extended the homeostasis model of SWB management as a result of their ongoing longitudinal research. The mechanisms identified that underpin the homeostasis model are external and internal buffers. External buffers are considered to be the objective part of the management system of SWB. That is, they are the variables that can be measured or observed by others and are often counted as frequencies. The two most powerful external buffers identified are wealth and relationships, as these two variables significantly support or challenge SWB levels.

Dealing with the external buffer of income first, Cummins (2000c) has demonstrated that income acts as a flexible resource that assists the homeostasis management system. Greater levels of income will not buy happiness or satisfaction but greater income does provide resources for the individual to meet their needs and thus maintain levels of SWB within their individualistic set-point range. Drawing from their longitudinal study Cummins and colleagues (2009) found that SWB increased with income up to a point (e.g., AUD\$91,000–\$120,000) but does not increase beyond that point. While incomes levels in this study went beyond AUD\$120,000 it was found that SWB plateaus at 80%SM, being the upper threshold of the set-point range, and therefore, supporting a notion of homeostatic control.

To further examine the relationship between wealth and SWB, participants were asked to indicate whether they had recently experienced an event that caused them to feel either happier or sadder than normal. If wealth acts as a flexible resource that protects SWB, then it is predicted that people on high incomes (wealthy) will experience more positive events that make them happier than normal and less negative events that make them sadder than normal. More than 50% of participants recall experiencing either a happy or sad event. Results indicate that people on low incomes (less than AUD\$15,000 per year) were more likely to experience negative events that made them sadder than normal and less likely to experience events that made them happier than normal. As income levels increased, the gap between experiencing sad and happy events decreased until these two variables converged around the \$60,000–\$90,000

annual household income level. After which increases in income beyond this point indicate that the probability of experiencing a sad or happy event is about the same (Cummins, 2010). These findings were used as evidence of homeostatic control.

The second external buffer is relationships with others involving mutual sharing, support and intimacy. Data concerning household structure and the nature of relationships between people was gathered as part of the longitudinal studies. When these variables were analysed against levels of SWB it was found that where participants lived with a partner, they rated their SWB higher or within the normative range for samples means. People who lived without a partner on the other hand showed consistently lower SWB. The exception to living without a partner but having SWB within the normative range, was participants who lived with their parents. The group with a SWB below the normal range (67.6%SM) were those who reported that they were living with other adults and children (Cummins, 2010). It is clear from this discussion that both income and relationships provide a flexible external source of support for the maintenance of SWB, which is managed by the homeostatic system.

The internal buffers that assist homeostasis are genetically programmed and specific to the individual. These buffers are activated when SWB thresholds are threatened and involve the automatic processes of adaptation and habituation (discussed earlier in 2.3.2), assisted by the three linked cognitive buffers of sense of control, self-esteem and optimism (Cummins, 2003).

A third characteristic proposed by Cummins (2005d; 2010) is that the role of the homeostasis system is to defend core affect. The authors argue that core affect as described by Russell (2003) is a mood-state and refers to how the individual feels, in an abstract as well as personal way about themselves. Core affect can be assessed when attention is drawn to it, but otherwise it operates in the background going unnoticed. It is proposed by the authors that core affect is the affective component of SWB, as well as being the basic steady-state set-point specific to each individual, that homeostasis seeks to defend. As a steady-state set-point, core affect provides the motivation or energy for behaviour.

The authors further propose that core affect, rather than higher cognitive process and personality, explain most of the SWB variance (Cummins, 2010). This perspective

represents a new radical way of thinking about SWB and affect, and challenges current thinking about SWB and the role of personality. However, such ideas need further refinement and validation from published studies before any solid conclusions can be drawn.

From the above discussion it seems worthwhile to continue investigations into the SWB homeostasis model targeting a range of population groups in society. In particular, groups for whom the maintenance of SWB is highly likely to be defeated as the homeostatic system loses control and extraneous variables gain control, as may be the case for people with intellectual disability who are marginalised in society. A fuller discussion of this point will be made in Chapter 3.

## 2.6 Cognitive Mechanisms and Subjective Wellbeing

It is clear that, for most people their reported SWB is maintained at a level in which they are about three-quarters satisfied with their life-as-a-whole. This maintained level of SWB has been identified as an outcome of the way people think about and explain what happens in their life (DeNeve, 1999). For example, when individuals believe that they are not in control of events in their lives, they tend to rate their level of happiness or satisfaction with life as low, whereas, individuals who make positive attributions about life events rate their happiness or satisfaction as high. In this context, happiness and satisfaction are used synonymously, rather than happiness being an acute response to an event or stimulus. Thus, the cognitions an individual has about their life, assists in the maintenance of SWB that lies within a set-point range for that individual. How this level of satisfaction is maintained has been of interest to investigators across the fields of life satisfaction, happiness and SWB for the past few decades, with numerous models proposed to account for it. One such model as mentioned above, is the homeostatic model of SWB as proposed by Cummins (1998b).

The homeostatic model of SWB operationalises the maintenance of SWB by proposing a system of three linked cognitive buffers: perceived control, self-esteem and optimism (Cummins & Nistico, 2002). At the same time, any attempt to understand how SWB is maintained must also account for personality, as it is consistently shown to correlate strongly with various indicators of SWB. Major personality traits that are associated with SWB are extraversion and neuroticism (Costa & McCrae, 1980; Pavot, Diener, &

Fujita, 1990). The role of personality in the maintenance of SWB will not be specifically discussed, as it was not a target of investigation in this thesis; rather the three linked cognitive buffering system involving perceived control, self-esteem and optimism will be discussed.

### *2.6.1 Perceived control*

For the past three or four decades, perceived control or a sense of personal control (i.e., self-efficacy) has been a focus in Social Psychology literature. Personal control generally refers to an individual's belief that they can behave in a manner that will ensure maximum positive outcomes, at the same time minimising negative outcomes for themselves (Peterson, 1999; S. C. Thompson, 1981; S. C. Thompson, et al., 1998). Such judgements of perceived control are frequently categorised as contingency and competence beliefs (S. C. Thompson & Spacapan, 1991). Thus, personal control can be viewed as both a cause and consequence of human action and the way people respond to their environment, particularly to aversive events.

The notion of a link between perceived control and SWB has intuitive appeal and has been well supported in the literature. In an early study of control and wellbeing, Larson (1989) reported that adults and adolescents who experienced more perceived control in their life reported greater happiness or SWB, than did those who reported less control. Similarly, Thompson and Spacapan (1991) reported that across diverse populations a sense of control had a variety of positive effects, such as emotional wellbeing, successfully coping with stress, good physiological and health outcomes, desired behavioural change and improved performance. Further support comes from Peterson (1999) who sees control as a critically important psychological process linked to motivation, cognition, and emotion. More recently in his homeostatic model of SWB, Cummins et al. (2004a) proposed that perceived control operates as a cognitive buffer maintaining levels of SWB. In this view, the individual exercising control or coping strategies are buffered from the negative impact of potentially aversive life events.

A sense of control has not only been reported as an important aspect of wellbeing, but the lack of it (sometimes termed helplessness), has been linked to illness (e.g., depression, lack of health-protective behaviours) (Bandura, 1997; Grob, 2000; Peterson, 1999). Thus, individual's with a strong sense of control, or self-efficacy, cope better

with aversive events, make desired behaviour changes and experience better wellbeing (S. C. Thompson, et al., 1998).

Perceived control has been conceptualised in the literature from a variety of perspectives, producing a vast array of empirical data. For example the following constructs are frequently found within investigations of control; uncontrollability or helplessness (Abramson, Seligman, & Teasdale, 1978), primary and secondary control (Rothbaum, Weisz, & Snyder, 1982), means-ends beliefs and agency beliefs (Skinner, Chapman, & Baltes, 1988), locus of control (Rotter, 1990), and outcome expectancy and efficacy expectancy (Bandura, 1997).

A related concept that has developed alongside perceived control, is coping. In an attempt to bring together the notions of control and coping, Folkman (1984) placed the role of personal control within stress and coping processes from the perspective of Lazarus' (1966) cognitive theory on coping. This theory of coping proposes two processes: (1) cognitive appraisal and (2) coping as mediators of stress and stress-related adaptational outcomes. According to Folkman et al. (1984) coping refers to "cognitive and behavioural efforts to master, reduce or tolerate the internal and/or external demands that are created by a stressful transaction" (p.843). Within this definition stressful transactions are viewed as events in the environment that are appraised by a person as exceeding their resources. This definition of coping shares similarities with the general definition of personal control, in which both definitions focus on cognitions and behaviour or actions of the individual. For the purpose of this thesis the terms control and coping are used interchangeably.

The definition of coping proposed by Folkman et al. (1986) has three key features. First, coping is viewed with a focus on what the individual actually thinks and does in an adverse situation and the changes that result. Secondly, coping is contextual, in that it is influenced by the appraisal an individual makes regarding the demands and the resources to manage the stressful event. Thirdly, the definition of coping does not suggest the success or failure of an individuals' efforts (Folkman, 1984; Folkman, et al., 1986). That is, the belief that one can affect positive or negative outcomes does not have to conform to reality. As noted by Bandura (1997), an individual's belief that they have no power over a situation (or power to produce desired outcomes) results in the individual not making any attempt to bring about desired outcomes. Similarly, Peterson

(1999) argues that having a sense of control in situations can often lead to a self-fulfilling effect. Simply believing that one has control of outcomes in one's life may result in the individual acting in such a determined manner they achieve control over outcomes that had previously seemed uncontrollable. Thus, one's perspective or beliefs about the control they have can result in positive (or negative) outcomes.

Early work on coping failed to result in the development of a single approach of categorising coping processes and appraisals. However, theorists tend to emphasise the multidimensional nature of the construct. For example, two functions of coping widely acknowledged and supported in the literature, are *emotion-focused coping*, which deals with the regulation of stressful emotions and *problem-focused coping*, which deals with the management of the problem by altering the person-environment relations (Carver, Scheier, & Weintraub, 1989; Folkman, et al., 1986). Any stressful situation can elicit problem-focused and emotion-focused coping. Problem-focused coping is usually employed when the stressor has been appraised as being able to be solved or something constructive can be done about it. Whereas, emotion-focused coping is employed when the stressor is not solvable but must be endured (Folkman, et al., 1986). However, as noted by Carver and colleagues (1989), the process of coping is complex and involves more than problem-focus and emotion-focus factors.

Thus, coping is also classified from the perspective of the *focus* of coping, or the *method* of coping used, by the individual (Moos & Schaefer, 1993). The focus of coping approach deals with the individual's orientation and activity in response to the stressor. Here, a person can approach their problems and make a concerted effort to resolve them, or try to avoid their problems and focus on managing the emotions related to the problems, otherwise known as Approach Coping and Avoidance Coping. The method of coping used, primarily describes the coping process as using either cognitive or behavioural responses (Moos, 1997; Moos & Schaefer, 1993). Classify coping from both a focus and method perspective appears to capture the entire spectrum of coping responses.

Consequently, these two approaches were combined by Moos and Schaefer (1993) to provide an integrated framework of coping processes. Their model has the individual's response towards the stressor divided into approach and avoidance domains. These domains are then divided into categories that reflect the method individual's use to

resolve the stressor, in the form of cognitive or behavioural responses. Thus, their model identifies four basic types of coping processes: approach-cognitive, approach-behavioural, avoidance-cognitive, and avoidance-behavioural. To this end the authors used theoretical and empirical criteria to develop the Coping Response Inventory (CRI) to measure approach and avoidance coping strategies and cognitive and behavioural methods (Moos, 1993). The CRI consists of eight subscales divided into two dimensions of Approach coping and Avoidance coping. Approach coping is made up of two cognitive subscales, logical analysis and positive reappraisal, and two behavioural subscales, problem solving and seeking guidance or support. Avoidance coping also consists of the two cognitive subscales, cognitive avoidance and acceptance or resignation and two behavioural subscales, seeking alternative rewards and emotional discharge. The CRI has sound psychometric characteristics with reported internal reliabilities alphas of 0.65 for women and 0.67 for men, and moderate intercorrelations 0.25 and 0.29 for women and men respectively (Moos, 1997).

In a review of control literature, Cousins (2001) provided compelling theoretical and empirical evidence supporting the use of approach and avoidance dimensions of control to examine the relationship between perceived control and the maintenance of SWB in adult populations. The link between approach and avoidance control and SWB or life satisfaction has not been the focus of a lot of research attention. As noted by Cousins (2001) the research on approach and avoidance coping has mostly been drawn from investigations with a focus on depression. The author attempted to extend this research with an investigation into the role of personality (conceptualised as Neuroticism and Extraversion), control (conceptualised as Approach and Avoidance Coping) and the subjective quality of life of a sample of secondary school teachers compared to the general population. Analysis from the combined sample showed that participants with high subjective quality of life ( $> 70\%SM$ ) had significant approach control and extraversion scores and significantly lower scores for neuroticism and avoidant control than those with lower subjective quality of life ( $< 70\%SM$ ). From her results Cousins concludes that approach control, along with neuroticism are indeed important factors in the maintenance of SWB.

This thesis seeks to extend the generalisation of findings using the CRI by exploring its usefulness in measuring perceived control of people with intellectual disability and its relationship to the maintenance of SWB by this group compared to non-disabled people.

To my knowledge people with intellectual disability have not previously used CRI studies. This is an important issue as a sense of control and self-esteem has been shown to have a positive significant relationship for people with intellectual disability (Cummins & Lau 2004). That is, a sense of control and feeling good about oneself (e.g., self-esteem) are important factors in life satisfaction and the maintenance of SWB.

### 2.6.2 *Self-esteem*

The second cognitive buffer in the homeostasis model of SWB is self-esteem. Self-esteem has attracted considerable attention over the years and has been used in various ways by authors, such as self-concept, self-image, and self-efficacy. However, general agreement concerning self-esteem is that it is an enduring construct, which is frequently viewed as being synonymous with self-concept (Cummins & Lau, 2004a; Rosenberg, 1979). Self-esteem refers to the evaluations that individuals make about themselves regarding their own worthiness. Consequently, it is viewed as the global feelings of self-worth and adequacy, or as the generalised feelings of goodness and self-respect that individuals have for themselves (Crocker & Major, 1989; Lyubomirsky, Tkach, & Dimatteo, 2006)).

A number of scales are reported to measure self-esteem, however, the best known and most frequently used is the Rosenberg Self-Esteem Scale (Rosenberg, 1979). This is a psychometrically sound scale consisting of 10 items. Five items are positively worded (e.g., “I feel that I have a number of good qualities”) and five items are negatively worded (“I wish I could have more respect for myself”) that together indicate the degree to which a person experiences themselves as worthy and capable.

Self-esteem is considered to be an indispensable resource that is central to the maintenance of an individual’s sense of wellbeing (Headey, et al., 1985; Rosenberg, 1979). As such, there is strong support in the literature for the notion that satisfaction with self (i.e., self-esteem) is one of the strongest predictors of SWB (Campbell, 1981; Diener, Smith, & Fujita, 1995; Lucas, et al., 1996; Lyubomirsky, et al., 2006). For example, in a study that looked at the impact of infertility problems and the SWB of couples, Abbey and colleagues (1992) found that stress related to infertility, had an indirect negative impact on SWB via its effects on self-esteem, internal control and interpersonal conflict. That is, the stress related to infertility did not directly affect the couple’s level of SWB. Rather, SWB was driven down after stress related to fertility



problems lowered the couple's self-esteem, sense of internal control and increase their interpersonal conflict (Abbey, Andrews, & Halman, 1992). In this sense self-esteem acts a buffer for the maintenance of SWB, a position that is argued by Cummins in his homeostasis model of SWB (Cummins & Lau, 2004a).

Such findings have intuitive appeal. That is, if one feels good about oneself then it seems logical that one would also feel positive about life in general and then be better equipped to deal with the problems that come along the way, including stress related to problems of fertility. Hence, individuals with high self-esteem tend to fare better when faced with detrimental life events, than individuals with low self-esteem. Those with high self-esteem, tend to persist with tasks, show greater problem-orientated coping, have an increased sense of control and use self-enhancing attributes (Abbey, et al., 1992). However, one of the limitations of the Abbey et al., study was that all couples interviewed were seeking help from a fertility specialist and it is unknown what effect their infertility had on their self-esteem prior to the interviews taking place. By the time the couples sought help they may have already been experiencing lowered self-esteem, which in turn may have meant that the maintenance of SWB within an optimal range was already under threat.

The link between self-esteem and life satisfaction has also frequently been reported in the literature. For example Campbell (1981) found a correlation between self-esteem and life satisfaction of 0.55. High correlations were also found in two studies by Diener and colleagues (Diener & Diener, 1995; Lucas, et al., 1996). In the first study Diener and Diener (1995) sought to determine the universality of self-esteem, examining whether self-esteem as a correlate of life satisfaction was the same for all cultures. The authors found that while life satisfaction and self-esteem were significantly correlated, this correlation differed across cultures. That is, self-esteem and life satisfaction correlations were strongest in individualistic Western cultures (i.e., where the focus is said to be on individual happiness) and were less so in collective cultures (i.e., where the focus is said to be on community and family belonging). The authors concluded that while self-esteem is an important aspect for life satisfaction, this importance varies according to cultural orientation (e.g., individualistic or collective).

In the second study, Lucas et al. (1996) using a multitrait-multimethod matrix analyses on self and informant reports of wellbeing, confirmed the convergent and discriminant

validity of wellbeing constructs. The authors demonstrated that life satisfaction is discriminable from the affective components of SWB (i.e., positive and negative affect) and cognitive traits of self-esteem and optimism. In other words, life satisfaction is a separable construct from positive and negative affect, and from self-esteem and optimism. Furthermore, consistently high correlations were reported by Cummins and Nistico (2002) who reviewed six studies on self-esteem and life satisfaction and found correlations ranging from 0.54 to 0.77.

It is clear that self-esteem has an important role in the maintenance of SWB. Knowledge of this role provides vital information for professionals who work with people reporting unhappiness or dissatisfaction with their lives. However, the role that self-esteem has in maintaining SWB for groups in society who are marginalised, such as those with disabilities, those with low educational attainment, the unemployed and ethnic minorities is less clear, due to these groups not been studied as thoroughly. As people in these groups may be more likely to suffer adverse circumstances, it is important that professionals who work with them have access to information about the role of self-esteem in the maintenance of SWB. It is also important to have a better understanding of whether self-esteem contributes more or less to the maintenance of SWB than do the other two cognitive buffers, sense of control and optimism, for people with intellectual disability. Or as proposed by Cummins (2000b, 2003) in his model of homeostasis that the three buffers work together as a system and therefore show strong positive relationship to one another. This thesis seeks to address these questions in relation to people with intellectual disability.

### 2.6.3 *Optimism*

The third linked buffer is optimism. While a sense of personal control over one's life is viewed by a number of theorists as being central to psychological wellbeing (e.g., Abramson, et al., 1978; Bandura, 1997); Scheier and Carver (1985) make a distinction between a sense of personal control and a sense of optimism. Optimism, as viewed by these authors, is a stable personality variable known as *dispositional optimism* that manifests as an overall tendency to expect favourable outcomes in one's life. That is, people generally expect to experience good events in their life, more often than bad events. However, this expectancy is not linked to one's ability to control desirable outcomes. Hence, optimistic expectations differ from perceptions of personal control.

In that, expectations of personal control relates to one's ability to attain favourable outcomes (e.g., if I have some money saved, I can meet unexpected costs and avoid debt), while optimism relates to general expectations about the likely occurrence of favourable events (e.g., I will get a pay rise in the next promotion round). Thus, Scheier and Carver (1992) argue that psychological wellbeing is not solely a result of a sense of personal control over outcomes but includes the general expectations that future desirable events will occur frequently in one's life. As a result people with high levels of optimism experience positive emotions, have greater confidence and generally recover or adapt in situation of stress and adversity. In contrast people with low expectations of favourable events occurring (i.e., pessimists) have a greater tendency to experience negative emotions such as, anxiety, guilt, anger, sadness and despair and show lower rates of recover from situations of adversity (Scheier, Carver, & Bridges, 2001).

A sense of optimism is linked to wellbeing and life satisfaction and provides a number of benefits including happiness, positive mood, perseverance and effective problem solving, academic and occupational success, social popularity, good health, and freedom from trauma. In contrast, pessimism has been linked to the development of depression, passivity, failure, social estrangement, morbidity, and mortality (Peterson, 2000). The different outcomes experienced by people with an optimistic or pessimistic orientation are partly due to the different manner in which they cope with challenging events. For example, Scheier et al. (1994) found optimists generally use more adaptive problem-focused and emotion-focused coping strategies, such as humour, acceptance and positive reframing of situations. In contrast, pessimists' coping styles include overt denial of the situation resulting in their mental and behavioural disengagement from desired goals, irrespective of whether the situation can be resolved or not. Furthermore, Chang (1998) found in a study with 400 undergraduate college students, that dispositional optimism was inversely related to depressive symptoms and positively associated with life satisfaction.

Optimism has typically been measured through the Life Orientation Test (LOT) developed by Scheier and Carver (1985). The LOT measures optimism through four positively worded items (e.g., "I always look on the bright side of things"), four negatively worded items (e.g., "I hardly expect things to go my way") and four filler items (e.g., "It's easy for me to relax"). The authors suggest that the four positively

worded and four negatively worded items together tap a bipolar optimism-pessimism dimension. However, whether optimism as operationalised by the LOT, is a unidimensional or bidimensional construct has been vigorously debated due to mixed findings from factor analytical studies. Such studies have produced both one-factor and two-factor solutions to fit the data (Lai, 1997; Marshall, Wortman, Kusulas, Hervig, & Vickers, 1992; Scheier & Carver, 1985). For example, a two-factor solution was found by Marshall et al. (1992), wherein the positively worded items loaded on an Optimism factor and the negatively worded items loaded on a Pessimism factor. However, Scheier and Carver (1985) had earlier dismissed the two-factor structure considering it to be an artefact of wording only. That is, responding to positively worded items is less complex and cognitively challenging than responding to negatively worded items and this difference may result in greater measurement error due to response styles (i.e., yea saying). The authors concluded that for most purposes, the LOT should be treated as a unidimensional scale.

In a study using multitrait-multimethod matrix analyses Lucas et al. (1996) disagreed with the findings of Marshall et al. (1992), supporting Scheier and Carver's (1985) original claim for their scale. In that, the results of Lucas et al. did not support a two-factor structure of optimism where the positively worded items (i.e., optimism) related to positive affect and the negatively worded items (i.e., pessimism) related to negative affect. Rather they found that optimism and pessimism were highly correlated with each other, and also highly correlated with both positive and negative affect. The authors suggest their findings support Scheier and Carver's model, in which optimism is viewed as a global, multifaceted construct that is highly correlated but separable, from other measures of wellbeing, including positive and negative affect. They also concluded that conceptualising optimism as having a two-factor structure simply reduces optimism's ability to discriminate from both positive and negative affect.

According to the homeostatic theory of SWB, optimism's role in the maintenance of SWB is to act as a buffer that reduces the impact of negative events. As a generalised expectation of positive outcomes in the future, the impact of negative events on SWB is reduced by the belief that life will improve and current difficulties will not last (Cummins, et al., 2002). When SWB is threatened by negative extrinsic events, the internal buffering system is activated and a sense of self, control and hope for the future is restored to an optimal range.

An important aspect of the internal buffering system is the notion of positive cognitive biases related to self enhancement (Cummins & Nistico, 2002). These positive cognitive biases are non-specific and empirically unfalsifiable. Positive cognitive biases were first discussed by Taylor and Brown (1988, 1994) as *positive illusions*. They describe a series of studies in which people demonstrated a pervasive positive bias. Some people in their studies had unrealistic perceptions about self; they saw themselves in the best possible way, had exaggerated perceptions of control or mastery and had unrealistic optimism about their future. Those who did not show this positive cognitive bias were deemed anxious or depressed. As argued by Taylor and Brown, positive illusions are not only robust and pervasive in the general population but are also highly adaptive for mental health and SWB. Furthermore, Cummins and Nistico (2002) argue, that satisfaction of the need for self-esteem, control and optimism is dependent on positive cognitions in relation to these aspects of self. These positive cognitions are then responsible for the homeostatic maintenance of life satisfaction within an optimal range (i.e.,  $75 \pm 2.5\%$  scale maximum, Western population mean life satisfaction).

In summary, a sense of control, self-esteem and optimism together form a tripartite buffering system with the sole function of maintaining SWB within a normative and narrow range. Thus, a strong buffer system provides protection from possible threats to SWB homeostasis, whereas, a weak buffer system will leave one vulnerable to homeostatic defeat. One of the aims of this thesis is to investigate the underlying relationship of these three buffers in relation to people with intellectual disability and their level of SWB. The thesis will also investigate whether the SWB homeostasis model explains the levels of SWB for people with intellectual disability, as it has been shown to do so for the general population. These are important research questions, given that people with intellectual disability represent a marginalised group in society. As such they do not have the same resources available to them as the general population to maintain normative levels of SWB and may therefore, be more likely to experience negative extrinsic events resulting in homeostatic failure which will then drive down SWB (Cummins & Lau, 2004a).

## Chapter Three

### People with Intellectual Disability and Subjective Wellbeing

#### 3.1 Introduction and Background to Disability and QOL

This chapter will discuss quality of life and SWB in relation to people with intellectual disability. It first provides a brief overview of what intellectual disability means, the definitions and terminology used when discussing this group, and how people in this group have been viewed by society. The chapter then elaborates on the link between disability and SWB. For the purpose of this thesis the term people with intellectual disability will be used to refer to this disability and the group of people who have it.

Throughout history, people with disabilities and impairments have existed within all cultures and societies. Within Western society, disability “exists at the junction between the demands of a particular impairment (e.g., physical, sensory, intellectual, psychiatric), society’s interpretation of that impairment and the broader political and economic context of disability” (Braddock & Parish, 2002, p. 4). This perspective argues that disability derives its meaning within the larger social context, while impairment is the biological condition (Braddock & Parish, 2002; I. Brown & Radford, 2007). Consequently, disability is more than just having an impairment; it is also a social construction or category that is imposed on individuals with impairments. As such, disability is not a stable construct (i.e., always thought of in the same way across time and place), but one that changes as the connotations attached to the term are derived from a range of social and environmental factors present in any given time and society (I. Brown & Radford, 2007). The social model and critical theory of disability reflects this perspective in holding that it is the responsibility of society as a whole to ensure the equality and wellbeing of all its citizens including those with a disability (Bach, 2007). From these perspectives disability is not reduced to the impairment of the individual but arises from the discrimination and disadvantage that individuals experience due to their differences and characteristics.

For the individual, disability ultimately represents a limitation in their functioning that represents a substantial disadvantage to them within a particular social context (American Association on Mental Retardation, 2002). According to Schalock et al. (2007) the constructs disability and intellectual disability are two separate but related constructs. The disability construct, relates to health conditions that give rise to impairments in body functions and structures, limiting activities and restricting participation within the context of personal and environmental factors. The construct intellectual disability is viewed as evolving from an ecological perspective, which has an emphasis on the person-environment interaction, and a strong focus on the application of individualised supports to enhance human functioning. This perspective is clearly influenced by the current definition of intellectual disability as outlined in the following section.

### 3.2 Definition of intellectual disability

The terms *intellectual disability* or *people with intellectual disability* are the preferred terms widely used by government, professionals and academic agencies within New Zealand and Australia to describe the group of people with cognitive impairments or developmental delays. While the terms developmental disability, mental retardation and learning disabilities are the preferred terms to use in Canada, United States, and United Kingdom respectively (Bray, 1999; I. Brown, 2007). At times these terms are used synonymously and interchangeably, while other times they refer to slightly different groups of people. However, they do not represent an exhaustive list of terms used to describe people with cognitive impairments or developmental delays. Rather they are the more commonly used terms. Frequently used disability terminology reflects the socio-political focus of the time and as such is consistently changing. This is particularly so when their connotations become derogatory to the point of being unacceptable for everyday use. For example, terms such as cretin, moron, idiot, imbecile, and feeble-minded, are all terms that were once used but now, are no longer deemed acceptable terms to describe this group of people (Bray, 1999).

The continued use of disability terms is important and serves a number of useful purposes. First, terms such as intellectual disability and developmental disability help identify those individuals in society who have special needs and require additional support for learning and carrying out activities associated with daily living. Second, classification is often required in

order to obtain funding for such support. Third, terminology that identifies marginalised people in society is frequently used for their legal protection and care. Fourth, the use of disability terms allows for the development of precise classification systems for various categories of disabilities. Fifth, this in turn allows for a better understanding and knowledge through research and practice, about the services and treatments that are required for people with intellectual or developmental disability to live quality lives. Finally, the use of disability terms allows for the specific focus and development of a field that clearly identifies the area of interest and focuses attention (specifically research and advocacy) to specific sets of issues that set it apart from other fields of interest (I. Brown, 2007). Thus, an argument can be made for the continued use of terminology applied to this group of people, which appropriately identifies people with intellectual disability from other groups in society.

At a general or commonly understood level, the term intellectual disability refers to a restriction or lack of ability in cognitive functioning, while developmental disabilities refers to restriction or lack of ability regarding development (I. Brown, 2007). However, there are times when a more formal and operationalised definition of disability is required. But gaining a consistent and mutually acceptable definition has been fraught with difficulties and delays, due to the multiple professional disciplines involved with this group of people. For example the medical profession, one of the earliest professions to define people with intellectual disability, did so according to physical and organic defects of the person (Meyen & Skrtic, 1995). Later, the use of psychological measurement resulted in definitions of intellectual disability in terms of Intelligence Quotient (IQ) (a standard score that reflects the ratio of *mental to chronological age*). Since IQ scores are normally distributed, the label of intellectually disabled is determined by where a person's IQ score lays in relation to the population mean (Meyen & Skrtic, 1995). For instance, an IQ score of  $<70$ , 2SD is considered to be sub-average intellectual functioning and forms part of the criteria for a diagnosis of intellectually disabled (American Association on Mental Retardation, 2002).

As noted by Brown (2007), the American Association on Mental Retardation (AAMR) definition of mental retardation is a widely accepted definition and classification system, and has had the most international impact. The American Association on Mental Retardation (2002; Schalock, et al., 2010) defines mental retardation as “a disability characterised by significant limitations in both, intellectual functioning and in adaptive behaviour as expressed



in conceptual, social and practical adaptive skills. This disability originates before the age of 18” (p. 1). Underpinning this definition are five assumptions that are considered to be essential for its application. These are, 1) Limitations in present functioning must be considered within the context of community environments that are typically experienced by the individual with disabilities, their peers and culture. 2) For any assessment to be valid, it must consider both linguistic and cultural diversity as well as differences in communication, sensory, motor and behavioural factors. 3) For any individual, it is recognised that limitations coexist with strengths. 4) The sole function of developing a profile of limitations is to provide access to needed supports. 5) Appropriate level of personalised support over a sustained period, will ensure that the person with intellectual disability life functioning will improve (Schalock, et al., 2010, p. 1).

The AAMR also proposes a new classification system, replacing the more restrictive traditional classification based on IQ score ranges (i.e., mild IQ 50–70, moderate IQ 35–49, severe IQ 20–34, and profound IQ under 25), along with the traditionally held educability expectations or judgements on the basis of medical origins. This system proposes that people with intellectual disability are classified according to the type and extent of support required. Supports in this context are defined as “resources and strategies that aim to promote the development, education, interest, and personal wellbeing of a person and that enhance individual functioning” (American Association on Mental Retardation, 2002, p. 151). Clearly, this approach to classification is linked to assumption number 5 (above) that underpins the application of the AAMR definition of mental retardation.

In a departure from previous traditional classification systems, this system does not relate to IQ score ranges. Rather support intensities are based on four levels of classification ranging from the less intrusive to highly intrusive. These are 1) Intermittent support, on an as-needed episodic base and is provided intermittently with either high or low intensity; 2) Limited support is characterised by consistency over time, but is not intermittent and is often provided at a low level of intensity; 3) Extensive support with regular involvement in one or more areas of the individual’s life (e.g., home or work) and is not time limited; and 4) Pervasive support of high intensity and constancy across all environments and is potentially life sustaining. This level of support has the highest level of intrusiveness, typically involves more staff and has higher support costs (American Association on Mental Retardation, 2002).

This classification system has recently been updated by the latest publication from AAIDD (Schalock, et al., 2010). The latest approach to classification differs from the 2002 approach, in that the focus of classification of intellectual disability is multidimensional and includes all the dimensions and features that affect human functioning, such as intellectual abilities, adaptive behaviour, health, participation, context and individualised supports. As noted by Schalock et al 2010, such an approach to classification is in line with the movement of the field of intellectual disability towards an ecological focus and a support paradigm.

More recently Schalock et al. (2007) outlined a change of terminology to the AAMR definition of mental retardation with a substitution of the term *intellectual disability* in place of mental retardation. This change in terminology related to people with intellectual disability has also resulted in a change of name for the AAMR, which is now known as the American Association on Intellectual and Developmental Disabilities (AAIDD).

There are numerous other definitions of intellectual disability, such as the American Psychiatric Association (APA) DSM-IV, or the World Health Organization (WHO) International Classification of Impairments, Disability and Handicaps (ICIDH). However, the AAIDD 2002 definition is the preferred definition as it represents the most current concept of disability, with its functional orientation and socio-ecological perspective. This definition has a multi-dimensional approach to intellectual disability that takes into account the intellectual functioning, adaptive behaviour, participation in social roles and activities, the health and importantly the cultural context of the person.

Additionally, the AAIDD definition of intellectual disability is underpinned by a support paradigm that recognises the vital role that systems of support have in the enhancement of an individual's functional capabilities. That is, within the AAIDD definitional framework Schalock et al. (2010) proposed a support model which depicts the relationship between the mismatch between the competencies of the person with intellectual disability and environmental demands and how the provision of support (i.e., resources and strategies that promote the development, education, interests, personal wellbeing and enhance individual functioning), lead to improved personal outcomes. Thus, argues Schalock et al. (2010; 2007) the support paradigm links to concepts of quality of life, SWB and personal outcomes, which in turn are related to independence, relationships, contributions, school and community

participation and personal wellbeing. Furthermore, these aspects of the AAIDD definition provide a coherent framework making it highly applicable for service providers to implement QOL, SWB and personal outcomes. The definitions used by the APA-DSM-IV and ICIDH tend to have this focus to a lesser extent and therefore do not provide a definition of disability that is as holistic or coherent as the AAIDD, which may account for its widespread acceptance and use (Schalock, et al., 2010).

Support intensities are based on four levels of classification. The first level is intermittent support, based on an as-needed episodic base and is provided intermittently with either high or low intensity. Second level involves limited support, which is characterised by consistency over time, and is often provided at a low level of intensity. Third, is extensive support, which is characterised by regular involvement in one or more areas of the individual's life and is not time limited. Fourth, level is pervasive support featuring high intensity and constancy across all environments and is potentially life sustaining. (American Association on Mental Retardation, 2002). Once people with intellectual disability have been identified and their levels of support classified, it is important to have an understanding of prevalence and demographic details of this group in society.

### 3.3 Prevalence and demographic details of intellectual disability in New Zealand

Two surveys relevant to intellectual disability were conducted in New Zealand in 2001. The Household Disability Survey and the Disability Survey of Residential Facilities provided demographic profiles on adults and children living with intellectual disability (Ministry of Health, 2005). This data revealed that 28,900 adults and 13,000 children with intellectual disability live in New Zealand. Across the whole population this means that 1% of adults and 2% of children living in New Zealand have an intellectual disability. However, it must be noted there is a likelihood that these figures are low due to adults with intellectual disability being unknown to service systems and children not yet being identified by the school system as having an intellectual disability. Only data pertaining to adults with intellectual disability will be reported here.

Seventy three percent of the adults were of European ethnicity, 20% were Maori, and 15% were Pacific Islanders. Sixty two percent of adults with intellectual disability lived in a one family situation, while 16% lived in flats or group homes and 10% lived on their own. A further 12% (3,500) live in a residential facility (e.g., homes for people who are elderly, hospitals and intellectual disability units). Fifty nine percent were single, and 29% reported having a partner or spouse. Most adults (31%) lived in a rented house, while 23% owned part of the house they lived in. Over half of the adults (51%) were not working and therefore had only a Social Welfare benefit for income, while 42% reported that they were employed.

It follows from this low rate of employment and dependence on benefits, that people with intellectual disability had low personal incomes levels. Sixty three percent reported an income of NZD\$15,000 or less, while only 14% reported incomes of NZD\$15,000–\$30,000. It would seem that even when employed personal income is below the average wage earner. People with intellectual disability had varied experiences with education. At the time of the survey 16% of adults were enrolled in some sort of formal education (e.g., secondary school, polytechnic...). However, more than half of those surveyed (51%) had no educational qualification.

### 3.4 Deinstitutionalisation and community living

While people with disabilities have always existed within society, they have not always been full participating or valued members of their society. The degree to which they have been included or excluded has varied according to predominant cultural perceptions (Yazbeck, McVilly, & Parmenter, 2004). For example, Wolfensberger (1972) reports that early historical recordings of the treatment of people labelled as intellectually disabled, indicate they have almost universally been associated with multiple negative stereotypes and images. They were frequently viewed as being sick, subhuman, deviant, and objects of pity, menace or dread and eternal children. Such perceptions frequently determined the models of service provision that was provided to them, if any.

The perception of people with intellectual disability as sick, led to service provision within a medical model, where the focus was on amelioration, treatment and cure of the disability rather than one of supporting the individual (Wolfensberger, 1972). The existence of large

institutions, where people with disabilities were kept behind locked doors in barren rooms, nurtured the perceptions commonly held, that people with disabilities were subhuman, a menace and threat to society. This further perpetuated the belief that services for people with disabilities should be segregated from mainstream society.

According to Gardner and Chapman (1985), when people with disabilities were perceived as eternal children they were pitied, overprotected and considered not responsible for their actions. Diagnosis and evaluation reports emphasised behaviour and skill levels in age-equivalent terms. This frequently resulted in service provision with an emphasis on training opportunities and the provision of experiences that would allow the person to grow and develop into adulthood and attain adult roles (Gardner & Chapman, 1985). Many of these views and perceptions of people with intellectual disability are still prevalent in society, resulting in the continued segregation and disabling of people with intellectual disability (O'Brien, Thesing, Tuck, & Capie, 2001).

Nevertheless, service provision for people with intellectual disability in Western culture has undergone substantial change over the last 40 years, with a number of factors considered to be responsible for these changes. A major factor linked to changes in service provision has been related to deinstitutionalisation, that is, the replacement of institutional care with community-based services and community living. Deinstitutionalisation, argues Ericsson and Mansell (1996), is one of the most important developments responsible for changes to the way services for people with disabilities are organised and delivered.

The ideology of normalisation theory is one of the contributing factors responsible for the advent of deinstitutionalisation. The concept of normalisation, as it is currently understood today, was first espoused by Bank-Mikkelsen (1969), who asserted that the mentally retarded of Denmark should obtain an existence as close to normal as possible. The principle of normalisation was elaborated on by Nirje (1969) who developed the first systematic treatise on the topic, in which the environment was seen as a key feature for the development of the individual with a disability, as well as society's perception of such people. Thus, in order to reform the restricting constructs applied to people with disabilities, Nirje argued that their environment must be altered. Accordingly, changes to people's environment could be achieved through the principles of normalisation, which has as its major goal to "make

available to the mentally retarded patterns and conditions of everyday life which are as close as possible to the norms and patterns of the mainstream of society” (Nirje, 1969, p. 181).

Normalisation was later popularised by Wolfensberger (1972) who was responsible for its implementation in North America, UK, Australia and New Zealand. However, unlike Bank-Mikkelsen (1969) and Nirje (1969), Wolfensberger argued that normalisation applies to all devalued persons in society and not just those with intellectual impairments. Later Wolfensberger (1983) reconceptualised normalisation as Social Role Valorisation (SRV), with a focus on creating and supporting socially valued roles for devalued people in their society.

The adoption of normalisation and SRV theory by service providers had a substantial impact on the development of community-based services. By the mid 1970s the practice of housing people with disabilities residing in large congregate institutions, shut away from mainstream society was considered no longer acceptable. This resulted in the move toward the closure of institutions and the development of community-based services across North America, Europe, and Australasia (Mansell, 2006). Within the New Zealand context, change in government policy supporting deinstitutionalisation and community living occurred from the late 1980s onwards (O'Brien, et al., 2001), with the last remaining institution (The Kimberley Centre) for people with intellectual disability in its final stage of closure.

In the United States, during the early years of deinstitutionalisation the people mostly likely to be relocated to community-based services, were people with mild to moderate impairments. The people left behind were those with severe impairments or those who posed a serious threat due to challenging behaviour. It took action from The Association for Persons with Severe Handicaps (TASH) to change this view. TASH (1979) called for the termination of services, activities and environments, which isolated people with severe or profound disabilities and called for integrated community-based services that reflected the full range of choices available to persons without disabilities. TASH proposed that these choices should minimally include: 1) the right to live in normalised, community-based homes, living with parents or self-selected roommates or peers; 2) the right to attend the school of one's choice or to receive individualised, appropriate educational services; 3) the right of access to a variety of vocational training opportunities; and 4) the right to participate

in recreational and leisure experiences enjoyed by peers (TASH, 1979, p. 4). Thus, by the 1980s deinstitutionalisation at least in principle, was seen as being appropriate for all persons with disabilities residing in institutions and not just those with mild to moderate impairments. Nevertheless, individuals with severe or profound disabilities were likely to be among the last to move to community-based services or in some instances are still be residing in institutions (Mansell, 2006; Schalock & Verdugo, 2002).

#### *3.4.1 Evaluation studies on the effects of deinstitutionalisation*

There have been numerous evaluative studies on the effects of deinstitutionalisation. As noted by Cummins and Baxter (1993), these studies have mostly looked at objective indicators to measure outcomes, using scales such as Program Analysis of Service Systems' Implementation of Normalisation Goals (PASSING) developed by Wolfensberger and Thomas (1983). Objective quality of life (QOL) variables are easily observed by a number of people and involve the counting of frequencies or quantities such as number of friends, number of outings, or things owned. Data were typically collected from caregivers, staff members or researchers, while the person with a disability, who was the target of the investigation, was not usually consulted. The results of these studies, indicated the effect of deinstitutionalisation were generally favourable. There were better outcomes for service users and substantial gains for improved QOL (as assessed by these indicators) for people with disabilities when receiving community-based services as opposed to institutional-based services. For example, Young et al. (1998) reviewed 13 Australian studies which looked at the effects of deinstitutionalisation of 289 individuals with intellectual disability to community based services. They concluded that community living services provide greater opportunities, promote improvements in adaptive behaviour, provide greater contact with family and friends, and increase community participation. In addition, both the person with a disability and their family reported greater overall levels of satisfaction. However, consistent with other data, the authors reported that the move to community-based services did not guarantee a reduction of challenging behaviour in some individuals.

In another review, Kim, Larson and Lakin (2001) assembled 29 comparative and longitudinal American studies between 1980 and 1999. They found that 19 of the 29 studies showed significant improvements in adaptive behaviour for people after moving to community-based

services, while two studies showed significant decline of adaptive behaviour after moving to community-based services. Five studies demonstrated a significant improvement in challenging behaviour, with two studies reporting significant decline in behaviour. The remaining studies did not show significant change, but eight studies reported a trend towards improvement, while six indicated a trend to decline in behaviour. On balance, the review by Kim, Larson and Larkin (2001) and Young et al. (1998) support the notion of community living for people with intellectual disability.

### *3.4.2 Community living and people with intellectual disability*

Currently, the concept of community living for people with intellectual disability is widely accepted in most Western countries (I. Brown & Radford, 2007). It is now expected that such people, regardless of their severity will reside in a wide range of community-based residential services and conduct all their daily activities within their communities. Further, for some people with intellectual disability they will never live anywhere but within community-based services.

However, while there is evidence that people who moved from congregate institutional care to community-based living experience an improved lifestyle, there is also evidence that quality of life is still less than desirable for many of these people (I. Brown, Raphael, & Renwick, 1997). Unfortunately, changing the living environments for people with disabilities did not necessarily improve their quality of life. All too frequently community services reproduce the same institutional practices of physical and social isolation, and stigmatisation of people with disabilities that were present in institutional services. Unequal, degrading power relationships between residents and staff were sometimes imported into community services, along with creation of dependency and regimentation of care. Thus, even though the place of residence changed for many people with disabilities, their social and personal power remained unimproved (Larkin, Bruininks, & Sigford, 1981).

Additionally, the move into community settings did not guarantee that people with disabilities would become socially integrated into the wider community. Having a physical presence in a community did not ensure that people with disabilities would have increased interaction with other members of society. For example, Robertson et al. (2001) examined



the social networks of 500 people with intellectual disability who lived in a range of residential settings. They found that the median size of participants' social network (excluding staff) was only two people. Participants' social network were predominately made up of, staff members (83%), family members (72%), and another person with an intellectual disability (54 %). Only 30% of participants reported having a person who did not fit any of these categories as being part of their social network. Furthermore, the type of residential setting in which participants lived, was inversely associated with variations in the size and composition of participants' social networks. Thus, smaller community-based settings and supported living services were more likely to be associated with larger and more inclusive social networks. On the other hand, settings that were high in institutional processes and operated from a large congregate care service, resulted in smaller social networks for participants that typically did not involve people in the outside community.

More recently, in a review of the social integration of devalued people, Lemay (2006) discusses how, even after 30 years of normalisation and SRV, the social integration of people with disabilities into mainstream society has still not occurred. While concepts of normalisation and SRV theory have achieved a lot for people with disabilities, the limitation of these theories to bring about changes in the quality of their lives has become evident. One reason cited for the failure of social integration, suggested by Brown (2007), is that deinstitutionalisation and the theories of normalisation and SRV place too much emphasis on the physical environment. From this perspective it is believed that the mere presence of people with disabilities in the community would be sufficient to bring about social integration and change. However, with an almost sole emphasis on the physical presence of people with disabilities in the community, the practices of normalisation and SRV appear to have neglected to provide strategies on how to best support people to optimise their quality of life in a community setting (I. Brown & Radford, 2007).

In conclusion, the evaluation studies and reviews into the effects of deinstitutionalisation have lead researchers, service providers and policy makers to begin questioning the quality of life of people with disabilities living in the community. As more and more people with intellectual disability live in community-based services, this questioning has taken the form of subjective appraisals (Cummins, 2005c; D. Felce & Perry, 1997; Schalock & Felce, 2004),

in which the target person with a disability reports their level of satisfaction or happiness for themselves.

### 3.5 Quality of life construct as applied to people with intellectual disability

If people with intellectual disability are to live quality lives, they may require support beyond the levels required by non-disabled people at a similar age and stage of life. For example, people with intellectual disability frequently require, individualised specialist training, guidance, structured opportunities, and in some instances specifically designed environments. They also require support to participate in mainstream society. Human services and health organisations are typically charged with providing these supports, in which the QOL construct has had a central role in the development and delivery of such supports.

The past two decades has seen a major increase in the intellectual disability academic literature on QOL, with numerous researchers and academics worldwide contributing to the philosophical, measurement and application of this construct (Ager & Hatton, 1999; R. I. Brown & Brown, 2005; Cummins, 2001b; Keith, 2007; Stancliffe, 1999; Verri, et al., 1999). Increasingly, the QOL construct is applied to persons with disabilities reflecting this impact (R. I. Brown & Brown, 2005; Schalock, 2004b; Schalock, et al., 2002). Underpinning this application is a belief that QOL is a relevant outcome for health and social policies and practices. Consequently, the frequent use of the QOL concept in mission statements, programme descriptions, quality assurance plans, programme (outcomes) evaluation and finally as an overriding principle of service delivery has become increasingly evident in human services (Schalock & Verdugo, 2002).

According to Schalock et al. (2002), the application of QOL concept to the field of intellectual disability can be traced to four developments that begun during the deinstitutionalisation period. These are, (1) a change in the belief that science, medical intervention or technological advances alone will result in improved life quality, to an understanding that life quality is a complex combination of these advances, (2) inquiry into QOL as a next logical step from normalisation, with a focus on the individual's life as a result of being in the community, (3) the development of civil rights movement and consumer empowerment with an emphasis on person-centred planning, personal outcomes and self-

determination, and (4) the introduction of subjective or perceptual aspects of QOL and the individual and personal characteristics.

Progress and development of the QOL construct in the field of intellectual disability has advanced to such a point that Schalock and his colleagues (2004a; Schalock, et al., 2002) note it is being used in three specific ways throughout the world; 1) as a sensitising notion; providing a sense of reference and guidance from the individual's perspective, 2) as a social construct; providing an overriding principle to enhance an individual's wellbeing and bring about change at a societal level, and 3) as a unifying theme; providing a common language and systematic framework to apply quality of life principle and concepts. Such a framework has great potential to promote the advancement and development of services for people with disabilities that goes beyond what normalisation and SRV theories were able to achieve. As noted by Schalock and Verdugo (2002), while some authors (e.g., Ager, 2002; Hatton, 1998) suggest that operationalising QOL into measurable outcomes for service-users is imperfect and flawed, so too was the concept of normalisation in earlier years. At best, normalisation represents an ambiguous concept that was difficult to operationalise, while research into QOL has progressed into domains and core indicators, which are ultimately able to be operationalised. The QOL construct applied to intellectual disability field can be described as the next generation theory, for the advancement of disabled people as full participating and valued members of society.

### 3.6 Issues related to conducting QOL assessment using self-rated response scales and people with intellectual disability

#### 3.6.1 *Interviewing process and people with intellectual disability*

The QOL construct as applied to the field of intellectual disability is not without its critics. In a series of research articles Antaki and Rapley (Antaki, 1999; C. Antaki & M. Rapley, 1996; C. Antaki & M. Rapley, 1996) argued that interviewing people with intellectual disability is fraught with methodological problems, that have as much to do with those conducting the interviews, as it does with the interviewee's ability to validly respond to questions related to their life quality. The authors provided detailed conversation analysis of the transcripts of structured quality of life assessments. Conversation analysis defined by Antaki and Rapely as;

a theoretically driven approach to social interaction...that proceeds on the basis that there are identifiable rules in the way that turns at talk are organised, and that speakers are aware of these rules and manifest their awareness of the rules by what they say and how they say it. (C. Antaki & M. Rapley, 1996, p. 423)

Findings from the transcripts showed there were numerous deviations in the psychometric assessment procedures undertaken by trained interviewers. Distortions occurred when trained interviewers frequently edited questions to be more in line with the cognitive capacity of the interviewees. Interviewers paraphrased complex items, often resulting in questions that no longer resembled the original scale item and redesigned questions in such a manner as to lower the social and personal criteria for a high score. Distortions also occurred with the use of pre-questions (i.e., alerting the interviewee to the fact that a question is coming), and response listing in which more than one alternative response was listed for the interviewee to respond to.

These distortions, concluded Antaki and Rapley (1996), result in assessments being flawed and therefore, limiting and invalidating any conclusions drawn about the subjective life quality of individuals. However, their conclusion that measuring SWB of people with intellectual disability is hopeless is a little extreme and unfounded. What their results do indicate, is the need for the more stringent and careful use of quality of life instruments in which interviews are conducted using well established psychological testing procedures, such as outlined by Anastasi and Urbina (1997).

### *3.6.2 People with severe intellectual disability*

In a similar critique of QOL construct, Hatton (1998) argues that the QOL approach, in particular the assessment of SWB of people with intellectual disability, should be abandoned because of the disenfranchisement of people with severe intellectual disability. That is, the assessment of SWB is typically conducted using self-report scales that require an understanding of abstract constructs beyond the scope of people with severe intellectual disability. Moreover, the meanings that different participant's bring to QOL assessments are denied through the use of set questions.

Hatton (1998) regards this quality of life approach, as in danger of strengthening the power and control that professionals and service agencies have over the entire life of the individual

with intellectual disability, rather than a tool to liberate them from a medical model of services. It is his view, that the only way forward is the use of objective indicators to measure QOL and service quality, and to abandon the use of SWB assessments, particularly as they rely on self-report assessment that cannot be verified and they leave out an entire group of disabled people who do not have formal verbal language. This is a valid point as currently the use of self-report surveys and questionnaires to measure SWB of people with intellectual disability is restricted to those with sound verbal and comprehension skills. That is, SWB measurement has not advanced sufficiently to measure the life satisfaction of people who experience severe communication difficulties.

### *3.6.3 Trait-like characteristics of subjective wellbeing*

Taking a similar point of view to Hatton, Hensel (2001) argues that the use of satisfaction to measure the QOL of people with intellectual disability should be abandoned because satisfaction exhibits stable trait-like characteristics, which is maintained at high levels by homeostatic or adaptive mechanism. However, the fact that SWB is so predictable and stable is what makes it useful for service delivery evaluation, argues Cummins (2002b). Such stability means that the values of SWB can be referenced to a normative range, which is homeostatically maintained. Although, aversive objective circumstances can result in homeostatic defeated (the SWB of an individual drops below 50%SM), such findings indicates the need for immediate intervention on the part of the service provider or caregiver. As argued by Cummins (2005a) people with intellectual disability are likely to experience increased homeostatic fragility. That is, the additional demands and stressor related to having a disability, is a source of challenge and constant pressure to their homeostatic system. Such constant pressure results in a homeostatic system that is more fragile and likely to fail, than the homeostatic system of non-disabled people.

### *3.6.4 Further critique of QOL as applied to people with intellectual disability*

A critique of the QOL construct is presented in a series of articles by Ager and Hatton (Ager, 2002; Ager & Hatton, 1999; Hatton & Ager, 2002) in response to a review on self-rated quality of life scales for people with intellectual disability by Cummins (1997d). This critique centres on three major issues: 1) the validity or psychological reality of the QOL construct to the lived experience of people with intellectual disability, 2) the combination of

objective and subjective measures and the presence of distinctive but related life domains, and 3) the utility of the QOL construct for measurement of service quality and the potential misuse and abuse of QOL assessment measures within service contexts.

These concerns were subsequently addressed by Cummins (2001b, 2002b), who argue that there is unequivocal support in the general literature for the validity of QOL to people's general beliefs and behaviour and there is no evidence to suggest this is not the same for people with intellectual disability. Evidence supporting this proposition, comes from the highly reliable findings from the general population sample mean score, to the global question "How satisfied are you with your life-as-a-whole?" that is consistently within a 10% range. As discussed in Chapter 2, when such data are recoded onto a 0–100 range (percentage of scale maximum, %SM), Western general population samples mean scores are 70–80%SM and 50–100% for individuals (Cummins, 1998b).

Additionally, when people are asked to describe areas of life that contribute to their quality of life, not only do they choose very similar life domains, but the life domain personal relationships with family and friends is frequently the domain reported as the most relevant to quality of life. People with intellectual disability show similar patterns of responding to SWB questions. When measuring the SWB Cummins et al. (1997) and Verri et al. (1999), found that mean scores for this population group were generally within the normative range (70–80%SM), and within-sample variance was the same as found in general population samples. At the same time, people with intellectual disability also rate personal relationships with family and friends as being the most important to their overall quality of life. Such findings, give support to the argument that people with intellectual disability can respond validly to SWB scales, reporting directly their perceived SWB.

Nevertheless, Cummins (2002b) acknowledges on the basis of current research methodologies that the present findings are restricted to people within an upper-moderate or mild level of intellectual functioning. These people have verbal language and can comprehend abstract ideas of satisfaction and happiness, and therefore can respond to subjective QOL scales in a reliable and valid manner. However, this does not mean that those people with severe or profound levels of disability do not have a conception of quality of life, or that they are incapable of experiencing life satisfaction or happiness. What it does

mean is the measurement of SWB of people with severe or profound levels of intellectual disability is more problematic. Thus, Cummins argues that all people demonstrating some level of cognitive functioning have valid subjective quality of life and that this information must be inferred using a range of methodologies (e.g., behavioural observation, functional analysis).

Notwithstanding, the problem remains how to gain SWB information from people with intellectual disability in such a way that the data are meaningful and reliably represents their feelings and desires. If concerted efforts are not made to overcome issues related to the measurement of SWB of this group of people, then there is a real danger, as mentioned by Hatton (1998), that people with severe or profound levels of intellectual disability will be disenfranchised and not have a voice in what constitutes their quality of life.

Finally, while Ager and Hatton (Ager, 2002; Ager & Hatton, 1999; Hatton & Ager, 2002) raise valid concerns about the assessment of quality of life and evaluation of services, they tend to have overlooked an important aspect of investigations into the subjective quality of life of people with intellectual disability. That is, these investigations are not about the misuse of the QOL construct, or the power of professional's to have control over the entire life of this group of people, although this could occur. Rather, they are investigations conducted within a Positive Psychology perspective (Schalock, 2004b; Seligman & Csikszentmihalyi, 2000), that is much more likely to promote positive outcomes for this group. This moves beyond measuring the objective aspects of a person life, as was done in deinstitutionalisation and normalisation studies.

Positive psychology focus is on research aimed at building positive human competencies, examining what makes positive experiences and positive social contexts, rather than focusing on pathology, distress, and maladaptive functioning of human behaviour (Kahneman, 1999; Seligman & Csikszentmihalyi, 2000). Such an approach according to Schalock (2004b), underlies the emergent paradigm of disability discussed earlier, and is responsible for changes in the way that people with intellectual disability are viewed in society. Also, changes in how disability is defined, as evidenced by the changes in definitions and even in the changes in the names of organisations, such as, from AAMR to AAIDD (Schalock, et al., 2007). Additionally, positive psychology has natural synergies with the goals and aims of

quality of life research, with its focus on personal wellbeing and life satisfaction. This point was highlighted by Schalock (2004b) who proposed;

Positive psychology and quality of life concept add the dimension of value to the disability paradigm. The focus on positive experiences and human potential provides the framework upon which to construct quality services, to decide on quality outcomes, and to understand the multidimensionality of personal wellbeing. (p. 206)

In summary, the assessment of SWB of people with intellectual disability is an appropriate approach for use with this population, and should underpin service delivery and service design. As noted by Cummins (2005a) this approach incorporates the principles of normalisation (Wolfensberger, 1972) where objective QOL replicates the standard that is acceptable to the general population, and subjective QOL indicates the extent to which an individual's environment permits them to experience SWB within the normative range as experienced by the general population. At the same time further work is required on how to access the quality of life of people with more profound impairments.

### 3.7 Measurement of Subjective Wellbeing and People with intellectual disability

Measuring SWB of people with intellectual disability is important, for a number of reasons. Many of these were discussed in the preceding section and have to do with informing the debate concerning normalisation, deinstitutionalisation and the changed paradigm of what intellectual disability means. Subjective wellbeing is considered to be a key component of QOL of people with intellectual disability, in the same way it is for non-disabled people (Cummins, 2005d; Schalock, et al., 2002; Schalock & Felce, 2004). Unlike objective QOL variables, which can be recorded by a third party, subjective variables are only experienced by the individual and are expressed as degrees of happiness or satisfaction with life. Valid measurement of SWB can only be obtained by directly asking the individual. This means, that SWB cannot be inferred by a third party (i.e., proxy responding, where responses are provided by a third party answering on the behalf of the target person), nor can it be inferred from objective measures (Cummins, 2005c).



However, the reliability and validity of responses made by people with intellectual disability to self-report rating scales, is an issue that frequently comes up when measuring SWB. As discussed previously, there still appears to be a view in the literature that people with cognitive impairments are unable to provide reliable and valid subjective data, and therefore only objective measures of quality of life should be used (see Hatton & Ager, 2002; Hensel, 2001), with this group. However, this view is unfounded.

Support for the validity and reliability of SWB data were highlighted in the above critique of the QOL construct as noted by Cummins (2002b) and in an earlier study by Matikka (1996) who investigated the relationship between personality traits, awareness of disability, individual resources, personal values, living conditions and QOL, of 619 people with intellectual disability in Finland. The author concluded that subjective QOL of this group could effectively be investigated on the bases of their own subjective responses to questioning. That is, the author found these people had very clear and firm views about their lives and were willing to express those views.

### *3.7.1 Studies measuring subjective wellbeing of intellectually disabled people only*

Currently, few studies investigate the SWB of people with intellectual disability (for a review see Emerson & Hatton, 2008). Although, this is changing with increases in our understanding of SWB and QOL and our ability to measure such constructs. Studies generally fall into two categories as, those that have only used people with intellectual disability as participants, and those that include non-disabled participants as a comparative group.

Studies that only use participants with intellectual disability tend to focus on identifying the factors that contribute to level of life satisfaction or happiness. One such study was Matikka (1996), who looked at the effects of psychological factors on the quality of life of 619 people with intellectual disability in Finland. Her results indicated that having high self-esteem, high positive self-image, positive sense of other's view of self and a greater sense of autonomy, predicted greater QOL. Additionally, positive self-image, high self-esteem and a sense of control had significant correlations to the other predictor variables, while feelings of stress, desire for autonomy, being female and awareness of disability were associated with low self-esteem. From her findings Matikka concludes that pursuing this line of enquiry is a

worthwhile endeavour that has potential to provide a comprehensive understanding of the factors that contribute to a life of quality for people with intellectual disability.

In a later study, using a participatory action research design Schalock et al. (2000) identified factors that influenced perceived life satisfaction among 237 adults with intellectual disability who received services and support from 10 participating service providers in Maryland, USA. Results from a path analysis revealed that perceived dignity and work contributed the most to life satisfaction. Further, the level of independence and integration into the community indirectly affected measured satisfaction. Whereas, participants' level of functioning and personal characteristics (such as age, communication problems and ambulating difficulties), had no direct or indirect effect on life satisfaction.

Most recently, Emerson and Hatton (2008) investigated the associations between SWB indicators and the personal characteristics, socio-economic position and social relationships of a sample of 1,273 adults with intellectual disability residing in the UK. A mean overall life satisfaction score of 71% SM (scale maximum) was obtained, which is within the normative range found in the general population (Cummins, 2003). Results indicate that variations in SWB were strongly correlated with socio-economic disadvantage, and less strongly to social relationships. Findings also indicate the presence of a gender bias. That is, women who were single and not poor reported higher levels of SWB on all indicators. There was no association between marital status and wellbeing for men. This finding is in direct contrast to Matikka (1996) who found in her study, that being female was associated with stress and not high levels of SWB, as reported by Emerson and Hatton. However, it is possible that the levels of stress measured in the Matikka study were not high enough to defeat homeostasis and this may account for the different findings. Relationships with friends, who are also intellectually disabled, appeared to protect participants from feeling helpless (Matikka, 1996).

According to Cummins et al. (2007) optimal levels of SWB are maintained by homeostatic control (as discussed in Chapter 2). This system is conceptualised as comprising two kinds of buffers, external and internal. Together, these normally have the capacity to protect SWB and keep it within the optimal normative range for individuals with and without disabilities. Wealth and relationships are external buffers. While it is generally accepted in the literature

that there is a poor correlation between these two variables (Cummins, 2000c; Diener & Biswas-Diener, 2002), Cummins et al., suggest that having sufficient income minimises challenges in the environment, that could otherwise defeat the homeostatic system and result in loss of SWB. Similarly, close intimate relationships moderate the influence of potential environmental stressors. These ideas lend support to Emerson and Hatton's (2008) findings. However, one of the limitations of their study was that the survey from which their data were extracted was not specifically designed to evaluate SWB. Rather, analysis was conducted on data that was most plausibly related to SWB variables.

In summary, investigations into the QOL of people with intellectual disability, identifying those factors that contribute to the SWB of this group, have had mixed findings. A range of factors were identified including, a positive self-image, self-esteem and a sense of autonomy, perceived dignity and work, level of independence and integration into the community, and social relationships, were directly and indirectly associated with life satisfaction. Additionally, variations in SWB were strongly correlated with socio-economic disadvantage.

### *3.7.2 Studies measuring subjective wellbeing of intellectually disabled and non-disabled comparison*

Studies using people with both intellectual disability and non-disabled people as participants, allows for an examination of differences between the two groups. One such study, conducted by Verri et al. (1999), examined both objective and subjective quality of life in a sample of people with and without an intellectual disability, drawn from Australian and Italian populations. The findings indicate that mean satisfaction scores for all groups were comparable and fell within the normative range (70–80%SM) for Western population means. This is an interesting result as it was also found that, people with intellectual disability from both countries experienced lower objective quality of life scores than those from the non-disabled population samples, while also retaining normative SWB scores. Such findings are, again consistent with the proposed operation of homeostasis.

In a second study, a quality of life scale was derived from The Core Indicators consumer survey, which is composed of four Life Dimension scales, with a total quality of life score calculated to give an overall composite score statistic (Human Services Research Institute, 2001). The four Life Dimension scales were WellBeing, Access-Rights, Autonomy, and

Community Participation, using a yes/no or a 3-point response format. The calculation of the wellbeing scale used data derived from individuals with intellectual disability who could answer independently; where proxy responding was required their data were not used. Using the Life Dimension scales Sheppard-Jones, Prout and Kleinert (2005) investigate whether quality of life differed between the general population and adults with intellectual disability receiving community-based services from a Southern State of USA. Standard regression was used to determine whether the independent variables could predict the probability that a particular score belonged to either the disabled group or the general population group. The independent variables of wellbeing, community participation, access and autonomy, were entered in combination with demographic variables age, race, marital status, and gender. It was found that wellbeing, autonomy, and marital status are significant predictors of group membership. Hence, increases in autonomy and wellbeing scores were more likely to belong to the general population group. As expected marital status was the strongest predictor of group membership, with those being married more likely to belong to the general population. In conclusion, the study found that overall people with disabilities are disadvantaged compared to their non-disabled counterparts, in particular when it came to aspects of autonomy, wellbeing, access to transport, and basic human rights (e.g., participants had less privacy); generally experiencing lower QOL (Sheppard-Jones, et al., 2005).

However, a problem with the above study, is scale items reported in the tables indicate that both objective and subjective indicators were used to measure quality of life and were then combined, to produce the total QOL score. The combining of objective and subjective measures is something that Cummins (2001b) reports as not being a valid approach. Therefore, the results of the study can be dismissed as uninterpretable.

Another limitation in the Shepard-Jones, Prout and Kleinert (2005) study was the inclusion of participants who were residing in institutional settings. As reported by the authors 15% of participants with disabilities lived in an institution. This could account for the findings of low QOL scores for people with disabilities, compared to the general population. Low QOL for this group can be explained by the findings that objective and subjective quality of life variables under normal operating conditions have low correlations. As argued by Cummins (2001b) changes in living environments, which are sufficiently aversive (institutional living environments conceivably could be such an environment) are likely to result in homeostatic

defeat. That is, a sufficiently aversive environment takes control of SWB away from the homeostatic system, forcing SWB to decrease below its normative range, resulting in objective and subjective indicators of quality of life co-varying. Furthermore, the living circumstance of people residing in institutions is likely to lower the mean scores on a number of the subscales used in the study (e.g., wellbeing, autonomy, access-rights), as most participants who live in institutions will invariably lack opportunity to experience activities that promote autonomy, self-determination, and privacy.

In summary, comparative studies measuring the SWB of people with intellectual disability with non-disabled people are few in number and have mixed findings. Some findings support no statistical difference between groups with SWB falling within the normative range (70-80%SM) (McGillivray, Lau, Cummins, & Davey, 2009; Verri, et al., 1999), while others support statistical difference between the two groups. These studies provide important evidence for the factors that contribute to SWB of people with intellectual disability, compared with non-disabled populations.

### *3.7.3 Studies measuring subjective wellbeing and other psychological constructs*

Although various studies (Cummins, 2001a; Emerson & Hatton, 2008; Schalock, et al., 2000), have identified factors contributing to QOL of people with intellectual disability, little analytic attention has been paid to the associations between SWB and other positive psychological constructs. However, these types of investigations into SWB as the dependent variable and positive psychological construct as the independent variables have begun to emerge.

A recent example is the study by Shogren, Lopez, Wehmeyer, Little and Pressgrove (2006) who investigated the associations between constructs of self-determination (as measured by The Adolescent Self-Determination Assessment), (Wehmeyer & Lopez, 2003), hope (Snyder, et al., 1997), optimism (LOT-R, Scheier, et al., 1994), locus of control (as measured by The Nowicki-Strickland International External Scales), (Nowicki & Duke, 1974), and life satisfaction in adolescents with and without disabilities in the state of Kansas. Life satisfaction was measured using Diener et al. (1985) Satisfaction with Life Scale, as well as the Self and Global subscales of the Multidimensional Life Satisfaction Scale (Huebner, 1994). Using Structural Equation Modelling (SEM) analysis, their findings revealed that

locus of control and self-determination were not significant predictors of life satisfaction. Rather, hope and optimism significantly predicted life satisfaction equally for adolescents with and without intellectual disability. However, when the structural model was evaluated for equivalence across groups, the findings revealed that self-determination, hope, optimism and locus of control were significantly related. The authors suggest further research assessing the commonalities as well as the differences of each construct is required to fully understand and promote optimal functioning and wellbeing of adolescents with and without disabilities.

The positive psychological construct of self-esteem has attracted much research interest, and there is strong support for a link between life satisfaction, self-esteem and SWB. Furthermore, the literature suggests that self-esteem is one of the strongest predictors of SWB (Campbell, 1981; Diener, et al., 1995; Lucas, et al., 1996; Lyubomirsky, et al., 2006), particularly as found for the general population. While, there is no reason to assume that this situation does not also apply to people with intellectual disability, empirical research specifically investigating the link between self-esteem and SWB for this group is limited.

One study to investigate self-esteem and SWB compared intellectually disabled young Chinese adults with non-disabled young adults in Hong Kong. The study found participants had higher self-concept or self-esteem than the comparison group, but only when the participants used in-group social comparison to maintain positive self-perception (Li, Tam, & Man, 2006). That is only when the young disabled participants used other disabled people as a source of their social comparison, did they have higher self-esteem. More commonly, studies investigating the self-esteem of this group appear to have done so from a focus on the presence or absence of psychopathology or depression (Benson & Ivins, 1992; Dagnan & Sandhu, 1999; Garaigordobil & Perez, 2007; MacMahon & Jahoda, 2008).

Such studies tend to find that people with intellectual disability have a higher risk of low self-esteem due to negative social comparison and their stigmatised and deviant social status. For example in a self-report study on anger, depression and self-concept of 130 adults with intellectual disability living in the community Benson and Ivins (1992), found a significant negative correlation between self-concept and depression. That is, participants reporting high depression also reported low self-concepts. Similar findings were reported in the study by

Garaigordobil and Perez (2007) who compared the self-concept, self-esteem and psychopathological symptoms of individuals with and without intellectual disability. Their findings revealed that participants with intellectual disability scored significantly lower in self-concepts and self-esteem, and reported higher psychopathological symptoms, than the non-disabled participants.

A further two studies investigated the associations between social comparison, self-esteem and depression in a sample of people with intellectual disability (Dagnan & Sandhu, 1999; MacMahon & Jahoda, 2008). Results from the Dagnan and Sandhu (1999) study, revealed a significant positive correlation between positive self-esteem (as measured with the Rosenberg Self-esteem Scale) and social comparison. Similar results were found in the MacMahon and Johada (2008) study, using a between group research design with a sample of 18 individuals with intellectual disability who had clinical depression and 18 non-depressed individuals with intellectual disability. Their findings revealed a strong negative correlation between scores on the adapted Rosenberg Self-esteem Scale and the two depression scales used. The authors conclude that for the sample as a whole, high levels of self-esteem were associated with low levels of depression.

It is clear from the research cited, that self-esteem has an important role in SWB for both intellectually disabled and non-disabled people. It is of particular interest of this thesis to understand more fully the nature of this connection, with particular reference to people with intellectual disability. The current study provides further evidence of the self-esteem of people with intellectual disability from a positive psychology perspective and also, the self-esteem levels of people with intellectual disability compared to the general population.

In summary, factors contributing to QOL of people with intellectual disability have been identified but very little attention has been paid to the associations between SWB and other positive psychological constructs, such self-esteem, optimism, control, self-determination. Findings from studies that have emerged, suggest that hope and optimism equally predict life satisfaction for adolescents with and without intellectual disability. Studies of self-esteem and SWB tend to focus on the presence or absence of psychopathology or depression and report that people with intellectual disability have a higher risk of low self-esteem due to negative social comparison and their stigmatised and deviant social status. Participants had

higher self-concept or self-esteem than the comparison group, only when the participants use in-group social comparison to maintain positive self-perception.



## Chapter Four

### Study 1: Response Discrimination of People with Intellectual Disability

#### 4.1 Introduction

The purpose of this thesis is to test the theory of SWB and the maintenance of homeostatic control for people with mild to moderate intellectual disability and to compare the results with those derived from non-disabled people. This will involve an investigation into the internal buffers of self-esteem, control and optimism. The dependent variable is SWB as reported by participants, and is measured with End-point defined scales, using either 7- or 11-point response categories. The literature suggests that the mechanism for the maintenance of SWB operates in the same manner for people with or without disabilities (Cummins & Lau, 2004a). This thesis will test this premise. In order to test homeostatic maintenance of SWB it is necessary to first, determine the response discrimination competence of people with mild to moderate intellectual disability.

In discussing response scale complexity, Cummins and Gullone (2000) express a preference for the use of an 11-point response category on the grounds that it represents a more sensitive instrument. This is an important consideration when wishing to detect differences between quality of life domains. However, data informing the optimal number of scale choice-points is limited most particularly for people with mild to moderate intellectual disability. Study 1 explores whether a 7- or 11-point choice response category is more easily understood and more reliably used by this population.

Chapter 4 presents the first of three linked studies. Study 1, is a pilot investigation into the response discrimination competence of people with mild intellectual disability, in order to determine which response scale level (e.g., End-point defined scales, either 7- or 11-point response categories) is the most appropriate to use in Studies 2 and 3 of this thesis. While the ComQoI-I and the PWI-ID scales have been specifically designed for use with people with an intellectual disability, whether the respondent is able to validly respond to a questionnaire that is sufficiently sensitive to assess actual changes in the phenomenon under investigation remains unknown. Study 1, provides evidence to address this gap in understanding. Before

results from Study 1, are presented a review of literature pertaining to response scales and response discrimination, including issues of reliability and sensitivity of scales, the optimal number of response categories to use, and the sensitivity of scales to measure SWB, will be presented. The chapter concludes with a discussion on measuring SWB of intellectually disabled people.

## 4.2 Response Scales

### 4.2.1 *Different types of response scales*

Self-rating scales are widely used in social sciences for both research and practical applications, and come in a variety of forms. Rating scales usually require respondents to select an answer from a range of verbal statements, numbers or a combination. The most common form of rating scale, is the Likert scale developed by Reniss Likert (1932).

The Likert scale was not the first rating scale to be developed. A set of rating scales, widely used to measure SWB, is a series of Graphic rating scales that combine the characteristics of the Likert rating scale and the visual analogue rating scales. The first of these is the Ladder scale (Cantril, 1965), presented in the form of a ladder with 10 rungs and 11 numbers (0–11). Respondents are asked to place themselves on the ladder according to their own values of what constitutes good, bad, best or worst possible life. Another example, is the Faces Scale, developed by Andrews and Withey (1976). This uses seven schematic faces with expressions that vary from very positive to very sad. Like the Ladder scale, this scale was designed to measure SWB that did not rely on verbal labels for scale categories. Also developed by Andrews and Withey was the Delighted-Terrible Scale, which is a version of a Likert scale, but differs from their earlier scale in that included both affective and cognitive components of SWB (Andrews & Robinson, 1991).

While sharing some qualities to the Graphic rating scale, the Likert scale differs in that this rating system is not continuous. Rather, Likert scales refer to a declarative sentence about some concept or construct, followed by a set of response options in which respondents are asked to indicate their level of agreement or disagreement with the statement. Response categories are worded in such a way as to have equal intervals to agreement. That is, differences in agreement between adjacent pair of responses are the same for all adjacent pair

of response categories. Response categories were originally presented as; strongly agree, agree, disagree and strongly disagree. However, scales may present any number of dichotomous (bipolar-opposite) adjectives that range from dissatisfaction to satisfaction or disapprove to approve and can have a neutral midpoint. Choices for a midpoint can include “neither agree nor disagree”, and “agree and disagree equally”. Other scales may be unipolar (one-way scale), and range from “not at all satisfied” to “very satisfied” (DeVellis, 2003).

All of these variations in rating scale format are known to influence the response patterns that people make to such scales (Cummins & Gullone, 2000). The following section will review literature related to the issue of optimal number of rating categories to use, in relation to the psychometric properties of reliability, validity and sensitivity.

### 4.3 Optimal number of rating categories on response scales

The optimal number of rating categories or response choice is an important consideration in the construction of scales and has received considerable research attention. Early investigators questioned whether for any given rating scale, is there an optimum number of rating categories beyond which no further improvement in discrimination occurs (Garner, 1960). It seems intuitive that, when few rating categories are used, the scale is coarse and can result in a limitation of the discriminative powers of which the participants are clearly capable. Coarse rating scales also risk loss of information (Garner, 1960). On the other hand, if a scale rating is too fine, then there is a risk of attempting to sample beyond the participant capability to discriminate (Komorita & Graham, 1965). However, as noted by Cox (1980) and more recently by Preston and Colman (2000), such investigations span the history of scale construction, yet the issue of optimal number of response categories, remains relatively unresolved. Issues that may influence the number of response choices will now be discussed.

#### 4.3.1 *Psychometric issues of reliability*

One of the earliest investigations into optimal number of response categories and the psychometric property of reliability was conducted by Symonds (1924). He proposed that optimal reliability is achieved using a 7-point scale, and that further increases in reliability from using a response choice beyond a 7-point format, are so small that it would not warrant

the extra effort involved. However, this conclusion is somewhat limited in that Symonds does not present evidence to support the view that increasing the response format beyond 7-point would require much more effort from the respondent.

In a recent study, Preston and Colman (2000) had 149 respondents rate their satisfaction with service quality of restaurants or stores they had recently visited, using rating scales that only differed in the number of response categories. The rating scales ranged from 2 to 11 response categories and a 101-response scale with a different format. Their findings showed that on the measures of reliability (both test-retest and internal consistency) the rating scales with the fewest response categories (i.e., 2-, 3-, 4-point scales) had the least reliable scores. The most reliable scores were derived from rating scales with seven or more response categories. However, both Cronbach's alpha coefficients and the test-retest reliability coefficients did not increase much beyond seven response categories (i.e., alpha coefficients for scales with 7, 8, 9, 10, 11, and 101 response categories were all very similar). These findings confirm results from previous studies (e.g., Symonds, 1924), which suggest that reliability increases from 2-points to about 6- or 7-point scales but after that reliability changes very little.

However, when respondents were asked to rate each scale, their preferences differed significantly. Scales with 5, 7, and 10 response categories were rated as easy to use. While the shorter scales (2, 3, 4 response categories) were all rated as quick to use, they were least preferred, in terms of adequately expressing one's opinion. Overall respondents preferred scales with rating categories of 10, 9 and 7, and least preferred scales with 2, 3, and 4 response categories. From their findings Preston and Colman (2000) concluded that while there is some support for a 7-point response scale there is no real support for scales with 5 and less response categories. Overall, scales with 7, 9, or 10 response categories generally perform better in terms of reliability, validity and discriminating power and more importantly in terms of respondent's preferences.

Other studies provide evidence that increasing the response options beyond 7-point does not systematically detract from scale reliability. For example, Russell and Bobko (1992) found that data from a 15-point scale increased regression analysis effect sizes by 93% over those from a 5-point scale. More recently, Pajares, Hartley and Valiante (2001), compared response format in writing self-efficacy scales, between a traditional 1–6 choice response

Likert format and a scale using a 0–100 choice response format. Their results from factor and reliability analyses showed that a writing self-efficacy scale using a 0–100-response format was psychometrically stronger. When converting the means of the two scales for comparison, the mean of the 0–100-response scale was 75.07 and 73.17 for the 1–6 scale. The authors conclude that neither scale artificially inflated nor deflated confidence judgments, in that the fine-grained discrimination (0–100-response format) provided not only an assessment of self-efficacy that was strongly related to the achievement indexes but also predictive of achievement in a regression model. Whereas, the less discriminating scale using the traditional Likert format (1–6 response categories) was not.

From the above studies, the findings appear mixed. Some studies found, that increasing the response options beyond 7-point does not systematically detract from scale reliability; others report that beyond 7-point response choice, reliability changes very little. However, none of these studies provide conclusive evidence that going beyond the 7-point response choice will be detrimental to reliability of the scale.

#### 4.3.2 *Psychometric issues of validity*

A study that looked at psychometric properties of both reliability and validity, and the optimal number of response categories was conducted by Matell and Jacob (1971). Respondents were asked to rate 60 statements on a modified Allport-Vernon-Lindzey Scale of Values, with response choices ranging from 2- to 19-points. Results indicate that as the number of response choices increased from 2- to 19-points, there was no systematic change in predictive and concurrent validity, or internal-consistency and test-retest reliability. Consequently, finer rating scales did not result in an increase (or decrease) in the reliability or validity measurement over coarser scale formats. The authors concluded that, internal-consistency and test-retest reliability, and measures of validity (predictive and concurrent) are all independent of the number of response categories.

While, the results of Matell and Jacoby's (1971) study showed that reliability and validity are independent of the number of response categories, their results are somewhat inconclusive as to the optimal number of response categories to use in rating scales. Their findings could be used to support an argument for the use of coarser rating scales (e.g., < 5-reponse points), over finer scales (> 7-response points) as reliability plateaus after 5- to 7-response options.

Their findings can also support an argument that the use of finer rating scales will not be detrimental to reliability and validity measures of rating scales. Thus, they have not provided compelling reasons for continuing to use 5- or 7-point scale formats. Therefore, an argument can equally be made for the use of finer rating scales. Particularly when measuring SWB data, which has been shown to have a negatively skewed distribution, due to respondents rating within the positive (satisfied) sector of the response scale (Andrews & Withey, 1976). As will be argued in the following section, the use of finer response rating scales are more appropriate for use when measuring SWB, as it is these scales that are sensitive enough to measure actual changes in SWB data.

Similarly, on the indices of validity and discriminative power, Preston and Colman (2000) found that scales with few response categories (< 4-points) performed the worst. Criterion validity coefficients were lowest for the 2-, 3- and 4-point response scales and highest for scales with response categories greater than 5-points, but these were not statistically significant. Discriminative power was lowest for scales with 4 and less response categories but was statistically significant for scales with 9 or 101 response categories. As expected, scales with two or three response categories had the lowest overall convergent validity. This, as noted by the authors is an inherent outcome of small scales, as these scales tend to generate scores that have little variance and therefore, limit the magnitude of correlations with other scales.

#### *4.3.3 Scale sensitivity and response discrimination of participants*

This discussion deals with whether, increasing the number of response categories will increase the measurement scales ability to detect small changes in the target variables of interest. With specific reference to measurement of SWB, Andrews and Robinson (1991) argue that the number of scale points in a measure has a direct effect on the extent to which the measure can reflect the actual variation that exists in a population. This suggests that coarse measurement scales will only measure gross differences in a population, and therefore will result in a loss of information (Bandura, 1997). Finer scales, however, have the potential capacity to measure actual variations that occur within a given population. This is of particular importance when dealing with life satisfaction data, which have a negatively skewed distribution.

Scale sensitivity and the possible loss of information that can occur with the use of coarse rating scales was of particular concern for Bandura (1997). He argues for the use of fine-grained scales stating, “scales that use only a few steps should be avoided because they are less sensitive and less reliable” (p. 4). Further, he advises researchers “including too few steps loses differentiating information because people who use the same response category would differ if intermediate steps were included” (p. 44). This view was supported by DeVellis (2003) who suggests a desirable quality of any measurement scale is sensitivity. That is, if a scale fails to discriminate differences in the underlying attribute being measured, then its correlations with other measures will be restricted, thus limiting the scales usefulness and ultimately its sensitivity. One way to achieve sensitivity suggests DeVellis, is to have either a large number of scale items (which can add significant time and cost to the administration of a scale), or to have larger number of response categories within items, which will allow greater opportunity for the scale to measure actual changes in the concept being measured.

However, this later approach is not without its problems. When respondents are faced with a large number of options, they simply mentally group response options into 5 or 10 categories. This has the effect of reducing scale choice and giving an illusion of precision or sensitivity. Such an illusion could mean that differences between any two scale points (i.e., 35 and 37) may not reflect actual differences in the phenomenon being measured. While the scale’s variance may increase due to having a bigger range of response categories, DeVellis argues this may be just random (i.e., error) variance increasing, rather than the actual phenomenon being measured. Consequently, an increased range of response categories will not necessarily increase the sensitivity of the scale to measure actual changes in the concept or construct under investigation. However, this is a completely different finding to Pajares, et al. (2001) who demonstrated that the 0–100 response format was not only a stronger psychometric scale but more importantly, the finer-grain response format was well within the discriminative capacity of students.

Further evidence to support an increase in the number of response categories is provided by Cummins (2003; Cummins & Gullone, 2000) who argues that since many people have a discriminative capacity that exceeds 7-point response choice, then restricting people to this level of scale complexity results in a loss of potentially discriminative data, which have

particular relevance to SWB data. This point will be further developed in the following section (4.4).

To summarise, the studies reviewed here have not provided conclusive support for the continued use of 5- or 7-point response format on Likert type scales. Rather the argument can be made for the use of rating scales with response choice options greater than 5- or 7-point, as it will not have an aversive affect on reliability of the scale. Additionally, there is more to gain in terms of scale sensitivity from using finer rating scales (e.g., end-defined 10/11-point response choice). This position is supported from the discussion that suggests finer rating scales are more sensitive, which has particular relevance when measuring SWB as it has a negatively skewed distribution. This seems a reasonable conclusion to draw particularly as the additional response categories are within the discriminative capacity of the respondents.

#### 4.4 Subjective wellbeing measurement and scale format

This section will present the argument for expanding Likert-type scales to 10/11 response categories when measuring SWB data. In a published review of measurement instruments used to assess SWB and related constructs, Cummins (2000a) identified more than 400 instruments. Almost all of these instruments use Likert-type scales. The complexity of these scales vary from 2- to 100-point response categories, with some using unipolar scales (e.g., from no satisfaction to complete satisfaction), and others using bipolar scales (e.g., from complete dissatisfaction to complete satisfaction). Some scales have a neutral mid-point, while others do not. Some use extreme anchors (e.g., terrible to delighted), while others use mild anchors (e.g., dissatisfaction) and so on. Each of these different forms is known to influence the response pattern that people make to rating scales, and yet as noted by Cummins and Gullone (2000), there has been little research attention paid to such psychometric issues in relation to SWB measurement. A discussion covering some of these psychometric inadequacies was presented in the preceding section.

Nevertheless, one such inadequacy that has particular relevance to SWB scales, involves the issue of scale sensitivity. While, the rating scale is robust and has sound reliability, Cummins (1998a; Cummins & Gullone, 2000) argues that issues of measurement sensitivity have



almost been completely ignored by researchers, particularly, when data are used as measures of wellbeing outcomes. Measurement sensitivity relates to the capacity of the scale to measure changes in the underlying construct (e.g., LS or SWB) and to reflect the actual increments in feelings of the respondent. As argued by Cummins and Cullone (2000), rating scales employing 3- to 7-choice points are not considered sensitive SWB measures for two reasons. First they are not likely to capitalise on the discriminative capacity of most people in terms of rating their perceived wellbeing. Clearly, most people are capable of rating levels of life satisfaction beyond the typical 3- 5- or 7-point response choice. Thus it would seem justified to use an expanded response category format, that is, better aligned with people's capabilities and thereby avoiding the loss of discriminative information.

Second, as SWB data typically have a negatively skewed distribution, this limits the number of response choices available, as respondents only use the higher or positive half of the scale. For example, when respondents are presented with a 3-point response scale, most people are forced into a binary choice, between the mid-point or neutrality and the extreme anchor of very satisfied. For those people who are only moderately satisfied, they are effectively forced to use the neutral choice category. Thus, such a forced choice results in their response being a gross measure that poorly represents their actual feelings of wellbeing (Cummins, 2003). Clearly, from this example, it can be seen that coarse measurement scales are highly likely to result in loss of discriminative information.

Furthermore, Cummins (1998a; Cummins & Gullone, 2000) argues that given the nature of SWB data, a number of factors exist that each reduces the 5- or 7-point response categories to a range narrower than was intended. First, SWB is not free to vary over its entire range, subject to personal circumstances. That is, SWB is constrained in range by its trait characteristic, which causes it to behave as though it is held under homeostatic control (as discussed in Chapter 2). Evidence exists, that the Western population mean for life satisfaction, is held within a normative range of 70–80%SM and the normative range for life satisfaction within samples is 40–100%SM (Cummins, 1995). This response pattern has been found so consistently, that the figure 70–80%SM has been suggested to constitute a *gold standard* for life satisfaction (Mellor, et al., 1999). As a result, respondents will normally experience SWB variations that are limited to only a proportion of the available scale.

Secondly, as mentioned above, SWB data has a negatively skewed distribution. Thus when measured using ordinary unipolar or bipolar scales, negatively skewed distribution indicates that respondents are only using the higher or positive half of the scales to report their life satisfaction judgements.

Thirdly, responses to rating scales comprise a high degree of response-set. For example Peabody (1962), found an average correlation of  $.54, \pm .24$  between individuals' intensity of agreement or disagreement to sets of attitudinal questions. This is of particular concern for detecting differences between quality of life domains, such as those provided in a number of SWB measurement scales (i.e., ComQoL, PWI) (Cummins, 1997b; Cummins & Lau, 2004b; International Wellbeing Group, 2006). Thus, maximum scale sensitivity is essential in order to measure differing levels of intensity, to quality of life domains (Cummins & Gullone, 2000).

The final factor identified by Cummins and Gullone (2000), is the issue of *variable series effect*, which sees the stimulus range as a major determinate of the value assigned to items in a series. That is, if respondents are presented with a scale where their attitude is not at the mid-point they will subjectively divide the range between the values that they recognise as being consistent with their own attitude range. The result is that they will exhibit a narrower range than the presented scale intended. This provides further support for the expansion of rating scales beyond the commonly used measure of 5- or 7-point response format.

From the above discussion, Cummins and Gullone (2000) conclude that rating scales in their current format, are very blunt instruments by which to measure change in SWB. That is they are not sufficiently sensitive to detect small and possibility significant changes in levels of life satisfaction. As a consequence Cummins recommends that SWB be measured using 10/11-point end-defined scales. The number of response categories to used must represent a trade-off between reliability, which is highest when using a binary choice and issues of discrimination and validity that requires a larger number of choice points (Cummins, 1998a).

Empirical evidence for the use of expanded response choice format beyond the 7-point format is provided by Cummins (2003), who examined the distribution of 62 previously published life satisfaction data within populations. Analysis of population means scores showed that the 10/11-point response scales produced higher mean score (76.6%SM) than the

7-point scales (74%SM). These results show that the 10/11-point scales were more sensitive and therefore more likely to be measuring actual SWB feelings of respondents. Higher standard deviations between population estimates were also obtained on the 10/11-point response scales (18.5%SM) than for the 7-point (15.0%SM). This again supports the argument that the scales with the greater number of choice points are superior and more sensitive, as such scales produce a greater spread of values (Cummins, 2003).

In summary, Cummins (1998a; Cummins & Gullone, 2000) argues from a theoretical and empirical position the superiority of bi-directional, 10/11-point (0–10), end-defined scales over 5- or 7-point scales when measuring life satisfaction. He also suggests a key characteristic of a good response scale is its ability to detect, or be sensitive to change, which is of particular interest when measuring SWB as an outcome measure. Thus, a sensitive scale allows respondents to record their life satisfaction with a degree of precision that matches their ability to discriminate changing levels of satisfaction. The 11-point response choice provides a respondent with five levels of satisfaction above the point of scale neutrality. While it can be argued that the discriminative capacity of most respondents is uncertain, five levels of choice are not likely to exceed the capacity of most respondents. In addition responding to a 0–10-point scale is not only intuitively meaningful in terms of common numerical counting experience (including for people with mild to moderate intellectual disability), but the 5- or 7-point response scales poses a greater cognitive strain on the respondent, particularly since such scales also inevitably use choice point labelling.

From the previous discussion, it is reasonable to conclude that increasing the response options beyond 7-point response choice does not systematically detract from scale reliability, but will assist with scale sensitivity. It is notable that the use of 10/11-point response scales is increasingly being used in the literature to measure SWB data in the general population (Cummins, 2003). What has not been undertaken is a systematic investigation into whether the 11-point response choice is appropriate for use with people who have a mid intellectual disability. This study attempts to examine this question.

#### *4.4.1 Measuring subjective wellbeing of people with intellectual disability*

Most of the discussion on measuring SWB in the preceding section is relevant to the measurement of SWB of people with intellectual disability. The following discussion

highlights some of the issues that are specific to gaining reliable and valid SWB data from this population sample.

The argument can be made, that having a better understanding of the SWB of people with intellectual disability is essential to the delivery of quality services that meets their needs, while also ensuring their personal fulfilment and life satisfaction. This point was made by Cummins and Baxter (1993), who argue for the use of broad-based QOL measures to be incorporated into a framework of human service delivery evaluations. In particular, such measures need to incorporate subjective responding, in which people with intellectual disability, report for themselves their levels of perceived satisfaction and happiness with life-as-a-whole, or within specific life areas (e.g. emotional, interpersonal, material, personal development, physical, self-determinism, social inclusion and rights) (Cummins, 2000b; D. Felce & Perry, 1996; Schalock, 1996a). Furthermore, Cummins (1997a) strongly advocates for the use of self-completed rating scales, as they constitute an essential and ethical requirement when issues of intervention, education, or service delivery are being considered.

The use of satisfaction measurement within the disability field is also strongly advocated by Schalock (1996a). He argues, that such measures provide a common understanding shared by service recipients, policy makers, service providers and researchers in the assessment of consumer needs and satisfaction. However, such investigations will not be fully valid if the data obtained does not accurately represent the actual feelings of respondents or at best only represents a very crude assessment of respondents' feelings of wellbeing. Therefore, any measurement instrument must be sensitive enough to record changes in perception and feelings underlying the phenomenon being investigated, in this case SWB and changes in levels of satisfaction across life domains. In order for this to occur, it is important that the maximum scale complexity that the respondent is capable of understanding and using is employed in satisfaction scales to ensure maximum scale sensitivity.

In order for issues of maximum scale complexity and scale sensitivity to be addressed for people with intellectual disability, empirical investigations involving this group needs to be conducted. That is, while questions of life satisfaction have been asked of many groups in society (Diener, et al., 1999; Headey & Wearing, 1992), such questions have been asked less frequently of people with intellectual disability, although some studies do exist (Emerson &

Hatton, 2008; Hensel, Rose, Kroese, & Banks-Smith, 2002; Renwick, Brown, & Raphael, 1994; Verri, et al., 1999). The relatively slow adoption of this methodological technique in the field of intellectual disability, is partially due to the difficulty of asking somewhat abstract questions of life satisfaction that are within the cognitive capacity of respondents.

Consequently, due to concerns regarding the cognitive capacity of people with intellectual disability to use complex response scales, the use of 3-point response scales is a common feature of measurement instruments to assess SWB. As argued previously, the 3-point response scale at best represents a very blunt scale and places considerable limitation on the measurement of valid variance. For example, in a review of scale construction, Andrews and Robinson (1991) estimated the degree of valid variance reflected in 3-point response scales as 80%, while 5-point and 7-point response scales increase to 95% and 97% of variance, respectively. This, argues Cummins (1997c), emphasises the importance of pre-testing protocols in scales when measuring the SWB of people with intellectual disability. Such pre-testing allows for the maximum scale complexity to be utilised by respondents, and thereby ensures the maximum degree of valid variance is obtained. A pre-testing process will be elaborated in a later section.

In spite of the 3-point response scale being a common feature of SWB scales, when using the ComQoI-I scale Cummins (1997b), found that people with an upper moderate or mild level of intellectual disability can reliably use 5-point Likert scales. Although, it must be stated that for people with severe or profound levels of intellectual disability, the use of such scales to report their level of SWB is not possible at present. Rather other means of inferring their SWB must be used (e.g., behavioural observations, functional assessment...). Furthermore, Cummins (2002b) argues that the validity and reliability of people with intellectual disability responding to SWB rating scales is verified by comparing their level of responding against data from general population samples. When this is done, it is consistently found that the mean value on the ComQoI-I scale for people with an intellectual disability are within or slightly below, the 70–80%SM normative range found in the general population (Cummins, 1998b).

Notwithstanding, the current development and refinement of test construction, methods for the assessment of SWB of people with intellectual disability is still a hotly debated issue, as

outlined in Chapter 3, with some authors (e.g., Ager & Hatton, 1999; Hatton, 1998; Hensel, 2001) arguing against its validity and utility. In particular, the use of SWB as an indicator of QOL and service quality for people with intellectual disability (Hatton, 1998). Furthermore, Hensel (2001) called for the total abandonment of SWB measures particularly, the use of satisfaction when assessing services and determining resource allocation for people with intellectual disability. Reasons cited for the abandonment of satisfaction, as summarised by Cummins (2005c) include: (1) SWB is stable and therefore will not reflect variations in the environment; (2) proxy responding (whereby a third party provides answers on-behalf of the person with a disability) is likely to be invalid for life satisfaction questions; (3) major issues exist with the interpretation and delivery of SWB scales; and (4) the adoption of a QOL agenda based on subjective measures, argues Hatton (1998) disenfranchises people with severe/profound levels of intellectual disability as they are not able to respond to SWB questions.

The above issues were addressed in a series of rebuttal arguments by Cummins (2001b, 2002b), who provided a comprehensive discussion on the usefulness of SWB measurement because it is so stable. He argues that SWB is held under homeostatic control and therefore within a narrow range of values. Homeostatic control suggests Cummins, is analogous to the homeostasis maintenance of body functions, such as blood pressure, body temperature, and supply of nutrients in the blood stream, all of which are normally, very predictable. It is this predictability that makes the system so useful. A drop in any of these functions (i.e., loss of homeostatic control) becomes a critical diagnostic signal, in which the body makes appropriate adjustments to right the system and resume normal functioning. This process of homeostatic control (as discussed in Chapter 2) is the same for SWB. Evidence for the homeostasis system of SWB has been provided in earlier publications (Cummins, 1995, 1998b, 2000b). Thus, any reduction in SWB levels below the normative range is indicative of homeostasis failure and ultimately, a signal that intervention by the service provider is required. It is from this point of view that Cummins argues for the utility of SWB as a measure that is relevant to service delivery.

The issue of proxy responding and measurement procedures highlighted by Hensel (2001) are technical matters, that only require care is taken when collecting SWB data (Cummins, 2002a). Issues related to proxy responding as a method of collecting SWB data, has been

thoroughly discussed by a number of authors (Cummins, 2002a; D. Felce & Perry, 1995; Schalock & Felce, 2004). These authors are generally agreed that responses provided by a proxy or third party, are not valid responses for SWB data. That is, the level of concordance between the third party and the person with severe or profound intellectual disability is extremely low. A reason proposed for such low levels of concordance, is simply that, the proxy or third party cannot have direct access to how the person actually feels and thinks about questions related to SWB. Therefore any information provided would at best be a guess, or worst be an opinion that is biased by the views of the proxy about what constitutes a good life.

However, where the information being sought is of a concrete or objective nature (i.e., can be verified by an external source), then proxy responding may be valid in these situations. As argued by Cummins (2002a) there is no evidence to support proxy responding as a valid and reliable technique for gaining SWB data for persons with severe intellectual disability. Rather he calls for the discontinued use of this practice by professionals and states, "... it seems timely to ask professional bodies to consider whether proxy estimates of SWB, made by professionals for people who are unable to respond for themselves, constitute ethical conduct" (Cummins, 2002a, p. 201).

Notwithstanding the above discussion, it is the respondent's discriminative capability that is of particular concern for this study, as very few studies have attempted to determine the level of response discrimination or complexity that can be meaningfully made by people with intellectual disability. An attempt to address this was provided by Cummins (1997c; Cummins & Lau, 2004b) with the development of the parallel form of the ComQoI-I and later the Personal Wellbeing Index–Intellectual Disability (PWI-ID) (Cummins & Lau, 2004), designed specifically for use with people with intellectual disability. Both scales have a pre-testing protocol that precedes test administration, which is designed to systematically assess the response complexity that people with intellectual disability can reliably and validly make to SWB response scales.

Pre-testing in the ComQoI-I, involves a three step process in which the respondent is asked to nominate size-order among a set of vertical bars, relate bar-size to a printed scale of importance and finally place something of high importance (e.g., favourite possession or

activity) correctly on the importance scale. The pre-testing begins with a binary choice (e.g., big, small) and progresses to three, then five response choices. The level of complexity in which the respondent can reliably (i.e., without error) make, is then used for subsequent measure of SWB. Pre-testing protocols in the PWI closely follows those developed in the ComQoI-I scale. An additional testing step is included in the PWI-ID, which tests the respondent familiarity with a 0 to 10 distribution and, if they are, then their ability to use a 0 to 10 Likert scale is tested.

Finally, in a review on the assessment of SWB of people with intellectual disability Cummins (2005c) proposes seven recommendations that are essential for obtaining reliable, and valid SWB data. These are as follows; 1) Item questions should be simple and unambiguous; 2) Response options must be explained and understood by respondent prior to administration of the scale/questionnaire; 3) Verbal presentation must follow exactly as specified in test instructions (i.e., interviewer must not reinterpret questions or responses); 4) Scale should not combine subjective and objective indices—need to treat as separate scales; 5) Satisfaction responses should not be weighted by perceived importance; 6) Establishing respondents competence through a pre-testing protocol is essential; 7) Data must be screened for acquiescent response patterns (i.e., responding only on the extreme end of the scale items).

#### 4.5 Aim of Study 1

Study 1 was designed to inform the second, larger quantitative study that investigates the process of homeostatic control and the influence of internal buffers or cognitive mechanisms, (i.e., the three linked processes of perceived control, self-esteem, and optimism) for the maintenance of SWB in a sample of people with mild to moderate intellectual disability and non-disabled people. In addition, the participants understanding of the wording and scale items was checked, as some of the scales had not been previously used with this population.

While the ComQoI-I and the PWI-I have been specifically designed for use with people with an intellectual disability, whether the respondent is able to validly respond to a questionnaire that is sufficiently sensitive to assess actual changes in the phenomenon under investigation remains unknown. This study will provide further evidence to address this gap in understanding. Using the established pre-testing protocol procedure developed in the



ComQol-I; Study 1 has used the PWI plus the additional scales CRI, Self-esteem, and Life Orientation Scale, to determine the level of complexity that people with intellectual disability can reliably make. If people with mild to moderate intellectual disability can reliably use a Likert-type scale above 7-point response discrimination then concerns about scale sensitivity will be addressed and new information regarding the discriminative capacity of people with mild to moderate intellectual disability will be available.

The specific aims of the pilot study are:

- To determine the nature of the relationship between data obtained from 7- and 11-point versions of the response scale in a sample of people with mild to moderate intellectual disability.
- To determine whether one of the scale versions provides a more reliable discrimination between people of mild to moderate intellectual disability.
- To check the wording and participants' understanding of the scale items.
- To ensure that the materials for Studies 2 and 3 were valid for people with intellectual disability.

## 4.6 Method

### 4.6.1 *Participants*

The participants were 15 people with a mild to moderate intellectual disability recruited from two small service providers. They were selected by convenience sampling from the larger sample of participants who had agreed to participate in Study 2. Eligibility to participate in the study included the ability to communicate with formal verbal language, having a good level of comprehension of abstract ideas (such as those related to satisfaction and dissatisfaction, happiness and unhappiness) and to be considered by staff to function in the mild to moderate level of intellectual disability. Classification of intellectual disability (i.e., mild, moderate, severe and profound) and level of support requirements (i.e., intermittent, limited, extensive or pervasive (American Association on Mental Retardation, 2002) as determined by service providers was also used to establish eligibility for participation in the

study. For all participants in this study typical levels of support were within the intermittent or limited range and were considered to be mildly or moderately intellectually impaired.

Human service organisations in the greater Auckland region were approached to assist in the recruitment. The selection of the two small service providers was done on the bases of proximity of location to the principal investigator. One service offered day service activities by providing workshop type employment for people with a range of disabilities. The other service provided both residential (both semi-independent and group home/hostel) accommodation and a day service program run on the site of the hostel accommodation.

Human service organisations were provided with a plain language information sheet, providing details on the aims of this study and their involvement (see Appendix F). After organisational consent was gained from the service providers (see Appendix B); a key staff member from each organisation approached potential participants who met the inclusion criteria. They explained the study and provided the plain language information statement (see Appendix D). For those who were interested, a subsequent meeting was arranged at the service provider sites, where the aims and purpose of the study were explained and consent was gained.

Potential participants were given the opportunity to ask questions. Their understanding of what was told to them about the study, and what was required of them was checked prior to signing consent forms (see Appendix A). This was done with set of simple questions as suggested in the PWI-ID manual, such as “What will I be talking to you about?” “How many times will I want to talk to you?” “What can you do if you decide you won’t want to talk to me anymore?” (Cummins & Lau, 2004b). Potential participants were presumed competent to give informed consent to participate, unless there were grounds to conclude otherwise. Once consent was gained, individual meeting times were arranged either at their place of work or residence, where the face-to-face administration of the questionnaire was conducted.

Participants were selected through a convenience sampling procedure with the first 18 people who were willing to participate in a study being selected for the pilot investigation. One potential participant declined participation at the point of gaining consent, while another participant withdrew from participating after answering the first scale. A third participant who completed the entire questionnaire for the first trial, declined to participate in Trial 2.

None of these data were used. This left a total of 15 participants (seven males and eight females) who completed the questionnaire for both Trials 1 and 2.

Seven of the participants worked from 9.00am to 3.30pm in the same workshop doing a variety of contract assembly work. Two participants worked part-time in open employment. The remaining six participants attended a day service program that provided a variety of recreational and community activities. Seven participants lived in the same residential service; with four of these living in semi-independent flats with staff on-site, while the other three lived in a group home/hostel type accommodation. One participant lived independently from any service provider and the living arrangement for the remaining seven participants was not disclosed. All 15 participants were never married but three mentioned either being engaged or having a steady partner.

The participant's ages ranged from 21 years to over 60. Six out of 15 (40%) were aged 21–29 years, 3 (20%) were within the 30–39-age range, 5 (33%) were within the 40–49 year age range, and 1(7%) was over 60 years old. Participant's identification of their ethnicity was; 12 (80%) NZ European/Pakeha, 1 (7%) Maori and 2 (13%) Asian.

#### 4.6.2 *Measurement Tools*

The questionnaire consisted of items to collect demographic data, including age, gender, ethnicity, marital status, employment status and income level, plus four scales as follows.

##### 4.6.2.1 *Personal Wellbeing Index*

Subjective wellbeing was measured using the *Personal Wellbeing Index* (Cummins & Lau, 2004b). This is designed as the first level of deconstruction of the global *satisfaction with life-as-a-whole* question. It assesses satisfaction across seven life domains: Standard of living, Health, Achievements in life, Personal relationships, Safety, Community connectedness and Future security, which is then aggregated to form the PWI satisfaction score. In addition to the seven life domain questions that make up the PWI, five additional life domain questions were asked. These included satisfaction with religious or spiritual beliefs, relationship with partner or spouse, relationship with family, relationship with friends and satisfaction with financial security. The additional five items were included as it is

expected they will provide a broader view of life domains that may be relevant to people with intellectual disability.

These items may also identify limitations in life domains for people with intellectual disability that will put them at risk for homeostatic failure. A copy of the scale is included in Appendix G.

The Personal Wellbeing Index–Intellectual Disability (PWI-ID) scale is designed for use with people with cognitive impairments and is the parallel form of the Personal Wellbeing Index–Adult (PWI-A). The PWI-ID scale differs from the PWI-A, in the use of simple and concrete language, and the use of a pre-testing protocol to ascertain participant understanding of the scale and level of response choice complexity they can use. For example wording used in the PWI-A is “How satisfied are you with...your standard of living?” or “How satisfied are you with...your health?” While in the PWI-ID the wording is as follows, “How happy do you feel about...the things you have, like the money you have and the things you own?” and “How happy do you feel about...how healthy you are?”

The PWI uses an 11-point (0–10) End Defined Response Scale (Jones & Thurstone, 1955). This scale represents the most reliable, valid and sensitive instrument of current empirical and theoretical understanding (Cummins & Lau, 2004b). A recent validation study on the PWI-I, by McGillivray and colleagues (2009) reported Cronbach’s alpha of 0.76 for a sample of mild to moderate Australian adults with intellectual disability. The item-total (domain-PWI) correlations ranged between 0.37 and 0.57, while inter-domain correlations ranged between 0.16 and 0.54. This psychometric data is comparable with general population data (Cummins, Eskersley, Pallant, van Vugt, & Misajon, 2003). The PWI-A manual reports Cronbach’s alpha range of .70 to .85 for Australian and overseas adult populations. Inter-domain correlations are moderate at .35 to .55 and item-total correlations are .50 (International Wellbeing Group, 2006).

#### 4.6.2.2 *Coping Response Inventory–Adult form*

Perceived control was measured using a modified form of the CRI–Adult Form (Moos, 1993). The CRI is a reduced scale from the original Moos (1993) scale and consists of 35 items grouped into eight subscales (as shown in Appendix H). The reduction from the

original 42 items and the subscales follows the structural analyses of Cousins (2001). Consistent with the approach used by Cousins, the participants were instructed to think about three aspects of their lives in which they experience problems or difficulties and then to indicate the extent to which they use each of the 35 items of the CRI. Items were anchored with “never” to “yes, all the time.”

The CRI is divided into two categories of coping responses, Approach coping and Avoidant coping, with each category having four subscales, making a total of eight subscales. The Approach coping category is made up of two cognitive scales, logical analysis and positive reappraisal, and two behavioural scales, problem solving and seeking guidance support. The Avoidant coping also has two cognitive scales and two behavioural scales, cognitive avoidance and acceptance or resignation, and seeking alternative rewards and emotional discharge, respectively. A description of these scales, as outlined in the manual are provided in Table 4.1, and a copy of the items comprising this scale are provided in Appendix G.

The scale’s manual reports reliability alpha coefficients for males (range from .61 to .74) and females (range from .58 to .71). Data presented in the manual demonstrate that the eight scales are moderately stable over time, with the average correlation of the eight scales for males and females at .45 and .43 respectively at a 12-month follow-up. While the scale has good face validity and its development has been based on a review of the literature, the reliability of this modified version is unknown.

Table 4.1  
*Description of the scales in the CRI*

Scale	Description
<b>Approach Control</b>	
1. Logical Analysis	Cognitive attempts to understand and prepare mentally for a stressor and its consequences
2. Positive Reappraisal	Cognitive attempts to construe and restructure a problem in a positive way while still accepting the reality of the situation
3. Seeking Guidance & Support	Behavioural attempts to seek information, guidance and support
4. Problem Solving	Behavioural attempts to take action to deal directly with the problem
<b>Avoidant Control</b>	
5. Cognitive Avoidance	Cognitive attempts to avoid thinking realistically about a problem
6. Acceptance or Resignation	Cognitive attempts to react to the problem by accepting it
7. Seeking Alternative Rewards	Behavioural attempts to get involved in substitute activities and create new sources of satisfaction
8. Emotional Discharge	Behavioural attempts to reduce tension by expressing negative feelings

*Note.* (Reproduced from Moos, 1993, p. 15)

#### 4.6.2.3 *Self-Esteem Scale*

Self-esteem was measured using the *Rosenberg Self-Esteem Scale* (SES) (1979), which consists of 10 items, five positively worded and five negatively worded, dealing with feelings about one's self. Participants are asked to indicate the extent they agree or disagree with each of the 10 items anchored with "do not agree at all" to "agree completely." For example "I feel I have a number of good qualities" and "At times I think I am no good at all." This scale is the most widely used self-esteem scale, and has good psychometric properties. The scale has high reliability with test-retest correlations of .82 to .88, and Cronbach's alpha in the range of .77 to .88 (Rosenberg, 1979). A copy of this scale is provided in Appendix G.

#### 4.6.2.4 *Dispositional optimism*

Dispositional optimism was measured using the LOT (Scheier & Carver, 1985), which consists of eight items, four positively worded items (e.g. "I'm always optimistic about my future") and four negatively worded items (e.g., "I hardly ever expect things to go my way"). Participants were asked to indicate the extent to which they agreed with each of the items, anchored with "not at all true", to "could not be more true". The LOT scale measures the

extent to which individuals have positive expectancies of life outcomes. Previous studies have shown that the test is psychometrically sound with Cronbach's alpha .76 and test-retest correlation .79 (Scheier & Carver, 1985). A copy of this scale is included in Appendix G.

All participants were asked scale questions in the same order. Demographic details were asked as part of building rapport followed by the PWI-ID, the CRI, the Rosenberg Self-Esteem Scale and the LOT.

#### *4.6.3 Procedure*

The investigation involved a split-reversal research design. Participants were randomly assigned to two groups. Group A consisted of eight participants and Group B consisted of seven. Group A participants had questionnaires administered using the 7-point version of scales on Trial 1 and the 11-point version of the scales on Trial 2. Group B participants had the reverse administration with the 11-point version administered on Trial 1 and the 7-point version administered on Trial 2. The interval between the administration of scales for Trials 1 and 2 varied from four days to 10 days, depending on participant availability. They were interviewed in a face-to-face interview by the principal investigator, in a room that allowed privacy and was free from the distraction of either the work place or the presence of other people. Participants had a copy of the questionnaire in front of them to refer to if they wished. Interviews (including the pre-testing procedure) lasted from 40 minutes (minimum) to 90 minutes (for two participants only). Where interviews lasted 90 minutes in Trial 1, this time was substantially reduced for Trial 2, with most participants completing the interview in less than 60 minutes. All interviews were conducted in a single session.

Prior to the administration of the questionnaire for Trial 1, the pre-testing protocol of the PWI-ID (Cummins & Lau, 2004b) was administered to check for acquiescence responses (i.e., participants who agree with every question, regardless of the appropriate response) and whether participants could understand and use the scale. Pre-testing progressively moves responding from concrete to abstract tasks by starting with an ordering task involving differently sized printed blocks and progressing to a task involving block size matching to a printed ladder scale (e.g. the largest block corresponds with the top of a printed ladder), and ends with pre-testing for domain satisfaction (using printed faces ranging from very sad to very happy). At each stage of this testing, participants commence with a task requiring a

choice between two stimuli (e.g. one large and one small block, or one happy face and one sad face) and progress to a maximum of five stimuli. This procedure is designed to eliminate those participants who do not have the cognitive capacity to respond validly to the scale. All participants in this investigation were able to complete the pre-testing procedure successfully, (i.e. they were all able to choose between five response categories). The pre-testing protocol was not repeated for Trial 2 as this information was established in Trial 1.

Demographic information was gathered at Trial 1 as part of building rapport with the participant prior to the scale administration. At the beginning of each set of items the anchor descriptors were explained and checked for understanding and then each item was read by the researcher and participants response recorded.

At the completion of all scale items a probe question was asked to check on the meaningfulness of the process for the participants and how they understood the scale formats. This was done at the completion of each trial by asking each participant a probe question from the PWI, (Item 3 “How satisfied are you with your health?”). Satisfaction with health was chosen for the probe question, as all participants appeared to understand this question and answered without difficulty. Each participant was asked the probe question twice, at the end of Trial 1 and then again at the end of Trial 2. In addition to asking each participant a probe question at the end of Trial 1 and 2, a further general question was asked at the end of Trial 2, which asked participants to indicate which questionnaire (the 7- or 11-point), they found easier to use. Participants were then thanked for their participation in the study.

#### 4.7 Results Study 1

The aim of this study was to discover whether people with mild to moderate intellectual disability could use either a 7-point (0–6) or 11-point (0–10) end-defined response scale format. Moreover, for those who can, the aim was to determine which version is the more reliable. A check was also made on the level of participants’ understanding of wording and phrasings of questions, as to my knowledge some of the scales have not been used with this population at the time of the study (e.g., PWI, CRI, LOT). Thus the findings from this investigation have a pragmatic value in that they will be used to inform the wording of items in Studies 2 and 3. However, before proceeding with the major analyses, it is necessary to



gain some assurance that methodological issues are not confounded. The main confound that could occur is an order effect and thus, this was examined.

#### 4.7.1 Order Effect

To enable a comparison of the two scale formats, the scores for all scales were converted into a standard score, Percentage of Scale Maximum (%SM), which converts Likert scale data to be distributed from 0 to 100, using the formula  $(\text{mean score} - 1) \times 100 / (\text{number of scale points} - 1)$ . The %SM was calculated and used in all subsequent analyses reported here.

It is possible that completion of the questionnaire on Trial 1 produced a practice effect for the participant's responses on Trial 2. That is, the participant's performance may have altered because of the presentation order of the two scale versions. To check this, a series of independent *t*-tests (2-tailed) were calculated to examine the significance of any differences between Groups A and B on all variables, across the 7-point and 11-point version of the scales. Group A was presented with the 7-point version of the scales in Trial 1, followed by the 11-point version in Trial 2. The reversed order occurred for Group B; Trial 1 used the 11-point version followed by the 7-point version.

Results of the *t*-tests indicate that generally there was no significant difference between the means of participant scores in Group A and Group B for most variables on the two trials. The exception was the subscale Emotional Discharge (from the CRI scale) and Self-esteem scale in which the mean score for Group B on the 7-point response category was higher than Group A. There was a significant difference in scores for Group B on the Emotional Discharge ( $M=50.00$ ,  $SD=20.03$ ) and Group A ( $M=25.69$ ,  $SD=20.34$ ;  $t(13)=.840$ ,  $p.04$ ) and Group B scores on Self-esteem scale ( $M=80.71$ ,  $SD=10.71$ ) and Group A ( $M=67.50$ ,  $SD=11.09$ ;  $t(13)=2.31$ ,  $p.04$ ). This indicates that for the subscale Emotional Discharge and Self-esteem scale participant's responses in Trial 1 (in which they were administered the 11-point response choice) increased their responses in Trial 2 (when the smaller scale was administered).

The risk of a Type I error is increased when many comparisons are made so therefore a Bonferroni correction was calculated to raise the critical value of *t* depending on the number of comparisons performed. Thus for this analysis the critical value of 0.05 was divided by 10

resulting in a new critical value of .005 (Green & Salkind, 2003). Following this procedure, neither results reached significance. Thus, there is sufficient evidence to proceed cautiously with subsequent analyses as the findings do not appear to be altered by practice.

#### 4.7.2 Differences in mean scores on 7-point and 11-point scale versions

Table 4.2 shows the total means and standard deviations for all variables of interest. The four approach and four avoidant control subscales from the CRI were kept separate for comparison purposes. Eight out of 11 mean totals are numerically higher for 7-point response scale, and six of the standard deviations on the 7-point response category is numerically higher than for the 11-point response scale.

Table 4.2  
*Means, Standard Deviations of Totals for all Variables of Interest*

Variables	11-point response choice	7-point response choice
1. PWI	74.57 ± 13.57	78.73 ± 13.24
2. Logical Analysis	54.67 ± 19.74	58.22 ± 22.57
3. Positive Reappraisal	57.11 ± 17.92	59.26 ± 16.89
4. Seeking Guidance	58.00 ± 19.07	55.00 ± 19.78
5. Problem Solving	59.87 ± 19.87	64.63 ± 12.49
6. Cognitive Avoidance	58.40 ± 20.85	54.98 ± 19.97
7. Acceptance/Resignation	47.60 ± 17.54	47.87 ± 14.51
8. Seeking Alt Rewards	76.00 ± 18.44	72.22 ± 18.54
9. Emotional Discharge	32.22 ± 21.09	37.04 ± 23.16
10. Self-esteem	67.96 ± 11.57	73.76 ± 12.63
11. Optimism	60.83 ± 14.47	64.03 ± 14.53

Notes.  $N=15$

(Scores are presented in %SM)

To compare if there were any differences between the means of the standard converted %SM scores on the 7-point and 11-point scale versions, paired-samples  $t$ -tests were conducted on all scale totals. Independent  $t$ -tests were also run to examine for gender difference in mean score between the 7- and 11-point scale versions.

No significant differences were found between the total mean scores for the PWI, the eight subscales of the CRI (Logical Analysis, Positive Reappraisal, Seeking Guidance, Problem Solving, Cognitive Avoidance, Acceptance/Resignation, Seeking Alternative Rewards, Emotional Discharge), Self-Esteem and the Optimism totals. As the sample size was small ( $N = 15$ ) an additional non-parametric test was conducted to determine if there were

differences in mean scores between the 7- and 11-point scale versions. Using the non-parametric Wilcoxon Signed Ranked Test there were no significant differences between all the variables of interests (PWI, Approach Control, Avoidant Control, Self-esteem and Optimism).

No significant differences were found between genders and performance on the 7- and 11-point scale version, except for on the two subscales Logical Analysis and Acceptance/Resignation (both from the CRI). Significant differences for gender were found in both of these subscales for the 11-point response scale version, with mean scores being higher for males. The men in this study appeared to use more logical analysis and more acceptance and resignation coping, when dealing with problems than females do. This gender difference did not occur on the 7-point response scale version. On further investigation when the four subscales of Approach Coping are aggregated and the four subscales of Avoidant Coping are aggregated and *t*-tests recalculated, gender differences disappear and no longer exist. Thus at this point gender differences are not of importance. However, some caution needs to be applied to these results due to the low sample size of this study ( $N=15$ ). That is, it is harder to detect an effect when sample size is small. Future research using a larger sample is required to conclusively determine if there is indeed a non-significant difference between the 7- and 11-point response scales as used by people with intellectual disability.

#### *4.7.3 Reliability of Subscales of Quality of Life Questionnaire*

Table 4.3 shows Cronbach's alpha coefficients for the 7-point and 11-point version of the scales examined in this study. Three of the four scales of the questionnaire, (Personal Wellbeing Index (PWI), Coping Response Inventory (CRI) and the Optimism Scales) had higher Cronbach's  $\alpha$  for the 11-point scale version (0.77, 0.89, and 0.65 respectively), than on the 7-point version. These Cronbach's alpha coefficients on the 11-point scale are comparable with those reported in the PWI-A manual where Cronbach's alpha range of 0.70 to 0.85 for Australian and overseas adult populations (International Wellbeing Group, 2006). Generally, the alphas for the 11-point version of the scales were within acceptable levels, with the exception of Self-esteem which was lower at 0.53 (Pallant, 2001).

When the alphas for the 7-point version of the scales were calculated, only the CRI had high internal reliability (0.81). While both the PWI and the Self-esteem scales had reasonable internal reliability (0.63 each), the alpha coefficient for Optimism was the lowest recorded with a  $\alpha$  of 0.48. However, this could still be considered an acceptable level as Cronbach's alpha values are sensitive to the number of items in the scale and it is common to find scales with less than 10 items to have Cronbach's alpha values as low as 0.5 (Pallant, 2001).

With shorter scales it can be more appropriate to report the mean inter-item correlations than Cronbach's alpha. The inter-item correlations for the PWI 11-point and 7-point scale version were 0.33 and 0.21 respectively. Both inter-item correlations for the PWI are within the optimal recommended range of 0.2 to 0.4 (Pallant, 2001). The inter-item correlations for the Self-esteem 11-point and 7-point scale version were not within the recommended range, with inter-item scores of 0.11 and 0.14 respectively. While the inter-item correlation for the Optimism 11-point and 7-point scale versions were 0.21 and 0.09 respectively. The 7-point response scale for the Optimism scale had both the lowest mean score and the lowest inter-item correlation score. Clearly, any conclusions drawn from this scale must be made with caution.

Overall the alpha coefficients for the scales were consistently higher on the 11-point version, suggesting that people with mild to moderate intellectual disability not only reliability used an 11-point response category, but also appeared to understand the scales.

Table 4.3  
*Alpha coefficients of 7-point and 11-point version of scales*

Subscales	Alpha 7-point	Alpha 11-point
PWI (7 items)	.63	.77
CRI (35 items)	.81	.89
Self-esteem (10 items)	.63	.53
Optimism (8 items)	.48	.65

*Note.* N=15

#### 4.7.4 Probe question and participants understanding of response discrimination

A check was made on the meaningfulness of the questions for the participants and how they understood the scale formats. This was done at the completion of each trial by asking each participant a probe question from the PWI, (Item 3 "*How satisfied are you with your*

*health?*”). Satisfaction with health was chosen for the probe question, as all participants appeared to understand this question and answered without difficulty. Each participant was asked the probe question twice, at the end of Trial 1 and then again at the end of Trial 2. Participants were reminded what their response to the question had been and then depending on the answer they gave, were asked “*Now, if you were only a ‘little bit satisfied’ with your health, what number would you rate it?*” and this number was recorded. Where a participant’s response was already within the *little bit satisfied* rating, they were then asked an alternative question, “*if you were only a little bit dissatisfied, what number would you give it?*” Participants were judged to understand the scale process when their response to the probe question matched the direction of the question. That is, if a participant responded with a rating between 4–5 on the 7-point scale and 6–7 on the 11-point scale for *little bit satisfied* and 1–2 on the 7-point scale and 3–4 for the 11-point scale for the *little bit dissatisfied* probe question, this was considered a match.

A match response for the probe question using the 7-point scale format was recorded for nine out of 15 participants, with five participants recording an incorrect match and one participant did not make a response to the probe question. Twelve out of 15 participants recorded a match for the probe question on the 11-point scale format, with the remaining three participants making a response that was judged as an incorrect match. Eight participants recorded a correct match for the probe question on both the 7- and 11-point response format, while two participants recorded an incorrect match on both response formats. All seven participants who received the 11-point scale format in Trial 1 recorded a match for the probe question and when the 11-point format was presented in the Trial 2, six out of eight participants recorded a match for the probe question. This indicates that participants understood and used the 11-point scale format regardless of presentation order (i.e., having the 11-point version presented in first or second).

In addition to asking the probe question at the end of each trial, a further general question was asked at the end of Trial 2, which asked participants to indicate which questionnaire (the 7- or 11-point) they found easier to use. Responses to this question were mixed. Not all participants indicated a preference for either the 7- or the 11-point response format, rather they tended to comment on the context of the questions with comments such as “*questions were hard to answer or explain*”.

Participants were about evenly divided as to whether having less or more response choices made answering the questions easier. However, most participants who answered this question indicated an awareness that the two scale formats were different in terms of the range of response choice they could make. Four participants felt that having less response choice made it easier to answer, with one participant commenting that *“there was less choice on the first questions and fewer choices made it easier to answer – with 10 choices had to work out the answers more”*. Three participants felt that having more response choices made it easier to answer the questions and made comments such as *“easier this time around as the first time had less to choose from”*. These comments need to be interpreted with some caution as choosing either the 7- or 11-point response format could simply have been influenced by the recency effect (i.e., the most recently presented items or experiences will most likely be remembered best). This means whatever response choice format that participants had in the last trial (7- or 11-point) was the one they would most likely see as the easiest to understand and use.

Another explanation for reported preferences is the practice effect; having the questions for a second time gave participants a feeling of familiarity and therefore the questions seemed easier in Trial 2. However, practice effect was not evident when testing for differences between participant’s responses on the 7-point or the 11-point response formats.

From the above results, there is at least some preliminary support that the use of either the 7-point scale or the 11-point scale will provide much the same results when used to access the SWB of people with mild to moderate intellectual disability. Although some caution needs to apply to these findings due to the small sample size, similar results should occur in studies with larger sample size. Since the scale sizes are equivalent, the 0–10 response choice (an 11-point scale) was selected for the studies that follow. This scale represents a numerical counting procedure that lies within the common experience of people with mild to moderate intellectual disability. That is, all people who participated in this study could easily count from 0–10 when asked. Moreover, the 11-point scale complexity provides a wider range of response options allowing greater measurement sensitivity.

#### 4.7.5 Wording and understandings of questions

This study also aimed to determine the validity of the scales in terms of their comprehension of the wording. These results are as follows.

##### 4.7.5.1 Personal Wellbeing Index

Five items (2, 4, 5, 8, 13) in this scale had to be explained and the wording simplified for participants during Trial 1. When asked, “*how satisfied are you with your standard of living?*” (Item 2), ‘standard of living’ was not a familiar term for many of the participants and this phrase was changed to “*...with the things you own, your living arrangement*”. Item 4 “*how satisfied are you with what you achieve in life*” was rephrased to “*...the things you do, or learn, your goals*”. “*How satisfied are you with your personal relationships*” (item 5) was rephrased to “*how satisfied are you with how you get on with others*”. Item 8, “*...satisfied with your future security,*” was changed to “*...things staying the same at work or home*” and item 13, “*...with your financial security*” was rephrased to “*...satisfied with your money situation*”. The change in wording was kept consistent with the wording developed for the ComQoI-I scale (Cummins, 1997) that was specifically designed for use with this population group and upon which the development of the Personal Wellbeing Index – Intellectual Disability (PWI-ID) scale was based.

##### 4.7.5.2 Coping Response Inventory

Wording for items 7, 12, 16, and 25 in this scale was simplified. Item 7, “*try to step back from the situation and be more unbiased*”, was rephrased to “*move away from the situation to think clearly about the problem*”. Item 12, “*realise that you have no control over the problem*”, was rephrased to “*realise that there is nothing you can do about the problem*”, item 16, “*think the outcome will be decided by chance*”, was rephrased as “*think that the outcome will be decided without planning or reason*”, and item 25, “*try to find some personal meaning in the situation*”, was rephrased as “*try to understand what you need to learn from the situation*”.

##### 4.7.5.3 Self-esteem scale

Wording for items 5, 7, and 8 was changed in this scale. The term “*good qualities*” (item 3) was unfamiliar to some participants and was explained by the investigator, giving examples

of what good qualities might be, such as being a good friend, helpful, hard working, funny, happy. Participants were then asked to identify some of their own good qualities, after which the interview continued with participant answering the question. Item 5, “*I feel I do not have much to be proud of*”, was rephrased to “*I feel that I do not have much to feel pleased about myself*”. Item 7, “*...on an equal plane with others*”, was simplified to “*...as good as other people*”, while Item 8, “*I wish, I could have more respect for myself*” appeared confusing for some participants and was explained as “*...feel good about myself*”. Item 9, “*All in all, I am inclined to feel that I am a failure*” a negatively worded item, was clearly understood by most participants, who responded with a statement such as “*I’m not a failure*”, and then responded with a score in the appropriate direction.

#### 4.7.5.4 Optimism scale

The wording for two items in this scale had to be simplified. Item 4, “*I’m always optimistic about my future*”, was rephrased to “*I’m always hopeful about my future*” and the phrase “*every cloud has a silver lining*” (item 7), was an unfamiliar phrase for a number of participants and was rephrased as “*sometimes something good can come from a bad situation*”. All suggested rephrasing was then used in Trial 2 of the study and participants’ responses recorded.

#### 4.7.6 Negatively worded items in Self-esteem and Optimism scales

A number of questions in the Self-esteem and Optimism scales are negatively worded (i.e., agreement with the item is in the opposite direction to positively worded items). This resulted in some participants initially being confused by the changed direction. The outcome of the misinterpretation of the negative question was participants checking the wrong end of the response categories. For example Item 2, “*At times, I think I am no good at all*”, was the first negatively worded item in the Self-esteem scale and participants would respond in the same direction as in their previous answer; a positively worded item. When this occurred the direction of agreement was explained and the question was repeated, with participant’s response recorded and the interview proceeded. Despite this initial confusion, where the negatively worded question was clear in its meaning, participants had no difficulty in answering the question, as was the case for Item 9 from the Self-esteem scale “*all in all, I’m inclined to feel that I am a failure*”. When asked this question most participants clearly



reported that they were not a failure and chose the appropriate direction to answer the question, with eight of the 15 participants choosing zero (do not agree at all) as their response in both trials to this negatively worded item. Two other participants chose in the positive range of agreement with the question for both trials, indicating that they did feel somewhat of a failure. Only three participants changed their response from disagreement to agreement across the two trials, indicating that for these participants only, some confusion around negatively worded items might have existed.

These findings indicate that not only do people with intellectual disability consider themselves to be successful but they also, to some extent understand the negatively worded items used in the Self-esteem and Optimism scales and respond in the correct direction. For this reason and to be aligned as much as possible with the original form of the scales, it was decided to keep the negatively worded items in the questionnaire for the major study.

In summary, the above results provide support for the following conclusions.

1. People with mild to moderate intellectual disability are able to respond reliably and validly to the instruments selected for use in this study.
2. There appears to be very little difference between results obtained using the 7-point or the 11-point response categories. While, Cronbach's alphas were higher for the 11-point response format, the means and standard deviations tended to be higher for the 7-point response format. Participants were divided as to which scale version was easier to use.
3. Wording of items in the scales appeared to be mostly understood by this group of participants, with only minor changes to wording of some items required.
4. Confusion with negatively worded items on the Self-esteem and Optimism scales was minor and appeared to be within the same tolerance as reported in the literature for the general population.

## 4.8 Discussion Study 1

One aim of this study was to ensure that the materials for Studies 2 and 3 were valid for people with intellectual disability. In order to do this it was necessary to determine the level of response discrimination that people with intellectual disability could make on response scales. Investigations into the discriminative capacity of people with mild to moderate intellectual disability, to reliably and validly respond to questionnaires that are sufficiently sensitive to assess actual changes in the phenomenon under investigation (i.e., life satisfaction), have not been extensively explored in the quality of life literature. This study helps address this gap. In addition this study examined the nature of the relationship between the 7-point and 11-point scale versions as used by people with intellectual disability, with the purpose of deciding the most appropriate number of response categories to use.

### *4.8.1 Modification to Study 2 materials*

One of the aims of Study 1 was to check the wording and participants' understanding of the scale items, as some of the scales had not been previously used with people with mild to moderate intellectual disability. At the time of this study, the PWI was newly developed and had not previously been tested and to my knowledge, the CRI had not been used with participants with intellectual disability.

Generally, participants understood what was being asked, although as expected there was individual variability in understanding. A number of possible improvements to wording of various items were suggested at the completion of Trial 1. Most of the changes to wording of items were minor and only simplified wording to a level that was within the cognitive comprehension of people with mild to moderate intellectual impairments, or into language that was more familiar to them. All scales used in this study had some minor changes made to wording. Consequently, changes made were consistent with suggestions presented in the results and were run in Trial 2 of the study.

### *4.8.2 Nature of relationship between 7- and 11-point response scale versions*

A split reversal experimental design was used to ensure that order of scale presentation did not alter participant's performance between the two trials. Independent *t*-tests carried out indicate there was generally no difference between mean scores for Group A (i.e., 7-point

scale version presented in Trial 1) and Group B (11-point scale version presented in Trial 1). Thus, indicating that participant's responses for Trial 2 were not differentially influenced by scale order in Trial 1.

The relationship between the two scale formats was examined using Cronbach's alpha coefficients. These were consistently higher on all but one of the scales in the 11-point scale version, suggesting that the participants more reliably used the 11-point response choice. The exception was the Self-esteem scale, which had a higher alpha for the 7-point scale version. However, even the low alpha coefficient obtained for the 11-point self-esteem scale (0.53) in this study is still higher than the alpha coefficient obtained by Matikka (1996) in her study on the perceived quality of life of people with intellectual disability. In her study, Cronbach's alpha for the Self-esteem scale was only 0.38. A related scale used by Matikka measuring self-image, however was slightly better ( $\alpha = 0.58$ ). Further, Cronbach's alphas obtained in this study are comparable to those obtained in other studies that have people with intellectual disability providing self-report life satisfaction data (Hensel, et al., 2002; Matikka, 1996; McGillivray, et al., 2009; Schalock, et al., 2000; C. Schwartz, 2003).

It is worth noting that the alpha coefficients obtained in this study for the 7-point response format while lower than the 11-point version, are still within acceptable levels according to Pallant (2001). Taken together these results indicate that people with mild to moderate intellectual disability can validly and reliably report their SWB using either response format.

In terms of differential mean scores, paired *t*-tests conducted on all the variables of interest, revealed no significant differences between the two response categories. Participants responded in the same manner to both scale versions. When gender was used as the independent variable, only two subscales (Logical Analysis and Acceptance/Resignation) from the CRI showed differences in mean scores. In both cases males scored higher on the 11-point scale.

The reason for this difference may have been due to the greater range of choice options available on the 11-point response scale. That is, an 11-point response scale provides five levels of positive choice from neutrality to extreme positive, thus increasing the scale sensitivity. However, as only two of the means showed such differences, it cannot be ruled out that these differences were only a result of chance and do not reflect actual difference.

In conclusion, participants demonstrated that they could make meaningful responses using both the 7- and 11-point response choice format. This was shown with total mean scores for life satisfaction, on both the 7- and 11-point scale versions that were within the normative range reported in other SWB studies. Participants responded in the same manner to both scale versions, as indicated by the non-significant difference between the two response categories.

#### *4.8.3 Scale complexity*

Difference in scale performance between the two response categories deals with issues of scale sensitivity. According to Cummins (2003; Cummins & Gullone, 2000) scale sensitivity is a critical psychometric parameter, more important than either validity coefficients or method variance. This is because a scale must be able to systematically measure changes in life satisfaction. Scale sensitivity is of particular importance since normative life satisfaction data typically have a negatively skewed distribution. The reason for this is SWB is not free to vary over its entire range, due to most people reporting positive SWB. This means that for the majority of people, only the positive half of the scale is used when making life satisfaction judgements. For example, as most people will respond between the point of neutrality and the positive extreme, in a reduced choice scale (i.e., 3-point) respondents will end up with a binary choice, “neither satisfied nor dissatisfied” and “very satisfied”. In this instance people who feel “moderately satisfied” are left with “neutral”, as the closest choice to their true feeling. Such a scale is clearly not capable of capturing differences in SWB, or representing the actual feelings of the respondent.

From the analysis of published studies on life satisfaction, Cummins (2003) concludes that since the expansion of bipolar scales above seven choice-points does not unduly influence scale reliability, then an expansion in choice-points is warranted on the grounds that complex scales provide discriminative data on actual levels of life satisfaction. Anything less than a 7-point response scale, simply represents a coarse and blunt measure of SWB.

One approach to increase scale sensitivity is to increase the number of response categories available to the respondent, an option that is supported by a number of authors (e.g., Andrews, 1984; DeVellis, 2003). However, this is not without its problems, such as, decreased measurement consistency, increased likelihood of response-set bias developing and

the possibility of exceeding the response discrimination of respondents (Cummins, 2003). The later is of particular concern when measuring life satisfaction of people who have cognitive impairments. Thus, determining the level of complexity that people with mild to moderate intellectual disability can reliably use is an important issue to be addressed. Particularly, in light of detecting actual changes to SWB levels and future service delivery.

Participants in this study were clearly able to use expanded response choice as demonstrated by the minimal difference between results obtained using the 7-point or the 11-point response categories and also the findings that total PWI mean scores obtained are within the range obtained from normative population data. More recently evidence supporting the use of more complex response format came from McGillivray et al. (2009) validation study of the PWI-ID scale as used by people with mild to moderate intellectual disability. After pre-testing protocol to test for response scale competency, 63% of their sample were able to use the 11-point version.

#### *4.8.4 Response discrimination of people with intellectual disability*

It was found that people with intellectual disability were able to provide meaningful responses to both of the two scales versions. Participants' performance to the probe questions at the completion of both trials provides clear indication that they generally understood the content of the questioning and the way the scales worked. The majority of participants recorded a correct match on both versions of the scales. Only two participants recorded an incorrect match for the probe question on both Trial 1 and Trial 2, indicating they had less understanding of how the scales worked. From these results, it can be concluded that the probe questioning using satisfaction/dissatisfaction with health from the PWI is an effective method to determine the level of understanding that participants have regarding the scale response formats.

The second probe question was an open-ended question, asked at the completion of Trial 2, in which participants were asked to give their opinion on the scale version they thought was easier to use. Responses to this general probe were mixed, with participants equally supporting both scale versions. Some participants felt that having more choices made it easier to answer, while others felt having less choice made it easier. However, a number of participants indicated that it was the content of the questions in the scales that was difficult,

rather than making a rating on the 7- or 11-point response scales. These results again indicate no simple advantage for either scale format.

Further support for the meaningfulness of participants responses to the 7- and 11-point response choice format, comes unequivocally from the findings that total mean scores obtained in this study are within the range for those obtained from normative population data (Cummins, 1998b).

#### *4.8.5 Rationale for number of response categories to use in subsequent studies*

When considering the number of response choice categories to use in subsequent studies, the decision to use the 11-point response choice (0–10 end-defined format) was selected for the following reasons. First, the results were somewhat inconclusive about which scale format was more easily used and understood by people with intellectual disability. However, the results tend to favour the use of 11-point scale version as being acceptable. Cronbach's alphas favoured the 11-point scale version, while the *t*-tests indicated no difference between the two scale formats and the answers supplied to both probe questions support understanding of both the 7-point and 11-point scale version.

Secondly, all participants in this study could easily count from 0–10 (as demonstrated in the pre-testing protocol). Thus, using a 0–10 end-defined response format did not appear to be outside the cognitive capacity of the participants in this study. As the more complex scale response format has been shown to be more sensitive to SWB data, then the 11-point scale has a better chance of measuring small changes in SWB. This is an important consideration in regard to SWB data, as it has a high trait component, and small deviations can be highly meaningful and have significance (Cummins & Gullone, 2000). This is particularly important when applied to members of vulnerable groups in society who are at risk for homeostatic failure, such as those with disabilities (Cummins, 2005a).

The third reason for using the 11-point response format is that this format is used in other comparative studies. This comparability criterion also influenced the decision to retain the negatively worded items in the Self-esteem and Optimism scales to keep the scales aligned as much as possible with the original scales.

## 4.9 Conclusions

As argued in the literature, increasing scale complexity poses little threat to psychometric properties of scales, such as reliability (Cummins, 2003; Matell & Jacoby, 1971; C. J. Russell & Bobko, 1992). The results of this study support this view. This is evident by Cronbach's alpha, which were within acceptable ranges for both response scale versions but more so for the 11-point response choice. Since life satisfaction data has a negatively skewed distribution, it then seems prudent to use more complex scales. This view was supported by Andrew and Robinson (1991), who had earlier argued for the relaxation of the usual psychometric considerations related to scale construction, as these do not apply to normative data of life satisfaction due to negatively skewed distribution. Such viewpoints provide a rationale for increasing response choice, particularly when the scale content deals with life satisfaction.

Furthermore, participants in this study demonstrated that they could make meaningful responses using both the 7- and 11-point response choice format. This was shown as the total mean scores for variables of interest on both the 7- and 11-point scale versions were within the normative range reported in other SWB studies (Cummins, 1995, 2003). Results also indicated that there was no significant difference between participants' responses when using the 7- and 11-point response choice scales. This finding supports a view that it is appropriate for people with intellectual disability to be participants in quality of life studies, in which they report on their own SWB. Further, it is appropriate to use response survey instruments to collect such data from this group of participants. While the data in this study did not perform entirely as expected (i.e., higher mean score on the 7-point response scale) nevertheless the findings on balance support the use of more complex scales (e.g., 11-point) over coarse scales. Finally, there is sufficiently strong evidence to proceed with the use of these instruments in Studies 2 and 3.

## Chapter Five

### Study 2: Subjective wellbeing, people with intellectual disability and non-disabled people

#### 5.1 Introduction

The specific purpose of the study is to examine the psychological factors and process involved in the maintenance of SWB for people with intellectual disability compare them to non-disabled people. This involved an investigation into the independent variables that have been proposed to buffer SWB and maintain levels of SWB within a normative range. These are the psychological factors of self-esteem, control and optimism as discussed in Chapter 2. The dependent variable is SWB as reported by participants.

#### 5.2 Aims of Study 2

Specific hypotheses of this study are:

1. That the SWB scores for people with intellectual disability will be within the same normative range (e.g., 70%SM to 80%SM) as found for non-disabled people.
2. That the internal cognitive buffers of perceived control, self-esteem and optimism, proposed to account for the maintenance of SWB, will interact in the same way with SWB between people with intellectual disability and non-disabled people
3. That the variables Perceived Control, Self-esteem and Optimism will predict the SWB of people with intellectual disability and non-disabled people.
4. That the homeostatic model of SWB, which has been shown to operate within non-disabled populations will explain the normative range of SWB found for people with intellectual disability.

Additional, specific hypotheses regarding interaction between the variables of interest and difference between the two sample populations are discussed prior to analyses.



The findings of Study 2 are reported in three sections. The first section deals with data screening and preliminary analysis of all data. This was done by screening data for missing values, univariate and multivariate outliers, normality and checking for any violation of the assumptions underlying statistical analysis used to address research questions. An examination of relationships between all variables of interest is presented, as well as the reliability analysis of scales used in the study. Finally the outcome of factor analysis on the CRI is presented prior to addressing research questions. The second section presents descriptive analyses on participants' characteristics, and the variables of interest. In the third section analyses of the hypothesis of the study in particular the predictors of subjective quality of life and differences between the two groups, non-disabled and intellectually disabled people are presented. Data were analysed using SPSS version 11.0.

## 5.3 Method

### 5.3.1 *Participants*

Participants in Study 2 comprised two groups, 64 people with mild intellectual disability and a comparison group of 93 non-disabled people from the general population. Human service organisations in the greater Auckland region were approached to assist in the recruitment of people with intellectual disability.

Human service organisations were provided with a plain language information sheet, providing details on the aims of this study and the nature of the requested involvement (see Appendix F). Organisational consent was gained from six human services (see Appendix B) that provided either residential services, or day services or a combination of both. Organisations ranged from small providers to a large national provider. Recruitment of participants was only achieved from four of the organisations that gave consent, as two of the organisations did not have potential participants who met the selection criteria for inclusion into the study. Eligibility to participate in this study is as outlined in Chapter 4 Study 1 (i.e., communicate with formal verbal language and a good level of comprehension of abstract ideas such as happiness, satisfaction).

After organisational consent was gained from the service providers, a key staff member from each organisation approached potential participants who met the inclusion criteria. They

explained the study and provided the plain language information statement (see Appendix D). For those who were interested, a subsequent meeting was arranged at the service provider sites, where the aims and purpose of the study was explained and consent was gained. See Appendix A, for consent form.

Potential participants were given the opportunity to ask questions. Their understanding of what was told to them about the study, and what was required of them was checked prior to signing consent forms. This was done with set of simple questions as suggested in the PWI-ID manual, such as “What will I be talking to you about?”, “How many times will I want to talk to you?” and “What can you do if you decide you won’t want to talk to me anymore?”. Potential participants were presumed competent to give informed consent to participate, unless there were grounds to conclude otherwise. Once consent was gained, individual meeting times were arranged either at their place of work or residence, where the face-to-face administration of the questionnaire was conducted.

The names of 82 possible participants with intellectual disability were forwarded to the principal investigator. Of these, six changed their minds and withdrew from the study. Two participants could not be contacted during the course of data collection and a further three did not pass the pre-testing protocol and did not participate further in the study. A further seven questionnaires were deleted from the study as these data showed response sets. That is, respondents consistently responded with maximum and minimum scores when answering all seven items on the PWI scale. Subsequently, the responses from a total of 64 participants (32 males and 32 females) from this group were used in the data analysis.

Recruitment of non-disabled people from the general population was conducted through the combined Electoral Rolls of the greater Auckland region. From the electoral database 500 names were randomly selected using the Research Randomizer (accessed at [www.randomizer.org](http://www.randomizer.org)), in which random sets of numbers were generated and then matched to the names on the electoral roll. These people were then sent via mail, a reply-paid envelope containing a plain language statement inviting people to participate in the study, a consent form and the self-administered questionnaire, which was returned to the researcher (see Appendices E, C, G, respectively). The names and addresses of each potential participant were kept separate from the questionnaires by assigning a code number to their questionnaire.

This was done in order to follow-up, with a reminder letter, those participants who had not returned their questionnaire within a three-week period, after which no further contact was made. Forty-three of the 500 mail-outs were returned because the addressee could not be located. A total of 95 questionnaires were returned following one reminder letter, yielding a response rate of 21%. One set of responses showed a response set, in that they responded consistently on all seven items of the PWI scale at both extremes of the scale (e.g., minimum and maximum possible scores) and another questionnaire was returned well after data analysis was completed and therefore was omitted, leaving a total sample of 93 participants (25 males and 67 females, 1 participant's gender was unknown).

### 5.3.2 *Materials*

The questionnaire for Study 2 consisted of demographic data, including age, gender, ethnicity, marital status, employment status and income level, plus four scales that were identical to the scales used in Study 1. This included the five additional life domain questions (e.g., satisfaction with spirituality/religious beliefs, satisfaction with spouse/partner, satisfaction with family, satisfaction with friends, and satisfaction with financial security) that were asked as part of the seven life domain questions comprising the PWI scale. Perceived control, self-esteem and optimism were measured using scales described in Study 1. Psychometric data for validity and reliability can be found in Chapter 4, and in the Method section of Study 1.

As a result of the findings in Study 1 minor changes to the wording was made for identified items within the following scales: Personal Wellbeing Index (PWI) (2004b), Coping Response Inventory (CRI) (Moos & Schaefer, 1993), Self-Esteem Scale (Rosenberg, 1979) and the Life Orientation Scale (LOT) (Scheier & Carver, 1985). These changes were made in order to simplify the language and aid understanding. See Chapter 4 results for precise changes in wording for items of scales for people with intellectual disability. The wordings of scales used for the non-disabled group were unchanged from the originals (as shown in Appendix G).

In addition, all response scales used in this and the next study were converted to 0 to 10-point (11-point), End Defined Response format (Jones & Thurstone, 1955). This was done to provide consistently in response format across all scales and to provide a level of scale

sensitivity by providing a greater range of possible responses to each item that is within a participant's response discrimination capacity. The 0 to 10-point response format was also used in questionnaires for participants with intellectual disability as the findings from Study 1 indicate this group understood the 11-point response format. Discussion on the rationale for using the 11-point response format over the 7-point response format can be found in the discussion section of Chapter 4.

All participants were asked scale questions in the same order. Demographic details were asked as part of building rapport followed by the PWI-ID, the CRI, the Rosenberg Self-Esteem Scale and the LOT.

### *5.3.3 Procedure*

The administration of the questionnaires for participants with intellectual disability was conducted in face-to-face interviews by the principal investigator. Specific meeting times were arranged with each participant in his or her place of work or place of residence, in a room that allowed privacy and was free from the distraction. Participants had a copy of the questionnaire in front of them to refer to if they wished. Interviews (including the pre-testing procedure) lasted from 30 to 60 minutes and were conducted in a single session.

Prior to the administration of the questionnaire, the pre-testing protocol for the PWD-ID (Cummins & Lau, 2004b) was conducted as described in Study 1. Three participants did not pass this stage of the interview. They were thanked and did not continue further with the questionnaire. At the beginning of each set of items the anchor descriptors were explained and checked for understanding, and then the researcher read each item and the participants' responses were recorded. At the completion of the questionnaire participants were thanked for their participation in the study.

Non-disabled participants were mailed the self-report questionnaire comprising the scales as described above, along with a plain language statement and consent form that they returned to the investigator with a reply-paid envelop.

## 5.4 Results

The findings of Study 2 are reported here. Data screening and preliminary analyses are reported first. This is followed by factor analyses of the CRI using both groups and factor analyses of both the Self-esteem and Optimism scales for the intellectually disabled group to determine the structure of the items in these scales. Descriptive analyses on the PWI, the CRI, Self-esteem scale and Optimism scale, follows. Next, analyses examining differences between the two groups will be presented, followed by a series of multiple regression analyses are conducted to determine the predictors of SWB for non-disabled and intellectually disabled groups.

### *5.4.1 Data screening and preliminary analyses*

Each variable was screened for missing data, normality and univariate and multivariate outliers for each of the non-disabled and intellectually disabled group. The relationship between variables was explored, along with the reliability of the scales. There were no missing values for people with intellectual disability. However there were five values missing in the non-disabled group. These five missing values were replaced with the group mean of that variable as recommended by Tabachnick and Fidell (Tabachnick & Fidell, 2007).

Data were screened for normality using the Explore option in SPSS. The variables from the two groups were screened using measures of skewness, kurtosis, histograms, and Kolmogorov-Smirnov. The variables were mostly normally distributed as indicated in the tests of normality. However, three variables from the intellectually disabled group; Self-esteem (.022), Optimism (.015) and Seeking alternative rewards from the CRI scale (.000) had values that were not equal to or greater than .05 for the Kolmogorov-Smirnov test of normality. The non-disabled group had four variables; Self-esteem (.000), Optimism (.030), Problem solving (.003), and Seeking alternative rewards from the CRI (.000), which were non-normal.

Most of the variables for the intellectually disabled group were moderately negatively skewed, with nine out of 11 variables demonstrating negative skewness (range -0.019 to -0.68), and six out of 11 variables on the non-disabled group showing moderate negative

skewness (range -0.066 to -1.10). However, the presence of moderate negative skewness is considered to reflect the inherent nature of these variables and the groups, therefore no transformations or deletions were performed (Cummins, 1995). In addition histograms of all variables were checked and appear to have near normal distributions for most variables, with skewness for some. Normal Q-Q plots were checked with most variables indicating normal distribution with no variables indicating extreme violation of normality. Finally, trimmed means were checked on all variables for the influence of outliers and were deemed satisfactory.

Univariate outliers were identified through box plots and stem and leaf diagrams generated using the Explore option in SPSS. A small number of univariate outliers were identified. These were not transformed as the outliers were considered to represent the actual data. Eight univariate outliers were identified for the intellectually disabled group and 12 for the non-disabled group. The presence of multivariate outliers was checked across the two groups using  $p = \leq .001$  criterion for Mahalanobis distance. Only one multivariate outlier was found past the critical value in the non-disabled group, and as there was only one it was decided to leave the value unchanged. There were no multivariate outliers found past the critical value in the intellectually disabled group.

#### *5.4.1.1 Correlations matrices*

Correlations matrices were generated to explore relationships among the variables for the two groups ND and ID. These matrices are shown on Tables 5.1 & 5.2, respectively. As shown in both tables no variables were singular (above 0.9) and no variable for either group had inter-correlations above 0.7. Four variables only were moderately correlated at 0.6 and above for the non-disabled group and only two in the intellectually disabled group had correlations above 0.6.

Table 5.1  
*Bivariate Correlations between all Variables of Interest for Non-Disabled (ND) Group  
 (n=93)*

Variable	Approach Control					Avoidant Control					
	PWI	LA	PR	SG	PS	CA	AR	SA	ED	Se	Op
PWI											
LA	.29**										
PR	.25*	.41**									
SG	.20	.23*	.57**								
PS	.40**	.56**	.58**	.59**							
CA	-.30**	-.02	.17	.15	-.10						
AR	-.35**	-.16	.05	.06	-.25*	.61**					
SA	.19	.32**	.46**	.48**	.42**	.12	-.03				
ED	-.39**	.05	.21*	.10	.10	.43**	.30**	.11			
Se	.68**	.24*	.30**	.17	.46**	-.34**	-.40**	.08	-.23*		
Op	.60**	.36**	.34**	.30**	.42**	-.30**	-.43**	.30**	-.28**	.68**	

*Notes.* PWI=Personal Well-being Index; Approach Control Subscales LA=Logical Analysis; PR=Positive Reappraisal; SG=Seeking Guidance; PS=Problem Solving; Avoidance Control Subscales CA=Cognitive Avoidance; AR=Acceptance/Resignation; SA=Seeking Alternative Rewards; ED=Emotional Discharge; Se=Self-esteem; Op=Optimism.

\* $p \leq .05$  (2 tailed), \*\*  $p \leq .01$  (2 tailed)

Correlations for the non-disabled group as shown in Table 5.1, revealed that PWI correlated with three of the four Approach Control subscales (e.g., logical analysis, positive reappraisal, and problem solving), and negatively correlated with three out of the four Avoidant Control subscales (e.g., cognitive avoidance, acceptance/resignation and emotional discharge) and Self-esteem and Optimism variables. One Approach Control subscale (seeking guidance) and one Avoidant Control subscale (seeking alternative rewards) were not significantly correlated with PWI. The correlations for Optimism significantly correlated at  $p=.01$  for all variables, while Self-esteem significantly correlated with all variables, except seeking guidance from the Approach subscale and seeking alternative rewards from the Avoidant subscale.

Table 5.2  
*Bivariate Correlations between all Variables of Interest for Intellectually Disabled (ID) Group (n=64)*

Variable	Approach Control					Avoidant Control					
	PWI	LA	PR	SG	PS	CA	AR	SA	ED	Se	Op
PWI											
LA	.15										
PR	.29*	.56**									
SG	-.00	.30**	.58**								
PS	.14	.66**	.59**	.63**							
CA	.37**	.33**	.57**	.38**	.50**						
AR	.07	.34**	.43**	.55**	.49**	.45**					
SA	.34**	.16	.27*	.36**	.32*	.29*	.25				
ED	-.08	.07	.13	.24	.16	.22	.35**	-.01			
Se	.48**	.15	.29*	.10	.26*	.40**	.10	.22	.00		
Op	.45**	.31*	.34*	.15	.39**	.26*	-.03	.23	-.10	.53**	

*Notes.* PWI=Personal Well-being Index; Approach Control Subscales LA=Logical Analysis; PR=Positive Reappraisal; SG=Seeking Guidance; PS=Problem Solving; Avoidance Control Subscale CA=Cognitive Avoidance; AR=Acceptance/ Resignation; SA=Seeking Alternative Rewards; ED=Emotional Discharge; Se=Self-esteem; Op=Optimism.

\* $p \leq .05$  (2 tailed), \*\*  $p \leq .01$  (2 tailed)

Correlations for the intellectually disabled group (see Table 5.2) revealed that the PWI scale correlated with only one of the Approach Control subscales (e.g., positive reappraisal) and two of the Avoidant Control subscales (e.g., cognitive avoidance and seeking alternative rewards). PWI also correlated with Self-esteem and Optimism scales, which is similar to that in the non-disabled group. Emotional discharge from the Avoidant Control subscale is significantly correlated with acceptance/resignation. Optimism variables only correlated with six of the 10 variables and Self-esteem only correlated with four of the 10 variables. All significant correlations are positive for the intellectually disabled group, but this is not the case for the non-disabled group that had negative and positive correlations present. It is notable that the correlations between cognitive avoidance and both self-esteem and optimism are positive, whereas they should be negative (see non-disabled group). These matters are of concern in relation to reliability and/or validity of ID data.

#### 5.4.1.2 Scale analysis

While most of the scales are widely used with general population groups, the scales in this study had not been widely used or used at all, with people with intellectual disability.



Therefore it is necessary to check the scales internal consistency; these are shown in Table 5.3. Using the acceptability criterion of 0.7 (Pallant, 2001), reliability analyses indicated a satisfactory level of alpha was obtained for total scale for the non-disabled group. Cronbach's alphas for the non-disabled group ranged from 0.83 (optimism) to 0.88 (self-esteem). However, consistent with the correlation matrix above, the  $\alpha$ 's for the intellectually disabled group were not as consistently good. While PWI and CRI scale reliabilities were acceptable at 0.74 and 0.86 respectively, the  $\alpha$ 's for the scales total self-esteem and total optimism were low at 0.57 and 0.54 respectively.

Table 5.3  
*Reliability Analyses of all Scales*

Subscales	ND Group ( <i>n</i> = 93)	ID Group ( <i>n</i> = 64)
	$\alpha$	$\alpha$
Total PWI	.84	.74
Total CRI	.84	.86
Total Self-esteem	.88	.57
Total Optimism	.83	.54
Total Approach Control	.79	.83
Total Avoidant Control	.54	.51
CRI subscales		
Logical Analysis	.39	.54
Positive Reappraisal	.81	.58
Seeking Guidance	.56	.39
Problem Solving	.67	.75
Cognitive Avoidance	.82	.28
Acceptance/Resignation	.72	.31
Seeking Alternative Rewards	-	-
Emotional Discharge	.38	.42

A close inspection of the correlation matrix for the Self-esteem variable revealed that the inter-item correlations were systematically lower for the intellectually disabled group compared to the non-disabled group. Out of 45 correlation pairs, the intellectually disabled group only had nine correlation pairs with a correlation  $> .3$ , whereas, the non-disabled group had only one correlation pair (items 5 and 1) that did not have a correlation greater than  $.3$ . There were no negative inter-item correlations for the non-disabled group. This is not the case for the intellectually disabled group, which had a number of negative correlations. Negative correlations for the intellectually disabled group were mostly associated with negatively worded items. A similar pattern is found for the Optimism variable when

inspecting the correlation matrix. Inter-item correlations were systematically lower for the intellectually disabled group compared to the non-disabled group. Out of 28 comparison pairs, the intellectually disabled group only had five correlation pairs with a correlation  $> .3$ , whereas, for the non-disabled group there were 16 correlations  $> .3$ . Similar, to the Self-esteem data, there were negative correlations present in the data from the intellectually disabled group but not for the non-disabled group.

Additional reliability analyses were calculated for the subscales that make up the CRI (see Table 5.3). First, this was done on the two types of control, Approach and Avoidant Coping and then for the eight subscales separately. For both the non-disabled group and the intellectually disabled group the alpha coefficients for the four subscales that make up Approach Control were relatively high and of a similar level (0.79 and 0.83 respectively), with the intellectually disabled group having a slightly higher  $\alpha$ 's than the non-disabled group. However, the four subscales that make up the Avoidant Control subscale were lower for both groups, with Cronbach's alphas of 0.54 for the non-disabled group, and 0.51 for the intellectually disabled group. Cronbach's alphas for the Approach Control and Avoidant Control subscales across both groups are similar to each other, indicating that both groups have responded similarly to items in the scales. From this analysis it would appear that the items making up the Approach Control subscales are more correlated with each other, therefore the scores obtained in the Approach Control subscale are reliable and indicate the possibility of a single unidimensional construct. The items that make up the Avoidant Control subscale of the CRI, however, are not as highly correlated and indicate the possible presence of an underlying multidimensional structure. Thus it is important that an examination of the factorial structure of these scales is conducted using both samples before proceeding with hypothesis testing.

Reliability analyses for the eight subscales (see Table 5.3) that make up the CRI were mixed across the two groups, with some subscales having acceptable alpha levels while others were poor. The alpha coefficients for the non-disabled group ranged from a low 0.38 (emotional discharge) to 0.82 (cognitive avoidance), with two subscales logical analysis and emotional discharge, having low  $\alpha$ 's (0.39, and 0.38 respectively). With the exception of the alphas for logical analysis and emotional discharge subscales, the results for the remaining subscales are generally comparable with those in the CRI scale manual, which ranged from 0.61 (seeking

guidance) to 0.74 (positive reappraisal) for men and 0.58 (emotional discharge) to 0.71 for both positive reappraisal and seeking alternative rewards for women (Moos, 1993).

However, this is not the case for the intellectually disabled group as Cronbach's alphas were generally lower across the eight CRI subscales than found for the non-disabled group. Alpha's for this group ranged from a low 0.28 (cognitive avoidance), to a reasonable  $\alpha$  level of 0.75 for the subscale problem solving. The cognitive avoidance subscale comprises, items 4, 11, 22, 29 and 34, which all relate to attempts to avoid thinking realistically about one's problems, actively wishing that one's problems would disappear or go away, and denying the seriousness of one's problems. The low alpha for this subscale indicates the possibility of measurement error. That is, for intellectually disabled participants their scores on these items may reflect social desirability responding, in that they did not want to appear to, not be able to handle their problems, or they were guessing a response they thought would be the correct one.

Overall, Cronbach's alphas for the intellectually disabled group, were generally lower on the four subscales that make-up the Avoidant Control and only slightly higher for the four subscales of Approach Control. The subscale problem solving from Approach Control is the only subscale of the CRI to reach an acceptable alpha level for the intellectually disabled group. However, it is notable that Cronbach's alphas for the subscale logical analysis and problem solving are both higher for the intellectually disabled group, than the alphas obtained for the non-disabled group. This is not an expected finding, as intellectually disabled people are typically portrayed as having low cognitive reasoning skills and problem solving skills, unlike the non-disabled population.

It is evident that some of the alpha coefficients for the CRI subscales were deemed not to be within an acceptable range for both groups. However, a possible explanation for these low alphas, is that short scales (e.g., less than 10 items) tend to have lower alpha coefficients than scales that have a larger number of items (Pallant, 2001). As all eight subscales had less than seven items each, this could account for some of the low alpha coefficients obtained for these subscales.

In summary, reliability analysis indicated that for the non-disabled group the data related to the total scores for the scales PWI, CRI, Self-esteem and Optimism were acceptable and therefore reliable. This is not the case for the intellectually disabled group, in which total Self-esteem and total Optimism scales had lower Cronbach's alphas. Reliability estimates for total PWI and total CRI were acceptable. Further, examination of reliability coefficients for the eight subscale totals on the CRI for both groups revealed Cronbach's alphas that ranged from unacceptable to acceptable. A greater number of low alphas are evident for the intellectually disabled group data, than for the non-disabled group data. Lower reliability estimates indicate the possibility of higher measurement error in the data for the intellectually disabled group. This in turn limits the interpretability of future results (Vassar & Hale, 2007). Thus, it is important that before proceeding with further analyses, an examination of the factorial structure of the scales used in this study is conducted on the non-disabled and intellectually disabled groups, in order to rectify any limitations related to low reliability estimates. These analyses will now be reported.

#### *5.4.1.3 Factor analysis of Coping Response Inventory*

A factor analysis was conducted on the CRI on the combined non-disabled and intellectually disabled sample ( $n = 157$ ), to determine the validity and the factor structure of the modified CRI scale as suggested by Cousins (2001). Past research suggests the existence of two factors, Approach and Avoidant Control. The factor analysis seeks to determine whether the structure of this study using non-disabled and intellectually disabled groups is consistent with previous research. The combined sample size met the criterion of a minimum of five subjects per variable as outlined by Tabachnick and Fidell (2007) and Pallant (2001). The 35 items of the modified form of the CRI were subjected to a principal components analysis (PCA) using SPSS. Prior to performing the PCA the suitability of the data for factor analysis were assessed. Inspection of the correlation matrix revealed the items 7, 13, 16 and 30 did not correlate greater than 0.3 with any other item and therefore were deleted. The Kaiser-Meyer-Oklin (KMO) measure of sampling adequacy is 0.73 exceeding the recommended value of 0.6 (Tabachnick & Fidell, 2007) and the Bartlett's Test of Sphericity ( $= 1844.87, p = <.001$ ) reached statistical significance supporting the factorability of the correlation matrix.

It is expected that two factors would emerge, those of Approach Control and Avoidant Control. However, an initial extraction of factors was performed using PCA, revealed 12 factors with eigenvalues greater than one, explaining 17.9%, 10.9%, 5.7%, 4.7%, 4.4%, 4.1%, 3.9 %, 3.6%, 3.3%, 3.0%, 2.9% and 2.8% respectively. An inspection of the scree plot revealed a clear break after the second component, so it was decided to retain two components for further investigation. Varimax rotation was performed to aid in interpretation of these two components. Examination of the factor loadings revealed that items 1, 17 and 20 cross-loaded on Factor 1 and Factor 2 greater than .3 and item 32 did not load on either factor. These items were deleted and then the data were reanalysed.

The rotated solution presented in Table 5.4 reveals the presence of a simple structure with a number of strong loading and all variables loading substantially on two factors. The two-factor solution explained a total of 32.46% of the variance, with Factor 1 contributing 19.11%, and Factor 2 contributing 13.35%. The internal consistency is acceptable for each factor with Cronbach's alpha for Factor 1 at 0.85 and for Factor 2 at 0.77. The criteria, for items to be considered as discriminating is a corrected item-total correlation above 0.2–0.3 (Briggs & Cheek, 1986; Streiner & Norman, 2003). The corrected item-total corrections for both Factors were between 0.24–0.65. Factor 1 consisted of 16 items that consistently reflected the items from the four Approach Control subscales in the CRI (problem solving, positive reappraisal, logical analysis and seeking guidance and support). Factor 2 consisted of 11 items that consistently reflected the items from three Avoidant Control subscales in the CRI (cognitive avoidance, acceptance/resignation and emotional discharge). This two-factor solution was a simple solution, reflecting other research (Cousins, 2001) and therefore, it was decided to use this solution in all subsequent analyses.

Table 5.4  
*Varimax Rotation of Two-factor Solution for CRI Combined Sample (n=157)*

Items	Description	Factor	Factor 2
25	Understand what you need to learn	.72	
26	Tell yourself thing will get better	.70	
21	Two different ways to solve problem	.68	
27	Find out more about the situation/problem	.64	
15	Decide what you want/try hard to get it	.62	
19	Better off than other people	.60	
14	See the good side of the situation	.59	
03	Plan of action	.59	
10	Know what has to be done	.55	
28	Do more things on own	.54	
08	Tell yourself how much worse things could be	.50	
33	Take things one day at a time	.45	
31	Change life in a positive way	.44	
18	Anticipate/think about how thing will turn out	.44	
02	Tell yourself things to feel better	.38	
09	Talk with a friend	.36	
34	Deny how serious the problem is		.75
11	Try not to think about the problem		.64
04	Try to forget about the problem		.64
12	Realise you have no control over the problem		.54
35	Lose hope that things will be the same		.53
22	Put off thinking about the problem		.51
05	Time will make a difference		.50
24	Yell or shout to let off steam		.49
29	Wish the problem would go away		.49
23	Accept the problem or situation		.45
06	Take it out on other people		.36
	<b>Cronbach's Alpha</b>	<b>.85</b>	<b>.77</b>
	<b>Corrected Item-Total Correlation</b>	<b>.31- .65</b>	<b>.26 - .63</b>
	<b>Percent of variance explained</b>	<b>19.11%</b>	<b>13.35%</b>

In addition, separate factor analyses were run for each of the two groups to verify the underlying structure of the CRI and to check how the scale performs in respect to each group. The 35 items of the CRI as used by the intellectually disabled group were subjected to PCA, and the suitability of the data for factor analysis was assessed. Bartlett's Test of Sphericity (=

981.678,  $p = .000$ ) reached statistical significance supporting the factorability of the correlation matrix. However, the KMO measure of sampling adequacy is 0.50 and is not greater than the recommended value of 0.6 (Tabachnick & Fidell, 2007). Thus the data did not adequately meet all of the necessary assumptions for testing. However, as Bartlett's Test of Sphericity is significant factor analysis will proceed with caution.

It is expected that two factors would emerge, those of Approach Control and Avoidant Control. An initial extraction of factors was performed using PCA, which revealed 13 factors with Eigenvalues greater than one. An inspection of the scree plot revealed a clear break after the second component, so it was decided to retain two components for further investigation. Varimax rotation was performed to aid in interpretation of these two components. Examination of the factor loadings revealed that items 3, 7, 15, 19, 20, 21, and 25 cross-loaded on Factor 1 and Factor 2 greater than .3 and item 2, 4, 12, and 31 did not load on either Factor. These items were deleted and then the data were reanalysed.

A second factor analysis was conducted extracting two components. Together the two components account for 30.81% of the variance. Examination of the factor loadings revealed items 5 and 29 cross-loaded on both factors and item 16 did not load greater than .3 on either factor. These items were deleted and a third factor analysis was rerun. Examination of factor loadings revealed that items 17 and 22 did not load on either factor greater than .3. These items were deleted and a final factor analysis was run on the remaining 19 items.

A simple structure was found, accounting for 33% of variance, with Factor 1 accounting for 19.6% and Factor 2 accounting for 13.45%. The reliabilities were reasonable for each factor with  $\alpha = .79$  for Factor 1 and  $\alpha = .66$  for Factor 2. The corrected item-total correlations were between 0.24 and 0.65 for both Factor 1 and Factor 2. Factor 1 comprised 10 items that mostly reflect items from the four approach coping scales in the CRI. However, one item (11) "try not to think about the problem" from the cognitive avoidant subscale of the avoidant coping scale loaded on this factor. This item clearly does not reflect approach coping. Factor 2 consisted of nine items that mostly reflect the four avoidant coping scales in the CRI. This time three items, one from the logical analysis subscale (item 30 "think about the demands of the situation") and two from the seeking guidance subscale (items 27 "find out more about the situation or problem" and 32 "pray for guidance or strength") loaded on this factor.

These items are clearly not avoidant coping. While the factor analysis on the data obtained from the intellectually disabled group confirmed the two-factor structure of approach and avoidant coping, the presence of complex variables on each of the two factors suggests this structure is not acceptable.

To be consistent with previous factor analysis the 35 items of the CRI as used by the non-disabled group were subjected to PCA, and the suitability of the data for factor analysis was assessed. The data adequately met all of the necessary assumptions for testing. The Bartlett's Test of Sphericity ( $= 1844.87, p = .000$ ) reached statistical significance supporting the factorability of the correlation matrix and the KMO measure of sampling adequacy is greater than the recommended value (Tabachnick & Fidell, 2007) of 0.6 at .73. An initial extraction of factors using PCA revealed 12 factors with eigenvalues greater than one. An inspection of the scree plot revealed a clear break after the second component, so it was decided to retain two components for further investigation. Varimax rotation was performed to aid in interpretation of these two components. Examination of the factor loadings revealed the presence of complex variables. Items 1, 17 and 20 cross-loaded on both factors and items 7 and 32 failed to load on either factor greater than 0.3 and were therefore deleted from further analysis and the factor analysis was rerun.

A simple structure was found, accounting for 30.77% of variance with Factor 1 accounting for 17.8% and Factor 2 accounting for 12.85%. The reliabilities were good for each factor with  $\alpha = .85$  for Factor 1 and  $\alpha = .84$  for Factor 2. The corrected item-total correlations were between 0.13 to 0.63 for Factor 1, and .32 to .77 for Factor 2. Factor 1 comprised 18 items that mostly reflect items from the four approach coping scales in the CRI. However, item 13 "take a chance and do something risky" from the emotional discharge subscale of the avoidant coping scale loaded on this factor. This item may indeed reflect approach coping in that 'taking a chance and do something...' is indicative of taking action to resolve a problem rather than attempting to avoid the problem. Factor 2 consisted of 12 items that are consistently reflective of three of the four avoidant coping scale in the CRI. Items making up the fourth avoidant coping scale, seeking alternative rewards were deleted in the previous iterations of the factor analysis and so this subscale does not contribute to the structure of Factor 2.



Separate factor analyses on the two groups revealed both similarities and differences. The number of items making up the CRI for each group differed; 30 items comprised the CRI for the non-disabled group, and 19 items comprised the CRI for the intellectually disabled group. The variance accounted for was slightly greater in the intellectually disabled group than obtained in the non-disabled group (33.11% and 30.66% respectively). Yet the internal reliabilities for Factor 1 and Factor 2 were greater for the non-disabled group compared with the intellectually disabled group (.85 vs. .79 and .84 vs. .66 respectively). Both groups had items that loaded on the opposite factor, however, this was more evident for the intellectually disabled group. Finally, the amount of total variance accounted by the two-factor solution for the combined group analyses and the separate factor analyses run on the intellectually disabled and non-disabled groups, are all very close in value (32.46 %, 33.11% and 30.66% respectively). Although the two-factor solution obtained from the combined group data provides the most parsimonious explanation of all the three factor analyses and therefore, is the most acceptable and will be used in all subsequent analyses.

In summary, the factor analysis on the combined groups confirmed the factor structure of Approach and Avoidant Coping. The analysis revealed a simple two-factor solution, that explained a total of 32.46% of the variance and that the reliabilities for both factors were high. The two-factor solution indicates that there were approach and avoidant factors within the data for the non-disabled and intellectually disabled samples, and that the structure of the modified CRI reflects other research. Additionally, factor analysis conducted separately on each group revealed two-factor solutions that have similar amounts of variance accounted for as found for the combined group factorial analysis.

#### *5.4.1.4 Factor analysis of Rosenberg Self-esteem scale*

A factor analysis was conducted on the Self-esteem scale data from the intellectually disabled group ( $n = 63$ ), to determine the validity and the factor structure of Self-esteem scale due to the low Cronbach's alpha coefficients.

The 10 items of the Self-esteem scale were subjected to a principal components analysis (PCA) using SPSS. Prior to performing the PCA the suitability of the data for factor analysis was assessed. The sample size met the criterion of a minimum of five subjects per variable and inspection of the correlation matrix revealed the presence of many coefficients of 0.3,

with all variables correlated with at least one other item ( $r > 0.30$ ). Bartlett's Test of Sphericity ( $= 118.089, p = .000$ ) reached statistical significance supporting the factorability of the correlation matrix. However, the KMO measure of sampling adequacy is 0.51 and did not exceed the recommended value of 0.6 (Tabachnick & Fidell, 2007). Thus the data did not adequately meet all of the necessary assumptions for testing. A low KMO value indicates the data are not entirely suitable for factor analysis, in that it is unlikely the data will form distinct factors. However, as the Bartlett's Test of Sphericity is significant, factor analysis will proceed with caution.

Initially, a one-factor solution was examined, to be consistent with Rosenberg's development of the Self-esteem scale, which is designed to measure a concept of global self-esteem. Using PCA, specifying one component to be extracted, this one component accounted for 22.36% of variance. Three positively worded items (1 "satisfied with myself", 3 "have a number of good qualities" and 4 "able to do things as well as others") did not load greater than 0.3 on this component and therefore, were deleted from further analysis and factor analysis was rerun on the remaining seven items. Using PCA, specifying one component extraction, this one component accounted for 31% of variance. A simple solution was found. All seven items had a factor loading of 0.36 to 0.74. Cronbach's alpha is reasonable ( $\alpha = .61$ ) and corrected item-total correlations fell between .20 and .51 (see Table 5.5). This one-factor solution has five negatively worded items (2, 5, 6, 8, 9) and two positively worded items (7, 10) that together reflect the global concept of self-esteem, as proposed by Rosenberg.

Table 5.5  
*One-factor Solution of Self-esteem Scale for Intellectually Disabled Group (n=64)*

Items	Description	Factor 1
9	I am inclined to feel like a failure	.74
5	I feel I do not have much to be proud of	.71
2	At times, I think I'm no good at all	.57
8	I wish I could have more respect for myself	.56
6	I certainly feel useless at times	.49
10	I have a positive attitude about myself	.42
7	I feel that I'm a person of worth, at least as good as others	.36
	<b>Cronbach's Alpha</b>	<b>.61</b>
	<b>Correct item-total correlation</b>	<b>.20 - .51</b>
	<b>Percent of variance explained</b>	<b>31.4%</b>

However, to be consistent with the scales' development, other solutions were explored. A free extraction of factors revealed four factors with eigenvalues greater than one, explaining 22.36%, 18.92%, 13.38%, and 11.02% of variance. The inspection of the scree plot revealed a clear break after the second component, so it was decided to retain two components for further investigation.

A Varimax rotation was performed to aid in interpretation of these two components. No simple structure was found, rather the solution revealed the presence of a complex variable, with item 5 ("I feel I do not have much to be proud of") cross loading on Factors 1 and 2. Examination of the factor loadings revealed that the five negatively worded items loaded on Factor 1 and the remaining five positively worded items loaded on Factor 2, thus revealing these to be two method factors. Factor 1 (negatively worded items) accounted for 21.42% of variance, whereas Factor 2 (positively worded items) accounted for 19.85% of variance. The reliability for each factor was  $\alpha = .63$  for Factor 1 and  $\alpha = .57$  for Factor 2. The corrected item-total correlations were between 0.21 and 0.56 for both Factor 1 and Factor 2.

While, it is usually expected that these method factors combine to form a super-ordinate factor that represents general self-esteem, the results of these factor analyses with the intellectually disabled sample, are consistent with previous research findings, in which the underlying factor structure of the Rosenberg Self-esteem scale can be operationalised as a two-factor scale (Martin, Thompson, & Chan, 2006). These factors represent "negative self-esteem or negative self-worth" (Factor 1) and "positive self-esteem or self-worth" (Factor 2). These two method factors are shown in Table 5.6. However, the presence of a complex variable (item 5) makes the two-factor solution a less acceptable factor solution, whereas, the one-factor solution is deemed an acceptable solution for the intellectually disabled group.

Table 5.6  
*Resultant Two-factor Solution of Self-esteem Scale for Intellectually Disabled Group (n=64)*

Items	Description	Factor 1	Factor 2
9	I am inclined to feel like a failure	.73	
5	I feel I do not have much to be proud of	.64	.33
8	I wish I could have more respect for myself	.63	
2	At times, I think I'm no good at all	.60	
6	I certainly feel useless at times	.56	
7	I feel that I'm a person of worth, at least as good as others		.78
3	I feel that I have a number of good qualities		.60
1	I am satisfied with myself		.59
4	I am able to do things as well as most other people		.53
10	I have a positive attitude about myself		.46
<b>Cronbach's Alpha</b>		<b>.63</b>	<b>.57</b>
<b>Corrected Item-Total Correlation</b>		<b>.32 - .51</b>	<b>.21 - .56</b>
<b>Percent of variance explained</b>		<b>21.4%</b>	<b>19.8%</b>

A further factor analysis was conducted on the Self-esteem data, this time for the non-disabled group ( $n = 93$ ), to determine the validity and compare the factor structure of Self-esteem scale to the intellectually disabled group factor solution. The 10 items of the Self-esteem scale were subjected to a PCA, and the suitability of the data for factor analysis was assessed. The sample size met the criterion of a minimum of five subjects per variable and inspection of the correlation matrix revealed the presence of many coefficients of 0.3. The data met all the necessary assumptions for testing. Bartlett's Test of Sphericity ( $= 482.56$ ,  $p = <.001$ ) reached statistical significance and the KMO measure of sampling adequacy is 0.86, confirming the factorability of the data. A one-factor solution was examined and this one factor accounted for 51.6% of the variance. A simple structure was obtained with all 10 items loading onto Factor 1 greater than 0.50.

To be consistent with previous factor analysis, a two-factor solution was also run on the data for the non-disabled group. A free extraction of factors revealed two factors with eigenvalues greater than one, and explained 51.6 and 10.4% of variance. An inspection of the scree plot revealed a clear break after the second component, thus these two components were retained for further investigation.

A Varimax rotation was performed to aid in interpretation of these two components. Unlike the intellectually disabled self-esteem data, no simple structure was found when a Varimax rotation was performed rather the solution revealed complex variables. Examination of the factor loadings revealed that the five positively worded items 1, 10, 3 loaded on factor 1 greater than 0.4, with the positively worded items 4 and 7 cross-loading on both factors. Factor 1 (positive self-esteem) accounted for 33.6% of variance. Negatively worded items, 6, 8, 5 loaded on Factor 2, with two negatively worded items (9, 2) cross-loading on both factors. Factor 2 (negative self-esteem) accounted for 28.4% of variance. Reliabilities calculated on all items that loaded on to each factor, were Factor 1 positive self-esteem  $\alpha = 0.87$ , and Factor 2 negative self-esteem  $\alpha = 0.84$ .

As a simple structure was not found, it was decided to rerun the factor analysis and examine the factor solution found for intellectually disabled self-esteem data (see Table 5.5) on the non-disabled self-esteem data. To be consistent with the one-factor solution for the intellectually disabled group, the positively worded items 1 (satisfied with myself), 3 (have a number of good qualities), and 4 (able to do things as well as others) were deleted. Using PCA on the seven remaining items, specifying one component to be extracted, this one component accounted for 54.73% of variance, which is an improvement on the previous one-factor solution. Examination of the factor loadings revealed all items loaded on the component greater than .54. Reliability for this factor is high, with Cronbach's  $\alpha = 0.85$ . The resultant one-factor solution is shown in Table 5.7 and is made up of five negatively worded items and two positively worded items. This one-factor solution was a simple solution and therefore, it was decided to use this solution in all subsequent analyses.

Table 5.7  
*Resultant One-factor Solution of Self-esteem Scale for Non-Disabled Group (n=93)*

Items	Description	Factor 1
2	At times, I think I'm no good at all	.85
9	I am inclined to feel like a failure	.82
6	I certainly feel useless at times	.76
10	I have a positive attitude about myself	.76
8	I wish I could have more respect for myself	.75
7	I feel that I'm a person of worth, at least as good as others	.65
5	I feel I do not have much to be proud of	.54
<b>Cronbach's Alpha</b>		<b>.85</b>
<b>Correct item-total correlation</b>		<b>.43 - .75</b>
<b>Percent of variance explained</b>		<b>54.7%</b>

In summary, it appears that the self-esteem data behaves differently for the two groups. Factor analyses on self-esteem data for both intellectually disabled and non-disabled groups supported a one-factor solution, and the data from the intellectually disabled group partially supported a two-factor solution. To find a consistent solution for both groups, a one-factor solution was explored. First using the intellectually disabled group, in which the resultant solution (see Table 5.5) provided the factor structure for the non-disabled group. The resultant solution provided an acceptable one-factor solution for both non-disabled and intellectually disabled groups. Both one-factor and two-factor solutions are consistent with current understanding of the construct, in which the two method factors combine to form a super-ordinate factor "general self-esteem". Or it can be conceptualised as comprising two factors of "positive self-esteem or self-worth" and "negative self-esteem or negative self-worth". However, the factor analyses for this data indicates that the one-factor solution with five negatively worded items and two positively worded items, was the most acceptable solution for both groups and therefore, this solution will be used in all subsequent analyses.

#### 5.4.1.5 Factor analysis for Optimism (LOT) scale

A factor analysis was also conducted on the eight items of the LOT scale due to the low Cronbach's alpha in the intellectually disabled group. The sample size met the criterion of a minimum of five subjects per variable and inspection of the correlation matrix revealed that item 2 "If something can go wrong for me, it will" and item 8 "I rarely count on good things happening to me" did not correlate at least one other item greater than  $r$  0.30. They were,

therefore deleted from further analysis and the factor analysis is rerun on six items. Bartlett's Test of Sphericity ( $= 67.618$ ,  $p = < .001$ ) reached statistical significance supporting the factorability of the correlation matrix. The KMO measure of sampling adequacy is 0.59 and while close, it did not exceed the recommended value of 0.6 (Tabachnick & Fidell, 2007). A low KMO indicates the possibility the data will not form distinct factors resulting in solutions being difficult to interpret, and thus puts in question the suitability of the data for FA. However, as the KMO is only slightly below the required value and the Bartlett's Test of Sphericity is significant, factor analysis will proceed cautiously, keeping in mind this violation of testing assumptions.

A free extraction of factors revealed three factors with eigenvalues greater than one, explaining 35.76%, 22.74%, and 17.69% of variance. The inspection of the scree plot revealed a clear break after the second component; however a single factor is investigated to begin with. The specific extraction of one factor explained 35.8% of variance with all items loading greater than 0.59, with the exception of item 7 "I believe every cloud has a silver lining" that did not load at all on this factor. Item 7 was deleted and the factor analysis rerun, again extracting one factor that accounted for 42.4% of variance. This factor comprised two negatively worded items (item 5 "hardly expect things to go my way" and item 6 "things never work out the way I want them to") with a factor loading of .714 and .674 respectively, and three positively worded items; item 1 "in uncertain times I usually expect the best", item 3 "I always look on the bright side of things", and item 4 "I am always optimistic/hopeful about my future" which had factor loadings of .671, .615 and .570 respectively.

In addition, the five items were subjected to further factor analysis, this time with two factors extracted, in keeping with the scree plot, and to be consistent with current research on the LOT scale. Table 5.8 shows the resultant factor structure. A Varimax rotation was performed on the two extracted factors to aid interpretation, which together explained 66.8% of variance. Examination of the factor loadings revealed that two negatively worded items (items 6 and 5) loaded on Factor 1, along with the positively worded item 1, "in uncertain times, I always expect the best", which cross-loaded on Factor 1 and 2. A possible explanation for this item cross-loading could be due the ambiguity of the wording. That is, while this item is a positively worded item, the word "uncertain" conveys a negative meaning and some people with intellectual disability could have interpreted the item negatively, rather

than positively as intended by the scales developers. Factor 1 explained 35.1% of variance and reflects pessimism, whereas Factor 2 explained 31.6% of variance and reflects optimism. The reliability for Factor 1 is  $\alpha = .66$  and  $\alpha = .58$  for Factor 2, which is an improvement on earlier Cronbach's alpha obtained (see Table 5.3). The corrected item-total correlations fell between .36–.55 for Factor 1 and .31–.47 for Factor 2.

Table 5.8  
*Resultant Two-factor Solution of Optimism Scale for Intellectually Disabled Group (n=64)*

Items	Description	Factor 1	Factor 2
6	Things never work out the way I want them to	.86	
5	Hardly expect things to go my way	.85	
1	In uncertain times, I usually expect the best	.52	.42
4	I am always optimistic/hopeful about my future		.84
3	Always look on the bright side of things		.83
	<b>Cronbach's Alpha</b>	<b>.66</b>	<b>.58</b>
	<b>Corrected Item-Total Correlation</b>	<b>.36 - .55</b>	<b>.31 - .47</b>
	<b>Percent of variance explained</b>	<b>35.1%</b>	<b>31.6%</b>

The result of these factor analyses indicates the presence of two factors Optimism and Pessimism, which is consistent with research (Marshall, et al., 1992). However, the presence of complex variables makes the items in the scale less distinctive. These results indicate that the LOT scale when used with people with intellectual disability results in the presence of complex variables. For this group negatively worded items do not appear to have been clearly distinguished, resulting in a complex structure.

Next, a series of factor analyses were run on the intellectually disabled group, this time using the four positively worded items as the Optimism subscale and four negatively worded items as the Pessimism subscale. Prior to performing the PCA the suitability of the data for factor analysis is assessed on the four positively worded items. Bartlett's Test of Sphericity (= 30.704,  $p = .000$ ) is significant supporting the factorability of the correlation matrix. However, the KMO measure of sampling adequacy is 0.58, and did not exceed the recommended value of 0.6. Thus, the data did not meet all the assumptions for testing. However, as the KMO is only slightly below the required value and the Bartlett's Test of Sphericity is significant, it was decided to proceed cautiously with factor analysis, keeping in mind this violation of testing assumptions.



The resultant one-factor solutions are shown in Table 5.9 for both the Optimism subscale and Pessimism subscale. The one-factor solution for the Optimism subscale accounted for 45.04% of variance, with a reliability of 0.56. The reliability for this factor is only a slight improvement on Cronbach's alphas obtained earlier when scale reliabilities were run (see Table 5.3). The corrected item-total correlations all fell between 0.28 and 0.45. This one-factor solution using positively worded items only, is an improvement on the one-factor analysis run earlier in which both negative and positively worded items were included in the analysis.

A second PCA was performed on the four negatively worded items making up the Pessimism subscale. Suitability of data for factor analysis was assessed. Examination of the correlation matrix revealed that not all variables had correlations  $> 0.30$ . Bartlett's Test of Sphericity ( $= 30.705$ ,  $p = < .000$ ) reached significance. The KMO however, did not exceed the recommended value 0.6, rather it was 0.55, and thus the data did not meet all the necessary assumptions for testing. Therefore, analyses will proceed with caution. The specific extraction of one-factor accounted for 43.3% of variance and had a reliability of 0.53, with corrected item-total correlations all falling between 0.17 and 0.43, which is worse than obtained for the Optimism subscales and therefore does not appear to be a satisfactory solution. Furthermore, these results confirm the previous factor analysis (see Table 5.8), which indicates that for the intellectually disabled group the negatively worded items are not as discernible as the positively worded items. However, the negatively worded items 5 ("hardly expect things to go my way") and 6 ("things never work out the way I want them to") loaded strongly in both the one-factor solution (see Table 5.9) as well as the two-factor solution (see Table 5.8), thus indicating that these two negatively worded items are clearly understood by intellectually disabled participants and therefore the possibility of retaining these items need to be considered.

Table 5.9  
*Resultant One-factor Solutions for Optimism and Pessimism Subscale of LOT for Intellectually Disabled Group (n=64)*

Items	Factor 1 Optimism	Factor 1 Pessimism
4 I am always optimistic/hopeful about my future	.73	
3 Always look on the bright side of things	.72	
1 In uncertain times, I usually expect the best	.71	
7 I am a believer that every cloud has a silver lining	.51	
5 Hardly expect things to go my way		.82
6 Things never work out the way I want them to		.81
8 Rarely count on good things happening to me		.56
2 If something can go wrong for me it will		.32
<b>Cronbach's Alpha</b>	<b>.56</b>	<b>.53</b>
<b>Corrected Item-Total Correlation</b>	<b>.28 - .45</b>	<b>.17 - .43</b>
<b>Percent of variance explained</b>	<b>45%</b>	<b>43.3%</b>

In order to determine if the LOT scale was behaving as the scale developers intended, an examination of the underlying factor structure of the LOT scale as used by the non-disabled group was conducted. PCA was performed on all eight items of the LOT scale. The resultant factor analysis revealed a simple factor structure that behaved in a manner expected by the scale developers. That is, all variables were suitable for factor analysis, with correlation coefficients above 0.3. Kaiser-Meyer-Olkin (0.776) and Bartlett's Test of Sphericity (= 332.450,  $p = < .001$ ) confirmed the factorability of the data. A free extraction of factors revealed two factors with eigenvalues greater than one, explaining 46.25%, and 20.91% of variance. Inspection of the scree plot revealed a clear break after the second component. However, to be consistent with the factor analysis performed on the intellectually disabled group, a one-factor solution is examined and this one factor accounted for 46.25% of the variance. A simple structure is obtained with all eight items loading onto Factor 1 greater than 0.54, and a reliability of 0.83. The negatively worded items had the highest factor loadings, followed by the positively worded items.

To be consistent with previous factor analysis performed on the intellectually disabled sample, a two-factor solution was also run on the data for the non-disabled group. A free extraction of factors revealed two factors with eigenvalues greater than one. A Varimax rotation was performed and the two factors together explained 67.13% of variance.

Examination of the factor loadings revealed all of the negatively worded items loaded strongly on Factor 1 (.82–.85) and all of the positively worded items loaded strongly on Factor 2 (.69–.84), thus revealing these to be two method factors. Factor 1 (Pessimism) accounted for 35.88% of the variance while, Factor 2 (Optimism) accounted for 31.27%. The reliabilities for each factor were both high, with  $\alpha = .87$  for Factor 1 and  $\alpha = .79$  for Factor 2. The corrected item-totals correlations for Factor 1 all fell between 0.69 and .73, and between .51 and .72 for Factor 2. The resultant two-factor structure is shown in Table 5.10. While the resultant two-factor solution below is a simple structure for the non-disabled group, such a simple structure was not obtained for the intellectually disabled group and therefore a final series of factor analysis was run.

Table 5.10

*Resultant Two-factor Solution for Optimism Scale for Non-Disabled Group (n=93)*

Items	Description	Factor 1	Factor 2
6	Things never work out the way I want them to	.85	
8	I rarely count on good things happening to me	.83	
2	If something can go wrong for me, it will	.82	
5	I hardly expect things to go my way	.82	
3	Always look on the bright side of things		.84
4	I am always optimistic/hopeful about my future		.80
1	In uncertain times, I usually expect the best		.77
7	I am a believer that every cloud has a silver lining		.69
	<b>Cronbach's Alpha</b>	<b>.87</b>	<b>.79</b>
	<b>Corrected Item-Total Correlation</b>	<b>.69 - .73</b>	<b>.51 - .72</b>
	<b>Percent of variance explained</b>	<b>35.9%</b>	<b>31.3%</b>

Finally, a series of separate factor analysis was run on the non-disabled group, this time using the four positively worded items as the Optimism subscale and four negatively worded items as the Pessimism subscale. Prior to performing the PCA, the suitability of the data for factor analysis was assessed on the four positively worded items. Kaiser-Meyer-Okin (0.71) and Bartlett's Test of Sphericity ( $= 132.75, p = .000$ ) confirmed the factorability of the data. The specific extraction of one-factor accounted for 62.52% of variance and had a good reliability of .79. A second PCA was performed on the four negatively worded items making up the Pessimism subscale. Suitability of data for factor analysis was confirmed with KMO (.79) and Bartlett's Test of Sphericity ( $= 178.67, p = .000$ ) reaching significance. The specific

extraction of one-factor accounted for 71.49% of variance and had a high reliability of .87. The resultant one-factor solutions for Optimism and Pessimism subscales are almost identical to the two-factor solution shown in Table 5.10, confirming that the underlying structure of the LOT scale for the non-disabled group includes both optimism and pessimism, which can be used either combined in a single scale or as separate subscales of optimism and pessimism.

In summary, a series of factor analysis were run on the eight items comprising the LOT scale for both the intellectually disabled group and the non-disabled group, to determine the underlying structure of the scale, due to low Cronbach's alphas in the intellectually disabled group data. Both one and two-factor solutions were examined, as well as using the positively worded and negatively worded items as subscales and running separate analyses. The resultant factors were different for the two groups. The intellectually disabled group did not adequately meet all assumptions for testing, which puts in doubt the suitability of their data for factor analysis and questions the interpretability of resultant factor solutions. This was not the case for the non-disabled group, which met all the necessary assumptions required for testing. A good solution for the intellectually disabled group was the five item two-factor solution, as shown in Table 5.8, in spite of the presence of a complex variable. However, closer inspection of the results indicates that a better solution was found in the one-factor solution, using only the positively worded items (see Table 5.9) and therefore, the decision was made to use this one-factor solution for all further analyses. The analysis revealed that the one-factor solution, using positively worded items only, is a dominant factor for the intellectually disabled group, producing a simple solution that accounts for 45% of variance. Additionally, the four positively worded items have reasonable reliability, especially given the low number of items making up the scale (Pallant, 2001).

To confirm that the LOT scale was behaving in the manner expected by the scale developers, a factor structure of the LOT scale for the non-disabled sample was conducted and the resultant structure compared to the factor structure for the intellectually disabled group. The resultant factor structure did confirm the expectations of the scale's developers, in that the method factors combined to form a super-ordinate factor representing general optimism. In addition, consistent with previous research, a two-factor solution revealed the presence of the two factors, optimism and pessimism, suggesting that the LOT scale can meaningfully be conceptualised as measuring both optimism and pessimism, as well as the overall general

optimism construct. Finally, separate factor analysis was run on the data from the non-disabled group to test a one-factor solution, using the positively worded (optimism) and negatively worded (pessimism) items as separate subscales. The resultant factor structures for the Optimism and Pessimism subscales produced satisfactory solutions. In order to be consistent across both groups it was decided that the factor structure of the LOT scale to use in further data analysis is the four positively worded items (items 1, 3, 4 and 7), as this is an acceptable solution for both groups.

#### *5.4.1.6 Factor analysis for Personal Wellbeing Index (PWI)*

While, the PWI-ID is designed specifically for use with intellectually disabled people, and Cronbach's alpha in this study was satisfactory ( $\alpha = .74$ ), factor analysis was conducted on the PWI data from the intellectually disabled group ( $n = 63$ ), to determine the validity and the underlying factor structure for this sample. The seven items of the PWI were subjected to PCA, and the suitability of the data for factor analysis was assessed. The data meet all the necessary assumptions for testing. Bartlett's Test of Sphericity ( $= 82.41, p = < .001$ ) reached statistical significance and the KMO measure of sampling adequacy is 0.78 confirming the factorability of the data. The free extraction of factors revealed one factor with eigenvalue 2.80, explaining 40.02% of variance. All seven items of the PWI loaded strongly (0.46 to 0.76) forming a single tight factor. The interpretation of this one-factor solution is consistent with previous research on the PWI (Cummins, et al., 2003; International Wellbeing Group, 2006) and is deemed an acceptable solution for the data from the intellectually disabled group.

Next, a factor analysis was conducted on the seven items of the PWI from the non-disabled sample in order to confirm the normal factorial structure. The data met all the necessary assumptions for testing. Bartlett's Test of Sphericity ( $= 214.99, p = < .001$ ) reached statistical significance and the KMO measure of sampling adequacy is 0.83 confirming the factorability of the data. The free extraction of factors revealed one factor with eigenvalue 3.54, explaining 50.54% of variance. All seven items of the PWI loaded strongly (0.55 to 0.79) forming a single tight factor. This one-factor solution is deemed acceptable and is consistent with the factorial structure for the data from the intellectually disabled group. It is

therefore concluded that the factor structure of the PWI for both the intellectual disability and non-disabled groups has been established.

## 5.5 Descriptive analysis

It is hypothesised that SWB scores for people with intellectual disability will be within the same normative range as found for non-disabled people. However, before testing this hypothesis it is important to examine the demographic and psychometric characteristics of the two groups.

### 5.5.1 *Analysis of Participant Characteristics*

Table 5.11 describes the sample in terms of demographic characteristics. A number of variables differ between the two groups. There are more females in the non-disabled group but an equal gender distribution in the intellectually disabled group. The spread of age range for the both groups is fairly similar. The median age of the non-disabled group is 40–49 years while the median age for the intellectually disabled group is younger at 30–39 years old. Marital status also differs between the two groups because most of the intellectually disabled participants have never been married.

Income is another demographic variable that is markedly different between the two groups. Most people with intellectual disability in this study indicated they did not know their income level, and simply responded with “rather not say.” As most of the disabled people in the sample were receiving a state welfare benefit, their income would have been below \$11,000pa. The median income level for the non-disabled group fell within the \$26,000–\$40,999 bracket, with 23.7% having an annual income above \$56,000, making income levels of the non-disabled group much higher.

Table 5.11  
*Demographic Information of Non-Disabled and Intellectually Disabled Groups*

	Non-Disabled Group (n=93)	Intellectual Disability Group (n=64)
<b>Gender</b>		
Male	25 (27%)	32 (50%)
Female	67 (72%)	32 (50%)
<b>Age</b>		
18-20	4 (4.3%)	1 (1.6%)
21-29	11 (11.8%)	13 (20.3%)
30-39	19 (20.4%)	20 (31.3%)
40-49	27 (29.0%)	15 (23.4%)
50-59	18 (19.4%)	10 (15.6%)
>60	14 (15.1%)	5 (7.8%)
<b>Marital Status</b>		
Never married	24 (25.8%)	58 (90.6%)
Married	54 (58.1%)	2 (3.1%)
Separated	3 (3.2%)	4 (6.3%)
Divorced	8 (8.6%)	-
Widowed	4 (4.3%)	-
<b>Income (NZD)</b>		
<\$10,999	16 (17.2%)	8 (12.5%)
\$11,00-25,999	14 (15.1%)	-
\$26,00-40,999	17 (18.3%)	-
\$41,00-55,999	14 (15.1%)	-
>\$56,000	22 (23.7%)	-
Rather not say/don't know	10 (10.8%)	56 (87.5%)
<b>Employment Status</b>		
Student	6 (6.5%)	1 (1.6%)
Part-time work <20hrs wk	25 (26.9%)	43 (67.2%)
Full-time work >30hrs wk	49 (52.7%)	8 (12.5%)
Unemployed	9 (9.7%)	12 (18.8%)
Retired	3 (3.2%)	-
<b>Ethnicity</b>		
NZ European	67 (72%)	56 (87.5)
Maori	9 (9.7%)	4 (6.3%)
Pacific Island	5 (5.4%)	1 (1.6%)
Asian	6 (6.5%)	1 (1.6%)
Other	6 (6.5%)	2 (3.1%)

Employment status for both groups shows similar differences. Most intellectually disabled participants (67.2%) had part-time employment, while most non-disabled people had full-time employment. Ethnicity of both groups is similar, with NZ European being the largest category reported. Although, the non-disabled group had a greater number of Maori, Pacific Island, Asian and other ethnicities than the ID group, the lack of greater ethnic distribution in the intellectual disability group can be accounted for by the predominately European services that the sample is drawn from and the trend in Auckland to have culturally appropriate services for people with disabilities. However, the ethnic distribution of the intellectually disabled is fairly close to that generally found in New Zealand society.

### 5.5.2 *Subjective Wellbeing variables*

The means, standard deviations and *t*-tests for the two groups on the PWI are presented in Table 5.12. Raw scores were converted into a standardised comparison statistic the Percentage of Scale Maximum (%SM), which converts Likert scale data to a range from 0 to 100 distribution, using the formula  $(\text{score}-1) \times 100 / (\text{number of scale points}-1)$ . Higher scores reflect reporting greater satisfaction or subjective quality of life (SQOL) for those domains. Satisfaction with Life-as-a-Whole question is included as a separate item, along with four additional satisfaction items, spiritual/religious beliefs, relationship with family, relationship with friends, and satisfaction with financial security.

An examination of Table 5.12, shows that the mean scores of satisfaction with life-as-a-whole for both groups falls within the expected normative Western range of 70–80%SM, as demonstrated in other research (Cummins, 1998b, 2000b). PWI mean scores also show a reasonable level of consistency across the two groups with no significant difference. However, the PWI score for the non-disabled group is marginally below the normative Western range, while the PWI score for intellectually disabled group is inside the normative range.



Table 5.12  
*Means and Standard Deviations and t-tests for Non-Disabled (ND) and Intellectually Disabled (ID) Groups for Subjective Wellbeing Variables*

Domains %SM	ND – Group ( <i>n</i> =93)	ID – Group ( <i>n</i> =64)	PWI and Domain Normative Ranges	<i>df</i>	<i>p</i> (2-tailed)
	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	Mean range		
Life-as-a-whole	71.40 (17.42)	75.31 (22.61)	75.8 - 79.2	155	.246
1. Standard of living	72.47 (17.17)	75.00 (23.10)	75.4 - 79.3	155	.458
2. Health	71.94 (20.81)	70.78 (22.13)	73.9 - 76.2	155	.740
3. Achievements in life	70.32 (17.41)	78.28 (21.35)	71.9 - 75.6	155	.015
4. Personal relationships	72.04 (21.80)	69.06 (24.35)	77.2 - 81.6	155	.423
5. How safe you feel	74.00 (19.05)	71.40 (26.88)	75.0 - 81.4	155	.509
6. Community connectedness	64.62 (20.67)	75.00 (24.10)	68.7 - 72.3	155	.006**
7. Future security	64.09 (20.34)	75.80 (22.52)	68.1 - 73.4	155	.001**
Total PWI	69.92 (13.80)	73.61 (14.65)	73.5 - 76.5	155	.110
<b>Additional Items</b>					
1. Spiritual/ religious beliefs	74.30 (21.00)	78.77 (22.40)	-	112	.336
2. Relationship with family	79.03 (19.00)	79.69 (25.07)	-	155	.860
3. Relationship with friends	77.42 (16.80)	79.53 (19.47)	-	155	.482
4. Relationship with spouse/partner	76.23 (25.60)	70.00 (14.14)	-	77	.734
5. Financial security	63.33 (20.34)	71.41 (24.50)	-	155	.032

*Note.* Results are presented as means and standard deviations and expressed as percentage of scale maximum (%SM) on a range of 0 to 100.

*t*-tests test if mean scores significantly differ between ND vs. ID groups; \*\* *p* < .01

The range for means and standard deviations across the seven life domain variables are very similar for both groups. The non-disabled range of domain scores is 9.91%SM (64.09 to 74.00), with a range of standard deviations of 4.63%SM (17.17 to 21.80). The range of the domain means for the intellectually disabled group is 9.22%SM, with a slightly higher standard deviation range of 5.53%SM.

The Australian normative ranges for PWI life domains are drawn from Cummins et al. (2007). These reveal (Table 5.12) that the mean scores for the non-disabled group for the seven life domains are all below the lower boundary of the PWI domain normative range, and this applies to life-as-a-whole. This is not the case for the intellectually disabled group, where the three life domains of, achievements in life, community connectedness and future security mean scores are all above the normative domain ranges. In addition, the life domain mean scores for health, personal relationships and safety for the intellectually disabled group are lower than the mean scores for the non-disabled group and the Australian PWI normative ranges.

Independent *t*-tests were carried out between the two groups, across the seven life domains, as well as *life-as-a-whole* question, to test the hypothesis that the two groups do not differ in their satisfaction with life domains. As shown in Table 5.12, there were significant differences between the two groups. People with intellectual disability were significantly more satisfied in, achievements in life ( $p < .05$ , eta squared = .04), community connectedness ( $p < .01$ , eta squared = .05), and future security ( $p < .001$ , eta squared = .07). However, when the Bonferroni correction is applied, satisfaction with achievements is no longer significant at the new alpha level ( $p < .01$ ). Means scores for total PWI were non-significant between the two groups, indicating that intellectually disabled and non-disabled people did not differ in terms of their SWB. Additionally, there are no significant differences in satisfaction between the two groups for Life-as-a-whole, and the life domains of Standard of living, Health, Personal relationships, and Safety.

#### 5.5.2.1 Additional domains

Also shown in Table 5.12 are the additional satisfaction variables investigated in this study. The means scores for both groups on additional satisfaction items are higher than for the average for the PWI domains. An interesting finding is the higher satisfaction rating by non-disabled participants for satisfaction with spouse/partner ( $M = 76.23$ ,  $SD = 25.60\%SM$ ). It would seem for those with intellectual disability who married, they reported lower satisfaction with their spouse than non-disabled, although the difference between the two groups was non-significant. Both groups report high satisfaction in their relationship with family and friends, with these two items having the highest satisfaction across all domains.

Finally, non-disabled people were the least satisfied with their financial security, as this domain is rated the lowest. No normative data exist for these new items.

Independent *t*-tests were also conducted on the additional satisfaction items. With the more stringent significant level of  $p < .01$ , *t*-tests reveal no significant differences in mean scores between the two groups. However, satisfaction with financial security ( $M = 71.41$ ,  $SD = 24.50$ ) almost reached significance for the intellectually disabled group. Thus the hypothesis that there would be no difference in satisfaction between the non-disabled and intellectually disabled groups is supported for 10 of the 12 life domain variables.

In summary, the hypothesis that SWB mean scores for the intellectually disabled group will fall within the normative Western range of 70–80%SM, as specified by Cummins (1998b), is supported. Mean score for satisfaction with life-as-a-whole also fell within its range, as did the mean scores for the life domains, with the exception of the life domain personal relationships, which is below this figure ( $M = 69.06\%SM$ ,  $SD = 24.35$ ). In addition, most mean scores for the intellectual disability group when compared against the normative Australian PWI domain ranges fall within, or exceed the normative range, with the exception of personal relationships, health and safety which all fall below. People with intellectual disability had significantly higher mean satisfaction scores on two life domains (community connectedness and future security), even after a Bonferroni correction is applied.

Of additional interest is the finding that all seven-life domain scores for the non-disabled group were generally low and fell below the lower boundary of the Australia PWI domain normative range, and this applies to life-as-a-whole and total PWI score. A possible explanation for this difference is the PWI domain normative range is drawn from Australian samples and not New Zealand sample. This point will be elaborated on in the discussion.

#### *5.5.2.2 Regression analysis of life-as-a-whole on life domains for both groups*

The following regression analysis examines the relative contribution that the seven life domains make to “Satisfaction with life-as-a-whole”, for both groups. Life domains represent the first level deconstruction of the global “Satisfaction with life-as-a-whole”. It is proposed that each domain contributes unique variance when regressed against “Satisfaction with life-as-a-whole”. The combination of unique and shared variance by the life domains

has been shown to explain 30–60% of the variance in “Satisfaction with life-as-a-whole” (International Wellbeing Group, 2006).

Analysis was performed using SPSS REGRESSION and SPSS EXPLORE for the evaluation of assumptions. Correlation matrices were generated for each group checking for multicollinearity and singularity. No transformation of data was undertaken. Sample size for the non-disabled group ( $n = 93$ ) is adequate for analysis to proceed with confidence. However, according to Tabachnick and Fidell (2007), formula  $N \geq 50 + 8m$  ( $m$  is number of IVs) the sample size for intellectually disabled group ( $n = 64$ ) is not adequate (e.g.,  $50 + 8 \times 4 = 82$ ). Although, as noted by Stevens (1996) multiple regression analysis is a versatile procedure, and recommends that for social science research 15 subjects per predictor is adequate for a reliable equation. Thus using this criterion, both sample sizes are adequate (e.g.,  $15 \times 4 = 60$ ) for the regression analysis to proceed with confidence.

Tables 5.13 and 5.14, displays the bivariate correlations, unstandardised regression coefficients ( $B$ ), the standardised regression coefficients ( $\beta$ ), squared partial correlations ( $sr^2$ ) explaining unique variance, and  $R$ ,  $R^2$ , and adjusted  $R^2$  after entry of all independent variables for the non-disabled and intellectually disabled groups respectively. Examination of correlation matrices indicates no multicollinearity, indicating the variables are suitably correlated for the multiple linear regressions to be reliably conducted. All PWI domains of correlate with life-as-a-whole, and range from 0.19 to 0.71 for the non-disabled group. While, for the intellectually disabled group all PWI domains correlate with life-as-a-whole, with the exception of health and range from 0.05 to .052.

Table 5.13

*Standard Multiple Regression of Life Domains on Life-as-a-Whole for Non-Disabled Group (n=93)*

Variables	LAW	1	2	3	4	5	6	B	$\beta$	t	$sr^2$
Life-as-a-whole											
1. Standard of Living	.68							.26**	.26	3.03	.03
2. Health	.58	.48						.13*	.15	2.05	.01
3. Achievements	.71	.41	.51					.38***	.38	4.89	.08
4. Personal /Relationship	.53	.56	.54	.51				.02	.03	.38	.00
5. Safety	.25	.30	.32	.32	.33			-.11	-.12	-1.85	.01
6. Community Connect	.49	.36	.24	.36	.32	.19		.12*	.14	2.21	.02
7. Future Security	.66	.65	.48	.53	.39	.44	.39	.17*	.20	2.33	.02
									$R^2 = .72$		
									Adjusted $R^2 = .70$		
									$R = .85$		
Unique variability = .17; shared variability = .53											

Notes. \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

R for regression is significantly different from zero,  $F(7, 85) = 30.89$ ,  $p < .001$  for the non-disabled, and  $F(7, 56) = 4.71$ ,  $p < .001$  for the intellectually disabled group. The results reveal for the non-disabled group (Table 5.13), five of the seven life domains make a statistically significant unique contribution to life-as-a-whole. The domain achievements in life makes the strongest unique contribution, while personal relationships makes the lowest contribution to life-as-a-whole. The seven domains contribute 17% in unique variance and 53% of explained shared variance to the prediction of life-as-a-whole.

The results reveal a different story for the intellectually disabled group. As shown in Table 5.14, only two life domains make a statistically significant unique contribution to life-as-a-whole, Future security and Safety. The domain Future security makes the strongest unique contribution ( $sr^2 = .13$ ), while five domains make no unique contribution to the prediction of life-as-a-whole. Together the seven domains contribute 20% in unique variance and only 10% of explained shared variance to life-as-a-whole.

Table 5.14  
*Standard Multiple Regression of Life Domains on Life-as-a-Whole for Intellectually Disabled Group (n=64)*

Variables	LAW	1	2	3	4	5	6	B	$\beta$	t	$sr^2$
Life-as-a-whole											
1. Standard of Living	.33							-.04	-.04	-.28	.00
2. Health	.13	.24						-.09	-.09	-.74	.01
3. Achievements	.33	.52	.21					.11	.10	.76	.01
4. Personal/Relationships	.26	.36	.28	.41				.05	.05	.41	.00
5. Safety	.38	.30	.05	.16	.21			.19*	.23	2.08	.04
6. Community Connect	.28	.26	.23	.26	.36	.26		.10	.11	.89	.01
7. Future Security	.53	.49	.34	.40	.28	.25	.22	.44***	.44	3.42	.13
											$R^2 = .37$
											Adjusted $R^2 = .30$
											R = .61

Unique variability = .20; shared variability = .10

Note. \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

In summary, regression analyses reveal a difference between the two groups and the life domains that contributed to the prediction of life-as-a-whole. In the non-disabled group, five life domains make a unique contribution to life-as-a-whole, With the seven domains contributing 17% in unique variance and 53% of explained shared variance to the prediction of life-as-a-whole. For the intellectually disabled group only two life domains (safety and future security) make a unique contribution to the prediction of life-as-a-whole. With the seven life domains contributing 20% unique variance and 10% shared variance to life-as-a-whole, which is much lower than obtained for the non-disabled group.

### 5.5.2.3 Correlations between variable totals

Correlations between the variables totals PWI, Approach Control, Avoidant Control, Self-esteem and Optimism are shown in Tables 5.15 for both groups. Some interesting differences between the two groups are evident. Most correlations in the non-disabled group are significant at  $p < .001$ , with the exception of total optimism and total avoidant control ( $p = < .05$ ) (see Table 5.15). Total PWI significantly correlates with all other variables. Avoidant Control showed moderately significant but negative correlations with Self-esteem and PWI, and a positive significant correlation with Approach Control and Optimism.

As shown in Table 5.15, the PWI is moderately correlated with most other variables, but is non-significantly correlated with Approach Control for the intellectually disabled group. Approach and Avoidant Control both moderately correlated with each other ( $r = .50$ ). Also of interest is that, Self-esteem has a non-significant relationship with Approach and Avoidant

Control, a moderate correlation with PWI and only a small correlation with Optimism, for this group.

Table 5.15  
*Bivariate Correlations, Means and Standard Deviation Between Totals of Variables for Non-Disabled and Intellectually Disabled Groups*

Variables	PWI	Approach Control	Avoidant Control	Self-esteem	Optimism
Non-Disabled ( <i>n</i> =93)					
PWI					
Approach Control	.36**				
Avoidant Control	-.28**	.23**			
Self-esteem	.63**	.35**	-.34**		
Optimism	.53**	.58**	.03	.50**	
<i>M</i>	69.92	65.64	41.24	72.77	68.57
<i>SD</i>	13.80	12.61	13.53	19.90	17.95
Intellectually Disabled ( <i>n</i> =64)					
PWI					
Approach Control	.18				
Avoidant Control	.25*	.50**			
Self-esteem	.37**	.19	.11		
Optimism	.47**	.34**	.21	.26*	
<i>M</i>	73.61	58.63	51.98	69.93	68.65
<i>SD</i>	14.65	16.89	14.48	13.39	17.96

Note. \* *p* .05, \*\* *p* .01 (Two-tailed)

Furthermore, most correlation pairs between the two groups were non-significant when compared as *z* values and observed *z* scores, with the exception of that between the PWI and Self-esteem, which is significantly different ( $2.27_{\text{obs}}$ ). Observed *z* scores that fall within the critical values of -1.96 and +1.96 indicate that the strength of the correlation coefficient is not significant (Pallant, 2001).

In summary, all correlations were significant for the non-disabled group, with strength of correlation ranging from small to moderate, whereas for the intellectually disabled group three variable pairs did not correlate (Approach control-PWI, Optimism-Avoidant control, and Self-esteem-Avoidant Control). However, Approach and Avoidant Control subscales were strongly correlated in the intellectually disabled group. Optimism and Self-esteem had moderate to high correlations with PWI for both groups. Overall, the strength of the correlations for the intellectually disabled group, were lower than found in the non-disabled group.

## 5.6 Comparison between non-disabled and intellectually disabled groups across the variables of PWI, CRI, Self-esteem and Optimism

The following series of Multivariate Analyses of Variance (MANOVAs) were conducted to examine differences between the two groups. These test the hypothesis that the internal buffers of perceived control, self-esteem and optimism, which have been proposed to account for the maintenance of SWB, will interact with SWB in the same way for intellectually disabled and non-disabled people. Additionally, MANOVAs were also conducted on the life domains of the PWI and eight subscales of the CRI to examine possible differences between the two groups.

### 5.6.1 *Multivariate analysis on all totals*

The current data have a minimum of 14 observations per cell and a maximum of 32. While, analysis of variance assumes equal sample sizes between groups, Kerr, Hall and Kozub (2002) suggest that as long as there are more than 10 observations per cell the procedure will remain robust. Thus, it is deemed acceptable to proceed with some caution.

The univariate tests for each of the dependent variables are displayed in Table 5.16. Also reported is partial eta-squared, which assess the amount of variance in the dependent variable that is predicted from levels of the independent variable, and Observed power. Values for partial-eta squared range from 0 to 1. The strength of association .01 describes a small effect, .06 describes a moderate effect and .14 describes a large effect (Pallant, 2001). Observed power, assess the chance of making a Type II error (failing to reject a false null hypothesis believing group means do not differ, when they do). The higher the power statistic, the more confidence there is in the results, when the null hypothesis is not rejected (Pallant, 2001).



Table 5.16

*MANOVA Examining Differences Between Groups for the Variables Total Personal Wellbeing (PWI), Total Self-esteem, Total Optimism, Total Approach Control, and Total Avoidant Control*

DV	Non-disabled <i>M (SD)</i>	Disabled Group <i>M (SD)</i>	<i>F(1, 155)</i>	<i>p</i>	Partial Eta <sup>2</sup>	Observed Power
PWI	69.92 (13.80)	73.62 (14.65)	2.58	.11	.02	.36
Self-esteem	72.77 (19.90)	69.93 (13.38)	.99	.32	.01	.17
Optimism	68.57 (17.95)	68.55 (17.96)	.00	.99	.00	.05
Approach Control	65.64 (12.61)	58.63 (16.98)	8.79	.00	.05	.84
Avoidant Control	41.24 (13.53)	51.98 (14.48)	22.54	.00	.13	.99

*Note.*  $n = 93$  Non-disabled,  $n = 64$  Disabled

Box's M test is significant suggesting the data did not meet the assumption of homogeneity of variance-covariance matrices  $F(15,73389) = 2.92, p = < .001$ . While, analysis of variance is based on the assumptions of normality and homogeneity of variance, minor violations of these assumptions can be tolerated due the robustness of this statistical procedure (Howell, 2007). Moreover, Tabachnick and Fidell (2007, p. 252) warn that Box's M can be too sensitive and so analysis will proceed with this deficiency in mind.

The univariate tests for homogeneity of variance for each of the dependent variables indicate that the homogeneity of variance had not been violated for the variables, personal wellbeing, optimism, approach control and avoidant control. However, the Levene's test for equality of variances is significant for self-esteem  $F(1,155) = 9.93, p = < .01$ , which indicates the results for this variable need to be interpreted with caution.

Due to these violations, the more robust Pillai's Trace multivariate test of significance is used. This test revealed a significant group effect on one or more of the dependent variables  $F(5,151) = 11.86, p = < .001$ ; partial-eta squared = .28. When the results were examined separately, the only group effects to reach statistical significance using a Bonferroni adjusted alpha level of .01, were Approach Control and Avoidant Control,  $F(1,155) = 8.78, p = .004$  and  $F(1,155) = 22.54, p = < .001$ , respectively. Table 5.16 shows the non-disabled group used more Approach Control (65.64 vs. 58.63) and less Avoidant Control (41.24 vs. 51.98).

Partial-eta squared and Power are strong for both variables, with Avoidant Control accounting for 13% and approach control accounting for 5% of the variance in PWI.

In summary, people with intellectual disability did not differ from non-disabled people on the dependent variables of SWB, Self-esteem and Optimism. However, non-disabled people tend to use more approach control strategies, while intellectually disabled people tend to use more avoidant control strategies.

### 5.6.2 *Multivariate analysis on PWI domains*

While, the ANOVA was non-significant for PWI it is of interest to examine whether differences exist between the two groups on specific life domain scores. Examining for differences in life domains scores is an important consideration as people with intellectual disability are typically marginalised in society, and often do not experience the same opportunities across various life domains as non-disabled people experience. That is, people with intellectual disability are far more likely to experience disrupted social relationships, unemployment, health-related issues, and discrimination (I. Brown & Radford, 2007; Cummins, 2001a; Sheppard-Jones, et al., 2005). Thus, a MANOVA is conducted to explore possible differences between the two groups on each of the seven life domains that make up PWI.

Pillai's Trace criterion indicates a significant main effect  $F(7,149) = 4.55, p = < .001$ ; Partial-eta squared = .18. The univariate tests for each of the dependent variables are displayed in Table 5.17. Box's M test is significant, suggesting the data did not meet the assumption of homogeneity of variance-covariance matrices  $F(28,64091) = 2.07, p = < .001$ . Levene's test for equality of variances was significant for standard of living  $F(1,155) = 10.52, p = .001$ , achievements  $F(1,155) = 9.97, p = .002$ , safety  $F(1,155) = 14.16, p = < .001$ , and community connectedness  $F(1,155) = 4.43, p = .037$ , indicating that caution should be used when interpreting the results for these variables. Homogeneity of variance was upheld for the other domains.

Table 5.17  
*Univariate Tests Examining the Differences Between Groups for the Seven Life Domains*

DV	Non-disabled <i>M (SD)</i> <i>n=93</i>	Disabled <i>M (SD)</i> <i>n=64</i>	<i>F(1,155)</i>	<i>p</i>	Partial Eta <sup>2</sup>	Observed Power
Standard Living	72.77 (17.17)	75.00 (23.09)	.62	.43	.00	.12
Health	71.94 (20.81)	70.78 (22.13)	.11	.74	.00	.06
Achievements	70.32 (17.41)	78.28 (21.34)	6.58	.01	.04	.72
Personal Relationship	72.04 (21.80)	69.06 (24.35)	.64	.42	.00	.13
Safety	73.98 (18.95)	71.40 (26.78)	.50	.48	.05	.11
Community Connected	64.62 (20.67)	75.00 (24.10)	8.33	.00	.05	.82
Future Security	64.08 (20.34)	75.78 (22.52)	11.48	.00	.07	.92

When the results were examined separately, the three group effects to reach statistical significance using a Bonferroni adjusted alpha level .01, are the life domains achievements, community connectedness and future security,  $F(1,155) = 6.58$ ,  $p = .01$ ,  $F(1,155) = 8.33$ ,  $p = .004$ , and  $F(1,155) = 11.48$ ,  $p = <.001$  respectively. Partial-eta squared is moderate and powers are high for all significant comparisons, with the domain future security exerting the most influence on the difference between the two PWI scores. For each comparison, intellectually disabled people are more satisfied than non-disabled people.

### 5.6.3 *Multivariate analysis on eight subscales of Coping Response Inventory*

Since the two groups differ on both forms of control, it is of further interest to investigate the eight sub-scales. Univariate tests for each of the dependent variables are shown in Table 5.18. Box's M test is significant, suggesting the data do not meet the assumption of homogeneity of variance-covariance matrices  $F(36,62005) = 2.86$ ,  $p = <.001$ .

Levene's test for equality of variances is significant for logical analysis  $F(1,155) = 13.21$ ,  $p = .001$ , seeking guidance  $F(1,155) = 11.09$ ,  $p = .001$ , problem solving  $F(1,155) = 11.04$ ,  $p = .001$ , seeking alternative rewards  $F(1,155) = 4.22$ ,  $p = .042$ , and emotional discharge

$F(1,155) = 6.56, p = .011$ , indicating that the results for these variables need to be interpreted with caution.

Table 5.18  
*Univariate Tests Examining the Differences Between Groups for the Eight Subscales of CRI*

DV	Non-disabled <i>M (SD)</i> <i>n=93</i>	Disabled <i>M (SD)</i> <i>n=64</i>	<i>F(1,155)</i>	<i>p</i>	Partial Eta <sup>2</sup>	Observed Power
Logical Analysis	64.46 (17.14)	57.03 (25.61)	4.75	.03	.03	.58
Positive Reappraisal	65.29 (16.85)	57.37 (18.18)	7.85	.01	.05	.80
Seeking Guidance	67.31 (17.47)	58.90 (23.88)	6.49	.01	.04	.72
Problem Solving	65.48 (13.47)	61.22 (20.06)	2.54	.11	.02	.35
Cognitive Avoidance	43.51 (21.08)	56.19 (15.97)	16.60	.00	.10	.98
Acceptance/Resignation	37.58 (18.56)	45.08 (19.05)	6.05	.02	.04	.69
Seeking Alternative Rewards	50.65 (25.18)	67.81 (29.41)	15.35	.00	.10	.97
Emotional Discharge	33.22 (20.41)	38.83 (25.86)	2.20	.13	.02	.33

Pillai's Trace is significant  $F(8,148) = 8.41, p = <.001$ ; partial-eta squared = .31. A significant univariate main effect was revealed for the subscales of cognitive avoidance  $F(1,155) = 16.60, p = <.001$ , and seeking alternative rewards  $F(1,155) = 15.35, p = <.001$ , both exerting the highest influence on the differences between the two groups. Positive reappraisal  $F(1,155) = 7.85, p = .006$ , and seeking guidance  $F(1,155) = 6.49, p = .01$  were also significant. While acceptance/resignation almost reached significance  $F(1,155) = 6.05, p = <.015$  (see Table 5.18).

Results indicate that the mean scores for the intellectually disabled group are higher for the Avoidant Control subscales cognitive avoidance ( $M = 56.19$  vs.  $M = 43.51$ ), and seeking alternative rewards ( $M = 67.81$  vs.  $M = 50.65$ ). It is also evident, when examining the effect size (partial-eta squared) for the intellectually disabled group that these two subscales make a greater contribution to the difference between the two PWI scores. However, some caution regarding the findings for seeking alternative rewards needs to occur, due to the earlier mentioned violation of assumptions.

In summary, multivariate analyses on the eight subscales of the CRI reveal a significant main effect for group on four of the eight subscales. These were Positive Reappraisal and Seeking Guidance from Approach Control and two Avoidant Control subscales Cognitive Avoidance and Seeking Alternative Rewards. People with intellectual disability all reported higher use of avoidant control strategies and lower use of approach control strategies. Of interest to note is, both groups did not differ in their use of emotional discharge and problem solving strategies.

## 5.7 Predicting Relationship Between Buffer Variables and Subjective Wellbeing

### 5.7.1 *Standard Multiple Regression Analysis predicting Subjective Wellbeing*

A series of regression analyses were used to test the hypothesis that buffer variables of self-esteem, optimism, approach and avoidant control, each predict SWB for both intellectually disabled and non-disabled people. The data have already been shown to meet most of the necessary assumptions for testing and thus, no data transformations were undertaken. Sample size for both groups is adequate. Kurtosis for PWI variable for the non-disabled group had a value greater than one, while Approach Control variable in the intellectually disabled group had a kurtosis value greater than one (see Table 5.19). All variables were negatively skewed, with the exception of Avoidant Control for the non-disabled group and Optimism in the intellectually disabled group. However, minor violations of normality are acceptable in SWB data, as skewness often reflects the underlying nature of satisfaction data (Pallant, 2001). Thus, these results indicate analysis can proceed with reasonable confidence.

Table 5.19  
*Skew and Kurtosis of Totals for Variables for Non-disabled and Intellectually Disabled Groups*

Variables	Non-disabled ( $n=93$ )		Intellectually Disabled ( $n=64$ )	
	Skew	Kurtosis	Skew	Kurtosis
PWI	-.82	1.29	-.41	-.39
Approach Control	-.12	-.16	-.54	1.19
Avoidant Control	.59	.96	-.36	-.14
Self-esteem	-.89	.28	-.08	.27
Optimism	-.60	.73	.12	-.83

As no *a priori* hypotheses had been made to determine the order of entry of the predictor variables, two standard multiple regressions were performed comprising each group. Table 5.20 displays the bivariate correlations, unstandardised regression coefficients ( $B$ ), the standardised regression coefficients ( $\beta$ ), squared partial correlations ( $sr^2$ ), and  $R$ ,  $R^2$ , and adjusted  $R^2$  after entry of all independent variables for the non-disabled group. The correlations indicate no multicollinearity and the variables are suitably correlated for the multiple linear regressions to be reliably conducted.

Table 5.20

*Standard Multiple Regression of Self-esteem, Optimism, Approach Control and Avoidant Control on Subjective wellbeing in the Non-Disabled Sample (n=93)*

Variables	PWI DV	Se	Op	Approach Control	Avoidant Control	$B$	$\beta$	$t$	$sr^2$
Self-esteem	.63					.28***	.40	4.05	.10
Optimism	.53	.50				.21**	.27	2.68	.04
Approach Control	.36	.35	.58			.11	.10	1.01	.01
Avoidant Control	-.28	-.28	.03	.23		-.19*	-.18	-2.04	.02
						$R^2 = .48$			
						Adjusted $R^2 = .46$			
						$R = .70$			
unique variability = .17; shared variability = .29									

Note. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

$R$  for regression is significantly different from zero,  $F(4, 88) = 20.64$ ,  $p < .001$ . Self-esteem makes the strongest unique contribution to the equation (.40) and Optimism (.27) and Avoidant Control (-.18) also make a significant unique contribution. Altogether, 48.4% (46% adjusted) of the variability in SWB is predicted.

A second standard multiple regression analysis was conducted on the intellectually disabled group, as shown in Table 5.21. All correlations are positive and are small to moderate, ranging between  $r .11$  (avoidant control and self-esteem) and  $r .50$  (avoidant control and approach control). Correlations indicate that multicollinearity is not a problem. Thus, the data are suitably correlated with the dependent variable for the multiple linear regressions to proceed with confidence.

$R$  for regression is significantly different from zero,  $F(4, 59) = 6.84$ ,  $p < .001$ . The results showed that two of the four independent variables contributed significantly to the prediction

of SWB, Optimism ( $sr^2 = .14$ ) and Self-esteem ( $sr^2 = .06$ ). Both Optimism and Self-esteem make a strong unique contribution to the equation (.40 and .26 respectively). Altogether, 31.7% (27% adjusted) of the variability in SWB is predicted by knowing scores on the independent variables; Self-esteem, Optimism, Approach Control and Avoidant Control, as shown in Table 5.21.

Table 5.21  
*Standard Multiple Regression of Self-esteem, Optimism, Approach Control and Avoidant Control on Subjective Wellbeing in the Intellectually Disabled Group (n=64)*

Variables	PWI DV	Se	Op	Approach Control	Avoidant Control	B	$\beta$	t	$sr^2$
Self-esteem	.37					.29*	.26	2.34	.06
Optimism	.48	.26				.33***	.40	3.46	.14
Approach Control	.18	.19	.34			-.08	-.10	-.80	.01
Avoidant Control	.25	.11	.21	.50		.19	.19	1.53	.03
						R <sup>2</sup> = .32			
						Adjusted R <sup>2</sup> = .27			
						R = .56			
unique variability = .21; shared variability = .04									

Note. \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

In summary, the hypothesis that all the independent variables would predict SWB of both groups is not fully supported. The results show that for both the non-disabled and intellectually disabled groups the strongest predictors of SWB are self-esteem and optimism. Moreover, while self-esteem is the strongest predictor of SWB for the non-disabled group, optimism is the strongest predictor for the intellectually disabled group. Approach control did not feature as significant for either group as proposed in the hypothesis. A notable difference between the two groups is the shared variance, which is lower for the intellectual disability group, indicating, that for intellectually disabled people there is a difference in the contribution that the buffer variables make to SWB compared to non-disabled people. Shared variance is the overlapping conceptual variance created by the responses to different questions. When this is low, it indicates that the respondents are not creating this overlapping variance, but rather are seeing the questions as fundamentally different from one another. This is consistent with the low, shared variance in the intellectually disabled group, and most likely reflects their low level of cognitive functioning, thus reflecting a fundamental difference between the two groups.

An additional hierarchical regression analysis was run on both groups, with Self-esteem and Optimism entered in step 1 and the other two variables in step 2. The results confirmed the above findings, in which Approach and Avoidant Control do not make a significantly unique contribution to the model. Self-esteem and Optimism are the most significant predictors of SWB confirming previous results.

## 5.8 Relationship with low and high SWB

According to the homeostatic theory of SWB, people can be categorised into three main groups. These are: people who experience normal levels of SWB, people most likely to experience some level of homeostatic challenge and those who are most likely to experience homeostatic defeat or depression (Cummins, 2003). Homeostatic defeat is predicted to occur when the level of challenge has reached the threshold to which the homeostatic system can no longer adapt. As a consequence, control over SWB transfers from homeostasis to the challenging agent.

As discussed in Chapter 2, the homeostatic threshold of SWB for population means has been found to fall between 70 to 80%SM, while the set-point range for individuals lies between 40 to 100%SM (Cummins, 2000b, 2003). More recently, these set-point ranges have changed with the addition of new data, in which the new set-point range for individuals is between 55–95, with a mean of 75 points (Cummins, 2010). Set points are always positive and therefore lie above 50%SM. Under non-threatening conditions a normative range of SWB will be maintained, with the individual rating SWB in terms of their idiosyncratic set-point. In such conditions, it is predicted that the cognitive buffering system will be relatively inactive, and therefore, will not contribute significant variance in SWB. However, when conditions threaten homeostasis of SWB the cognitive buffers become activated as they attempt to restore and maintain SWB within the normative range, and thus will increase the explained unique variance in SWB.

In this section a number of data divisions were undertaken in order to examine the relationship between low and high SWB. However, the composition of these groups is not simple and requires some explanation. As previous analysis indicated there is no difference between non-disabled and intellectually disabled groups for the PWI, the two samples were



combined ( $n = 157$ ) and then divided into two subgroups, those with low SWB (e.g., PWI scores  $< 70\%SM$ ) and those with high SWB (PWI scores  $\geq 70\%SM$ ). However, owing to individual differences in set-point as discussed above, the low ( $< 70\%SM$ ) subgroup is likely to contain people for whom normal SWB approximates the lower boundary of the individual range (i.e., set-points between 55% and 69%). Thus, this lower group will contain a mixture of people who are either experiencing homeostatic challenge, or outright homeostatic defeat.

As this lower group is more likely to contain people for whom homeostasis has failed, it was decided to create a group with an extended range of 40 to 69%SM. While this is likely to contain more people in homeostatic defeat, it has the advantage of yielding a range of values (40–69) equal to the range of values in the high SWB (70–100) grouping. These equal ranges allow for comparisons to be made between the standard deviations of each group as well as between correlations with other variables. This decision resulted in a loss of three participants who scored below 40%SM. However, sample size remains adequate, just meeting the required 60 cases for analyses to proceed with confidence.

The following analysis presents bivariate correlations, followed by regression analyses. It is hypothesised that the buffer variables (Self-esteem, Optimism, Approach Control and Avoidance Control) will explain more variance in the low SWB group (40–69% SM) than in the high SWB group ( $\geq 70\%SM$ ), due to the buffer variables being activated with the threat of homeostatic failure.

### 5.8.1 *Bivariate correlations*

Table 5.22 displays the means, standard deviations and bivariate correlations for all variables of interest. In the combined sample ( $n = 157$ ), 38.2% ( $n = 60$ ) participants reported PWI scores that were in the restricted range 40 to 69%SM, while 59.9% ( $n = 94$ ) participants reported PWI scores  $\geq 70\%SM$ , and three (1.9%) participants scored below the cut-off value of 40 and thus were deleted from further analyses leaving a total sample of  $n = 154$ .

Table 5.22  
*Descriptive Statistics of the Low and High SWB Groups*

Variables	PWI	Self-esteem	Optimism	Approach Control	Avoidant Control
$\geq 70\%SM$ SQOL ( $n=94$ )					
PWI					
Self-esteem	.13				
Optimism	.41**	.17			
Approach Control	.15	.20*	.42**		
Avoidant Control	.18	-.23*	.19	.17	
	<i>M</i>	80.76	77.23	74.62	64.28
	<i>SD</i>	7.39	13.52	14.74	15.30
40-69%SM SQOL ( $n=60$ )					
PWI					
Self-esteem	.42**				
Optimism	.14	.36**			
Approach Control	.33**	.30**	.39**		
Avoidant Control	.02	-.21	.05	.33**	
	<i>M</i>	58.86	64.79	59.88	60.69
	<i>SD</i>	7.70	18.23	17.54	13.43

Note. \*\* $p < .01$  (2-tailed), \* $p < .05$  (2-tailed)

If as proposed, homeostasis is working hard to maintain SWB in the low SWB group (40–69%SM), then it is expected that the mean score for the buffer variables will be lower, while the standard deviations will be higher, due to the presence of homeostatic defeat for some people. As can be seen in Table 5.22 this is the case. The mean of the buffer variables are higher for  $PWI \geq 70\%SM$  ( $M = 65.22$ ,  $SD = 14.48$ ) than the  $PWI$  40–69%SM group ( $M = 58.04$ ,  $SD = 15.93$ ). This represents a difference of 7.2% points for the mean of the buffers and 1.5% points for the standard deviations in the predicted directions.

Also as expected, the mean of the correlations between the buffer variables and  $PWI$  scores are numerically higher in the 40–69%SM  $PWI$  group, than in the  $\geq 70\%SM$  group (.26 vs. .23 respectively). However, the correlations between the two groups are not significantly different.

### 5.8.2 Regression analysis exploring relationships between $\geq 70\%SM$ and 40–69%SM Groups

Regression analysis is used to determine which of the four buffer variables is the best predictor of high levels of SWB. Prior to conducting these analyses, two multivariate outliers slightly above the critical value were identified using Mahalanobis distance with a cut-off criterion of  $p < .001$ . These were found in both groups. However, regressions run in the

absence and presence of the two outliers do not differ. Thus, it was decided to run the regression analysis with all cases present. According to the criterion of 15 cases per predictor, as noted by Sevens (1996), sample size is adequate for regression analysis to proceed with confidence. The results are displayed in Table 5.23. The correlations indicate that multicollinearity is not a problem.

For the  $\geq 70\%$ SM group,  $R$  for regression was significantly different from zero,  $F(4, 89) = 5.30, p .001$ . The results indicate that only Optimism alone makes a significant unique contribution to the prediction of SWB ( $sr^2 = .12$ ). Together 19% (adjusted 15.6%) of the variability in SWB is predicted by the buffer variables together.

Table 5.23

*Standard Multiple Regression of Self-esteem, Optimism, Approach Control and Avoidant Control on Subjective wellbeing for  $\geq 70\%$ SM PWI Subgroup (n=94)*

Variables	PWI DV	Se	Op	Approach Control	Avoidant Control	$B$	$\beta$	$t$	$sr^2$
PWI									
Self-esteem	.13					.06	.12	1.12	.01
Optimism	.41	.17				.20***	.39	3.66	.12
Approach Control	.15	.20	.42			.03	-.07	-.62	.00
Avoidant Control	.18	-.23	.19	.17		.07	.15	1.44	.02
						$R^2 = .19$			
						Adjusted $R^2 = .16$			
unique variability = .15; shared variability = .004						$R = .44$			

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

The regression analyses for the PWI 40 to 69%SM group is presented in Table 5.24.  $R$  for regression was significantly different from zero,  $F(4, 55) = 4.09, p .006$ . The results indicate that only Self-esteem makes a significant unique contribution to the prediction of SWB ( $sr^2 = .12$ ). Together 23% (adjusted 17.3%) of the variability in SWB is predicted by the buffer variables. While the increased explained variance is predicted by homeostasis theory, due to the buffer becoming activated when under threat the fact that only self-esteem makes a significant contribution is against the prediction. Also of interest to note, is the small differences between the two models in terms of explained variance predicting PWI for the two groups (e.g.,  $R^2 .19$  v  $.23$  and adjusted  $R^2 .16$  v  $.17$ , for  $\geq 70\%$ SM PWI and 40 to 69%SM PWI group respectively). Furthermore, both models resulted in low explained

variance, with 84% and 83% remaining unexplained. Finally, an interesting result was that the one significant predicting buffer differed between each group. For the high PWI group the significant buffer was optimism, while for the low PWI group it was Self-esteem.

Table 5.24

*Standard Multiple Regression of Buffer Variables on Subjective for 40% to 69%SM PWI Subgroup (n=60)*

Variables	PWI DV	Se	Op	Approach Control	Avoidant Control	B	$\beta$	t	$sr^2$
PWI									
Self-esteem	.42					.16**	.38	2.78	.12
Optimism	.14	.37				-.04	-.10	-.74	.08
Approach Control	.33	.30	.39			.15	.25	1.75	.04
Avoidant Control	.02	-.21	-.01	.33		.01	.02	.13	.00
						$R^2 = .23$			
						Adjusted $R^2 = .17$			
unique variability = .23; shared variability = -.06						R = .48			

Note. \*  $p < .05$ , \*\*  $p < .01$

## 5.9 Summary of Results of Study 2

Factor analysis revealed the following results:

- The CRI was confirmed as two factors, Approach and Avoidant Control, thus all subsequent analyses were run using the totals for the two factors of Approach Control and Avoidant Control.
- The Rosenberg Self-esteem scale was confirmed as a single factor.
- The Life Orientation Scale analysis revealed that the negatively worded items were not clearly distinguishable for the intellectually disabled group. A one-factor solution using the positively worded items only resulted in an acceptable solution for both groups.

The hypothesis that SWB scores for people with intellectual disability will be within the same normative range as found for non-disabled people, is supported. However, when the individual life domains are examined this presents a different story. Specifically,

achievements in life, community connectedness and future security were all above the Australian normative ranges for PWI life domains while, the life domains of health, personal relationships and safety were below the Australian normative PWI ranges. People with intellectual disability were significantly more satisfied with the domains community connectedness and future security than non-disabled people.

People with intellectual disability did not differ from the non-disabled group for SWB, self-esteem and optimism. However, they did differ on the type of control/coping strategies they used. Non-disabled people scored higher on approach control strategies, while intellectually disabled people scored higher on avoidant control strategies.

The hypothesis that the buffers would predict SWB of both groups is not fully supported. Findings from regression analyses show, that the strongest predictors of SWB for both groups were self-esteem and optimism. However, these two predictors did not perform in the same way for each group. Self-esteem was the strongest predictor of SWB for the non-disabled group, followed closely by optimism and avoidant control, while optimism is the strongest predictor of SWB for the intellectually disabled group. Furthermore, Approach Control variables did not predict SWB for either group in this study, but Avoidant Control did contribute to the prediction of SWB for the non-disabled group.

Finally, the hypothesis that the buffer variables will explain more of the variance in SWB in the group that is most likely to be experiencing homeostatic challenge (restricted 40–69% group) was weakly supported. However, differences in explained variance between high and low PWI groups were small and both models evidenced low explained variance (84% and 83% remain unexplained). Only one buffer predicted SWB and this differed between the two groups (Optimism for the high PWI group and Self-esteem for the low PWI group).

## 5.10 Discussion of Study 2

The purpose of Study 2 is to explore the determinants of SWB and the maintenance of homeostatic control for people with mild to moderate intellectual disability compared to non-disabled people. This involves an investigation into self-esteem, optimism and perceived control, which have been proposed to buffer SWB. It is proposed that these three linked variables combine to absorb the impact of changing need states to maintain the steady output

of SWB, within the set-range as reported by Cummins and Cahill (2000). However, investigations into such cognitive processes have not been systematically investigated within intellectually disabled populations.

This study builds on earlier investigations into SWB and contributes to the study of intellectual disability by providing a greater understanding of the maintenance of SWB for this group. The conceptual framework of this investigation is that, any sort of disability is likely to be a source of challenge to the homeostatic system, additional to the normal life-challenges experienced by the general population (Cummins, 2005a). Consequently, even when reporting SWB within a normative range, the homeostatic system of people with disabilities is likely to be more fragile, compared to non-disabled people. As a consequence of this additional stress, their ability to regulate SWB will be compromised. The extent to which their disability will actually be evident as a source of stress is dependent on the individual's external and internal resources. When resources are enough to neutralise the additional demands caused by disability, the homeostatic system will maintain SWB within normative levels, relative to that person's set-point range. However, if the demands overwhelm resources, then homeostasis will fail and SWB will fall below the normative range (Cummins, 2005a).

The further importance of this research flows from the argument advanced in Chapter 3; that the assessment of SWB of people with intellectual disability should underpin service design and service delivery. As noted by Cummins (2005a) this approach incorporates the principles of normalisation (Wolfensberger, 1972) where objective QOL replicates the standard that is acceptable to the general population, and subjective QOL indicates the extent to which an individual's environment permits them to experience SWB within the normative range as experienced by the general population. However, before such measurements can be made with rigour, it is important to establish the psychometric adequacy of such data derived from this population.

#### *5.10.1 Verification of data from Intellectual Disability sample*

The first issue addressed in this study, involved establishing the reliability and validity of subjective data derived from people with intellectual disability. In the present study, Cronbach's alphas for the intellectually disabled group were consistently lower than those of

the non-disabled group, which indicates the possibility of higher measurement error in the data (Vassar & Hale, 2007). This limits the interpretability of results. Hence, it is necessary to determine whether the data for intellectually disabled people are adequate to support parametric analysis.

This examination was undertaken by applying Factor analyses to all of the scales employed in Study 2. Initially these analyses were conducted on data from intellectually disabled participants, and then on data from non-disabled participants to confirm that the scales performed as intended by their developers. Factor Analyses were also conducted on the combined sample for the CRI, as a modified version of this scale was used in the present study and thus, it was important to establish the underlying structure of this modified scale version.

#### *5.10.2 Personal Wellbeing Index*

The PWI is a composite measure of SWB comprising seven life domains; standard of living, health, achievements' in life, personal relationships, community connectedness, safety, and future security. Results from the Factor Analysis were consistent across both groups and confirmed the presence of a single stable factor accounting for 40 to 50.5% of variance (i.e., 40% for intellectually disabled and 50.5% for non-disabled groups). This result is consistent with previous research (International Wellbeing Group, 2006) and in addition reveals that people with intellectual disability have a similar factor structure of wellbeing as non-disabled people. This demonstrated that the PWI is a valid and reliable measure for use with people with an intellectual disability. Of note, the version of the PWI used has been specifically designed for people with intellectual disability, in contrast to the other scales employed.

#### *5.10.3 Self-esteem Factor Analysis*

The Rosenberg Self-esteem scale was developed to measure a global concept of self-esteem (Rosenberg, 1979). Subsequent research has proposed that the underlying structure of the scale can be operationalised as a two-factor structure, that represents “negative self-esteem or negative self-worth” and “positive self-esteem or self-worth” (Martin, et al., 2006). However, it is apparent that the two-factor structure is an artefact of item-wording (Greenberger, Chen, J., & Farruggia, 2003; Marsh, 1996; Tomas & Oliver, 1999). That is, the two factors reflecting positive and negative self-esteem may simply be a result of the

respondent's tendency to agree with positively worded statements about self and disagree with negatively worded statements about self.

Confirming this in an examination of a 7-item version of the scale (four positively worded and three negatively worded items) using confirmatory factor analysis, Marsh (1996) found a meaningful and highly interpretable single factor and also the existence of the method effect, which he attributed as being primarily due to the negatively worded items and the difficulty of interpreting them. As argued by Marsh, agreeing with, and especially disagreeing with negatively worded items, adds a degree of complexity to the task of responding to scales. Furthermore, this complexity is heightened when respondents have poor verbal ability. This was demonstrated by the students with poor verbal ability in Marsh's study, who were much more likely to make responses to negatively worded items that were inconsistent with their responses to positively worded items. Such difficulty in understanding negatively worded items is therefore, highly likely to occur for people with intellectual disability. Thus, it is important to establish the validity of the underlying structure of the Rosenberg Self-esteem scale, as used by people with intellectual disability.

In the present study, results from the intellectually disabled group support a one-factor solution and only partially supports a two-factor solution. Using PCA, and specifying one component to be extracted, this one component accounts for 22.4% of variance. Three of the original positively worded items (1 "satisfied with myself", 3 "have a number of good qualities" and 4 "able to do things as well as others") did not load greater than 0.3 in the first iteration and were deleted from further analysis.

The factor analysis was then run on the remaining seven items. Specifying a one-component extraction, a simple one-factor solution was found, in which 31.4% of variance was accounted for. The scale has barely adequate internal reliability ( $\alpha = .61$ ), although this value to some extent reflects the small number of items (Pallant, 2001), and the corrected item-total correlations fell between .20 and .51. Thus, the final one-factor solution comprised seven items (five negatively worded and two positively worded items). The factor structure of the current study share a number of similarities with the 7-item structure obtained in the studies by Marsh (1996) and the 6-item structure by Dagnan and Sandhu (1999). As shown in Table 5.25, four of the seven items retained in the factorial structure were common across all three



studies. These were items 2, 5, 7, and 10, while items 8 and 9 are only found in the current study.

Table 5.25

*Items Retained after Factor Analyses for Current Study, Marsh Study, and Dagnan and Sandhu Study, Compared Against Items in Original Rosenberg Self-esteem Scale.*

Original RSES Items (10)	Current Study (ID) Items (7)	Marsh (ND) Items (7)	Dagnan & Sandhu (ID) Items (6)
1. On the whole, I am satisfied with myself (+)		√	
2. At times I think I am no good at all (-)	√	√	√
3. I feel I have a number of good qualities (+)			√
4. I am able to do things as well as others (+)		√	√
5. I feel I do not have much to be proud of (-)	√	√	√
6. I certainly feel useless a times (-)	√	√	
7. I feel I am a person of worth, or at least on an equal plan with others (+)	√	√	√
8. I wish I could have more respect for myself (-)	√		
9. All in all, I am inclined to feel that I am a failure (-)	√		
10. I take a positive attitude towards myself (+)	√	√	√

*Note.* (+) positively worded items; (-) negatively worded items  
ID = Intellectually Disabled Sample; ND = Non-Disabled Sample

However, to be consistent with previous research, a two-factor solution was also examined with Varimax rotation and used to interpret the two components. No simple structure was found. Rather the presence of complex variables made this solution unacceptable. Thus, for this study a two-factor solution for the Rosenberg Self-esteem scale is not a valid structure. This finding however, is contrary to the findings from two previous studies performed with people who have an intellectual disability.

The first of these, by Dagnan and Sandhu (1999) found an acceptable two-factor solution using a 6-item version of the original Rosenberg Self-esteem scale, comprising four positively worded and two negatively worded items, on a sample of adults with mild to moderate intellectual disability. This is the same level of intellectual disability as the current sample. Wording of items was simplified by the authors to a level of comprehension relevant to this sample, while retaining the original meaning of the items. For example, item 7 (“I feel that I’m a person of worth, at least on an equal plane with others”), was modified to “I feel that I am a good person, as good as others” or item 10 (“I take a positive attitude to myself”), was simplified to “I like myself”. The authors conclude that the scale as used with this population showed reasonable concurrent validity, as shown by its predicted interrelationship with depression in which self-esteem was negatively correlated with depression ( $r = -.41$ ,  $p < .01$ ), and had a factor structure consistent with Rosenberg’s theoretical model of self-esteem.

The major point of difference between the factor structure of this and the current study is that, whereas, the current study comprises five negatively worded items and two positively worded items, the Dagnan and Sandhu study comprised four positively worded items and two negatively worded items (see Table 5.25). Four of the six items in the two-factor solution found by Dagnan and Sandhu were common with the 7-item one-factor solution used in this current study. As shown in Table 5.25, these were the two positively worded items 10 and 7 (“I take a positive attitude to myself” and “I feel that I am a worthwhile person, at least as good as others”) and two negatively worded items 5 and 2 (“I feel I do not have much to feel proud of” and “At times, I feel I am no good at all”). However, while their first factor is psychometrically acceptable with the four positively worded items accounting for 35.5% of total variance, their second factor is invalid since it comprises just two items. Since the minimum number of items to constitute a valid factor is three (Costello & Osborne, 2005), their claim to have discovered two factors is actually incorrect.

In a second study, Davis, Kellett and Beail (2009), assessed the factor structure with people who have mild to moderate intellectual disability. Using the original 10-item version of the scale, the authors found a two-factor structure accounting for 54.5% of variance. Factor 1 comprised seven items; four positively worded and three negatively worded which generally reflected Self-Worth, while Factor 2 comprised three items; two negatively worded and one positively worded item that reflected Self-Criticism. Consistent with the Dagnan and Sandhu

(1999), the positive and negative items did not separately factor. However, the internal reliabilities were weak for the whole and two subscales ( $\alpha = .64, .66$  and  $.32$  respectively). Again these findings cast doubt on the validity of this scale for use with people who have intellectual disability.

In conclusion, there is clearly considerable uncertainty regarding the construct validity of the Rosenberg Self-esteem scale for people who have mild to moderate intellectual disability. The scale does not factor as intended and the internal reliability is weak for all studies discussed. However, in order to persevere with the analysis as best as possible with this measure, the self-esteem data for intellectually disabled group used in the current study are derived from the 7-item single factor solution.

In terms of the non-disabled group, both one-factor and two-factor solutions were sought. The one-factor solution accounted for 51.6% of variance with all 10 items loading on to Factor 1 greater than 0.50. This indicates the presence of a reliable super-ordinate factor. However, the two-factor solution did not emerge as expected. In a manner similar to the data from the intellectually disabled group, the two-factor solution revealed the presence of four complex variables which, when removed did not result in a satisfactory factor solution. Thus it would appear from these results that a two-factor solution representing negative self-esteem and positive self-esteem does not adequately fit the data for either group. Factor analytic studies have yielded contradictory results in terms of factor structure, with some studies supporting a two factor solution (Martin, et al., 2006; Tomas & Oliver, 1999). However, these results are consistent with previous factor analytic research (Gray-Little, Williams, & Hancock, 1997; Marsh, 1996; Rosenberg, 1979), which support a one-factor model as the best fit of the data.

Since an important aspect of this research is to compare the intellectually disabled and non-disabled samples, it was decided to use the same single factor solution as had emerged from the intellectually disabled group. So the factor analysis was rerun, and the resultant 7-item one-factor solution accounted for almost 55% of variance, which is an improvement on the initial 10-item one-factor solution (51.6% of total variance) found for the non-disabled group. All items loaded on the factor greater than .54 and internal reliability was good ( $\alpha = 0.85$ ). The variance accounted for is higher than that obtained for the intellectually disabled sample

(55 % vs. 31.4% respectively), indicating this one-factor structure is a sound and valid structure to use for subsequent data analysis.

In summary, these results provide a number of insights into the measurement of self-esteem. The first confirms the difficulty of obtaining valid data from negatively worded items for people with mild to moderate intellectual disability. Second, these findings may indicate a genuine difference in the way that people with intellectual disability structure self-esteem. This is evident in the difference between the one-factor structure obtained for the intellectually disabled group (see Table 5.5) and the original one-factor structure from the non-disabled group (see Table 5.7).

Furthermore, these findings highlight the importance of verifying the factorial structure of each measurement instrument before formal data analyses is conducted. An implication of not doing this is that the interpretation of results from subsequent analyses will be flawed. While these results demonstrate that the construct self-esteem can be measured for people with intellectual disability, such findings need to be viewed with some caution, as clearly further work needs to be done in the area of measuring self-esteem and the development of a scale that is easily understood by this group. Additionally, further work needs to be done to better understand how intellectually disabled people respond to questions related to self-concept, self-esteem or self-image, as they clearly did not respond to the items in the scale in a manner similar to non-disabled participants, as shown in Table 5.25. Thus, there is a clear need to establish whether people with intellectual disability respond differently to personality scales and the extent to which their responses are influenced by method effects and the confusion that arises from negatively worded items. Certainly as argued previously (Dagnan & Sandhu, 1999; Davis, et al., 2009; Matikka, 1996; Zigler, Bennett-Gates, & Hodapp, 1999), the assessment of the self-esteem construct is an important consideration for this population. However, valid research into this area is only possible with the use of appropriately constructed instruments that are easily understood and interpreted by this group.

#### *5.10.4 Optimism Factor Analysis*

Similar problems as described above were encountered with the LOT (Scheier & Carver, 1985), particularly as used by people with intellectual disability. While this scale has been

widely used to assess optimism in the general population, it has not been widely used with people with intellectual disability. Almost no studies reporting the factorial structure of the LOT, as used by this group, were found. Furthermore, as noted by Shogen et al. (2006) only a small number of studies have applied the positive psychology constructs of optimism and hope to people with intellectual disability. This general lack of reporting on the psychometric properties of data appears to be a trend highlighted by Vassar and Hale (2007), who report that within existing literature, less than half of all studies report adequate reliability information. Furthermore, the lack of reporting on the psychometric properties shows the inadequacy of much of the published material, where authors have not conducted rigorous investigations of the adequacy of their data. Thus, establishing the adequacy of the data in the current study is important as it will add to an understanding of the optimism, but in particular this study will provide psychometric data on the suitability of the LOT, as used by people with intellectual disability.

Using data from the intellectually disabled group, the initial one-factor solution run on all eight items of the LOT did not result in a simple solution. Two negatively worded items (2 and 8) were eliminated from further factor analysis, as they did not load using the cut-off criteria of 0.3 and factor analysis was rerun on remaining six items. This time item 7 “I believe every cloud has a silver lining” did not load on this factor and thus was eliminated from further analysis and factor analysis was rerun again extracting one factor. The final one-factor solution comprised five items (two negatively worded items and three positively worded items) that together accounted for 42% of variance with factor loading greater than .570. In keeping with current research on the LOT scale a two-factor solution was examined. Varimax rotation was performed to aid interpretation, which together explained almost 67% of variance. Examination of the two-factor solution revealed one item (item 1 “in uncertain items, I usually expect the best”) cross-loaded on both factors. While the presence of two factors is consistent with other research (Marshall, et al., 1992), the presence of complex variables makes this solution unsatisfactory. The difficulty in obtaining a simple solution from the LOT scale, as used by this group is similar to the results obtained from the factor analysis for the Rosenberg scale, indicating the possibility that scales in which both positive and negatively worded items are used, may not be easily understood by this population. As noted by previous researchers (Cummins, 2005b; Davis, et al., 2009; Prosser & Bromley,

1998), it is highly likely that negatively worded items may place an unacceptably high cognitive load on people with intellectual disability and thus, their use in scales as used by this group is questionable.

While, negatively worded items are included in scales to counter acquiescent responding (i.e., tendency to say “yes” to questions regardless of their content), the potential difficulty of using such wording was noted by Scheier and Carver (1985). These authors suggest that negatively worded items pose a level of semantic complexity that is not present when positively worded items are used, and thus may form the basis of different responding between the positive and negative items. Whilst, this observation was made in relation to the general population the problem is likely exacerbated for people with cognitive and language impairments, resulting in them becoming confused in their responding. As a consequence their data show larger variability and lower internal reliability (see Table 5.3), than data from non-disabled people.

To test whether positively or negatively worded items were more easily understood, two further factor analyses were undertaken separately, on the four positively worded items (measuring Optimism) and four negatively worded items (measuring Pessimism). The one-factor solution for the Optimism subscale accounted for almost 45.% of variance, and internal reliability of  $\alpha = 0.56$ , which is the same value found in the study by Shogren et al. (2006), which used mild to moderate adolescents with intellectual disability. This solution accounts for slightly more variance than the initial one-factor solution, which comprised all eight items (45.5 vs. 42.4 respectively). This is consistent with the view that people with intellectual disability find positively worded items easier to comprehend.

The one-factor solution run on the Pessimism subscale explains 43.3% of variance, which is very similar in value to the variance accounted for by the Optimism subscale (45.5) and the initial one-factor solution (42.4). This indicates that the negatively worded items may have been partially understood, after all. Furthermore, Cronbach’s alpha (.53) and corrected item-total correlations were similar to those obtained for the initial one-factor solution (.53 vs. .54). This solution was acceptable, however, it is not as good as that obtained when using the Optimism subscale. Internal reliabilities were barely adequate for all factor analysis models tested. Closer inspection of the results, indicate that the best fit for the intellectually disabled

group is the one-factor solution comprising the four positively worded items (see Table 5.9) as it has slightly better variance accounted for and better internal reliability than the other factor solutions. This factor solution was used in all subsequent analyses.

The LOT has been widely used to assess optimism in the general population, however, it has only been applied to people with a range of disabilities in a limited way and even less so for people with intellectual disability. For example, optimism has been assessed with adolescents with Cerebral Palsy (Manuel, Balkrishnan, Camacho, Peterson Smith, & Korman, 2003), and people with traumatic brain injury (Tomberg, Toomelea, Puer, & Tikk, 2005). A limitation of many studies however, is that very few report the internal reliability of their data.

An exception is the study by Shogren et al. (2006), who reported psychometric data for a sample of mild to moderate intellectually disabled adolescents. The authors sought to compare the associations between the positive psychological constructs of hope, optimism, locus of control, self-determination, and life satisfaction in adolescents with intellectual disability and non-disabled adolescent using structural equation modelling. Their study revealed comparability in the measurement of these positive psychological constructs across the two groups, in that there was no significant change in fit based on the RMSEA Model Test. That is, their findings showed that the constructs included in the model (autonomy, self-regulation, psychological empowerment, self-realisation, agency thinking, pathways thinking, optimism, locus of control and life satisfaction) were invariant when measured across intellectually disabled and non-disabled adolescents. However, while the constructs being assessed were judged to be the same for both groups, it is of interest to note the internal reliabilities between the two groups for the LOT differed. That is, Cronbach's alpha values for the LOT were 0.75 for non-disabled adolescents and 0.56 for intellectually disabled adolescents, which reflect the same value as obtained in the current study with the Optimism subscale.

This was not the case for the other constructs being measured in the Shogren et al. study, as all Cronbach's alpha values were high and within a similar range for both groups. For example, Cronbach's alpha for the Hope scale were 0.89 and 0.87, the Locus of Control scale were 0.73 and 0.72, the Life Satisfaction scale values were 0.91 and 0.86 for the global

domain, in adolescents without disabilities and adolescents with disabilities, respectively. In spite of the lower internal reliabilities obtained for the LOT as used by people with intellectual disability in the current study and the Shogren et al. study, these results provide tentative support for the use of the LOT by this group, extending the use of the LOT to include people with intellectual disability. These results also provide tentative data on the psychometric properties of this scale as used by this population, which has not featured very much in published studies to date.

In contrast, factor analyses run on the non-disabled sample produced a single super-ordinate factor using all eight items and a valid two-factor solution producing two method factors. However, to compare intellectually disabled and non-disabled results, it was decided to rerun the factor analysis, specifying the extraction of one-factor using the positively worded items (Optimism subscale) only, as emerged from the intellectually disabled. The resultant one-factor solutions for Optimism and Pessimism subscales confirm the underlying structure of the LOT scale for the non-disabled group as comprising both optimism and pessimism, which can be used either combined in a single scale or as separate subscales of optimism and pessimism. These findings add to and support previous research assessing optimism using the LOT (Lai, 1997; Scheier & Carver, 1985; Scheier, et al., 1994). However, the single factor solution derived from the four positively worded items was considered the most acceptable solution as it accounted for 71.5% of variance and had high reliability ( $\alpha = .87$ ). To be consistent with the intellectually disabled group this solution is used in all subsequent analysis.

In summary, while the factor analyses for the non-disabled group confirmed the underlying structure of the LOT scale, the most satisfactory factorial solution for the intellectually disabled group was however, obtained using only the four positively worded items (Optimism subscale). This factorial solution was also deemed the most suitable for the data of the non-disabled group, and therefore, used in all subsequent data analyses. While, this factorial solution for the intellectually disabled group has barely reasonable reliability ( $\alpha = .56$ ), the low value is consistent with the low number of items making up the scale (Pallant, 2001). These results also support the notion that the use of negatively worded items in which the respondent's rate their agreement, may be problematic when used with intellectually



disabled samples. If negatively worded items are to be used, then the phrasing of items needs to be within the every-day language and experience of people with disabilities.

#### *5.10.5 Perceived Control Factor Analysis*

Exploratory factor analysis was performed on CRI (Moos, 1993). The scale had been modified as a result of previous findings (Cousins, 2001), who as a result of factor analysis with the general population sample, had reduced the 48 items to 35. These reflected approach and avoidant coping factors, as well as providing support for the eight subscales. It was these 35 items that were used in the present study. Data from the two groups were combined prior to factorial analysis as the CRI for the present study has high internal reliabilities for both groups ( $\alpha = 0.84$  non-disabled and  $0.86$  intellectually disabled). These values are much higher than the values reported in the CRI manual (e.g.,  $\alpha = .65$  for women and  $.67$  for men) (Moos, 1993).

A PCA with Varimax rotation accounted for 32.5% of the variance. In total, eight items either did not load on each factor using the cut-off criteria of 0.30 or cross-loaded on both factors. Following the elimination of these items, the analysis was rerun with the 27 remaining items. Factor 1 contains 16 items, explaining 19.1% of variance comprising items that reflect approaching or acknowledging problems and includes items from each of the four Approach Coping subscales (e.g., problem solving, positive reappraisal, logical analysis and seeking guidance and support). Factor 2 comprised 11 items that reflect avoidant or withdrawing from problems and included items that make up three of the Avoidant Coping subscales (i.e., cognitive avoidance, acceptance/resignation and emotional discharge), accounting for 13.35% of variance. Internal reliabilities were reasonable for each factor ( $\alpha = 0.85$  and  $\alpha = 0.77$ , Factor 1 and Factor 2 respectively).

In summary, the two-factor solution found in this study, is not only a simple and highly interpretable model, but is also consistent with previous research (Cousins, 2001; Herman-Stahl, Stemmler, & Peterson, 1995; Moos, 1993), and is similar to the conceptual framework proposed by Moos and Moos (1983). It can be concluded that the underlying factor structure of the CRI shows clear support for the approach and avoidant distinction of coping.

To be consistent with analysis of the previous scales, separate factor analyses were run on the two groups. The 35 items of the CRI as used by the intellectually disabled group were subject to PCA. It was decided to run the factor analysis using all 35 items as it was the first time that the CRI had been applied to this population, and the underlying structure for this modified version of CRI, as used by people with intellectual disability, is not known. Two factors were extracted with Varimax rotation performed, which accounted for 33% of variance. Factor 1 comprised 10 items that mostly reflect approach coping. Factor 2 comprised nine items that mostly reflect items from the avoidant subscales. While the internal reliabilities for each factor were mostly reasonable ( $\alpha = 0.79$  and  $0.66$  for Factor 1 and Factor 2 respectively) they were not as good as obtained in the combined sample factor analysis. Furthermore, while the factor analysis confirms the two-factor structure of approach and avoidant coping, the presence of complex variables cross-loading on both factors makes this solution unacceptable.

In keeping with previous analyses, the 35 items from the CRI as used by the non-disabled group were subjected to a series of factor analyses. The extraction of two factors explained almost 31% of the variance, which is slightly lower than obtained for the intellectually disabled group. Factor 1 comprised 18 items, mostly reflecting items from the Approach Coping subscales, while Factor 2 consisted of 12 items that consistently reflect items from the Avoidant Coping subscales of the CRI. Internal reliabilities were higher than those obtained for the intellectually disabled group (i.e.,  $\alpha = .85$  for Factor 1 and  $\alpha = .84$  for Factor 2).

A number of similarities and differences were revealed in the factor analyses for the combined groups, intellectually disabled and non-disabled groups, as shown in Table 5.26.

Table 5.26

*Comparison of the Resultant Factorial Structure of CRI for Combined Sample, ID Group and Non-Disabled Group for Study 2*

Items	Combined Sample	Intellectually Disabled	Non-disabled Group
1. Think of different ways to deal with problems	√	√	
2. Tell yourself things to make yourself feel better	√		√
3. Make a plan of action and follow it	√		√
4. Try to forget the whole things	√		√
5. Feel that time will make a difference; that the only thing to do is wait	√		√
6. Take it out on other people when you feel angry or depressed	√	√	√
7. Try to step back from the situation and be more objective			
8. Remind yourself how much worse things could be	√	√	√
9. Talk with a friend about the problem	√	√	√
10. Know what has to be done and try hard to make things work	√	√	√
11. Try to forget the whole things		√	√
12. Realise that you have no control over the problem	√		
13. Take a chance and do something risky		√	√
14. Try to see the good side of the situation	√	√	√
15. Decide what you want and try hard to get it	√		√
16. Think that the outcome will be decided by fate			√
17. Try to make new friends			
18. Try to anticipate how things will turn out	√	√	√
19. Think about how you are much better off than other people with similar problems	√		√
20. Seek help from persons or groups with same type of problem			
21. Try at least two different ways to solve the problem	√		√
22. Try to put off thinking about the situation, even though you know you will have to at some point	√		√
23. Accept it; nothing can be done	√	√	√
24. Yell or shout to let off steam	√	√	√
25. Try to understand what you need to learn from the situation	√		√
26. Try to tell yourself that things will get better	√	√	√
27. Try to find out more about the situation	√	√	√
28. Try to learn to do more things on your own	√	√	√
29. Wish the problem would go away or somehow be over with	√		√
30. Try to anticipate the new demands that will be placed on you		√	√
31. Think about how this event could change your life in a positive way	√		√
32. Pray for guidance and/or strength	√	√	
33. Take things a day at a time, one step at a time	√	√	√
34. Try to deny how serious the problem really is	√	√	√
35. Lose hope that things will ever be the same	√	√	√

*Note.* Combined Group = 27 items; ID Group = 19 items; ND Group = 30 items.

In addition to those already mentioned there was a difference in the number of items that comprised the CRI for each group. Twenty-seven items comprised the CRI for the combined sample, 19 items for the intellectually disabled group and 27 items in total remained from factor analysis for the non-disabled group. Yet the difference in total variance accounted for by each factorial structure was very small, 32.5% for the combined groups, 33% for intellectually disabled and 31% for the non-disabled group. Three items, two from Approach Coping (items 7, 20) and one from Avoidant Coping (item 17) subscales were not found in the factorial structure of all three groups, while 14 items were common across all three groups. Nine of these common items were made up from the Approach Coping subscales, with six of the nine coming from the two subscales Positive Reappraisal and Problem Solving. The remaining four items common to all three groups came from the Avoidant Coping subscales. Another notable difference is a higher proportion of items from the Approach Coping subscales (9) compared to the Avoidant Coping subscales (4) that do not feature in the factorial structure for the intellectually disabled group but do feature in the combined and non-disabled group factorial structure.

In summary, it is clear that the two-factor solution obtained from the combined group data provides the most parsimonious explanation of all the three factor analyses and therefore, is the most acceptable and will be used in subsequent analyses. Furthermore, factor analyses run separately on each of the two groups confirmed the underlying structure of the CRI as comprising both approach and avoidant scales, which is consistent with previous research (Cousins, 2001). Separate factor analyses run on the two groups, revealed similarities and minor differences in the factorial structure. However, the factorial structure for the non-disabled group proved a more acceptable solution than that obtained for the intellectually disabled group. Finally, the shortened version of the CRI developed in this study provides a more efficient and acceptable instrument to assess coping styles, particularly when used with intellectually disabled adults for whom attention and interest span is likely to be less than non-disabled adults.

#### *5.10.6 Summary*

The results of Factor Analyses on the scales as used specifically, by people with intellectual disability highlights the importance of establishing the adequacy of the data prior to further

analyses. The results indicate the difficulty of gaining reliable and valid data from people with intellectual disability, in particular the difficulties that can arise when negatively worded items are used. Overall, the findings from factor analyses on the scales used in this study are mixed. In that, a similar factor structure of personal wellbeing was found for both groups. Additionally, factor analyses for the CRI scale run separately on each of the two groups confirmed the underlying structure of the CRI. Whereas, similar factor structures for both the Self-esteem and Optimism scales were more difficult to obtain, due to difficulty of obtaining valid data from negatively worded items for people with mild to moderate intellectual disability. Finally, these findings indicate the need to further investigate the Optimism and Self-esteem scales in particular, to understand the responses that people with intellectual disability make to such scales.

### 5.11 The Subjective Wellbeing of Intellectually Disabled and Non-disabled Groups

As previously mentioned, the effective measurement of self-report data from people with intellectual disability is fraught with difficulties (Ager & Hatton, 1999; Hatton & Ager, 2002) and raises concerns about the adequacy of such data, due to their cognitive and language limitations. While some of these issues have been addressed (Cummins, 2002b), researchers simply cannot afford to assume that self-report SWB data obtained from people with intellectual disability are valid. Hence, an important consideration when reporting on data obtained from this group is to establish validity and reliability. Failure of researchers to do this seriously jeopardises the generalisation of any reported findings and is simply not good science. As discussed in the previous section, factor analysis is one approach that is useful to determine the adequacy of data, once they have been collected. However, results from the factor analyses in this study were mixed, in that the scales using both positive and negatively worded items (i.e., Rosenberg Self-esteem scale and Life Orientation Inventory) did not appear to be easily understood by a high proportion of the intellectually disabled sample. In particular the negatively worded items were problematic for this group.

Additionally, steps can be taken to establish the validity and reliability of data from intellectually disabled samples, prior to data collection. The first, involves the use of pre-testing protocols from the PWI-ID (Cummins & Lau, 2004b). These protocols serve a

number of functions. Specifically, they are used to determine if participants understand the scale and the level of complexity they are able to use, to check for acquiescence responses (i.e., participants who agree with every question regardless of the appropriate response), and to eliminate those participants who do not have the cognitive capacity to respond validly to the scale. An outline of this procedure is covered in the Method section in Chapter 4 of this thesis. Moreover, at the time of consent each participant was asked a series of questions, to ensure they understood the nature of the task they were agreeing to perform. These two preliminary procedures provide a reasonable level of confidence for the researcher, that responses made by participants will be valid.

The second step taken to establish the validity and reliability of data from intellectually disabled samples involves screening data for response sets, after data have been collected. Response sets occur when the participant's scores for all seven life domain items are consistently at the top or bottom of the scale (Cummins & Lau, 2004b). That is, if a 0–10 response scale is being used, then participant's scores on all items will either, all be 0 or 10. As argued by Cummins (2004b) such data provide no internal variation and therefore must be eliminated prior to conducting data analysis. The presence of response sets in data is not restricted to intellectually disabled samples, as it also occurs in data from the non-disabled samples as well. These two procedures have been undertaken with the data from the intellectually disabled group used in this study and thus, formal data analysis can proceed with reasonable confidence that the data are valid and likely to be free from the usual issues that contaminate data obtained from intellectually disabled groups. Data from the non-disabled sample were also checked for the presence of response sets.

The third step taken to ensure the validity and reliability of data from intellectually disabled samples, involves comparing the data from this group with normative SWB data, to check if their data fall within normative ranges. Currently there are no available normative data on the SWB of intellectually disabled people in New Zealand. There are however, normative Australian SWB data obtained from the general population (Cummins, Woerner, Tomy, Gibson, et al., 2007). Moreover, there is also the highly stable Western normative range for SWB (Cummins, 1998b) that can be used as the comparison by which to judge the adequacy of the data from intellectually disabled samples. A simple visual inspection of the means, standard deviations and ranges for the PWI, Life-as-a-Whole, and the seven life domain

scores obtained for the intellectually disabled sample with the Normative Australian scores will indicate if the data are within established norms. From this comparison, it is clear that the SWB scores obtained for the intellectually disabled sample in this study fall within the normative range as obtained from the combined Australian Unity surveys.

The conclusion to be drawn is that data from the intellectually disabled sample are valid and reliable. Thus, conclusions drawn from subsequent analyses can be considered robust, contributing to the theory of SWB and furthermore, contributing to an understanding of the SWB of people with intellectual disability. These findings will now be discussed.

#### *5.11.1 Life-as-a-whole: Group differences*

The hypothesis that SWB scores for people with intellectual disability will be within the same normative range as determined from the scores of non-disabled people is supported. This is true of the most abstract-personal indicator, satisfaction with life-as-a-whole, as well as the total mean score for PWI. That is, despite people with intellectual disability being marginalised in society and not experiencing the same opportunities as other members of society for a life of quality, they report SWB levels that are within the expected Western normative range (Cummins, 1998b).

However, this was not the case for the non-disabled group, who had mean scores that were slightly below both the Western normative range and the lower boundary of the Australian normative range (see Table 5.12). Thus, it would appear from the findings that non-disabled people in Auckland, have lower satisfaction levels across the global life-as-a-whole question, the seven life domains and the total mean score for PWI. People with intellectual disability on the other hand reported satisfaction scores that were either higher or within the Australian normative ranges for life-as-a-whole, PWI and life domain scores (see Table 5.12). No clear explanation can be given as to why the non-disabled sample has lower SWB scores. It could be that non-disabled people in Auckland are not as satisfied with their life as others, or that this particular group is not representative of the general population of non-disabled people in Auckland, despite efforts to ensure otherwise. That is, recruitment of non-disabled people from the general population was conducted through the combined Electoral Rolls of the greater Auckland region. From the electoral data-set, the 500 names were randomly selected using the Research Randomizer (accessed at [www.randomizer.org](http://www.randomizer.org)), in which random sets of

numbers were generated and then matched to the names on the electoral roll data-set. These people were then sent via mail, a package containing Study 2 materials: a plain language statement inviting people to participate in the study, a consent form and the self-administered questionnaire.

An examination of the demographic profile of the non-disabled sample in this study compared to the demographic profile from the normative longitudinal Australian Unity Wellbeing Index Survey 18 data (Cummins, Woerner, Tomy, Lai, et al., 2007), may possibly provide some explanation for their low SWB scores. However, comparisons need to take into account the possibility of cross-cultural differences between Australian and New Zealand samples, as one cannot assume that these two populations represent homogeneous groupings. The demographic profile for the non-disabled participants in this study comprised 72% females and 27% males, resulting in a skewed gender distribution. According to results from the Australian Unity Wellbeing Index Survey, females tend to have higher levels of personal wellbeing than males. As women exceeded men by almost 2.67 to 1, gender differences do not seem to account for the low SWB scores.

The Personal wellbeing of people aged 26–55 years is also highly sensitive to low incomes, with men aged between 36–55 years more likely to experience low SWB when their income is low (Cummins, Woerner, Tomy, Lai, et al., 2007). In the present study 60% of people were in this age bracket, with 50% reporting incomes less than \$41,000.00. Having 50% of participants on low incomes seems very high and may reflect the skewed distribution of females to males in this study. That is, it seems highly probable that the female sample in this study, comprise women who are caregivers, students, or part-time workers and therefore will overall, have lower incomes. This demographic influence may account for the lower SWB in the non-disabled sample of this study. A more balanced sample representing an equal distribution of gender is required before the findings of low SWB of non-disabled people in Auckland, New Zealand, can be accepted.

Another demographic influence identified as having a detrimental effect on personal wellbeing is unemployment, in particular for those 25 years of age and beyond, but more so for males than females. In this study 12% of men and 9% of females were unemployed, which is higher than reported in the Australian Unity Wellbeing Index Survey 18, where only



4.8% of the combined sample were unemployed. As reported by Cummins et al. (2007) people unemployed have lower than normal PWI scores (66.4) and lower wellbeing for all domains (ranging from 61 for domain achieving to 68 for domain standard of living), except the of domain safety which was within the normative range 76. Thus the higher rate of unemployment of the non-disabled sample in this study may account for low SWB scores reported.

The final demographic influence mentioned in the longitudinal study to influence SWB is marital status. Most particularly, males who live alone have lower personal wellbeing, while married people have significantly (2.2 points) higher personal wellbeing than other groups (e.g., defacto, separated, divorced) (Cummins, Woerner, Tomy, Lai, et al., 2007). In the present study over half of the sample were married (58%), while only 3.2% of the sample were separated and 8.6% divorced. No men in this sample were separated or widowed. As only a small proportion of non-disabled males in this current study were single or divorced, this figure is not enough to account for the low personal wellbeing score. However, the overall proportion of married participants in the current study is lower than found in the combined sample of the Australian non-disabled, where 65.1% were either married or in a defacto relationship. With more than 50% of the non-disabled sample in the present study being married, it was expected that the SWB of this sample would have been within normative ranges. The lower proportion of married participants in the Auckland non-disabled sample compared to the Australian non-disabled sample, may account for low SWB score. As noted by Cummins et al. (2007), SWB is made resilient by marriage, as the presence of a partner acts as a buffer against negative life events and therefore married couples strengthen each other's SWB. This means that for the non-disabled sample in the current study, fewer participants experienced the benefits that accompany the presence of a partner, which may have been a factor that contributed to the low SWB scores.

In summary, it would appear that the comparison of the demographic profile of the Auckland non-disabled sample with the Australian non-disabled sample might provide some explanation as to why the SWB scores were lower than expected. A plausible demographic explanation is income and employment status, which appears to be affected by the disproportionate gender balance of the non-disabled sample. Thus, it could be that the lower SWB scores, reported by the non-disabled sample in this study is simply an artefact of the

sampling procedure. A second plausible explanation is the lower proportion of participants in the Auckland non-disabled sample who were married. In conclusion, a larger sample size with a balanced gender distribution is needed before one can conclusively accept or reject the finding, that the SWB of the non-disabled people in this study have lower SWB than other populations.

#### *5.11.2 Personal Wellbeing: Group differences*

The PWI is designed as the first level deconstruction of life-as-a-whole and is a composite of satisfaction with seven life domain questions; satisfaction with standard of living, health, life achievements, personal relationships, safety, community connectedness, and future security (International Wellbeing Group, 2006). An important finding from this study is there were no significant differences between the two groups for PWI scores, despite the non-disabled PWI being slightly below the cut-off point of 70%SM. That is, people with intellectual disability and non-disabled people experienced similar levels of reported SWB. As PWI is a composite measure of expressed satisfaction across the life domains, such a finding leads support to the notion that quality of life for people with intellectual disability is made up of the same factors as found for non-disabled people (Goode, 1999; Schalock, 2004a). It also provides evidence for the homeostatic theory of SWB operating within intellectually disabled populations. According to homeostasis theory, so long as homeostatic control is maintained and not under threat or defeated by powerful external forces then differences in life circumstances will have very little influence (Cummins, et al., 2003). Hence, if any differences between groups exist, this will be an indication of either a difference between the two groups in terms of lived experiences, or the existence of homeostatic threat operating at the group level. As indicated from the results of the current study, there is no significant difference between people with intellectual disability and non-disabled people in terms of reported PWI scores. Thus, it can be argued that having an intellectual disability does not mean the factors that make up a life of quality will be different from the factors that make up a life of quality for non-disabled people. What will be different is each individual's set-point at which SWB will be maintained.

The results from the present study are generally consistent with other SWB research that compares intellectually disabled and non-disabled populations. For example, a study by

Verri et al. (1999), which examined the SWB of people with intellectual disability compared to non-disabled people drawn from Italian and Australian populations, reported similar levels of SWB between the groups. The measure used to assess SWB were the two forms of the Comprehensive Quality of Life Scale (ComQol), designed for people with intellectual disability (ComQol-ID (Cummins, 1997c) and the ComQol-A designed for general adult populations (Cummins, 1997b). The ComQol preceded the PWI (Cummins & Lau, 2004b) used in this thesis. These authors found, with the exception of the Italian intellectually disabled group, the mean group values for total satisfaction scores fell within the normative range as established by Cummins (1995). This is consistent with the findings from the present study, at least for the intellectually disabled group. Furthermore, when examining the satisfaction data alone, most of the comparisons between the four groups in the Verri et al. study showed considerable uniformity, suggesting there was no constitutional difference between the groups. The exception was the Italian intellectually disabled group, which had higher values for most domains.

However, a recent comparative study by Sheppard-Jones et al. (2005), argues for the existence of quality of life differences between adults with developmental disabilities and the general population. Using The Core Indicators Consumer Survey (Human Services Research Institute, 2001), which measures relationships, safety, health, choice-making opportunities, community participation, wellbeing and satisfaction, and rights, the authors found significant differences in overall wellbeing and decision-making between the two groups. Specifically, the authors conclude that people with intellectual disability experience lower quality of life, had less choice and decision-making in everyday life as well as more important aspects of life (i.e., where to live or work), were more likely to experience loneliness, be afraid in their homes and less likely to have friends. Of interest to note, however, is that there were no appreciable differences between the two groups for their level of participation and involvement in community activities. This is not supported by the results of this study in which, significant differences were found between the two groups for satisfaction with community connectedness.

While the Shepard et al. (2005) study indicates that people with intellectual disability have a difference experience of quality of life than the general population, this finding is not supported by the current study, nor the study by Verri et al. (1999), which found no

differences between the two groups. One explanation to account for this difference is that the quality of life measure used by these studies differs. That is, in the Shepard et al. study the Core Indicators Consumer Survey measures objective quality of life indicators, while the current study and the Verri et al. study measure subjective quality of life indicators.

### *5.11.3 Life domain: Group differences*

An indication of the construction of SWB can be obtained from an examination of differences in expressed satisfaction across particular life domains. This is an important consideration as people with intellectual disability are commonly marginalised in society, and frequently do not experience the same opportunities across various life domains as experienced by non-disabled people. For example, they are far more likely to experience disrupted social relationships, unemployment, health-related issues, abuse, and discrimination (I. Brown & Radford, 2007; Cummins, 2001a; Sheppard-Jones, et al., 2005). Thus, lowered satisfaction across life domains can be used for diagnostic purposes to identify specific domains that may threaten SWB and defeat the homeostatic system.

Closer examination of the seven life domains revealed some unexpected differences as well as expected similarities. Specifically, people with intellectual disability were significantly more satisfied with the life domains of Community Connectedness, Future Security, and Achievements in Life almost reached significance. Furthermore, the life domain Future Security exerted the most influence on the difference between the two groups. Thus, it would seem that satisfaction with future security, community connectedness and achievements in life account for the differences in PWI scores between intellectually disabled and non-disabled groups. As expected, due to their marginalised status in society, intellectually disabled people reported lower satisfaction for the life domains of Health, Personal Relationships and Safety, although, differences between the two groups were non-significant due to higher variance in the intellectually disabled sample.

Other literature reports that, typically in general population samples, the highest satisfaction ratings occur for the domain intimacy or personal relationships (Campbell, et al., 1976), while the lowest ratings occur for community connectedness. While this was also the case for the Verri et al. study, it was not so for both groups in the present study. The highest domain rating for the non-disabled group in the current study was Safety (74.0%SM) and the

lowest was Future Security (64.1%SM), which was significantly different ( $p = .001$ ) between the two groups. The highest domain for the intellectually disabled group is, Achievements in Life (78.28%SM), which almost reached significance, while the lowest is Personal Relationships (69.1%SM), which is non-significant between the two groups. However, when participants were asked specifically about satisfaction with their relationship with family/friends, both groups confirmed previous research by rating these two additional items the highest. For unknown reasons, both groups in this study did not rate the more abstract or general life domain question, “how satisfied are you with your personal relationships?” the highest, but did rate as the highest the more specific relationship questions. Such a distinction, while expected from the intellectually disabled group, who are more likely to relate to concrete questions (such as “how satisfied are you with your relationship with your family/friends?”), was not expected from the non-disabled group, who were expected to understand more abstract questioning.

Also of interest, the domain Satisfaction with Financial Security, almost reached significance between the two groups, indicating that intellectually disabled people tend to be more satisfied with their financial security than non-disabled people. This is an unexpected finding, as not only do intellectually disabled people have highly restricted incomes but also they all live in services where the service provider manages their income for them (thus they do not directly handle their benefit). Furthermore, almost 86% of participants with intellectual disability had no idea what their annual income was, reporting “rather not say”. Yet, it would seem that people with intellectual disability are either satisfied with their financial security, due to others dealing with these matters for them and therefore they do not have to worry about money, or they are satisfied with the level of income/financial security they experience and do not want for more. Although, the latter is not true for a small number of intellectually disabled participants who felt they do not have enough money and what money they have they do not get to manage.

Another study, that used the ComQoI scale to compare non-disabled and intellectually disabled participants across life domains (Hensel, et al., 2002), found different results. In the Hensel et al. study the domain that was rated the highest by participants with intellectual disability was Material wellbeing. People with intellectual disability were significantly more satisfied with their material wellbeing than were non-disabled people. While, people with

intellectual disability were significantly less satisfied with their health than non-disabled people. The other domain that was significantly different between the two groups in the Hensel et al. study was Productivity/Achievements in Life, in which people with intellectual disabilities reported being more satisfied with what they achieved in life. This finding is similar to the results of the present study.

While, there are similarities between the Hensel et al. (2002) study and the present study, a limitation of the aforementioned study is the small sample size (e.g., intellectually disabled  $N = 31$  and matched non-disabled  $N = 31$ ), resulting in a lack of generalisation of their findings. Additionally, some of the satisfaction domains scores for the intellectually disabled group are very large (e.g., Material wellbeing is 95.16 and Productivity is 91.13), and well above the normative range typically found in satisfaction data. The authors do not give any indication as to whether they removed data in which respondents demonstrated response-set through the endorsement of a maximum score for all seven domains. If such data were left in the data set, then this would inflate the mean score values and account for the higher than usual mean domain scores. A conclusion that can be drawn from these studies is that more data on the SWB of people with disabilities needs to be collected before we can say definitely, what the construction of SWB is for this group.

Further information on the construction of SWB may be obtained by examining the unique variance contributed by each domain when regressed against the global question Life-as-a-whole. That is, which life domains predict satisfaction with life-as-a-whole, and does this pattern differ across the two groups? The life domains represent the first level of deconstruction of the global satisfaction with life-as-a-whole and have been shown to explain 30–60% of unique and shared variance (International Wellbeing Group, 2006). Results from regression analyses indicate differences exist between the two groups. For the non-disabled group five life domains (Standard of Living, Health, Achievements, Community Connectedness, and Future Security) predicted satisfaction with life-as-a-whole, whereas for the intellectually disabled group, two life domains (Safety and Future security) contributed to satisfaction with life-as-a-whole. This finding has implications for service providers in meeting the needs of people with intellectual disability in their service. As these results indicate, an important consideration for the maintenance of SWB for people with intellectual disability is that things in their life will not change unexpectedly (future security), and they

are free from personal threats to their safety. Satisfaction with the other five remaining life domains plays less of a role in the prediction of satisfaction with life-as-a-whole. This is a somewhat unexpected finding and contradictory to other research. As previously mentioned, the highest rated domain contributing to life satisfaction, in general populations is Intimacy or Personal Relationships (Campbell, et al., 1976), yet this life domain did not feature as a prediction of life satisfaction in the intellectually disabled group.

It is also interesting to note, the data from the present study confirm the homeostatic proposition as proposed by Cummins et al. (2003), wherein the domain scores that comprise the PWI Index will average a lower score than their correspondingly more abstract life-as-a-whole question. As domains have a higher degree of specificity, they have less value-added satisfaction from homeostasis. Results from this study confirm this proposition and provide empirical support, as indicated in Table 5.12. The life-as-a-whole question yielded 71.4%SM vs. 69.9%SM for the PWI score for the non-disabled group and 75.3%SM vs. 73.6%SM for the intellectually disabled group, thus providing further evidence for the validity of the current findings.

To summarise, SWB was not significantly different between the two groups in this study. This indicates that intellectually disabled and non-disabled groups were similar, despite the fact that the SWB scores for the non-disabled group were slightly below the Western normative range as well as below the lower boundary of the Australian normative PWI and domain ranges. However, at the more specific life domain level of analysis, two of the seven life domains significantly differed across the two groups while a third almost reached significance. That is, people with intellectual disability were significantly more satisfied with the domains Community Connectedness (75%SM) and Future Security (75.80%SM) than non-disabled people (64.62 and 64.09 respectively). The intellectually disabled group had the highest score, which almost reached significance, for the domain Achievements in Life (78.28%SM) compared to the non-disabled group (70.32%SM). Despite the fact that people with intellectual disability are more marginalised than their non-disabled counterparts, the hypothesis that the SWB scores of people with intellectual disability will be within the same Western normative range as non-disabled people was supported. In addition, the SWB scores for intellectually disabled people are within the ranges for the longitudinal Australian normative PWI and domain ranges.

## 5.12 Cognitive Buffers and SWB within intellectually disabled and Non-disabled Groups

As previously discussed, factor analysis established that the data for the cognitive buffers, Self-esteem, Optimism and Control appear valid and reliable. This section will discuss the cognitive buffers and their role in the maintenance of SWB for the two groups.

It is proposed that the cognitive buffers absorb the impact of changing need states to maintain the steady output of SWB, within the set-point range. These cognitive buffers become active when SWB is threatened (Cummins, 2010). While this pattern has been found among people not experiencing an overt extrinsic threat in relation to control and self-esteem (Ralph, Merralls, Hart, Porter, & Tan Su-Neo, 1996), this finding is less clear for samples in which the likelihood of experiencing extrinsic threat is greater, such as those with intellectual disability (Cummins & Lau, 2004a).

The hypothesis that the three buffers will interact with SWB in the same way between people with intellectual disability and non-disabled people was not fully supported in this study. Furthermore, the hypothesis that the buffers would equally predict the SWB of people with intellectual disability and non-disabled people was only partially supported. These findings will now be discussed, beginning with a discussion on the internal buffers approach and avoidant control, then the buffers self-esteem and optimism.

### *5.12.1 Approach and Avoidant Control*

Control is conceptualised in this thesis as follows: Approach control comprises cognitive and behavioural coping strategies that actively address one's problems, and avoidant control comprises cognitive and behavioural coping strategies that actively avoid one's problems, while focusing on managing the emotions associated with the problem (Moos, 1993). Approach control is always associated with normative SWB, while avoidant control has mostly been associated with low SWB (Cousins, 2001). A third type of control, not used in this study, is relinquished control or learned helplessness, which due to homeostatic failure is associated with low SWB and resultant negative consequences for the individual. The discussion in this section focuses on the following results: Differences in means for the two



types of control as used by both groups; differences in correlations for approach and avoidant control with PWI scores for each group; and finally the prediction of the two types of control for SWB for each group.

The link between both forms of control and SWB has been well supported in the literature. For example, Larson (1989) reported that adults and adolescents who experienced more approach or primary control in their life, experience greater happiness or SWB. More recently in his model of SWB homeostasis, Cummins et al. (2004a) proposes that control operates as a cognitive buffer to maintain levels of SWB. From this perspective, the individual exercising either approach or avoidant control is buffered from the negative impact of potentially aversive life events. Given that people with intellectual disability are more likely to experience extrinsic threat, such as, aversive life events, academic and social failure, discrimination, and unemployment (Li, et al., 2006), it is expected that exercising avoidant control may have particular relevance to this group. Results from this study support this notion.

If the link between control and SWB is valid as proposed in the literature, then a lack of control experienced by people with intellectual disability should result in either lower SWB as homeostasis fails, or differences in the type of control strategies used (i.e., more avoidant), as the homeostatic system is activated. Results in this study, indicate that people with intellectual disability did not have lower SWB scores than non-disabled people. However, differences in the use of the two types of control were evident. In relation to approach control, examination of group means indicate the non-disabled group used more approach control strategies than intellectually disabled group (65.64 vs. 58.63 points respectively). This constitutes a 7.01-point difference in the use of approach control strategies by the non-disabled group.

In confirmation of this distinction, for the non-disabled group, PWI was positively correlated with approach control ( $r = .36, p .01$ ) and negatively with avoidant control ( $r = -.28, p .01$ ). This finding is consistent with Cousins (2001), who found in a sample of carers of people with mental illness, both types of control were used. While, in her general population sample, which presumably experienced less stress than the carer sample, only approach control correlated positively with SWB. From these findings Cousins concludes that

approach control plays a predominate role in the maintenance of SWB. Avoidant control on the other hand, is only used when people are faced with an uncontrollable situation or stressors of an unpredictable nature, as can be the situation when caring for people with mental illness.

This conclusion is consistent with Roth and Cohen (1986) who suggest that when situations are controllable and the source of stress is known, then the preferred coping strategy to use is approach coping. Whereas, avoidant coping is the preferred strategy when the source of the stressor is unclear, the situation uncontrollable and emotional resources are limited. Additionally, they suggest the partial or tentative use of avoidance coping strategies can have positive outcomes, such as the reduction of stress and anxiety, which allows the gradual recognition of threat, followed by an increase in hope and courage. Operating this way, the consequence of avoidant coping strategies is to facilitate the use of approach coping, which is frequently associated with normative SWB, as previously mentioned.

An examination of the eight subscales; four approach control and four avoidant control strategies that make up the CRI, revealed interesting similarities and differences between the two groups. Consistent with the above findings, people with intellectual disability report using significantly less approach control strategies such as, positive reappraisal and seeking guidance, when dealing with their problems. Positive reappraisal coping strategies involve cognitive attempts to restructure a problem within a positive framework, while at the same time accepting the reality of their situation. Given the cognitive impairment of people with intellectual disability, it is not surprising that they do not use cognitive restructuring of stressful situations, as this requires a level of complex metacognitive skills that may be beyond them; at least without a level of training or intervention to acquire such skills. These findings indicate a potential need to provide training to people with intellectual disability in the use of approach coping strategies.

A surprising finding was that people with intellectual disability use approach control in the form of problem solving control strategies, to the same extent as non-disabled people. Given this group has cognitive impairment it was expected there would be a significant difference between the two groups in this regard. This finding is encouraging, as it implies the use of self-determination, or autonomous behaviour in people with intellectual disability. Equally,

this finding may also support the notion that support is being provided in such a manner that encourages empowerment or self-determination, which may promote the use of problem solving strategies.

### 5.12.2 Avoidant Control

In relation to avoidant control, examination of group means indicate that people with intellectual disability use more avoidant control strategies than non-disabled (51.98 vs. 41.24 points respectively), to maintain homeostasis. This constitutes a 10.74-point difference in the use of avoidant control strategies. This higher use of avoidant control provides possible evidence that the homeostatic system is activated as people with intellectual disability strive to maintain SWB within normative levels. This link is proposed based on the cognitive buffers and their role in SWB and the finding that people with intellectual disabilities had normative SWB levels. However, in light of the finding that avoidant control was not a predictor of PWI for this group, further investigation is required to determine whether this link is valid or just particular to this sample of people with intellectual disabilities.

Furthermore, an examination of the four avoidant control subscales revealed interesting differences between the two groups. It was found that the acceptance and resignation subscale, almost reached significance, with the intellectually disabled group reporting higher means, indicating a tendency to accept their problems and resign themselves to their life situation compared to non-disabled people. People with intellectual disability also report using significantly more cognitive avoidance and seeking alternative rewards strategies. Thus, they are more likely to use control strategies to deal with problems by actively avoiding thinking about their problems, and seeking alternative rewards to deal with problems.

In contrast to the findings for the non-disabled group, a positive association between avoidant control and SWB was evident for the intellectually disabled group. That is, avoidant control had a significant positive ( $r = .25, p = .05$ ) correlation with PWI, indicating that avoidant control has a positive relationship with the maintenance of SWB, while approach control does not. For intellectually disabled people, these results are consistent with the idea that SWB is maintained within a normative range by the use of avoidant control strategies.

The positive association between avoidant control and PWI was unexpected. One explanation is that many people with intellectual disability are taught to be compliant, to cooperate with a range of staff, and generally not behave in an autonomous and self-determining manner (Hartley & MacLean Jr, 2008). Consequently, opportunities to use approach control strategies are limited compared to non-disabled people and this may account for the higher use of avoidant control strategies.

This point was highlighted in the study by Hartley and MacLean (2005) who suggest the lack of privacy, control and autonomy that people with intellectual disability experience in their daily life could explain this positive association. As argued by the authors in such an environment the use of avoidant coping strategies is more adaptive, as people with intellectual disability do not have the power to take charge of their own life, and often require assistance to deal with their problems. Consequently, their ability to modify their environment or stressful situations is limited. In these situations the use of avoidant or ignoring control strategies may well be related to positive psychological outcomes, such as normative SWB found in this study, because they do not make futile attempts to modify situations that are beyond their control.

This possibility is also supported by Larson (1989) who suggests the ability to give up approach control without substantial distress, can be considered as a defining criteria of positive mental health. While positive mental health requires a person to achieve a general sense of control over their life, it also requires that a person have the ability to effectively deal with occasions in which they have no control or use avoidant control. The notion, that avoidant control may have a positive function in relation to the maintenance of SWB, is also consistent with previous research on the use of approach and avoidant control, with both the general population (Gonzales, Tein, Sandler, & Friedman, 2001), and intellectually disabled population (Hartley & MacLean Jr, 2008).

In the Gonzales et al. (2001) study the use of avoidant control strategies by urban adolescent boys was associated with more adaptive functioning (i.e., the relative ability to interact with society and care for oneself in order to function in everyday life (American Association on Mental Retardation, 2002)), but only in the presence of high levels of stress. That is, with low levels of family or community stress, avoidant control was positively associated with

conduct problems but at high levels of stress using avoidant control strategies predicted fewer conduct problems. The authors conclude that in life situations, which are unchangeable and beyond the control of the individual, avoidance control strategies could be adaptive.

Furthermore, Hartley and MacLean (2005, 2008) provide support for this link in a series of studies looking at coping strategies used by adults with intellectual disability, to stressful social interactions. In these studies avoidant control strategies were more likely to be used in stressful situations that were appraised as uncontrollable, whereas active control or approach control was used in situations appraised as controllable. The authors conclude that for people with intellectual disability, the use of avoidant control strategies is more adaptive when situations were seen as beyond their control, than attempt to use approach control strategies when such efforts would not produce the desired outcomes. However, as pointed out by these authors, avoidant control strategies should only be a short-term measure, as continued use of this type of control in the general population is dysfunctional, and is reported to be typically related to negative psychological outcomes of depression and anxiety (Herman-Stahl, et al., 1995). Therefore, it is important that people with intellectual disability are able to exert both approach and avoidant control strategies in their environment.

The conclusions that can be drawn from the above discussion are that the buffers of approach and avoidant control do not normally interact with SWB in the same way for people with intellectual disability and non-disabled people. That is, people with intellectual disability were significantly more likely to use cognitive avoidance, than non-disabled people and significantly less likely to use approach control strategies to deal with problems. Thus, it follows that people with intellectual disability are more likely to accept or become resigned to their situation, actively avoid thinking about their problems and seek alternative rewards, as effective strategies to deal with problems in their life.

### *5.12.3 Approach and Avoidant Control and Predicting SWB*

The final results to be discussed in this section, involves the hypothesis that each of the buffer variables would equally predict SWB. In relation to the buffers approach and avoidant control, regression analysis indicates that approach control did not predict SWB for either group. That is, using approach control strategies does not contribute to SWB for either group. However, avoidant control predicted SWB for the non-disabled group, only.

Avoidant control was negatively correlated with SWB and thus, low levels of avoidant control predict SWB for this group. As discussed in the previous section, this was not the case for the intellectually disabled group, in which neither of the control strategies predicted SWB.

An additional notable finding was the lower shared variance for the intellectually disabled group. The low-shared variance could well reflect the low levels of cognitive functioning for this group and also indicate a fundamental difference between intellectually disabled and non-disabled in terms of their life experiences and learning. As previously argued, people with intellectual disability are taught to be compliant, to cooperate with a range of staff, and generally not behave in an autonomous and self-determining manner. Consequently, opportunities to learn to take charge and actively approach stressful or negative life events are both restricted and limited compared with non-disabled people. However, further research into control strategies as used by people with intellectual disability and its relationship to the maintenance of SWB compared to non-disabled people is required in order to determine whether a fundamental difference between the two groups exists, and whether the results can be generalised to a wider group or are specific to this particular participants with intellectual disability.

In summary, the two groups differ on the type of control strategies they use. People with intellectual disability appear to use more avoidant control strategies, while non-disabled people used more approach control strategies. For the non-disabled group, PWI was positively correlated with approach control and negatively with avoidant control, while in the intellectually disabled group only avoidant control had a significantly positive correlation with PWI. Thus, it seems for intellectually disabled people, that avoidant control has a positive function in relation to the maintenance of SWB. This finding is consistent with previous research on the use of approach and avoidant control, with both the general population (Gonzales, et al., 2001), and intellectually disabled population (Hartley & MacLean Jr, 2008). Finally, approach control did not predict SWB for either group. However, avoidant control predicted SWB for the non-disabled, but not for the intellectually disabled group. Thus, the hypothesis that the buffer variables of control would equally predict the SWB of the two groups was not fully supported.

#### 5.12.4 *Self-esteem*

Self-esteem is the second buffer in the homeostasis model of SWB. The discussion in this section focuses on the differences in self-esteem mean scores for both groups; differences in correlations between self-esteem and PWI scores for each group; and the prediction of SWB for both groups.

Results from this study contradict previous research, which indicates that people with intellectual disability have lower levels of self-esteem than non-disabled people (Garaigordobil & Perez, 2007; Masi, Mucci, Favilla, & Poli, 1999). There was found to be no difference in total self-esteem scores between these two groups (ID:  $M = 69.93$ ,  $SD = 13.39$  and NI:  $M = 72.77$ ,  $SD = 19.90$ ). As can be seen, the standard deviation for the intellectually disabled group is also lower, which gives further credence to the reliability of these measures. Thus, notwithstanding the higher risk of low self-esteem due to negative social comparison and their stigmatised and deviant social status, people with intellectual disability had levels of self-esteem that are comparable with non-disabled.

This finding is both surprising and somewhat expected. It is a surprising result given the body of literature purporting low self-esteem for people with intellectual disability due to their marginalised status and negative life experiences and only a small amount of literature reporting normal or above levels of self-esteem for this group (Dagnan & Sandhu, 1999; Li, et al., 2006; MacMahon & Jahoda, 2008). On the other hand, these results support earlier findings in the current study, in which no significant differences were found between intellectually disabled and non-disabled groups for levels of SWB. Furthermore, the SWB scores for people with intellectual disability were within the Western normative range.

A possible explanation for these findings is that effective homeostatic control was operating for both groups. According to the homeostasis model of SWB, self-esteem acts as a buffer for the maintenance of SWB, along with a sense of control and optimism for the future (Cummins & Lau, 2004a). If the three cognitive buffers work together as a system, then it is expected they would show a strong positive relationship to one another. This positive association was found in the current study for the non-disabled group and to a lesser extent for the intellectually disabled group.

Two conclusions can be drawn from these findings. The first is that the significant correlations found in both groups, support previous findings concerning the link between self-esteem and SWB (Campbell, 1981; Diener, et al., 1995; Lucas, et al., 1996; Lyubomirsky, et al., 2006). The second is the possible operation of homeostasis for people with intellectual disability in which self-esteem buffers SWB from possible failure. This conclusion supports hypothesis 4 of this study, which states that the homeostatic model of SWB can be used to explain the normative range of SWB found for people with intellectual disability.

Despite the similarity of SWB and self-esteem for the two groups, it remains likely that the intellectually disabled group are more vulnerable to homeostatic failure. While such vulnerability can only be observed through actual failure of the homeostasis system (as indicated when means for SWB fall below the normative range), people with intellectual disability are certainly exposed to more challenges, due to negative life experiences and marginalisation (Cummins, 2005a; Dagnan & Sandhu, 1999; MacMahon & Jahoda, 2008). Evidence for this vulnerability is also evident in light of the two major external buffers of the homeostatic system—wealth and relationships.

As discussed by Cummins (2005a; 2010) wealth acts a flexible resource which protects homeostasis. In this way wealth minimises challenges from the environment by reducing the impact of chronic negative life events, such as, medical expenses, high cost of living, and unemployment. However, wealth does not permanently increase an individual's set-point. Any unexpected increase in wealth (such as winning the lottery), will only result in a temporary gain in SWB before the set-point equilibrates back to the specific range for each individual.

The other external buffer is relationships that involve mutual support and intimacies. Reporting on longitudinal Australian data, Cummins et al. (2007) found that non-disabled people living without a partner showed consistently lower SWB, while those living with a partner rated higher or within the normative range for SWB sample means.

People with intellectual disability tend to have diminished levels of each of these buffers relative to non-disabled people. This is evident by examining the demographics for this group (see Table 5.11), which shows that 90% of intellectually disabled people were never



married and 87% had no idea of their income level, which comprises a state welfare benefit. Furthermore, most of the intellectually disabled people in this study live in human service residential homes and therefore all of their money is paid directly to the service provider.

Most people with intellectual disability in this study do not experience close intimate relationships and do not have much income to buffer themselves from negative life events, yet they have SWB that is within the normative Western range, therefore something must be occurring to allow this. Results from this study indicate the possibility that self-esteem is making an important contribution to SWB homeostasis because these levels are undiminished and positively correlate with SWB. This is confirmed by the finding that self-esteem contributes to the prediction of SWB for both groups.

These results provide important information to caregivers of people with intellectual disability, in regard on how to provide care and support that facilitates high self-esteem levels, particularly for those people who report levels of unhappiness or dissatisfaction with their lives. This knowledge provides a focus by which to target intervention. Caregivers can provide support to individuals with intellectual disability, which empowers the person by bolstering levels of self-esteem and personal confidence (Cummins, 2005a). This can be achieved in the following ways; supporting the individual with disabilities to obtain skills related to wielding greater control in areas of life that are important to them, developing a sense of belonging or connectedness and purpose in life, and above all else enhancing their confidence and self-esteem. From this perspective, the role of caregivers is to facilitate either the provision of external resources (e.g., income or relationships) to reduce the threat of homeostatic failure, or facilitate internal resources via support that enhances a sense of control, optimism and self-esteem (Cummins, 2010). While, the facilitation of external resources may well be beyond the capability of most caregivers (i.e., they cannot increase wealth for this group beyond what the Government stipulates in policy), it seems only imminently sensible that caregivers facilitate the external resources to whatever extent they can.

In summary, while no differences were found in mean scores for self-esteem between the two groups, the correlation between self-esteem and SWB is generally lower in the intellectually disabled group. Nevertheless, the relationship remains positive and significant. This

indicates an important avenue by which SWB may be protected by caregivers, who aim to enhance the self-esteem of the people in their care.

#### *5.12.5 Optimism*

Optimism, the final buffer to be discussed, involves holding positively biased expectations that one's future will have positive outcomes, even in the presence of aversive life events (Scheier, et al., 2001). The discussion in this section focuses on the differences in optimism between the groups, differences in correlations between optimism and the PWI scores, the prediction of SWB, and finally the three buffers combined.

According to the theory of SWB homeostasis, optimism behaves in a similar manner to the previous two buffers discussed. It is expected that optimism will show a robust positive relationship with control, self-esteem, and life satisfaction. The results support this view.

A notable result is that the levels of optimism for both groups are almost identical (ID:  $M=68.55$ ,  $SD=17.96$  and ND:  $M=68.57$ ,  $SD=17.95$ ), as are the standard deviations. This similarity gives further credence to the reliability of these measures. The most likely interpretation of this similarity is that people with intellectual disability have understood and have responded to the items measuring optimism, in a manner equivalent to the non-disabled group. Thus it appears, in spite of the fact that people with intellectual disability are exposed to more challenges, as a result of negative life experiences and marginalisation, their levels of optimism do not differ from those of non-disabled people. Such findings lend support to the notion that SWB homeostasis is operating effectively, in that PWI and core affect are the same for both groups.

However, as found for other buffers, the correlations between optimism and SWB are consistently lower in the intellectually disabled group. This suggests the association between optimism and SWB for this group is more fragile than it is for non-disabled people. Some of the reasons for this have been discussed in the section on self-esteem, which can also be applied to the optimism buffer. An implication of this fragile connection is that it provides caregivers with a direction for targeting intervention to buffer SWB of this group, and avoids homeostatic failure. People with intellectual disability can be supported to develop positive

thinking, to have a sense of hope for the future, and to have an optimistic outlook on life, as these factors will contribute to and protect SWB within each person's set-point.

In spite of the weak prediction of SWB found in this study, the finding that optimism does contribute to SWB, confirms the result in the only other study found in the literature to investigate optimism (also measured by the LOT) in adolescents with and without intellectual disability. As reported by Shogren et al. (2006), hope and optimism were significant predictors of SWB. Moreover, similar to the current results, the authors found no difference in levels of global life satisfaction between the two groups. The findings from the two studies together, provide empirical support for the proposed link between optimism and SWB (Cummins, et al., 2002; Peterson, 2000; Scheier, et al., 2001), which can now be extended to include people with intellectual disability. This finding is particularly interesting given the low Cronbach's alpha obtained for the Optimism scale as used by people with intellectual disability.

For the intellectually disabled group, regression analysis revealed that optimism made the strongest unique contribution to SWB ( $\beta = .40$ ), followed closely by self-esteem ( $\beta = .26$ ), which together accounted for 27% of the variability in SWB. An important implication may be that optimism is the most significant homeostatic buffer followed by self-esteem. It appears that together these two buffers are contributing the most to the homeostatic control for SWB as demonstrated by the presence of a normative range of SWB found for people with intellectual disability.

In summary, results from this study indicate that optimism makes an important contribution to SWB homeostasis in accordance with hypothesis 4. The findings that optimism is an important contributor to the prediction of SWB, provides a direction and focus of intervention and support for service providers and caregivers of people with intellectual disability.

#### *5.12.6 Control, Self-esteem and Optimism and the SWB homeostasis*

One aim of this thesis is to investigate the precise nature of the buffering system and its adequacy to describe homeostatic control for people with intellectual disability. The results show that people with intellectual disability experience levels of SWB that is within the normative Western range. That is, despite their higher risk of homeostatic defeat, people

with intellectual disability experience normative SWB. Thus, it might be expected that, in accordance with SWB homeostasis theory, the buffers would also relate to SWB in the same way between the two groups. But this was not the situation for this study, as differences were found in how the buffer system works between the two groups.

From this discussion of the cognitive buffers and SWB within the two groups, it would appear that the buffering system works differently for each group. First, the two groups differed on how control strategies were utilised. People with intellectual disability used more avoidant control strategies, while non-disabled people use more approach control strategies in maintaining SWB. Hence SWB was positively correlated with approach control and negatively with avoidant control for the non-disabled group, while avoidant control had a significantly positive correlation with SWB in the intellectually disabled group. Thus, it seems for intellectually disabled people avoidant control has a positive function in relation to the maintenance of SWB, which was not the case for non-disabled group.

Second, there was a subtle difference in how the buffers self-esteem and optimism worked between the two groups. While, self-esteem makes an important contribution to SWB homeostasis for both groups it makes the strongest unique contribution to SWB for the non-disabled group. Optimism on the other hand, makes the strongest unique contribution to SWB for the intellectually disabled group. Additionally, the buffers of self-esteem and optimism appear to be more fragile for the intellectually disabled group, as evident by the consistently lower correlations between these two buffers and SWB, whereas, these buffers had strong significant correlations with SWB for the non-disabled group.

Furthermore, lower correlations were generally found for all buffer variables in the intellectually disabled group, with the exception of the correlation between avoidant and approach control, which is larger for the intellectually disabled group ( $r.50$  vs.  $r.23$ ). These lower correlations found in the intellectually disabled group may indicate that the buffering system has to work harder to maintain homeostatic control. Nevertheless, the homeostasis system appears to be operating effectively as evidenced by the presence of normative SWB scores.

These findings have shed some light on the precise nature of the buffering system and its adequacy to describe homeostatic control for people with intellectual disability. Furthermore,

these findings have relevance for the disability field in general, as developing an understanding of the maintenance of SWB is of particular importance to service providers and caregivers, in their attempts to provide inclusive support and services that enhance the life quality and life satisfaction of service users. This knowledge provides a focus by which to target interventions that will directly ensure homeostasis does not fail for this group. Thus, caregivers can provide support to individuals with intellectual disability, which empowers the person by bolstering levels of self-esteem, optimism and personal confidence (Cummins, 2005a).

### 5.13 Homeostasis and Prediction of Subjective Wellbeing

This final section discusses the relationship between high and low SWB, the buffer variables and homeostatic failure. Homeostatic defeat is predicted to occur when the level of challenge has reached the threshold to which the homeostatic system can no longer adapt (Cummins, 2003). As a consequence, control over SWB transfers from homeostasis to the challenging agent. As previously discussed, the homeostatic threshold of SWB for population means has been found to fall between 70 to 80%SM, while the set-point range for individuals lies between 40 to 100%SM. More recently, new data suggest that set-point ranges for individuals lie between 55–95, with a mean of 75 points (Cummins, 2010). Set points are always positive and therefore lie above 50%SM. According to SWB homeostasis theory under non-threatening conditions a normative range of SWB will be maintained, with the individual rating SWB in terms of their idiosyncratic set-point. In such conditions, it is predicted that the cognitive buffering system will be relatively inactive, and therefore, will not contribute significant variance in SWB. However, when conditions threaten homeostasis the cognitive buffers become activated as they attempt to restore and maintain SWB within the normative range, and thus will increase the explained unique variance in SWB.

#### 5.13.1 High and Low PWI Subgroups

These homeostatic predictions were tested by combining the two groups and then splitting them into two subgroups based on those with low SWB (e.g., PWI scores < 70%SM) and those with high SWB (PWI scores  $\geq$  70%SM). As argued by Cummins et al. (Cummins, et al., 2003), 70%SM is the point at which homeostasis resistance occurs and is defended.

However, a problem remains with the  $PWI < 70\%SM$  subgroup as, owing to individual differences in set-point, this subgroup will contain people for whom normal SWB approximates the lower boundary of the individual range (i.e., set-points between 55% and 69%), as well as a mixture of people who are either experiencing homeostatic challenge, or outright homeostatic defeat. In addition to this heterogeneity, the range of the group is 60 points (0–69) while the range of the higher group is just 30 points (70–1000). These differences would affect within group SWB variance and make the between-group comparisons confounded. Therefore the boundaries of the lower group truncated to a range of 40 to 69%SM. Those participants who scored PWI below the 40%SM cut-off (therefore experiencing homeostatic defeat) were deleted from further analysis. Approximately 60% of participants in this study reported PWI scores in the  $\geq 70\%SM$  group, 38% had PWI scores in the 40 to 69%SM group, while 2% had PWI scores below 40%SM.

Evidence of SWB homeostasis is demonstrated when the mean scores for the buffer variables in the low group are lower than the high group, while the standard deviations are higher. That is, the buffer variables (Approach and Avoidant Control, Self-esteem and Optimism) will be activated in order to stabilise and maintain SWB within the normative range, when under threat. The results confirmed this prediction. Mean scores for PWI in the 40–69%SM subgroup were consistently lower than those in the  $\geq 70\%SM$  group with the exception of avoidant control mean score, which is higher in the 40–69%SM group. Moreover all standard deviations were higher in the 40–69%SM group. Further evidence that homeostatic control is operating comes from the correlations, which are consistently higher and significantly positive in the 40–69%SM group than those in the  $\geq 70\%SM$  group, indicating the buffer variables are actively working to either maintain or restore SWB at the 70%SM level.

However, despite this evidence, the buffer variables are not behaving as expected. The hypothesis that the buffer variables will explain more of the variance in SWB in the group that is most likely to be experiencing homeostatic challenge (40–69%SM group) was only weakly supported. Furthermore, regression analyses from the  $\geq 70\%SM$  group indicate that only Optimism made a significant unique contribution to the prediction of SWB ( $sr^2 = .12$ ), with 19% (adjusted 15.6%) of the variability in SWB is explained by the buffer variables. On the other hand, results for the 40–69%SM group showed that only Self-esteem made a

significant unique contribution to the prediction of SWB ( $sr^2 = .12$ ), with 23% (adjusted 17.3%) of the variability in SWB predicted by the buffer variables, which is an increase of 5.7% points in variance. While the increased explained variance is predicted by homeostasis theory, due to the buffers becoming activated when under threat, the fact that only one buffer variable in each group (i.e., Optimism for the  $\geq 70\%$ SM group and Self-esteem for the 40–69%SM group) made a significant contribution is against prediction, as it is expected that all buffer variables would be activated in the low PWI group. However, an important aspect of these results that needs to be taken into consideration is the high likelihood that within the lower PWI (40–69%SM) group, there are participants who are experiencing homeostatic challenge or outright defeat and as such these data will contaminate the results by reducing variance accounted for. Nevertheless, while this hypothesis is only weakly supported, the results overall do provide evidence that SWB homeostasis is operating.

#### 5.14 Conclusions of Study 2

In conclusion, the findings indicate that people with intellectual disability can respond reliably and validly to subjective data. However, caution needs to be exercised in regard to using response scales that employ negatively worded items, as there are mixed findings on whether people with intellectual disability can fully understand such items.

The hypothesis that SWB scores for people with intellectual disability will be in the same normative range, as found for non-disabled people was strongly supported in this study. Furthermore, the hypothesis that the homeostatic model of SWB can be used to explain the normative range of SWB found for people with intellectual disabilities was also supported.

The hypothesis that the internal cognitive buffers of perceived control, self-esteem and optimism, proposed to account for the maintenance of SWB will interact in the same way between the two groups was not fully supported. Whilst the results strongly suggest that people with intellectual disability do not differ from the non-disabled people in terms of SWB, self-esteem and optimism, they do differ on the type of control/coping strategies they used. Non-disabled people use more approach control strategies, while intellectually disabled people use more avoidant control strategies. However, there were subtle differences in how the buffers behaved in predicting SWB for both groups. Self-esteem was the strongest

predictor of SWB for the non-disabled group, followed closely by optimism and avoidant control, while optimism is the strongest predictor of SWB for the intellectually disabled group. Furthermore, Approach Control variables did not predict SWB for either group in this study, but Avoidant Control did contribute to the prediction of SWB for the non-disabled group. Importantly this study provides support that the SWB homeostatic model, which has been shown to operate within non-disabled populations, can be used to explain the normative range of SWB found for people with intellectual disability. Finally, this study weakly supports the hypothesis that the buffer variables will explain more of the variance in SWB in the group that is most likely to be experiencing homeostatic challenge (the 40–69% group).

The investigation of the SWB of people with intellectual disability is still in the discovery and formative stage, as a body of literature on the determinants of SWB for this group is still developing. The results of this study add to and extend current theory and understanding, in particular the SWB homeostasis theory. However, in order to increase confidence that the findings can be generalised and did not just occur by chance, it is important to replicate this study. Accordingly, Study 3 will replicate and extend Study 2 with the addition of core affect.



## Chapter Six

### Study 3: Core Affect, SWB and People with Intellectual Disability

#### 6.1 Introduction

The results from Study 2 indicate that people with intellectual disability, can respond reliably and validly to subjective data. The results also strongly suggest that people with intellectual disability do not differ from non-disabled people in terms of SWB, self-esteem and optimism. Furthermore, optimism makes the strongest contribution to SWB for intellectually disabled people, whereas it is self-esteem that predicts SWB for non-disabled people. The two groups, however, did differ on the type of control/coping strategies used. People with intellectual disability use more avoidant control and less approach control strategies than non-disabled people.

The findings from Study 2, also provide support for the idea that the SWB homeostatic model, which has been shown to operate within non-disabled populations, can also be used to explain the normative range of SWB found for people with intellectual disability. These results are important, as investigations into the SWB of people with intellectual disability are only in the discovery and formative stage, as a substantial body of literature on the determinants of SWB for this group is still developing. Therefore, Study 3 is a replication and further extension of the investigation into SWB homeostasis theory in people with intellectual disability. In addition, an objective of this study is to investigate the core affect component of SWB, as outlined in Davern's (2004) thesis, as it relates to people with mild to moderate intellectual disability.

The remainder of this introduction will briefly review SWB and affect. This is followed by a discussion of core affect and SWB homeostasis, with particular reference to Davern's findings. Finally a statement of hypotheses for the current study will be presented.

#### 6.2 Subjective Wellbeing and Affect

Researchers have debated extensively the degree to which affect and cognition are related. For example, more than thirty years ago Zajonc (1980) argued that affect and cognition are

separate systems, citing evidence in which affective reactions precede and are distinct from cognition. This viewpoint is still relevant, particularly as applied to the study of SWB. The link and separability of affective and cognitive systems was illustrated in the work of Lucas, Diener and Suh (1996), who demonstrated that the constructs life satisfaction, pleasant affect and unpleasant affect are related, but also separable and must be studied individually to gain a full understanding of SWB. That is life satisfaction, which is considered to represent the cognitive component of SWB, and pleasant and unpleasant affect are separate systems but are functionally linked, and in order to have a holistic understanding of an individual's SWB both systems must be assessed.

As discussed in Chapter 2, early attempts to conceptualise SWB focused on the affective component. This is illustrated in the seminal work of Bradburn (1969), who proposed that SWB refers to the overall evaluations that people make about their life, in which they sum up essential life experiences along a continuum of positive and negative affect. From this perspective SWB is the balance or discrepancy between negative affect (e.g., sadness, depression, anxiety or anger) and positive affect (e.g., joy, contentment or pleasure). Hence, high SWB occurs when a person reports their life has frequent pleasure or positive affect, while experiencing infrequent unpleasant or negative affect. Conversely, low SWB is when a person experiences infrequent pleasant affect and frequent negative affect. Furthermore, life satisfaction, pleasant affect and a low level of unpleasant affect can co-occur within the same individual (Diener & Lucas, 1999).

Research into SWB, has highlighted the important role that affect has for human functioning and wellbeing. Gaining a greater understanding has come about from two parallel areas of research. The first is the field of quality of life, SWB research (Andrews & Withey, 1976; Diener, et al., 1985), the second is the study of emotions and moods. A discussion of SWB and quality of life is presented in Chapter 2, and Chapter 3, as it relates specifically to people with intellectual disability. In relation to the study of emotions SWB researchers, typically took the dimensional approach (i.e., identifying underlying processes), studying co-variation in emotional experiences, as opposed to identifying basic features of emotion approach (i.e., studying specific emotions) (Diener, Napa Scollon, & Lucas, 2003). The later approach, is typically taken by the mood and emotions researchers (J. A. Russell, 1980; Watson &

Tellegen, 1985), which has had enormous growth since the 1980's. Some of the research related to this area will now be discussed.

### 6.2.1 *Definition Core Affect and Emotions*

Research into affect has suffered from the same proliferation of terminology as has occurred for SWB. For example, researchers frequently use terms such as mood, emotion, valence, and affect interchangeably. This problem was highlighted by Russell and Barrett (1999) who proposed the separability of emotion and affect. As argued by the authors, emotion is too broad a class of event to be used as a single scientific category. That is, the boundaries of the emotion domain are too wide and fuzzy, that everything is in danger of being classified as an emotion. For example, emotion as used in psychology describes events as diverse as, but not exclusive to, lifelong love for an offspring, the euphoria of winning the lottery, unrelenting profound grief for the loss of a spouse or family member, the momentary pleasant sensations from a warm summer's breeze, the cardiovascular changes in response to viewing a scary movie, to feeling cheerful for no apparent reason. Furthermore, in a review of emotions and core affect Russell (2003, 2009) and Barrett (2009) point out repeated observations in the literature purporting that not all mental states belong to a particular category of named emotion. For example, the emotion word 'fear', does not look the same, or feel the same, or have the same neurophysiological signature from one instant to another. Furthermore, cultural variations in labelling emotion categories have been shown to exist (Barrett, 2009). While some emotion categories are cross-culturally stable due to their functionality in addressing universal human need, other categories are culturally specific.

Following on from earlier emotion researchers (Oatley & Johnson-Laird, 1987), in order to overcome problems related to terminology, Russell and Barrett (1999), distinguish between *prototypical emotional episodes* and *core affect*. Emotional episodes are defined as "any occurrent event that sufficiently fits a prototype to count as an instance of that emotion" (J. A. Russell, 2003, p. 147). Thus, prototypical emotional episodes reflect what most people would consider emotions to be, and vary in felt intensity. For example, fleeing from a rabid dog, fighting someone in rage, kissing someone you are in love with, are all examples of intense emotions, while milder emotions would be helping a colleague out of pity, or avoiding a stranger out of apprehension.

A defining characteristic of prototypical emotional episodes is they are directed to an object. That is, using the above examples, the object of the prototypical emotional episode is the rabid dog, the person, the condition, event or thing that can be real or imagined, in the past, present or the future. As such, prototypical emotional episodes involve a multiple set of complex dimensions that include all of the following; core affect, overt behaviour related to the object (e.g., flight or fight), attention towards or appraisal of and attributions of the object, the experience of the specific emotion (i.e., love, fear, anger), and all the neurophysiological and bodily events (increased heart rate, increased hormones...) that are part of psychological events (J.A. Russell & Barrett, 1999).

A second important feature of prototypical emotional episodes is they include cognitive structures, such as cognitive appraisal (Roseman, Spindel, & Jose, 1990) and attributional processes (Wiener, 1985). Finally, prototypical emotional episodes are bound in time; they have a beginning and an end.

On the other hand, core affect as defined by Russell (2003) is, “a neurophysiological state that is consciously accessible as a simple, non-reflective feeling that is an integral blend of hedonic (pleasure-displeasure) and arousal (sleep-activated) values. It is object free (free-floating), but through attribution can become directed at an object” (p. 147). In contrast, moods are viewed as being an instant of prolonged core affect, without an object but not always. According to Russell, core affect describes moods but is also at the core of all emotion-laden events. It can exist without being labelled, interpreted, or attributed to any cause and thus, is considered to be primitive, universal and ubiquitous. Core affect can be understood, explains Russell using an analogy of felt body temperature, which one can access and become consciously aware of, at anytime. Extremes can become very salient and felt temperature exists prior to words such as, hot or cold, or prior to the concept of temperature and prior to any attribution about what is making one hot or cold (J. A. Russell, 2003).

In contrast cognitive events, such as beliefs or precepts are object based, whereas, core affect is not object-based. That is, core affect can be experienced with no known stimulus, in a free-floating form (i.e., feeling down or blue without knowing why), as seen in moods. Intense core affect can be the focus of consciousness, but milder core affect is typically part

of the background of the person's conscious world. Similar to SWB set-points, there is individual variability in how core affect is experienced (Barrett, 2009).

The distinction between emotions and core affect, as proposed by Russell and colleagues (Barrett, 2009; J.A. Russell & Barrett, 1999) is adopted in this thesis. Moreover, the terms mood and affect are considered synonymous. The core affect discussion in this section is conducted from the subjective experience of affect, as opposed to a physiological perspective. However, as noted by Russell, core affect like other psychological events has accompanying neurophysiological substrates. Importantly, alongside the psychological research into core affect, a parallel research agenda into the biological factors of affect/emotion has progressed. For example, Heller (1993) proposed that pleasantness and activation dimensions of core affect are associated with distinct neural systems. In particular, parietotemporal regions are primarily responsible for processing emotional information and the mediation of autonomic arousal, while the frontal lobes are concerned with emotional valance. These two neural systems are suggested to interact differently, as a result of conditioned individual differences and developmental tendencies that produce unique and stable personality and emotional characteristics. Both these areas of research contribute to building a strong body of literature, which advances an understanding of the structure of emotions, moods and the important role that affect has for human wellbeing and behaviour.

### 6.2.2 *Circumplex model of affect*

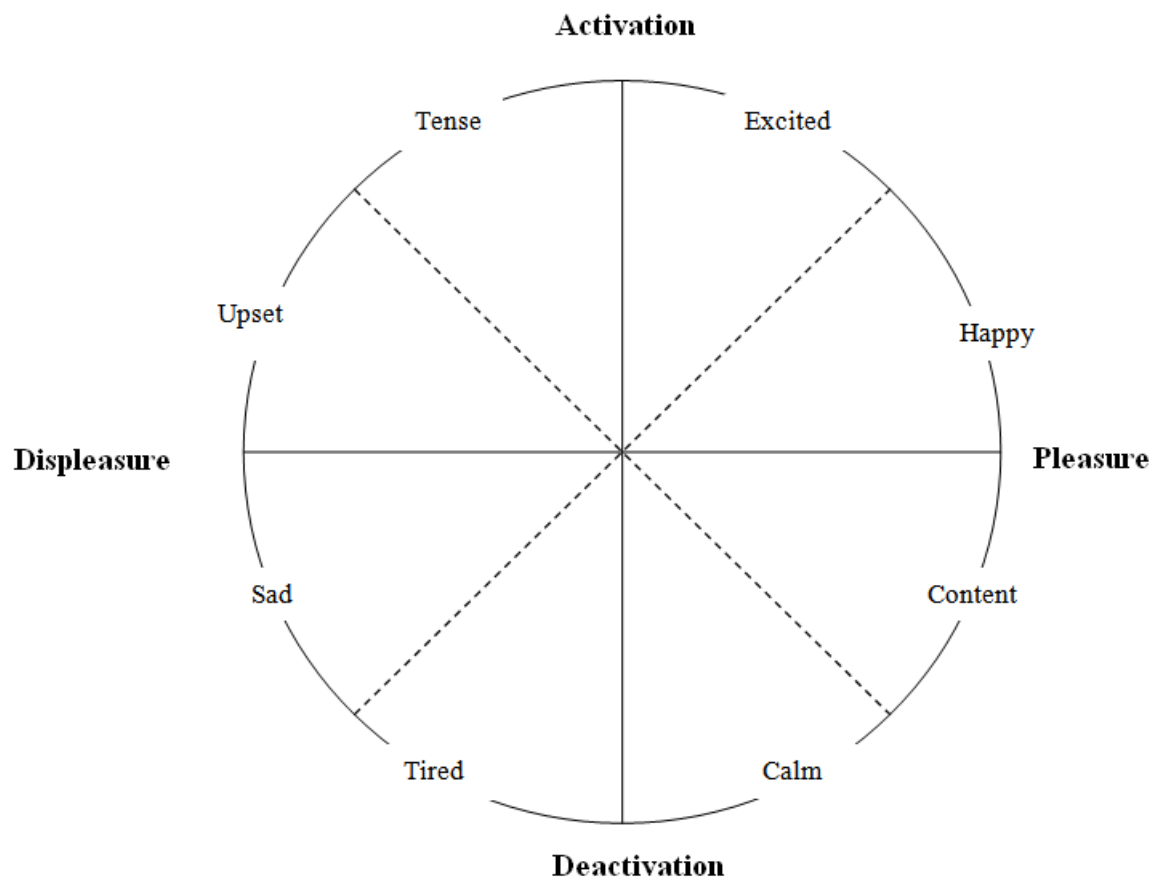
Contributing to the understanding of affect has been the development of the circumplex and hierarchy theories of affect. In 1954, Guttman proposed the circumplex structure, suggesting that mental abilities could be represented in a circular order. Since that time, circumplex representations have had widespread application in psychology, particularly within the fields of Personality and Social Psychology (e.g., Eysenck's theory of personality (Eysenck, 1970)).

A circumplex structure is the ordering of variables (i.e., affective traits), that are highly related and form a circular arrangement within a two-dimensional space (J. A. Russell, 1980). An assumption of a circumplex is that the strength of the association between the variables decreases as the distance between variables on the circle increases. For example in a two-factor structure of mood, all terms located within the same octant are highly positively correlated, whereas affective items adjacent to that octant are moderately correlated.

Affective items that are 90 degrees apart are completely unrelated, while those 180 degrees apart are opposite in meaning and thus are highly negatively correlated.

The most cited circumplex model of affect comes from the work of Russell and colleagues (J. A. Russell, 1980, 2009). In a two dimensional circumplex model of affect, Russell (1980) proposed that eight affect adjectives all fall in a circle divided by two axes labelled, pleasure-displeasure and arousal-sleepiness; pleasure ( $0^{\circ}$ ), excitement ( $45^{\circ}$ ), arousal ( $90^{\circ}$ ), distress ( $135^{\circ}$ ), displeasure ( $180^{\circ}$ ), depression ( $225^{\circ}$ ), sleepiness ( $270^{\circ}$ ), and contentment ( $315^{\circ}$ ). These eight affect adjectives argues Russell, comprise an understanding of affect as utilised by “laypersons” (i.e., general public) and the academic sector. A schematic representation of Russell’s (2003) model of core affect showing his most recent affect adjectives is presented in Figure 6.1.

Essentially, a circumplex is the pictorial representation of the association between measured variables (as shown in Figure 6.1), which is achieved through exploratory factor principal component analysis or multidimensional scaling (Fabrigar, Visser, & Browne, 1997). The graphical representation of the final factor/principal components solution is done with researchers specifying one factor as the vertical axis and the other factor as the horizontal axis. The loading values of each variable on each factor acts as the coordinates for the variable in two-dimensional space. The graphical representation is then examined for the appearance of a circular pattern. That is, does the location of the variables in the two-dimensional space formed a circle (Fabrigar, et al., 1997).



*Figure 6.1.* A schematic representation of Russell (2003) model of core affect. Taken from “Core Affect and the Psychological Construction of Emotion” by J. A. Russell, 2003, *Psychological Review*, 110(1), p. 148. Copyright 2003, by the American Psychological Association.

The result of these analyses is an unrotated dimension variously labelled hedonic tone (Cropanzano, Weiss, Hale, & Reb, 2003) or pleasant-unpleasant (i.e., how good vs. bad a person feels) (Yik, Russell, & Feldman Barrett, 1999) and mood valence (J. A. Russell & Carroll, 1999). The horizontal axis is anchored with affective terms such as, “happy” and “pleased” on the pleasant pole, while “sad” and “upset” anchors the unpleasant pole (Cropanzano, et al., 2003; Watson & Clark, 1997). Once the pleasant dimension is extracted a second dimension emerges, reflecting the intensity with which negative and positive states are experienced. The vertical dimension has also been described in various ways, including activation-deactivation (J.A. Russell & Barrett, 1999), engagement or arousal (Watson & Tellegen, 1985), and describes the extent to which a person feels engaged or energised. Affective terms used on this axis include “sleep”, “drowsiness” on the deactivated pole and “tense” and “alert” on the active pole. Thus, people scoring high on this dimension would be

described as “restless” and “changeable” while, those with a low score would be described using terms such as “peaceful” or “controlled” (Cropanzano, et al., 2003).

These dimensions have emerged from factor analyses with non-self-report data using facial and vocal expressions of emotions, semantic analyses of affect terms, as well as studies employing self-reported mood. As argued by Davern (2004), Russell’s circumplex theory has firmly placed the study of affect back on the research agenda, since first being mentioned by Wundt and then again by Guttman. Core affect theory, overlaps into and appears to have natural synergies with the study of SWB and QOL, which is the major focus of this thesis.

### *6.2.3 Watson and Tellegen’s affect model*

The circumplex model of affect, wherein, the underlying dimensions of pleasantness and arousal describe emotional experience (J. A. Russell, 1980), is not the only structure used to describe affect, as a number of other models exist. One such model, is Watson and Tellegen’s (1985) widely cited two-factor model of affect. This model differs from Russell’s affect model, as Watson and Tellegen found that positive and negative emotions formed separate clusters, which they took to mean that the two factors (positive affect and negative affect) are independent of each other.

This two-factor model of affect rotates the pleasant and arousal axes. As argued by Watson and Tellegen (1985), while these two dimensions provide a good description of affective experiences, these axes do not reflect the underlying systems responsible for affect that people experience. When the authors rotated the mood ratings 45 degrees the resultant model comprises two bipolar, orthogonal constructs, labelled positive affect (PA) and negative affect (NA) that are part of a hierarchy of discrete emotional categories. Thus, PA is a combination of pleasantness and arousal, while NA is a combination of arousal and unpleasantness. A schematic representation of Watson and Tellegen’s two-factor structure of affect is presented in Figure 6.2.



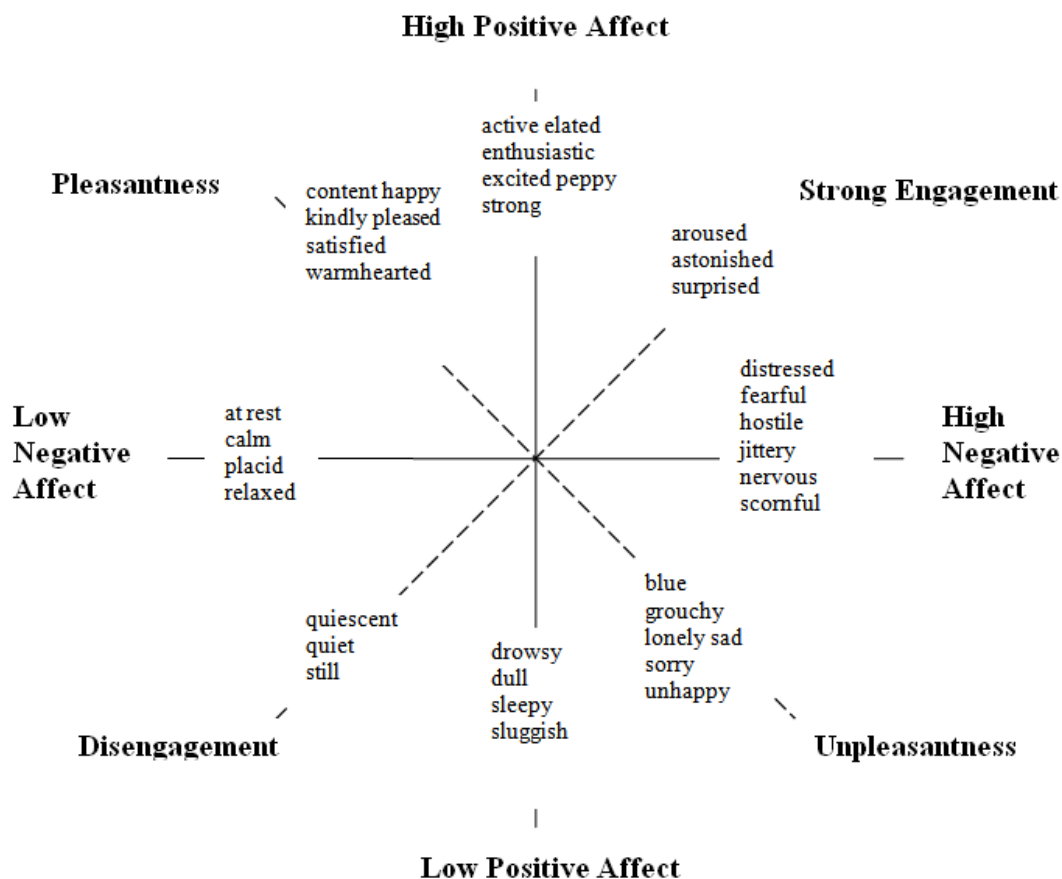


Figure 6.2. A schematic representation of Watson and Tellegen's two-factor model of affect. Taken from "Towards a Consensual Structure of Mood," by D. Watson & A. Tellegen, 1985, *psychological Bulletin*, 98(2), p. 221. Copyright by the American Psychological Association.

According to the authors, the first factor PA represents the extent to which a person reports enjoyment for life, while the second factor NA, is the extent to which a person reports feeling upset or unpleasant arousal. Thus, high PA is characterised as a state of high energy, full concentration, positive and pleasant engagement (i.e., alert, active, excited), whereas, a person with low PA does not necessarily experience negative emotion, but rather, they are characterised as having an absence of positive emotion and the presence of low energy. In this instance, items such as "drowsy", "dull", and "sluggish" characterise people with low PA.

Negative affect works in a corresponding manner to PA, only this time those high in NA will experience unpleasant emotions that involve high activation or engagement, for example emotions such as, "irritable", "angry", or "hostile". Similarly, those with low NA do not necessarily experience positive emotion, rather they will report low activation or energy

feeling states, such as “relaxed”, “calm”, or “placid”, which indicates an absence of negative emotion (as shown in Figure 6.2).

In this model the factors PA and NA are described as being “descriptively bipolar but affectively unipolar dimensions” (Watson & Tellegen, 1985, p. 221). This statement highlights the fact that only the high end of each pole or dimension is representative of emotional arousal or high affect, whereas, the low end of each dimension is representative of low or no affective involvement. Consequently, in spite of the two factors appearing as opposites (i.e., negatively correlated), they are independent, uncorrelated affective dimensions. Positive affect and NA vary according to activation.

Furthermore, as demonstrated in the two-factor model of affect, many mood terms do not constitute pure markers of either PA or NA. That is, within the Pleasantness octant, terms representing both high PA and low NA can be found (see Figure 6.2). Conversely, a mixture of high NA and low PA are present in the Unpleasantness octant. Terms that signify Strong Engagement, only have moderate loading on both PA and NA, whereas, terms denoting Disengagement negatively load on each factor (Watson & Tellegen, 1985).

Support for the two-factor model of affect has come from other affect research. In particular, research on the rotated factors of PA and NA, has consistently found that the two factors are closely associated with the personality traits; extraversion and neuroticism (Argyle & Lu, 1990; Costa & McCrae, 1980; Pavot, et al., 1990). In a series of studies on adult male samples, Costa and McCrae (1980) found significant positive relationships between extraversion and PA and between neuroticism and NA. Moreover, the two personality dimensions had a relatively independent influence on an individual’s affective balance. That is, extraversion was related to PA but not NA, whereas, neuroticism was related to NA but not PA. Such was the strength of this relationship, the authors found that extraversion predicted positive affect ( $r = .27$ ), 10 years later.

Additionally, the two dimensions PA and NA have proven to be highly robust and reliable across different descriptor sets, time frames, response formats and rotational structures, as well as within and between subject analyses (Diener, et al., 1995; Watson, et al., 1988). As a result a number of PA and NA scales have been developed, including the Positive and

Negative Affect Schedule (PANAS), developed by Watson et al. (1988), which measures activated PA and NA.

In summary, the circumplex model of affect is the association between measured variables; achieved through exploratory factor principal component analyses or multidimensional scaling. The unrotated dimension of the circumplex model (Russell, 1980) has been variously labelled hedonic tone or pleasant-unpleasant and mood valence. The horizontal axis is anchored with affective terms such as, “happy” and “pleased” on the pleasant pole, and “sad” and “upset” on the unpleasant pole. The second dimension reflects the intensity with which negative and positive states are experienced and are variously labelled; activation-deactivation, engagement or arousal and describes the extent to which a person feels engaged or energised. Affective terms used on this axis include “sleep” and “drowsiness” on the deactivated pole and “tense” and “alert” on the active pole. In contrast, Watson and Tellegen (1985) model of affect is achieved when mood ratings are rotated 45 degrees. The resultant solution is a two-factor structure of affect, comprising two bipolar, orthogonal constructs, labelled PA and NA. The PA factor represents the extent to which a person reports a keen enjoyment for life, while the NA factor is the extent to which a person reports feeling upset or unpleasant arousal. High PA is characterised as a state of high energy, full concentration, positive and pleasant engagement, whereas, a person with low PA is characterised as having an absence of positive emotion and the presence of low energy. Those high in NA experience unpleasant emotions that involve high activation or engagement, while those with low NA report low energy feeling states, such as “relaxed”, “calm”, or “placid”, indicating an absence of negative emotion. These two models represent two separate research teams and are the most dominant models of affect, currently in the literature. However, in order to evaluate these models it is necessary to review a third model of affect, which set out to simplify affect.

#### *6.2.4 Other contributions to affect models*

An attempt to integrate various models of affect was undertaken by Yik, Russell, Feldman, and Barrett (1999). These authors set out to simplify the affect model by combining the previous works of Russell’s (1980) circumplex; Watson and Tellegen’s (1985) PA and NA; Larsen and Diener’s (1992) pleasantness and activation, and Thayer’s (1996) tense and

energetic arousal. The authors tested these affect models using two set of undergraduate students, 198 in Boston and 217 in Vancouver. Participants completed a three-part affect questionnaire using three different response formats. The first section comprised an adjective list rated on a Likert scale with responses ranging from 1 (not at all) to 5 (extremely). The second and third sections comprised a list of statements in which participants indicated their degree of agreement, and how well the statements described their current feelings, respectively.

In testing and comparing these affect models, Yik and colleagues (1999) revealed that the various affective variables used within each of the models demonstrate such a level of overlap that a common set of labels and concepts could be found. For example, the affect adjectives of Larsen and Diener's "pleasant-activated", Watson and Tellegen's "high positive affect", and Thayer's "energy", are all very similar. That is, the three-affect variables, Pleasant Activated, High Positive Affect and Energy, only showed a slight variation in their position on the perimeter of the two-dimensional pleasantness-activation space, as indicated by separate structural equation models and the non-overlapping confidence intervals from the CIRCUM analysis (Yik, et al., 1999). This new circumplex model (as shown in Figure 6.3) is an improvement on the earlier rotated models, as it comprises two bipolar independent dimensions of pleasant-unpleasantness and activation-deactivation into one two-dimensional circumplex model of affect. The authors conclude that an advantage of the circumplex model of affect is its potential to unite previous structures and incorporate other dimensions. Thus, a greater understanding of affect is achieved through the effectiveness of the circumplex model, which has the capacity to account for a large diversity of affective states.

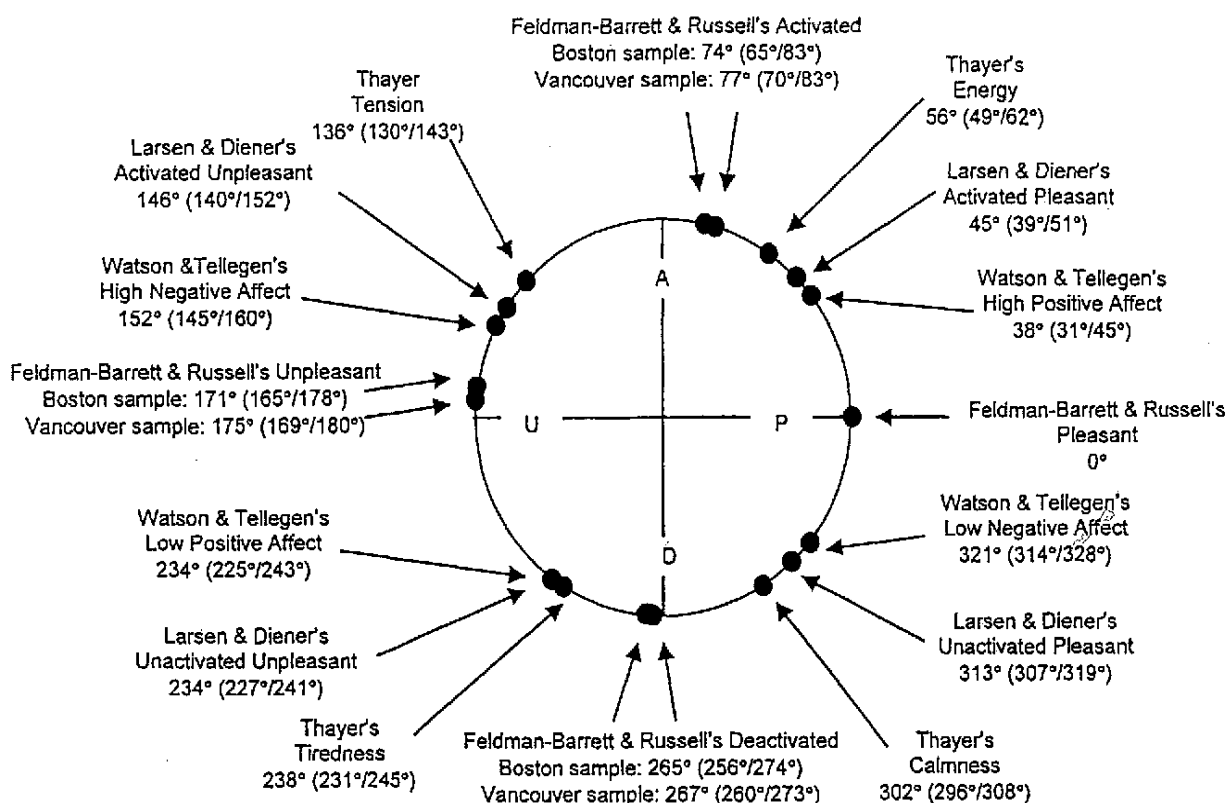


Figure 6.3. A circumplex representation four alternative structures of affect.

From "Structure of self-report current affect: Integration and beyond" by M.S.M. Yik, J.A. Russell & L. Feldman Barrett, 1999, *Journal of Personality and Social Psychology*, 77(3), p. 615. Copyright 1999 by the American Psychological Association, Inc. Reprinted with permission.

In their review on affective structure, Cropanzano et al. (2003), highlighted the importance of ongoing research into this area by stating that "if researchers do not have a nuanced understanding of affective structure, then they are likely to exclude potentially important variables in their investigations" (p. 851). As a consequence, affective experience will not be well understood. On the other hand, the usefulness of the circumplex model will only be assured if a full range of affect descriptors are utilised, which according to Yik et al. (1999) is more easily accommodated by the circumplex model. The full range of affect descriptors deemed necessary to understand affect was explored by Davern (2004), who identified two unresolved issues related to the measurement of affect. The first involved the relative strength of the two orthogonal axes of pleasure and activation and the second, the minimum set of affect terms that best explain the variance in SWB. This gap has recently been closed with research findings from Davern, who found that is primarily an affective construct, with

66% of variance in SWB explained by core affect; represented parsimoniously by the three affect items, happiness, contentment and excitement. This finding provides further support for the usefulness of the circumplex model of affect, particularly in the study of SWB.

In summary, Yik and colleagues (1999) proposed a circumplex model of affect, which comprises two bipolar independent dimensions of pleasant-unpleasantness and activation-deactivation, successfully demonstrating the integration of separate structures of affect (e.g., Watson & Tellegen's PA and NA, Thayer's tense and energetic arousal, and Larsen and Diener's pleasantness and activation) into one two-dimensional circumplex model of affect. The authors argue their model presents a simplified structure of affect at multiples of 45 degrees from one another, while also allowing for other variables to be created and fall at any angle within the pleasantness-activation space. Furthermore, the advantage of the circumplex model of affect is its potential to unite previous structures and incorporate other dimensions and thus contribute to a greater understanding of affect. The usefulness of the circumplex model was further demonstrated by Davern (2004) who found that SWB is primarily an affective construct (explaining 66% of variance in SWB), which is parsimoniously represented by the three affect items happiness, contentment and excitement.

### 6.3 Core Affect and Subjective Wellbeing Homeostasis

A consensus on the measurement of SWB is that, it involves both cognitive and affective processes and is represented with the measurement of satisfaction with life questions (Campbell, et al., 1976; Cummins, 2010; Diener, 1984). A substantial body of research has afforded SWB an important role, however, as recently argued by Davern, Cummins and Stokes (2007), very little attention has been directed to examining the relative contribution of affect and cognition to the SWB construct. In that, while it is generally accepted that the two components, affect and cognition are separable (Lucas, et al., 1996), the literature is less clear on whether SWB is predominantly a cognitive evaluation, as proposed by Diener and colleagues (2003).

Recent research by Davern and colleagues (Davern, 2004; Davern, et al., 2007), challenges this view and assert that SWB is predominately driven by affective and cognitive states. Moreover, from research findings the authors suggest that when suitable affective and

cognitive variables are used, the predominate role that personality has in contributing unique variance to the explanation of SWB, is virtually eliminated. That is, zero-order correlations between personality and SWB were found to substantially reduce when variance from core affect was factored out. The authors conclude that the measurement of SWB is predominantly an assessment of pleasant core affect and not personality as previously claimed (Davern, et al., 2007). This viewpoint contradicts previous literature reporting strong correlations between the two personality dimensions (e.g., extraversion and neuroticism) and SWB (Costa & McCrae, 1980; Pavot, et al., 1990) and therefore requires a possible reinterpretation of these findings.

The strength of affect in the model of SWB, found by Davern (2004) is consistent with Russell's (2003) definition of core affect. Core affect and its relationship with SWB homeostasis is considered by Cummins (International Wellbeing Group, 2006) to utilise the "satisfaction with life-as-a-whole" (SLAW) heuristic. That is, when respondents are asked the general but abstract question, "How satisfied are you with your life-as-a-whole?" people use a judgement heuristic based on the most salient available information, at that point in time. This judgement appears to be based on two types of information; domain salience in which individuals conduct a quick review of domains that are most salient and report their judgement, or dispositional trait affect in which individuals simply infer satisfaction from how they generally feel. Additionally, the "satisfaction with life" question also invokes affective heuristic, which then guides the judgement heuristic, whereby respondents subsequently attach their response to available and salient domains. Thus, within the "satisfaction with life" heuristics core affect is utilised (Cummins, 2010).

Core affect generally measures people's feelings when they think about their life in general, with responses from "not at all" to "extremely". Within the SWB homeostasis framework, core affect constitutes the minimal number of adjectives needed to explain the affective variance in SLAW. The current suggestion from Davern's research is that three affect adjectives explained 66% of the variance in SLAW, Contentment, Excitement, and Happiness. Together these positive adjectives represent the activated and deactivated pleasant quadrants of the affective circumplex.

In a slight departure from Russell's (2003) description of core affect, Cummins (2010) suggests that core affect is not "free-floating" but is a fixed entity for each individual, much like the set-point in SWB theory (Headey & Wearing, 1992). Thus, like the set-point, core affect has a value that is a genetically determined balance of positive and negative affect. More recently Russell (2009) changed his view of core affect's properties and suggest that it may be involved in either moods or emotions and it has the potential to become directed at and even changed by a range of other influences. This prompted Cummins and colleagues (Cummins, 2010; Davern, et al., 2007) to coin the term Homeostatically Protected Mood (HPMood) to explain the mood affect association with homeostasis. HPMood is described as a feeling state with a number of identifiable characteristics, summarised as follows: (1) HPMood is biologically determined mood, comprising the tonic state of affect responsible for the activation energy or motivation for behaviour; (2) it is the dominant affective state of SWB and also the set-point that homeostasis defends; and (3) HPMood is part of all cognitive processes, in particular those processes pertaining to self (Cummins, 2010). Hence, for the remainder of this thesis core affect will be referred to as HPMood.

In summary, research findings from Davern found the affective terms, contentment, excitement, and happiness explain 66% of the variance in SLAW. Furthermore personality did not predict SWB, as typically reported in the literature. Affect and its contribution to SWB, has now been incorporated into the SWB homeostasis theory by Cummins and colleagues (Cummins, 2010; Davern, et al., 2007). However, the contribution of HPMood to SWB has not been investigated in terms of people with intellectual disability. The purpose of the study is to further extend our understanding of the maintenance of SWB of this group of people and also examine the composition of SWB of people with intellectual disability, in relation to HPMood compared to non-disabled people.



## 6.4 Aims of Study 3

Specific aims of this investigation are:

- To replicate and extend Study 2 with the inclusion of three core affect items.
- To determine whether the composition of core affect for people with intellectual disability differs from that found in the general population.
- To determine whether the amount of variance explained in SWB by core affect will be within the same range as for non-disabled people.

## 6.5 Method

### 6.5.1 *Participants*

The Participants for Study 3 comprised 104 people with intellectual disability recruited through convenience sampling. They were recruited through the same human service organisations in the greater Auckland area that were approached in Study 2. In addition, they were asked for contact details of other human service organisations in the greater Auckland area that provided support to people with intellectual disability. All organisations were provided with a plain language information sheet, providing details on the aims of this study and the nature of the requested involvement (see Appendix F). Organisational consent was gained from 10 human service organisations (see Appendix B) that provided either residential services, or day services or a combination of both. Organisations ranged from small providers to a large national provider.

After organisational consent was gained from the service providers, a key staff member from each organisation approached potential participants who met the inclusion criteria. They explained the study and provided the plain language information statement (see Appendix D). For those who were interested, a subsequent meeting was arranged at the service provider sites, where the aims and purpose of the study was explained and consent was gained. See Appendix A, for consent form.

Eligibility to participate in this study was as outlined in Chapter 4, Study 1. Potential participants were given the opportunity to ask questions. Their understanding of what was told to them about the study, and what was required of them was checked prior to signing consent forms. This was done as outlined for Study 2. Potential participants were presumed competent to give informed consent to participate, unless there were grounds to conclude otherwise. Once consent was gained, individual meeting times were arranged either at their place of work or residence, where the face-to-face administration of the questionnaire was conducted.

The names of 104 possible participants were forwarded to the principal investigator. Of these four withdrew their consent to participate and one participant's interview was stopped part way through, as he kept falling asleep and was unable to complete the interview process. It was later determined that he has Epilepsy and due to recent increases of seizure activity was heavily medicated. A further 14 questionnaires were deleted from the study as these data showed response sets, that is, respondents consistently responded with either maximum (10-point) or minimum (0-point) scores when answering all seven items on the PWI scale. Subsequently, the responses from a total of 85 participants (42 males and 43 females) with intellectual disability were used for the data analysis. Demographic characteristics for study 3 can be found in Table 6.6 of the results.

The comparison group for Study 3 came from a data set (FU-5.2) collected as part of the Australian Unity Wellbeing longitudinal (Auqol public db 02-09-2008 v6.2) study. As survey FU-5.2 ( $n = 478$ ) had most of the variables of interest to Study 3, it was extracted from the larger data set and used as a comparison group for Study 3. These data had previously been collected as part of a follow-up telephone survey for SWB investigation and represent the general population aged 18 to 88 years. Mean age of the comparison sample was 52 years. Nine cases were deleted from this data set as they showed response sets. Subsequently, the responses from a total of 469 participants (200 males and 266 females, 3 data missing) from the general population were used as the comparison group.

### 6.5.2 *Materials*

The questionnaire for Study 3 consisted of demographic items (as outlined for Study 1 and 2), four scales (PWI, CRI, Self-esteem and LOT) identical to those used in Study 2 along with

the addition of three Core Affect adjectives (e.g., content, happy and alert) used to represent the affective component of SWB, derived from Davern's (2004) findings. Participants were asked to rate how they felt about their life according to each of these three adjectives with the instructions "please indicate how each of the following describes your feelings when you think about your life in general" using an 11 point bipolar response scale ranging from (0) completely dissatisfied to (10) completely satisfied. The three Affective items followed the PWI questions, followed by the CRI, Self-esteem and Optimism scales.

For the comparison group, the variables that related to Study 3 were extracted from the larger data-set. These comprised all seven variables from the PWI, three Core Affect items (content, happy, alert), 10 Self-esteem items and six LOT items. The comparison group data did not include CRI variables, so Approach and Avoidant Control will not be compared between the groups.

### *6.5.3 Procedure*

Following approval from Deakin University Human Research Ethics Committee and the Auckland Northern X Regional Ethics Committee, the administration of the questionnaires for participants' with intellectual disability was conducted in face-to-face interviews by the principal investigator. Specific meeting times were arranged with participants in their place of work or place of residence, in a room that allowed privacy and was free from distraction. Participants had a copy of the questionnaire in front of them to refer to if they wished. Interviews (including the pre-testing procedure) lasted from 30 to 60 minutes and were conducted in a single session.

Consistent with procedures outlined for Studies 1 and 2, the pre-testing protocol was conducted prior to administration of the questionnaire for participants (Cummins & Lau, 2004b). All participants completed the pre-testing protocol successfully and proceeded to the next stage of the interview. At the beginning of each set of items, the anchor descriptors were explained and checked for understanding, and then the researcher read each item and the participants' responses were recorded. At the completion of the questionnaire participants were thanked for their participation in the study.

The comparison group was obtained by follow-up postal survey. All data were examined and cleaned for response sets.

## 6.6 Results

The findings of Study 3 are reported here. Consistent with Study 1 and 2 all raw scores were converted into a standardised comparison statistic the Percentage of Scale Maximum (%SM), which converts Likert scale data to a range from 0 to 100 distribution. When the scale is scored 1-X, %SM is calculated using the formula  $(\text{score}-1) \times 100 / (\text{number of scale points}-1)$ . Whereas, when the scale is scored 0-X the formula becomes  $(\text{score}) \times 100 / (\text{number of scale points}-1)$ . Such conversion allows for understanding scores and comparison of scales scored differently (Cummins, 1995). Data screening and preliminary analysis are reported first, followed by scale analyses. Next correlations and descriptive analysis of variables of interest are reported. A comparison of the CRI between intellectually disabled participants for Study 2 and 3 is outlined. Analyses on Core Affect and SWB, Self-esteem, and Optimism for intellectually disabled and non-disabled groups is reported and lastly analyses for prediction of SWB for both groups is presented.

## 6.7 Data screening and preliminary analysis

Each variable was screened for missing data, normality, univariate and multivariate outliers. The relationship between variables was explored, and the reliability of the scales tested. There were no missing values for intellectually disabled participants in Study 3. Data were screened for normality using the Explore option in SPSS. The variables were screened using measures of skewness, kurtosis, histograms, and the Kolmogorov-Smirnov test of normality. The variables were mostly normally distributed as indicated in the tests of normality. However, the four variables, PWI (.002), Positive Reappraisal (.02), Seeking Alternative Rewards (.00) and Emotional Discharge (.02) were non-normal, that is, the values of these variables were not equal to or greater than .05 for the Kolmogorov-Smirnov test of normality.

Most of the variables were moderately negatively skewed, with nine of 11 variables demonstrating negative skewness (range -.047 to -.86). However, the presence of negative skewness is considered to reflect the inherent nature of these variables and the groups,

therefore no transformations or deletions were performed (Cummins, 1995). Univariate outliers also remained in the analysis for these reasons. In addition, histograms of all variables were checked and appear to have normal distributions for most variables, with skewness as mentioned. Normal Q-Q plots were checked with most variables indicating normal distribution with no variables indicating extreme violation of normality. Finally, trimmed means were checked on all variables for the influence of outliers and were deemed satisfactory.

Univariate outliers were identified through box plots and stem and leaf diagrams generated using the Explore option in SPSS. A small number of univariate outliers were identified. One extreme value in the Self-esteem scale was found and replaced with the next less extreme value to reduce its influence. All other univariate outliers were not transformed as they were considered to represent valid data. The presence of multivariate outliers was checked using a  $p < .001$  criterion for Mahalanobis distance. As only one multivariate outlier was found past the critical value it was therefore decided to leave the value unchanged.

## 6.8 Scale analysis

Part of preliminary data analysis involved the calculation of the reliability coefficients for all scales used in the study. As indicated in Table 6.1, Cronbach's alphas were low for some of the scales used.

Table 6.1  
*Reliability Analysis for the Intellectually Disabled Group on All Scales*

Subscales	Alpha ID Group ( $n=85$ ) $\alpha$
PWI	.50
Core Affect	.45
CRI	.83
Self-esteem	.60
Optimism	.33

The PWI (0.50) and Optimism (0.33) scales are particularly low. While the reliability coefficient was lower than expected for the PWI, this score was not very different from that reported by Marriage and Cummins (2004) in their study on the subjective quality of life and

self-esteem in school age children, in which they reported a reliability coefficient of 0.58 for the satisfaction subscale of the ComQOL. The authors argue that the reliability coefficients obtained were consistent with data collected using an adult population with an intellectual disability (Cummins, 1997c). Thus, Cronbach's alphas obtained in this study from an adult population with intellectual disability are reasonably comparable to previous data sets.

At the same time, it is known that Cronbach's alpha values are quite sensitive to the number of items that make up the scale. That is, with short scale (less than 10 items) it is not uncommon to have Cronbach's alphas in the region of .5 (Pallant, 2001). The scales comprising the PWI, Core Affect and Optimism all have less than 10 items (7, 3, and 8 respectively). Whereas, the CRI and Self-esteem scales are made up of 35 and 10 items respectively and thus had good Cronbach's alphas. However, the low alphas obtained in this study were not obtained in the previous study for these scales, so it was considered important to conduct further analyses to examine the structure of PWI and Optimism scales. For these reasons Confirmatory Factor Analysis (CFA) and SEM were conducted on the PWI and LOT scales.

#### *6.8.1 Additional analysis on Personal Wellbeing Index and LOT scale*

Prior to conducting the CFA and SEM descriptive analyses on the seven life domains comprising the PWI was carried out (see Table 6.2). Descriptive statistics indicates that participants in this study were very satisfied with the following life domains; Standard of Living ( $M$  81.88,  $SD$  18.48), Achievements ( $M$  79.41,  $SD$  20.55), Community Connectedness ( $M$  78.12,  $SD$  23.43), and Future Security ( $M$  73.53,  $SD$  25.85). Of interest to note, the mean scores for these life domains are all above the upper boundary of the Australian normative domain ranges for PWI (Cummins, Woerner, Tomy, Gibson, et al., 2007). Participants with intellectual disability were less satisfied with how safe they feel ( $M$  73.53,  $SD$  23.49), which fell below the normative domain range, which can be seen in Table 6.9. Participants were also less satisfied with their health and even less satisfied with their personal relationships ( $M$  69.53,  $SD$  23.35 and  $M$  68.94,  $SD$  24.10 respectively), which were below the lower boundary of the PWI normative domain ranges. Further, it is worth noting that with the exception of two domains (Health and Personal Relationships) the mean scores fall into the normative 70–80%SM range found in data for non-disabled adults (Cummins, 1997b).

Table 6.2  
*Observed Means, Standard Deviation, Correlation and Covariance Matrices for PWI Measure for Intellectually Disabled Group (n=85)*

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7
1. Standard of Living	81.88	18.48	—	.15	.51	.96	.54	.33	.33
2. Health	69.53	23.35	.04	—	.13	.42	1.30	-.02	.67
3. Achievements	79.41	20.55	.14	.03	—	.41	.82	1.10	.90
4. Personal Rel	68.94	24.10	.22*	.08	.08	—	-.01	-.06	1.98
5. Feeling Safe	73.53	23.49	.12	.24*	.17	-.00	—	1.6	.87
6. Community Con	78.12	23.43	.08	-.00	.23*	-.01	.29**	—	.76
7. Future Security	73.53	25.85	.07	.11	.17	.30**	.14	.11	—

*Note.* Simple correlations are below diagonal, with covariance above.  $n=85$  \* $p < 0.05$  (2 tailed), \*\* $p < 0.001$  (2-tailed)

As indicated (see Table 6.1), the low Cronbach's alpha for PWI is further reflected in the low inter-item correlations found in the correlation matrix. Low inter-item correlations could also be explained as a function of the PWI scale, or a function of this particular sample or it could have been a function of the administration of the questionnaire. All of these possibilities require further investigation. However, the requirements for administration of the questionnaire were satisfied, as the scales were administered following the recommended procedures as outlined in the various manuals for each of the scales used in this study. If this had not been the case, then the alpha coefficients for the CRI and Self-esteem scales might also have been expected to be low, but they were both in the acceptable range.

Due to the low Cronbach's alpha on two of the scales, being of concern it was decided to conduct CFA and then run SEM to validate the scale scores of the PWI (Cummins & Lau, 2004b). This analysis was also conducted on the Optimism scale (Scheier & Carver, 1985) (to be discussed in following section). The goal of the analysis was to show that the continued use of the PWI and Optimism scale was justified despite their low alpha coefficients. The use of CFA is warranted as alpha coefficient is the median of inter-item correlations, while CFA examines the means, variances, correlations, covariances, and residuals to determine whether a proposed model has a close fit to the data. Thus, CFA is able to validate a factor structure's presence by taking into consideration more parameters in the responses of participants.

Although sample sizes ought to be greater than 250 for robust estimation of parameters in CFA (Byrne, 2005), maximum likelihood estimation procedures provide the best estimation

of population values with small sample sizes. Where the sample size is about 50, research has shown that about 12 items are required to provide a robust factor structure (Marsh, Hau, Balla, & Grayson, 1998). Thus, it is assumed that CFA can detect the factor structure since  $N=85$  and the two factors have seven and eight items respectively.

A well fitting model would be indicated by a  $\chi^2/df$  ratio less than 3.0 ( $p$  value of  $\chi^2 > .05$ ) to show that the observed values differ from expected by no more than chance; note this is valid especially when  $N$  is less than 100, large sample sizes will often be rejected because of a large  $N$ . Goodness of fit indices (e.g., TLI, CFI) should be  $> .95$  when the model is simple— (Cheung & Rensvold, 2002) badness of fit indices (e.g., root mean square error of approximation [RMSEA] (Steiger, 2000) should be close to zero and not more than .05. The best fitting model is one where all statistics simultaneously meet standards (Hoyle & Duvall, 2004).

The analyses for the PWI are now discussed. The hypothesised Model 1 represents all variables loaded onto one factor, consistent with the intention of the scale. The seven variables, Standard of Living, Health, Achievements, Personal Relationships, Feeling Safe, Community Connectedness and Future Security represent the first level of deconstruction of life-as-a-whole and consistently form a single stable factor of Personal Wellbeing (Cummins & Lau, 2004b). As indicated in Table 6.3, indices of fit TLI and CFI are both less than the required standard at .82 and .88 respectively. Although, the RMSEA is reasonable at .04 and the  $\chi^2/df$  ratio is within the standard at 1.14, indicating a good model fit. This analysis indicates that, for this sample, all seven variables are not forming a single factor. Hence further analyses were conducted.

Examination of exploratory factor analysis indicated the possible presence of two factors underlying the PWI scale. Thus, the hypothesised model 2 was tested. Two correlated factors were proposed in Model 2. Factor 1 comprised the four variables of Personal Relationships, Feeling Safe, Community Connectedness, and Future Security, while Factor 2 had the remaining three variables of Standard of Living, Health, and Achievements. While there were general improvements in the goodness of fit indices from Model 1, not all appropriate standards were simultaneously met and a third model was tested.



Model 3 examined the possibility of three factors also indicated by the EFA. The indices for fit in Model 3 were identical to those found when testing Model 2. Factor 1 was made up of variables of Achievement, Feeling Safe, Community Connectedness and Future Security. Factor 3 had paths to both Factor 1 and 2 but did not have any latent variables loading on it. Factor 2 had the variables of Personal Relationships, Standard of Living, and Health. There was no change in the fit statistics and as this model does not appear to fit with theoretical concepts of Personal Wellbeing, a fourth model was proposed.

While Model 4 also examined the possibility of three factors it differed from Model 3 in that Factor 3 now had a path to the latent variable of Health. Again there was a small increase in goodness of fit indices but they still were not all simultaneously meeting the standard.

Model 5, is one general PWI factor with a sub-factor made up of Personal Relationships and Standard of Living. The main factor then consists of the five variables (Health, Achievement, Feeling Safe, Community Connectedness, and Future Security), plus the sub-factor. All models met fit standards for  $\chi^2$  and RMSEA. However, only Model 5 met all appropriate standards simultaneously and is thus selected as the best model of participant responses to the PWI.

Table 6.3  
*Fit Indices for Models Underlying Response to PWI*

Models	<i>df</i>	$\chi^2$	<i>p</i>	$\chi^2/df$	TLI	CFI	RMSEA
1	14	15.99	<i>.31</i>	1.14	<i>.82</i>	<i>.88</i>	<i>.04</i>
2	13	14.56	<i>.34</i>	1.12	<i>.85</i>	<i>.91</i>	<i>.04</i>
3	13	14.56	<i>.34</i>	1.12	<i>.85</i>	<i>.91</i>	<i>.04</i>
4	12	13.31	<i>.35</i>	1.11	<i>.86</i>	<i>.92</i>	<i>.04</i>
5	13	13.31	<i>.42</i>	1.02	<i>.97</i>	<i>.98</i>	<i>.02</i>

*Note.* Values meeting standards are shown in italics.

The structure of Model 5 may be explained by current thinking around homeostasis and SWB (Cummins, 2010). Optimal levels of SWB are maintained by a specifically evolved system of psychological devices. Homeostasis is a theoretical construct that can account for this maintenance. In discussing SWB, Cummins makes the distinction between two separate buffers of the homeostatic system—internal and external buffers. The variables of Wealth and Relationships make up the external buffers and as argued by Cummins, both have the

capacity to support or challenge SWB. It is this capacity to protect SWB that allows them to be conceptualised as external homeostatic buffers. While the literature on wealth and SWB clearly support the notion that money does not buy happiness or satisfaction, wealth does protect SWB as it acts as a flexible resource that assists homeostasis (Cummins, 2000c). That is, having sufficient income allows people to minimise challenges in the environment that would otherwise defeat the homeostatic system resulting in a loss of SWB. Equally, having close personal relationships with other adults moderates the influence of potential environmental stressors on SWB.

In their study Cummins et al. (2009) showed that the highest levels of support were associated with the highest levels of wellbeing and as the levels of support decreased, so did SWB. In their study the variable Wealth was an objective measure of reported household income. In this study the source of income for people with intellectual disability is typically a welfare benefit, and thus they do not have the level of income that is generally available to non-disabled people. The question which taps how satisfied people were with their standard of living or the things they owned, what they do and what they could afford to buy, is taken to be equivalent to questions that tap wealth or income level in the general population. From examining the underlying structure of the PWI measurement scale the fact that both standard of living and personal relationships both formed a subfactor of Factor 1 fits with Cummin's discussion on external buffers of SWB homeostasis. Thus, it can be concluded that the seven items of the PWI can be legitimately aggregated into one scale score as intended. However, further research is needed to determine whether the explanations offered here are valid to explain the internal structure of PWI for intellectually disabled people in general or whether these findings are an artefact of this particular participant group.

#### 6.8.2 *Additional analyses for Optimism (LOT) measure*

Table 6.4 shows the descriptive statistics, means, standard deviations, correlation and covariance matrices that were run on the items making up the LOT. Scores are expressed as percentage of scale maximum (%SM). The LOT scale measures the extent to which individuals have positive expectancies of life outcomes. The scale is made up of four positively worded items (e.g. 1, 3, 4, and 7) and four negatively worded items (e.g., 2, 5, 6, and 8) as shown in Appendix G. High scores on positively worded items indicate high levels of

optimism, while high scores on negatively worded items indicate low levels of optimism or pessimism. Therefore, in conformity with the procedure in these types of scales, all negatively worded items were reversed before any analyses were run to ensure that all high scores indicate high levels of optimism.

As indicated in Table 6.4, intellectually disabled participants in this study generally have high levels of optimism, in particular “looking on the bright side of life” (items 3) which had the highest mean score at  $M$  80.23,  $SD$  22.14. Followed closely by “expecting good thing to happen to them” ( $M$  79.17,  $SD$  24.31). The lowest mean score was for item 7 (“I believe that every cloud has a silver lining”). A possible reason for the lower mean score on this item is not that people do not believe that something good can come from a bad situation, but rather this saying is not a familiar saying to people with disabilities and therefore they did not fully understand its meaning. The other feature worth noting is the items in the LOT scale have strong inter-item correlations and shared covariance suggesting that participants responded to each item independently, as they appear to have done for the PWI. For example item 6 (“Things never work out the way I want”) has strong covariance with item 7 (“I believe that every cloud has a silver lining”).

Table 6.4  
*Observed Means, Standard Deviation, and Correlation and Covariance Matrices for Optimism (LOT) Measure for Intellectually Disabled Group*

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8
1. Usually expect the best	72.35	26.97	-	.61	.41	1.57	.06	.59	1.67	.90
2. Things go wrong for me	64.94	27.80	-.08	-	.25	.37	.89	1.55	-1.17	2.29
3. Bright side of life	80.23	22.15	.07	.04	-	2.51	-.09	-.22	-.15	.36
4. I'm hopeful about future	74.11	25.37	.23*	.05	.45**	-	.46	.54	-.75	.92
5. Don't expect things to go my way	61.17	28.10	.01	.11	-.01	.06	-	1.68	-1.20	.39
6. Things don't work out way I want	57.88	29.88	.07	.19	-.03	.07	.20	-	-3.48	1.57
7. Believe every cloud has a silver lining	57.52	36.11	.17	-.12	-.02	-.08	-.12	-.32**	-	1.28
8. Rarely count on good things happen	79.17	24.31	.14	.34**	.07	.15	.06	.22*	.14	-

*Note.* Simple correlations are below diagonal, with covariance above. Means and standard deviations are expressed as percentage of scale maximum (%SM) on a range of 0 to 100.

\* $p < 0.05$  (2 tailed), \*\* $p < 0.001$  (2-tailed)

Fit indices for hypothesised models testing the underlying structure of the LOT scale are shown in Table 6.5. Model 1 represents all eight items loading onto one factor, consistent with the intention of the scale. None of the fit statistics for Model 1 meet the required standard and therefore Model 2 was tested. Model 2 has two correlated factors. Factor 1 has all four positively worded items (1, 3, 4, and 7) loading onto it while Factor 2 has all four negatively worded items (2, 5, 6, and 8) loading onto it. This is not a good model as all the fit statistics are not simultaneously met. Further systematic attempts were made to resolve Model 2 by deleting problematic positively worded items one at a time. All attempts were unsuccessful, as Model 2, with two correlated factors comprising positively and negatively worded items, failed to solve or was not admissible. Model 3 was then tested. This model was similar to Model 2 with two factors and seven items. The positively worded item 7 ("I believe every cloud has a silver lining") was dropped. Three positively worded items (4, 3, and 1) loaded onto Factor 1 and the four negatively worded items loaded onto Factor 2. Model 3 resulted with item 4 ("I'm always optimistic about my future") having negative variance error, resulting in a bad model with poor fit statistics. Next, all four positively

worded items were dropped and model four was tested. Model 4 has one factor with only the four negatively worded items (8, 2, 6, and 5) included. This model has good fit statistics with all four variances significantly different from zero at the .001 level (two-tailed).

Table 6.5  
*Fit Indices for Models Underlying Response to Optimism (LOT) Measure*

Models	<i>k</i>	<i>df</i>	$\chi^2$	<i>p</i>	$\chi^2/df$	TLI	CFI	RMSEA
1	8	20	46.82	.00	2.34	.07	.34	.13
2	7	19	25.45	.15	1.34	.77	.84	.06
2a	7	13	23.59	.04	1.815	.60	.75	.09
3	7	13	6.38	.93	.49	1.39	1.00	.00
4	4	2	2.19	.34	1.09	.96	.99	.03

*Note.* Values meeting standards are shown in italics.

In summary, a series of systematic analyses were carried out to determine the underlying structure of the LOT scale. This involved CFA and SEM. First, one factor with all items loading onto it was tried and this model did not solve. Then two factors with negatively worded items loading onto one factor and positively worded items loading onto the other factor were tried and this only solved when negative error variance was fixed at 1. This did not produce the best model solution. When positively worded items alone were proposed in the model, a permissible model could not be found. However, when negatively worded items only were proposed, this model solved well (see Table 6.5 Model 4). Thus for people with disabilities, their levels of optimism in Study 3 will be calculated on the four negatively worded items only. In accordance with usual procedure these items are recoded so that agreement is in the positive direction of the scale.

There is no clear reason why the four negatively worded items were understood more by these participants than the positively worded items. Moreover, this result is opposite to the factor analytic findings in Study 2, where the four positively worded items were a better fit of the data. Furthermore, it does not fit with current logic, which suggests the opposite would be true. That is, negatively worded items pose a higher level of cognitive challenge, as they are semantically more complex than positively worded items (Scheier & Carver, 1985). Thus, for people with intellectual disability this semantic challenge should have meant that the negatively worded items were not understood as well, yet this does not appear to be the case. For example, item 7 (“I believe every cloud has a silver lining”), is a positively worded

item that did not appear to be understood by many of the participants. This is indicated by the low mean score and the large standard deviation of this item, which were larger than all other items in the scale (see Table 6.4).

One explanation why the negative items were more easily understood could be that these items are more concrete and less abstract, making them more understandable for this group. Another possible explanation is that for people with intellectual disability the use of negative wording or pessimistic direction of the items was more in line with their experiences. That is, the presence of optimism is better represented by the pessimistic direction of wording than the positive direction. Clearly, further investigation into the use of the LOT scale with participants who are intellectually disabled is required, but at present this is not the scope of this thesis. As there was a reasonable fit with the four negatively worded items used in the current study, confidence in further analysis is warranted.

### *6.8.3 Factor analysis for LOT as used by non-disabled group*

In order to compare the optimism data between people with intellectual disability and the Australian longitudinal non-disabled study, it was decided to conduct a factor analysis on the intellectually disabled sample ( $n = 85$ ) using the specific items in the LOT scale as used by the comparison group, as three negatively worded and three positively worded items (see Appendix I). The wording of items 1 to 5, were identical to both groups. However, item 6 “I expect more good things to happen to me than bad” from the non-disabled group, was replaced with “I always look on the bright side of things” for the intellectually disabled group.

The sample size met the criterion of a minimum of five subjects per variable and inspection of the correlation matrix revealed the presence of many coefficients of 0.3, with all variables correlated with at least one other item ( $r > 0.30$ ). The determinant of the correlation matrix was larger than 0.001, indicating an absence of multicollinearity and singularity. Bartlett’s Test of Sphericity ( $= 38.505$ ,  $p = < .001$ ) reached statistical significance supporting the factorability of the correlation matrix. However, the KMO measure of sampling adequacy is 0.51 and did not exceed the recommended value of 0.6 (Tabachnick & Fidell, 2007). As the KMO is not far below the required value and the Bartlett’s Test of Sphericity is significant, factor analysis will proceed cautiously, keeping in mind this violation of testing assumptions.

A free extraction of factors revealed two factors with eigenvalues greater than one, explaining 27.44%, and 21.46% of variance. The inspection of the scree plot revealed a clear break at the third component, however to be consistent with current research on the LOT scale two factors were extracted. Table 6.6 shows the resultant factor structure. A Varimax rotation was performed on the two extracted factors to aid interpretation, which together explained 48.90% of variance. Examination of the factor loadings revealed that three positively worded items (1, 3, and 6) loaded on Factor 1 and three negatively worded items (2, 4, and 5) loaded on Factor 2. Factor 1 explained 25% of variance and reflects optimism, where as Factor 2 explains 23% of variance and reflects pessimism. The reliability for Factor 1 is  $\alpha = .50$  and for Factor 2 is  $\alpha = .37$ , which is an improvement on the earlier Cronbach's alpha obtained ( $\alpha = .33$ ). The corrected item-total correlations fell between .18–.45 for Factor 1 and .11–.30 for Factor 2. These findings are consistent with the factor analytic results in Study 2.

Table 6.6  
*Resultant two-factor solution of Optimism scale for Intellectually Disabled Group (n=85)*

Items	Description	Factor 1	Factor 2
3	I am always optimistic/hopeful about my future	.83	
6	I expect more good things to happen to me than bad	.75	
1	In uncertain times, I usually expect the best	.51	
2	If something can go wrong for me, it will		.82
5	I rarely count on good things happening to me		.74
4	I hardly ever expect things to go my way		.38
	Cronbach's Alpha	.50	.37
	Corrected Item-Total Correlation	.18 - .45	.11 - .30
	Percent of variance explained	25.8%	23.1%

*Note.* Item 6 for ID group is worded "I always look on the bright side of things", while for the ND group is worded as shown.

Finally, a factor analysis was conducted on the six items of the LOT from the Australian non-disabled sample in order to confirm the normal factorial structure. The data met all the necessary assumptions for testing. Bartlett's Test of Sphericity ( $= 406.66, p = < .001$ ) reached statistical significance and the KMO measure of sampling adequacy was 0.78 confirming the factorability of the data. The determinant of the correlation matrix was 0.14, indicating an absence of multicollinearity and singularity. The free extraction of factors revealed two factors, with eigenvalues 3.02 and 1.13. Varimax rotation was performed on the two extracted factors to aid interpretation, which together explained 69.3% of variance.

Examination of the factor loadings revealed the three negatively worded items (4, 2, and 5), loaded on Factor 1 explaining 42% of variance and reflecting pessimism, while three positively worded items loaded on Factor 2, explaining 27% of variance and reflecting optimism. One positively worded item 6, (“Overall, I expect more good things to happen to me than bad”) cross-loaded (.65, .37). The reliability for each factor were satisfactory; Factor 1 was  $\alpha = .67$  and for Factor 2 was  $\alpha = .83$ . The corrected item-total correlations fell between .41–.61 for Factor 1 and .19–.72 for Factor 2. This solution is deemed acceptable and is consistent with the factorial structure for the data from the intellectually disabled group. It is therefore concluded that the factor structure of the LOT for both the intellectual disability and non-disabled groups has been established. For this reason and also in order to meet one of the aims of Study 3, it was decided to use the current 6-item LOT scale in further data analyses.

## 6.9 Correlations for Intellectually Disabled Group

Correlations matrices were generated to explore relationships among the variables for the intellectually disabled group. This matrix is shown on Table 6.7. As shown no variables correlated at 0.6 and above for this group and all significant correlations were positive. Overall, the association between variables is low. The correlations revealed that PWI scale correlated with two of the Core Affect (happy and alert) and had a non-significant correlation with the Core Affect Content. Personal Wellbeing Index had correlations with three of the Approach Coping scales (e.g., Logical Analysis, Positive Reappraisal, and Problem Solving) and one of the Avoidant Coping subscales (e.g., Seeking Alternative Rewards). Personal Wellbeing Index also correlated with Self-esteem and Optimism scales, which is similar to the results in Study 2. However Self-esteem and Optimism, each only correlated with four of the 13 variables. Emotional discharge from the Avoidant Control subscale is significantly correlated with acceptance/resignation, again this is similar to the results in Study 2 for this group. The highest correlation was between the Approach subscales positive reappraisal and logical analysis ( $r .57, p = < .01$ ).



Table 6.7

*Bivariate Correlations, Means and Standard Deviations Between Totals of Variables for Intellectually Disabled (ID) Group (n=85)*

Variables	Approach Control							Avoidant Control						
	PWI	CONT	HAP	ALT	LA	PR	SG	PS	CA	AR	SA	ED	Se	Op
PWI														
Cont	.36**													
Hap	.34**	.02												
Alt	.50**	.28*	.34**											
LA	.23*	.38**	.09	.20										
PR	.28*	.25*	.16	.19	.57**									
SG	.10	.25*	.23*	.20	.28*	.39**								
PS	.32**	.20	.24*	.30**	.42**	.53**	.33**							
CA	.19	.27*	.00	.14	.43**	.51**	.21*	.27*						
AR	.15	.17	.04	.20	.29**	.32**	.28**	.35**	.38**					
SA	.28*	.30**	.11	.09	.27*	.22*	.23*	.34**	-.01	-.09				
ED	-.15	-.08	-.07	-.08	.05	.14	.02	.04	.18	.39**	-.13			
Se	.47**	.18	.02	.30**	.14	.15	-.08	.21*	-.01	-.14	.23*	-.19		
Op	.49**	.17	.31**	.18	.14	.27*	.10	.19	.08	-.10	.20	-.09	.38**	
<i>M</i>	74.99	71.41	85.18	68.47	61.36	61.20	58.80	63.57	53.43	42.42	65.06	30.86	74.01	72.00
<i>SD</i>	11.40	24.74	20.66	26.66	16.47	17.60	23.20	17.00	19.73	18.43	32.24	24.00	12.42	13.07

## 6.10 Descriptive analyses for both group

### *6.10.1 Analysis of participants' characteristics*

Table 6.8 shows that the sample of people with intellectual disability differs little in terms of demographic details from the intellectually disabled sample in Study 2. Three participants in this study reported their income was greater than greater than \$NZD11,000.00 (i.e., above the level of the welfare benefit). This detail was not verified by a third party and should be treated with caution, as most people with disabilities have limited incomes, derived mostly from the social welfare benefit and a small allowance provided by the day service or sheltered employment centre.

Limited demographics details were available for the non-disabled comparison group and therefore a comparison of participant characteristics can only be made across common variables of age, income and gender. The distribution of gender across the two groups is very similar (see Table 6.8), while age and income differs. The non-disabled group is older with a median age of 50–59 years old whereas, the median age for the intellectually disabled group is 30–39 years old. As expected income levels are markedly different, being much higher in the non-disabled group.

Table 6.8  
*Demographic Information of Non-Disabled and Intellectually Disabled Groups*

	Intellectual Disability Group (n=85)	Non-Disabled Group (n=469)	
<b>Gender</b>			
Male	42 (49.4%)	200 (42.6%)	
Female	43 (50.6%)	266 (56.7%)	
<b>Age</b>			
18-20	3 (3.5%)	8 (1.7%)	
21-29	20 (23.5%)	20 (4.3%)	
30-39	23 (27.1%)	87 (18.6%)	
40-49	21 (24.7%)	79 (16.8%)	
50-59	10 (11.8%)	107 (22.8%)	
>60	8 (9.4%)	160 (34.1%)	
<b>Marital Status</b>			
Never married	76 (89.4%)	-	
Married	6 (7.1%)	-	
Separated	1 (1.2%)	-	
Divorced	2 (2.5%)	-	
Widowed	-	-	
<b>Income</b>			
<\$10,999	61 (71.8%)	<\$15,000	164 (34.5%)
\$11,000-25,999	2 (2.4%)	\$15,000 to 30,000	66 (14.1%)
\$26,000-40,999	1 (1.2%)	\$31,000 to 60,000	86 (18.3%)
>\$41,000	-	>\$61,000	92 (19.6%)
Rather not say/don't know	21 (24.7%)	Missing/rather not say	61 (13%)
<b>Employment Status</b>			
Student	5 (5.9%)	-	
Part-time work <20hrs wk	51 (60.0%)	-	
Full-time work >30hrs wk	13 (15.3%)	-	
Unemployed	16 (18.8%)	-	
Retired	-	-	
<b>Ethnicity</b>			
NZ European	74 (87.1%)	-	
Maori	6 (7.1%)	-	
Pacific Island	3 (3.5 %)	-	
Asian	2 (2.4%)	-	
Other	-	-	

### 6.10.2 Subjective Wellbeing variables

The Australian normative ranges for PWI life domains are drawn from Cummins et al. (2007). An examination of Table 6.9, shows that the mean scores of satisfaction with life-as-a-whole for the non-disabled group fall within the new normative Western range of 73.4–76.4 as demonstrated in other research (Cummins, Woerner, Tomyn, Lai, et al.,

2007). Both life-as-a-whole and the PWI are not only higher in the intellectually disabled group but also above the normative range. This also applies to a majority of the domains. However, it is interesting to see that two domains do not differ between the groups (Health and Safety), while Relationships is actually lower in the intellectually disabled sample. These differences lend credibility to the measures, as will be discussed.

Table 6.9

*Means and Standard Deviations for Non-Disabled (ND) and Intellectually Disabled (ID) Groups for Subjective Wellbeing Variables*

Domains %SM	ND – Group (N=469)	ID – Group(N=85)	PWI and Domain Normative Ranges
	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	Mean range
Life-as-a-whole	71.94 (17.71)	82.00 (20.69)	75.8–79.2
1. Standard of living	72.09 (19.72)	81.48 (18.48)	75.4–79.3
2. Health	69.40 (20.25)	69.53 (23.35)	73.9–76.2
3. Achievements in life	70.66 (18.32)	79.41 (20.55)	71.9–75.6
4. Personal relationships	76.67 (20.24)	68.94 (24.10)	77.2–81.6
5. How safe you feel	73.91 (19.81)	73.53 (23.49)	75.0–81.4
6. Community connectedness	69.89 (20.40)	78.12 (23.42)	68.7–72.3
7. Future security	66.22 (22.46)	73.53 (25.82)	68.1–73.4
Total PWI	71.10 (14.33)	74.99 (11.39)	73.5–76.5
<b>Additional Items</b>			
1. Spiritual/ religious beliefs	-	80.60 (22.95)	-
2. Relationship with family	-	91.00 (16.63)	-
3. Relationship with friends	-	83.65 (24.39)	-
4. Relationship with spouse/partner	-	80.00 (21.44)	-
5. Financial security	-	74.59 (26.84)	-

*Note.* Results are presented as means and standard deviations and expressed as percentage of scale maximum (%SM) on a range of 0 to 100.

A MANOVA explores differences between the two groups on each of the seven life domains that make up PWI. Prior to analysis, eight multivariate outliers were identified in the non-disabled group and one in the intellectually disabled group, using Mahalanobis distance with  $p < .001$  and deleted from subsequent analyses. Pillai's Trace criterion indicates a significant main effect  $F(7,532) = 10.51, p = < .001$ ; partial-eta squared = .12. The univariate tests for each of the dependent variables are displayed in Table 6.10. Box's M test is significant, suggesting the data did not meet the assumption of homogeneity of variance-covariance matrices  $F(28,76631) = 7.92, p = < .001$ .

Levene's test for equality of variances was significant for Health  $F(1,538) = 4.47, p = .035$ , Personal Relationships  $F(1,538) = 8.39, p = < .004$ , Safety  $F(1,538) = 11.36, p = < .001$ , and Community Connectedness  $F(1,538) = 9.54, p = < .002$ , indicating that caution should be used when interpreting the results for these variables. Homogeneity of variance was upheld for the other domains.

Table 6.10

*Univariate tests examining the differences between groups for the seven life domains*

DV	Non-disabled <i>M (SD)</i> <i>n=456</i>	Disabled <i>M (SD)</i> <i>n=84</i>	<i>F(1,538)</i>	<i>p</i>	Partial Eta2	Observed Power
Standard of Living	72.72 (18.65)	82.26 (18.26)	18.69	.00	.03	.99
Health	69.70 (19.85)	69.76 (23.39)	.00	.97	.00	.05
Achievements in Life	71.34 (17.75)	80.36 (18.72)	17.99	.00	.03	.99
Personal Relationship	77.19 (19.33)	69.76 (23.02)	9.85	.00	.02	.88
Safety	74.17 (19.30)	73.21 (23.45)	.16	.69	.00	.07
Community Connected	70.28 (20.31)	77.86 (23.44)	9.94	.00	.02	.86
Future Security	66.97 (21.72)	74.40 (24.71)	7.94	.01	.02	.80

When the domains were examined separately, five reached statistical significance using an alpha level of .01. These are Standard of Living ( $F(1,538) = 18.69, p = .001$ ), Achievements in Life ( $F(1,538) = 17.99, p = .001$ ), Personal Relationships  $F(1,538) = 9.85, p = .002$ , Community Connectedness ( $F(1,538) = 9.38, p = < .002$ ) and Future Security ( $F(1,538) = 7.94, p = < .005$ ). No significant differences were found for the domains Health and Safety between the two groups.

Partial eta-squared is small to moderate and powers are high for the significant comparisons. The domains Standard of Living and Achievements in Life exerted the most influence on the difference between the two PWI scores. For each comparison, intellectually disabled people are more satisfied, with the exception of Personal Relationships where non-disabled people were more satisfied. However, some caution regarding the findings needs to be observed, due to the earlier mentioned violation of assumptions. These findings confirm and extend the results in Study 2, in which people with intellectual disability are more satisfied with Achievements in Life, Community

Connectedness, Future Security and now Standard of Living, and less satisfied with Personal Relationships.

### *6.10.3 Additional domains*

As occurred in Study 2 additional satisfaction variables were investigated in this study, however, these variables were not part of the Australian data set and so no comparative analysis can be made. A comparison however, can be made between the intellectually disabled samples from Study 2, with the current study. Independent *t*-tests revealed there were no significant differences between the two groups. Similar to the findings from Study 2, people with intellectual disability in this study rated relationships with family and friends, the highest mean satisfaction. Notably, this is not reflected in their rating for satisfaction with Personal Relationships, which was rated below the Australian normative domain ranges (see Table 6.9). This discrepancy could be due to the more abstract and general nature of the domain question “How satisfied are you with your personal relationships?” whereas, the questions “How satisfied are you with your relationship with family/friends?” is more concrete and specific.

In summary these results support and extend the results from Study 2. People with intellectual disability reported SWB mean scores that fall within the normative range. Furthermore, when their mean scores were compared against the normative Australian PWI domain ranges they fell within, or exceed the normative range. People with intellectual disability had higher mean satisfaction scores on four of the seven life domains. Non-disabled had higher mean scores for Personal Relationships. The two life domains Health and Safety did not show significant difference between the two groups.

### *6.10.4 Regression analysis of life-as-a-whole on life domains for both groups*

Life domains represent the first level deconstruction of the global SLAW. It is proposed that each domain contributes unique variance when regressed against SLAW. The combination of unique and shared variance by the life domains has been shown to explain 30–60% of the variance in SLAW (International Wellbeing Group, 2006).

In order to test this in the current context, Regression was performed using SPSS REGRESSION and SPSS EXPLORE for the evaluation of assumptions. Correlation matrices were generated for each group checking for multicollinearity and singularity.

No transformation of data was undertaken. Sample size for non-disabled group ( $n = 461$ ) and intellectually disabled ( $n = 84$ ) is adequate for analysis to proceed with confidence.

Tables 6.11 and 6.12, display the results for the non-disabled and intellectually disabled groups respectively. Examination of correlation matrices indicates no multicollinearity.  $R$  for regression was significantly different from zero,  $F(7, 448) = 113.98$ ,  $p < .001$  for the non-disabled, and  $F(7,76) = 1.941$ ,  $p .075$  non-significant for the intellectually disabled group. The results revealed that for the non-disabled group (Table 6.11), four of the seven life domains make a statistically significant unique contribution to life-as-a-whole. The domain Standard of Living made the strongest unique contribution, followed by Achievements in Life, while Community Connectedness made the lowest contribution to life-as-a-whole. The seven domains contributed 17% in unique variance and 47% of explained shared variance to the prediction of life-as-a-whole.

Table 6.11  
*Standard Multiple Regression of Life Domains on Life-as-a-Whole for Non-Disabled Group (n=461)*

Variables	LAW	1	2	3	4	5	6	$B$	$\beta$	$t$	$sr^2$
Life-as-a-whole											
1. Standard of Living	.67							.32***	.36	9.35	.07
2. Health	.44	.44						.05	.06	1.65	.00
3. Achievements	.73	.59	.49					.30***	.33	7.85	.05
4. Personal /Relationship	.57	.39	.28	.51				.21***	.24	7.18	.04
5. Safety	.32	.36	.33	.32	.30			-.01	-.01	-2.24	.00
6. Community Connect	.41	.34	.24	.45	.29	.38		.07**	.09	2.52	.01
7. Future Security	.43	.52	.29	.48	.36	.67	.47	-.04	-.05	-1.09	.00
								$R^2 = .64$ Adjusted $R^2 = .63$ $R = .80$			
Unique variability = .168; shared variability = .467											

Note. \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

However, results reveal a different story for the intellectually disabled group. As shown in Table 6.12, only Future Security made a unique contribution ( $sr^2 = .13$ ), to the prediction of life-as-a-whole. Together the seven domains contribute around 17% in unique variance and 9.2% of explained shared variance to life-as-a-whole.

Table 6.12  
*Standard Multiple Regression of Life Domains on Life-as-a-Whole for Intellectually Disabled Group (n=84)*

Variables	LAW	1	2	3	4	5	6	B	$\beta$	t	sr <sup>2</sup>
Life-as-a-whole											
1. Standard of Living	-.11							-.08	-.07	-.639	.01
2. Health	.02	.02						.01	.01	.048	.00
3. Achievements	-.08	.06	-.01					-.10	-.09	-.774	.01
4. Personal Relationship	-.09	.17	.05	-.06				-.15	-.17	-.534	.03
5. Safety	-.02	.15	.25	.25	.04			-.05	-.05	-.444	.00
6. Community Connectedness	.00	.10	.01	.30	.02	.28		-.00	.00	-.028	.00
7. Future Security	.32	.01	.09	.04	.26	.19	.15	.31***	.37	3.360	.13
Unique variability = .166; shared variability = -.092								R <sup>2</sup> = .15 Adjusted R <sup>2</sup> = .07 R = .39			

Note. \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

This result is somewhat unexpected and does not confirm the findings of Study 2 for the intellectually disabled group, in which regression analysis revealed 20% unique variance and 41% of shared variance contributed to the prediction of life-as-a-whole for this group (see Table 5.14). Furthermore, in Study 2 all but one of the PWI domains (i.e., Health) significantly correlated with life-as-a-whole. The validity of the PWI scale, as used by the intellectually disabled group in this study was confirmed in the earlier CFA, which is able to validate a factor structure by taking into consideration more parameters in the responses of participants. Confirmatory factor analysis examines the means, variances, correlations, covariance, and residuals to determine whether a proposed model has a close fit to the data. Results of the regression analysis suggest that these findings may be an artefact of this particular intellectually disabled group.

As this result is contrary to expectation, all raw data for this group were carefully checked for possible errors. Additional, frequency distributions for each of the seven PWI domains and life-as-a-whole question and correlation matrix between these variables and other variables used in the study were run and rechecked. No errors were discovered. For reasons unknown to me, this group did not reliably use the PWI scale in Study 3. I am fairly confident that administration of the scale during interviews was in accordance with manual processes and that data were not corrupted at that point. However, it is possible for some administration error to have occurred, but not enough



to account for the low inter-item correlations that resulted. All intellectually disabled people included in this study participated in the pre-testing protocol used in the PWI, to ascertain participant understanding of the scale and level of response choice complexity they can use. All participants passed.

The above results suggest the possibility that the intellectually disabled group, in the current study, did not fully understand the question “How satisfied are you with your life-as-a-whole?” and their responses reflect guessing on their part. However, at the same time, their mean total PWI and domain scores all fall within normative Western ranges, suggesting that their responses to satisfaction with life and PWI scale are not random either. Clearly, further research is needed to determine whether the explanations offered here are valid to explain the internal structure of PWI for intellectually disabled people in general or whether these findings are an artefact of this particular participant group.

In summary, regression analyses revealed differences in the prediction of SWB between intellectually disabled and non-disabled groups. Four of the seven life domains contributed to the prediction of life-as-a-whole for the non-disabled group, whereas only the domain Future Security contributed to the prediction of life-as-a-whole for the intellectually disabled group. However, these results confirm the finding in Study 2, in respect that the life domain Future Security significantly contributed to the prediction of SWB of people with intellectual disability. Correlations for the intellectually disabled group are very low and most of the PWI domains do not positively correlate with life-as-a-whole question. This was not the case for the non-disabled group in which all domains correlated with life-as-a-whole as expected.

### 6.11 Comparison of the CRI between Intellectually Disabled Participants for Study 2 and Study 3

As there were no control variables available from the Australian non-disabled sample, a comparison was instead made between the two intellectually disabled samples comprising Studies 2 and 3. Means, standard deviations, and results of *t*-tests are shown in Table 6.13. The most notable feature of this comparison is the strong similarity of data from both intellectually disabled samples. This similarity was confirmed in subsequent *t*-tests, which revealed non-significant results for most of the CRI subscales.

The only subscale to show significances ( $p = .05$ ) was Emotional Discharge from the Avoidant scales, and the total Avoidant scales which almost reach significant. Thus, it seems that people with intellectual disability from both studies use Approach and Avoidant Coping response strategies in a similar manner. These results provide support for the validity and generalisation of the findings of Study 2 in relation to how people with intellectual disability use coping strategies.

Table 6.13

*Comparison of Means Scores Between Intellectually Disabled Participants for Study 2 and Study 3 on CRI Subscales*

Variables	ID-Study3 (n=85)		ID-Study 2 (n=64)		<i>t</i>	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
<b>Approach Coping Subscales</b>						
Logical Analysis	61.37	16.47	57.03	25.61	1.18	.24
Positive Reappraisal	61.20	17.60	57.37	18.27	1.30	.19
Seeking Guidance	58.80	23.20	59.01	23.88	-.03	.98
Problem Solving	63.60	17.00	61.22	20.10	.78	.44
<b>Avoidant Coping Subscales</b>						
Cognitive Avoidance	53.44	19.73	56.19	16.00	-.91	.36
Acceptance/Resignation	42.42	18.43	45.18	19.05	-.86	.39
Alternative Rewards	65.10	32.24	67.82	29.41	-.54	.59
Emotional Discharge	30.86	24.00	38.83	25.86	-1.92	.05*
Approach Coping Totals	61.23	13.87	58.63	17.00	1.03	.31
Avoidant Coping Totals	48.00	13.26	52.00	14.50	-1.77	.08

*Note.* \* $p < .05$ , \*\* $p < .01$

In summary the two intellectually disabled samples from Studies 2 and 3 demonstrate a similar pattern of responding to items on the CRI subscales. There is no difference in mean scores on the eight subscales or the total Approach and Avoidant scales for the two samples across Studies 2 and 3. This result lends support to the findings in Study 2 where it was demonstrated that people with intellectual disability use avoidant coping strategies more than non-disabled people.

## 6.12 Core Affect and Subjective Wellbeing

This section deals with data analysis concerned with whether the composition of core affect for people with intellectual disability differs from that found in non-disabled people. It also seeks to determine whether the amount of variance explained in SWB by core affect (Content, Happy and Alert) will be within the same range as for non-disabled people.

It is of interest to first examine the associations between the variables of interest before undertaking more complex analyses. Table 6.14 shows the total means, standard deviations and correlations for the variables common across the intellectually disabled and non-disabled groups for Study 3. Some interesting differences between groups are evident. In the non-disabled group Self-esteem had a non-significant correlation with PWI, while Optimism had a weak correlation. This is most unusual. About half of the correlations in the non-disabled group are significant at  $p < .001$ , with the affect Happy having a high correlation with both PWI and Content, and a moderate correlation with Alert.

A notable difference between the two groups is that PWI is significantly correlated with all other variables in the intellectually disabled group. Self-esteem did not correlate with the Affects Content and Happy, while Optimism did not correlate with the two affects Content and Alert. The strength of correlations ranged from low to moderate for this group. The highest correlation occurred between PWI and Alert ( $r = .49$ ) and PWI and Optimism also,  $r = .49$ , while the lowest correlations occurred between Self-esteem and two core affects, Content and Happy. Thus it would seem that for intellectually disabled people feeling good about one self is not related to how content or happy one feels.

Table 6.14  
*Bivariate Correlations, Means and Standard Deviations Between Totals of Variables for Non-Disabled and Intellectually Disabled Groups*

Variables	PWI	Content	Happy	Alert	Self-esteem	Optimism
Non-Disabled	(n=461)	(n=448)	(n=451)	(n=450)	(n=318)	(n=208)
PWI						
Content	.62**					
Happy	.69**	.70**				
Alert	.32**	.38**	.38**			
Self-esteem	.10	.07	.13*	.08		
Optimism	.04*	-.03	-.07	-.08	.21	
<i>M</i>	71.51	70.78	72.60	62.02	58.28	65.45
<i>SD</i>	13.93	20.68	19.33	22.35	23.57	16.90
Intellectually Disabled	(n=84)	(n=84)	(n=84)	(n=84)	(n=84)	(n=84)
PWI						
Content	.29**					
Happy	.37**	.08				
Alert	.49**	.27*	.34**			
Self-esteem	.39**	.05	.06	.30**		
Optimism	.49**	.14	.31**	.18	.37*	
<i>M</i>	75.37	72.26	85.36	68.69	74.60	72.16
<i>SD</i>	10.90	23.60	18.91	26.74	11.27	13.06

Note. PWI=Personal Well-being Index.

\*  $p$  .05, \*\*  $p$  .01 (Two-tailed)

In summary, half of the correlations for the non-disabled group were significant. Optimism and Self-esteem, both correlated significantly with one other variable; Self-esteem with Happy, and Optimism with PWI. All PWI scores had positive significant correlations for the intellectually disabled group. The strength of correlations for the non-disabled group ranged from low ( $r$  = .03) to high ( $r$  = .70), while the strength of correlations for the intellectually disabled group were generally lower, ranging from .05 to .49.

Next a series of ANOVAs were conducted on the variables Age and Gender in order to determine whether there were differences between the two groups. There were no differences in regard to Gender. Age differences were found in the non-disabled group for the affect Content between the age grouping 40–49 and 50+, in which contentment increased in the 50+-age grouping. No other differences were found. For the intellectually disabled group no differences between Gender and all variables were detected. The only significant difference in age grouping was found for Self-esteem between the age groupings 18–29 (80.13) and 30–39 (71.39), in which post hoc comparisons indicate there is a drop in mean scores that does not recover to the 18–29 age group level.

### 6.12.1 Comparison of Core Affect, Self-esteem, Optimism and SWB for both groups

The following series of ANOVAs were conducted to examine differences between the two groups for Content, Happy, Alert, PWI, Self-esteem and Optimism, as the dependent variables. A MANOVA was not conducted, as the valid  $N$  for the non-disabled group reduced to 61 cases, when all dependent variables were included in the calculation. ANOVAs test the hypothesis that the internal buffers of perceived control, self-esteem and optimism, which have been proposed to account for the maintenance of SWB, will interact with SWB in the same way for intellectually disabled and non-disabled people. Additionally, the ANOVAs were conducted on Content, Happy and Alert variables to examine possible differences between the two groups.

The analyses have a minimum of 14 observations per cell and a maximum of 32. While, analysis of variance assumes equal sample sizes between groups, Kerr, Hall and Kozub (2002) suggest that as long as there are more than 10 observations per cell the procedure will remain robust. Thus, it is deemed acceptable to proceed with some caution.

The univariate tests for each of the dependent variables are displayed in Table 6.15. Levene's test for equality of variances were significant for Content  $F(1,530) = 7.29, p = .007$ , Alert  $F(1,532) = 6.82, p = .009$ , Self-esteem  $F(1,400) = 52.44, p = <.001$ , and Optimism  $F(1,290) = 5.25, p = .023$ , which indicates the results for these variables need to be interpreted with caution. Homogeneity of variance was upheld for the other variables.

As shown in Table 6.15, using an adjusted Bonferroni statistical significance alpha level of .01, Happy, Self-esteem and Optimism differ between the two groups. The effect size for each one is small-to-moderate and the intellectually disabled group is higher in each comparison. The findings for Self-esteem and Optimism are contradictory to the findings in Study 2, in which no differences were found. However, due to violations of assumptions these results need to be treated with caution.

Table 6.15  
*Univariate Tests Examining the Differences Between Groups for Affects Content, Happy, Alert, PWI, Self-esteem and Optimism*

DV	Group	<i>M (SD)</i>	<i>F</i>	Sig.	Partial Eta <sup>2</sup>	Observed Power	<i>N</i>
Content	Non-disabled	70.78 (20.68)	.346	.557	.001	.09	448
	Disabled	72.26 (23.61)					84
Happy	Non-disabled	72.55 (19.33)	31.29	.000	.055	1.00	451
	Disabled	85.36 (18.91)					84
Alert	Non-disabled	62.02 (22.35)	5.90	.015	.011	.679	450
	Disabled	68.70 (26.74)					84
PWI	Non-disabled	71.51 (13.93)	5.85	.016	.011	.675	461
	Disabled	75.38 (10.89)					84
Self-esteem	Non-disabled	58.28 (23.57)	37.90	.000	.087	1.00	318
	Disabled	74.59 (11.26)					84
Optimism	Non-disabled	65.44 (16.90)	10.68	.001	.036	.903	208
	Disabled	72.16 (13.06)					84

A series of ANOVAs were also conducted with 2 groups (non-disabled, intellectually disabled) x 4 age groups (Group 1, 18–29 years; Group 2, 30–39 years, Group 3, 40–49 years, and Group 4, 50 plus years) as between subject factors in regard to the dependent variables of interest. There were no significant differences found for any of the dependent variables, group and age group.

### 6.13 Predicting Subjective Wellbeing

A series of regression analyses were used to determine whether the amount of variance explained in SWB by the core affective variable for intellectually disabled people will be within the same range as found for non-disabled people. The data have already been shown to meet most of the necessary assumptions for testing and thus, no data transformations were undertaken. As no *a priori* hypotheses had been made to determine the order of entry of the predictor variables, two standard multiple regressions were performed comprising each group.

Table 6.16 displays the bivariate correlations, unstandardised regression coefficients (*B*), the standardised regression coefficients ( $\beta$ ), squared partial correlations ( $sr^2$ ), and *R*,  $R^2$ , and adjusted  $R^2$  after entry of all independent variables for the non-disabled group. The correlations indicate no multicollinearity and the variables are suitably correlated for the multiple linear regressions to be reliably conducted. Furthermore, as expected all three core affects correlate with life-as-a-whole, and range from 0.29 to 0.70 for the non-disabled group.

For the non-disabled group,  $R$  for regression was significantly different from zero,  $F(3, 438) = 173.269$ ,  $p < .001$ . Two core affect variables significantly contributed to the prediction of SLAW, Content ( $sr^2 = .09$ ) making the most unique contribution followed by Happy ( $sr^2 = .07$ ). Alert did not make a significant contribution to satisfaction with life-as-a-whole. The three independent variables in combination contributed another .38 in shared variability. Together, 54% (54% adjusted) of the variability in satisfaction with life was predicted by knowing scores on these three independent variables of affect rating. This value is very close to the value obtained by Davern (2004) in which three pleasant affect descriptors; content, happy, and satisfied, predicted 65% satisfaction with life-as-a-whole, with excited adding an additional 1% of explained variance.

Table 6.16  
*Standard Multiple Regression of Core Affect on Life-as-a-Whole for Non-Disabled Group (n=461)*

Variables	LAW	1	2	3	$B$	$\beta$	$t$	$sr^2$
Life-as-a-whole								
1. Content	.69				.34***	.43	9.24	.09
2. Happy	.67	.70			.32***	.38	8.13	.07
3. Alert	.29	.38	.38		-.00	-.01	-.17	.00
Unique variability = .159; shared variability = .381					$R^2 = .54$ Adjusted $R^2 = .54$ $R = .74$			

Note. \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

A second standard multiple regression analysis was conducted on the intellectually disabled group, as shown in Table 6.17. All correlations are positive and small to moderate, ranging between  $r .01$  (Alert and Life-as-a-whole) and  $r .34$  (Alert and Happy). Correlations indicate that multicollinearity is not a problem. Thus, the data are suitably correlated with the dependent variable for the multiple linear regressions to proceed with confidence.

$R$  for regression was non-significant,  $F(3, 80) = 1.74$ ,  $p < .165$ . The results indicate that none of the three core affect variables contribute to satisfaction with life-as-a-whole for the intellectually disabled group. A possible explanation for this result may have to do with the possibility that the intellectually disabled group, do not appear to have fully understood the question "How satisfied are you with your life-as-a-whole?" as was highlighted in Table 6.12. For this reason a second set of regression analyses were run, this time using PWI total mean score as the dependent variable.

Table 6.17  
*Standard Multiple Regression of Core Affect on Life-as-a-Whole for Intellectually Disabled Group (n=84)*

Variables	LAW	1	2	3	<i>B</i>	$\beta$	<i>t</i>	<i>sr</i> <sup>2</sup>
Life-as-a-whole								
1. Content	.14				.14	.16	1.38	.02
2. Happy	.19	.08			.23	.21	1.84	.04
3. Alert	.01	.27	.34		-.08	-.11	-.91	.01
Unique variability = .082; shared variability = -.043					$R^2 = .06$ Adjusted $R^2 = .03$ $R = .25$			

Note. \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

### 6.13.1 Standard multiple regression of core affect on PWI

Separate standard multiple regressions of Content, Happy and Alert was performed on total mean PWI for both groups. As shown in Table 6.18 all correlations for the non-disabled group were significant and range from .32 to .70. *R* for regression was significantly different from zero,  $F(3, 438) = 157.541$ ,  $p < .001$ . Similar to the previous regression analysis for this group, only two core affect variables significantly contributed to the prediction of SWB: Content ( $sr^2 = .03$ ) and Happy ( $sr^2 = .13$ ). The three independent variables in combination contributed another .36 in shared variability. Together, 52% (52% adjusted) of the variability in satisfaction with SWB and this value is very similar to the value obtained on the previous regression for satisfaction with life-as-a-whole (i.e., 54%) for this group.

Table 6.18  
*Standard Multiple Regression of Core Affect on PWI for Non-Disabled Group (n=461)*

Variables	PWI	1	2	3	<i>B</i>	$\beta$	<i>t</i>	<i>sr</i> <sup>2</sup>
Personal wellbeing								
1. Content	.62				.16***	.24	5.06	.03
2. Happy	.70	.70			.37***	.52	10.94	.13
3. Alert	.32	.38	.38		.02	.04	.96	.00
Unique variability = .160; shared variability = .356					$R^2 = .52$ Adjusted $R^2 = .52$ $R = .72$			

Note. \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$



A second standard multiple regression analysis was conducted on the intellectually disabled group, as shown in Table 6.19.  $R$  for regression was significantly different from zero,  $F(3,80) = 12.209$ ,  $p < .001$ . Two core affect variables significantly contributed to the prediction of satisfaction with SWB, Happy ( $sr^2 = .05$ ) and Alert ( $sr^2 = .11$ ). Content almost reached significance ( $p = .08$ ). The three independent variables in combination contributed another .11 in shared variability. Together, 31% (29% adjusted) of the variability in satisfaction with SWB is predicted.

Table 6.19  
*Standard Multiple Regression of Core Affect on PWI for Intellectually Disabled Group (n=84)*

Variables	PWI	1	2	3	$B$	$\beta$	$t$	$sr^2$
Personal wellbeing								
1. Content	.29				.08	.17	1.78	.03
2. Happy	.37	.08			.13*	.06	2.31	.05
3. Alert	.49	.27	.34		.15***	.37	3.62	.11
						$R^2 = .31$		
						Adjusted $R^2 = .29$		
						$R = .56$		
Unique variability = .185; shared variability = .105								

Note. \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

In summary, regression analyses with life-as-a-whole as the dependent variable and the three core affect items, did not result in a significant prediction for the intellectually disabled group. This indicates the possibility they may not have understood the question “How satisfied are you with your life-as-a-whole?” This is different from the non-disabled group where Content and Happy contributed 16% unique variability and 38% shared variability, together explaining 54% of variability in satisfaction with “life-as-a-whole”. On the other hand, regression analysis with PWI as the dependent variable resulted in significant prediction for both groups. For the non-disabled group, Content and Happy both significantly predicted satisfaction with SWB, while for the intellectually disabled group Happy and Alert explained 31% of the variance in SWB.

### 6.13.2 Standard multiple regression of Core Affect, Self-esteem and Optimism on PWI

Regression analysis in Study 2 indicated that Self-esteem and Optimism were significant predictors of SWB for both group. Therefore it is of interest to test if this relationship can be replicated in this study and further if it exists with core affect

included in the model. Separate standard multiple regressions of Content, Happy and Alert, Self-esteem and Optimism were performed on total mean PWI for both groups. As shown in Table 6.20 for the non-disabled group,  $R$  for regression was significantly different from zero,  $F(5,59) = 13.104$ ,  $p < .001$ . Only the core affect variable, Happy ( $sr^2 = .13$ ) made a significantly unique contribution to the prediction of SWB, while Content almost reached significance ( $p = .07$ ). The five independent variables in combination contributed another 0.32 in shared variability. Together, 53% (49% adjusted) of the variability in satisfaction with SWB is predicted by knowing scores on these five independent variables.

It would seem, however that the inclusion of Self-esteem and Optimism has resulted in a change to the prediction of SWB. In the previous regression (see Table 6.18) two affect variables made unique contribution to the explanation of SWB, this is now reduced to just the Happy affective variable. Shared variability also decreased from .356 to .318. Alert did not contribute to the prediction of SWB in either regression model for the non-disabled group.

Table 6.20  
*Standard Multiple Regression of Core Affect, Self-esteem and Optimism on PWI for Non-Disabled Group (n=461)*

Variables	PWI	1	2	3	4	5	$B$	$\beta$	$t$	$sr^2$	
Personal wellbeing											
1. Content	.62						.16	.23	1.83	.027	
2. Happy	.70	.70					.38***	.52	4.07	.133	
3. Alert	.32	.38	.38				.03	.04	.41	.001	
4. Self-esteem	.10	.07	.13	.08			-.00	-.00	-.04	.000	
5. Optimism	.04	-.03	-.07	-.08	.21		.07	.09	.93	.007	
										$R^2 = .53$	
										Adjusted $R^2 = .49$	
										$R = .73$	
Unique variability = .168; shared variability = .318											

Note. \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

A second standard multiple regression analysis was conducted on the intellectually disabled group, as shown in Table 6.21.  $R$  for regression was significantly different from zero,  $F(5,78) = 13.204$ ,  $p < .001$ . The results indicate that two of the five independent variables contributed significantly to the prediction of SWB, Optimism ( $sr^2$

= .07) and Alert ( $sr^2 = .07$ ). Both optimism and Alert make a strong unique contribution to the equation (.30 each). Altogether, 45.8% (42% Adjusted) of the variability in SWB is predicted by knowing scores on the independent variables.

The inclusion of Self-esteem and Optimism also resulted in changes of the predictors of SWB, for people with intellectual disability (see Table 6.19). The affect Happy, now no longer contributes to the prediction of SWB. There was an increase of 15% in the explained variance, as well as an increase in shared variability and unique variability between the two equations.

Table 6.21

*Standard Multiple Regression of Core Affect on PWI for Intellectually Disabled Group (n=84)*

Variables	PWI	1	2	3	4	5	B	$\beta$	t	$sr^2$	
Personal wellbeing											
1. Content	.29						.07	.15	1.68	.020	
2. Happy	.37	.08					.09	.15	1.63	.019	
3. Alert	.49	.27	.34				.12**	.30	3.07	.066	
4. Self-esteem	.39	.05	.06	.30			.17	.18	1.90	.025	
5. Optimism	.49	.14	.31	.18	.37		.25**	.30	3.14	.069	
										$R^2 = .46$	
										Adjusted $R^2 = .42$	
										R = .68	
Unique variability = .199; shared variability = .225											

Note. \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

In summary the inclusion of Self-esteem and Optimism resulted in changes to the prediction of SWB for both groups. In the non-disabled group only one affect variable, Happy made a unique contribution to the prediction of SWB, explaining 53% of variance. The addition of Self-esteem and Optimism did not increase explained variance for this group. While, in the intellectually disabled group the addition of Self-esteem and Optimism increased the explained variance in SWB from 31% to 46%. Optimism made the strongest significant unique contribution to the prediction of SWB, followed by affect alert. Content did not make a significant contribution in either group. Both unique and shared variability increased in the intellectually disabled group with the inclusion of Self-esteem and Optimism. However, these values are still lower than obtained in all of the non-disabled group regressions.

A notable difference in the regression equations for the two groups is that shared variance is consistently lower for intellectual disability regressions when compared with the non-disabled. Shared variance is the overlapping conceptual variance created by the responses to different questions. When this is low, it indicates that the respondents are seeing the questions as fundamentally different from one another. This consistently low, shared variance in the intellectually disabled group most likely reflects their lack of understanding and thus reflects a fundamental difference between the two groups. The low Cronbach's alphas obtained in earlier analyses, reflects the lower shared variances obtained by this group. Furthermore, low-shared variability was a feature of regression analyses for the intellectual disability group in Study 2.

### *6.13.3 Hierarchical regression predicting SWB by Core Affect, Self-esteem and Optimism*

Results from Study 2 indicated that both Self-esteem and Optimism significantly contribute to the prediction of SWB, for both groups. This was not the case in the current study. In the previous regression, Self-esteem and Optimism were not predictive of SWB for the non-disabled group, while for the intellectual disability group only Optimism added unique variance. Thus it was decided to conduct separate hierarchical regressions to investigate the separate contributions that the three affect variables, Self-esteem and Optimism make to SWB. The three affects, Content, Happy and Alert were entered into the regression at step 1 and Self-esteem and Optimism at step 2.

$R$  for regression is significantly different from zero for each step. After step 2 with all IV's entered  $R^2 = .53$ ,  $F(5, 59) = 13.104$ ,  $p < .001$ . Table 6.22 indicates that for the non-disabled group the best predictor of SWB is Happy ( $sr^2 = .13$ ). The three affect items, Content, Happy and Alert, explain 53% (adjusted 49%) of the variance in SWB. Affect Content almost reached significance, while affect Alert did not add any unique variance in satisfaction with SWB. At step 2 the addition of Self-esteem and Optimism only added 1% to the explanation of SWB beyond affect. Affect Happy continues to be the strongest predictor of SWB for non-disabled people, while Content almost reaches significance. When compared with Table 6.20 it is evident that no new variance is found. Thus it can be concluded that the affect Happy alone makes the strongest unique contribution to SWB for non-disabled group in both regression equations (Tables 6.20 and 6.22). These results confirm that for non-disabled people core affect of Happy

explains over 50% in SWB, while Self-esteem and Optimism only add an additional 1% of variance.

Table 6.22  
*Hierarchical Multiple Regression Predicting Satisfaction with PWI by Core Affect, Self-esteem and Optimism for Non-Disabled Group (n=461)*

Variables	<i>B</i>	$\beta$	$sr^2$	$\Delta R^2$
Step 1				
Content	.16	.24	.026	.52**
Happy	.37***	.52	.131	
Alert	.02	.04	.001	
Step 2				
Content	.16	.23	.027	.01
Happy	.38***	.52	.133	
Alert	.03	.04	.001	
Self-esteem	-.00	-.00	.000	
Optimism	-.07	.09	.007	
		$R^2 = .53$		
		Adjusted $R^2 = .49$		
		$R = .73$		
Unique variability = .169; shared variability = .317				

Note. \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

A second hierarchical multiple regression analysis was performed on the intellectually disabled group. Variables were entered in the same order as occurred for the non-disabled group. Table 6.23 indicates that  $R$  for regression is significantly different from zero for each step. After step 2 with all IV's entered  $R^2 = .46$ ,  $F(5,78) = 13.204$ ,  $p < .001$ . The best predictor of SWB for this group is affect Alert ( $sr^2 = .11$ ) followed by Happy ( $sr^2 = .05$ ). The three affect items, Content, Happy and Alert explain 31% of the variance in SWB and the affect Content almost reach significance at step 1. At step 2, the affect Alert ( $sr^2 = .07$ ) and Optimism ( $sr^2 = .07$ ), each made the strongest unique contribution to the prediction of SWB. The addition of Optimism and Self-esteem significantly improves  $R^2$  and adds 14% to the explained variance in SWB. Together, the affective variables, Content, Happy and Alert, and Self-esteem and Optimism account for 46% of variance for SWB for this group. This result is identical to the regression analysis in Table 6.21 and confirms that affect explains almost 50% of the variance in SWB for intellectually disabled people, which is similar to the findings for non-disabled people.

Table 6.23  
*Hierarchical Multiple Regression Predicting Satisfaction with PWI by Core Affect, Self-esteem and Optimism for Intellectually Disabled Group (n=84)*

Variables	<i>B</i>	$\beta$	<i>sr</i> <sup>2</sup>	$\Delta R^2$
Step 1				
Content	.08	.17	.027	.31***
Happy	.13*	.23	.046	
Alert	.15***	.37	.112	
Step 2				
Content	.07	.15	.020	.14***
Happy	.09	.15	.018	
Alert	.12**	.30	.066	
Self-esteem	.17	.18	.025	
Optimism	.25**	.30	.069	
		$R^2 = .46$		
		Adjusted $R^2 = .42$		
		$R = .68$		
Unique variability = .199; shared variability = .225				

Note. \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$   $F(5, 78) = 13.204$ ,  $p = .000$

In summary, regression analyses revealed differences between the two groups. For the non-disabled group two core affects, Content and Happy consistently made a unique contribution to SWB. The affect Alert, and Self-esteem and Optimism did not contribute to the prediction of SWB for this group. The affective variables together explained over 50% of variance in SWB. This finding is similar to and confirms previous findings (Davern, 2004). For the intellectually disabled group regression analyses revealed a different story. When life-as-a-whole is used as the dependent variable then the regression equation is non-significant and no variables contribute to the prediction of satisfaction with life-as-a-whole. This situation changes when total mean PWI score is used as the dependent variable, with the affects Happy and Alert, and Optimism consistently making a contribution to SBW. Content almost reaches significance. The two affect variables Happy and Alert, along with Optimism consistently contributes 46% of the explained variance in SWB. This figure is very close to both the non-disabled group, both in this study, as well as the non-disabled group in Davern's study. Shared variability in regression analyses is consistently lower for the intellectually disabled group than found for the non-disabled group. Lower shared variability appears to be a feature for the intellectually disabled group across both Study 2 and 3.

## 6.14 Summary of Study 3

CFA and SEM were conducted to validate scale scores and confirm that the continued use of PWI and LOT scales was justified. Structural Equation Modelling revealed, one general PWI factor consisting of the five variables; Health, Achievement, Feeling Safe, Community Connectedness and Future Security, plus the sub-factor comprising Standard of Living and Personal Relationships, that can be explained by current thinking around homeostasis and SWB (Cummins, 2010).

Confirmatory Factor Analysis and SEM revealed the underlying structure of the LOT for intellectually disabled group, comprised one factor with the four negatively worded items. This model demonstrated good fit statistics, however, no clear reason could be proposed why the four negatively worded items appear to be understood more by these participants. This result is opposite to the factor analytic findings in Study 2, where the four positively worded items were a better fit of the data. For these reasons and in order to compare the optimism data between people with intellectual disability and the Australian longitudinal non-disabled study, a factor analysis was conducted on the intellectually disabled sample using the specific six items in the LOT scale (three negatively worded and three positively worded items) as used by the comparison group. This resulted in an acceptable solution for both groups.

Consistent with results in Study 2, people with intellectual disability reported SWB mean scores that fell within the normative range. Furthermore, when their mean scores were compared against the normative Australian PWI domain ranges they fell within, or exceeded the normative range. People with intellectual disability had significantly higher mean satisfaction scores on four of the seven life domains (Standard of Living, Achievements in Life, Community Connectedness and Future Security) but as expected, had significantly lower mean scores for personal relationships. Furthermore, mean score for satisfaction with life-as-a-whole exceeded the normative range.

Regression analyses revealed differences in the prediction of SWB between intellectually disabled and non-disabled groups. Four of the seven life domains contributed to the prediction of life-as-a-whole for the non-disabled group, whereas only the domain Future Security contributed to the prediction of life-as-a-whole for the intellectually disabled group. This was an unexpected result and is contradictory to the

findings of Study 2. Furthermore, correlations for the intellectually disabled group are very low and most of the PWI domains do not positively correlate with the life-as-a-whole question. These results suggest the possibility that the intellectually disabled group, in the current study, did not fully understand the question “How satisfied are you with your life-as-a-whole?” and their responses reflect guessing on their part.

People with intellectual disability did not differ from non-disabled people for affect Content and Alert, and total PWI. The non-significant finding of mean scores between both groups for PWI is consistent with findings from Study 2. However, the two groups did differ in terms of levels of affect Happy, and Self-esteem and Optimism, with higher mean scores reported by people with intellectual disability for all three variables. This finding partially contradicts the results of Study 2, in which no differences were found between both groups for total means, Self-esteem and Optimism.

In relation to the Control variables the two intellectually disabled samples from Studies 2 and 3 demonstrate a similar pattern of responding to items on the CRI subscales. There is no difference in mean scores on the eight subscales or the total Approach and Avoidant scales for the two samples across Studies 2 and 3. This result lends support to the findings in Study 2 where it was demonstrated that people with intellectual disability use avoidant coping strategies more than non-disabled people.

Regression analyses on life-as-a-whole, indicated that none of the three pleasant affect variables (Content, Happy and Alert) contribute to SLAW for the intellectually disabled group. An explanation for this result may have to do with the possibility that the intellectually disabled group, in this study does not appear to have fully understood the question “How satisfied are you with your life-as-a-whole?”

However, regression analysis with PWI as the dependent variable resulted in significant prediction for both groups. For the non-disabled group, Content and Happy both significantly predicted satisfaction with SWB, while for the intellectually disabled group Happy and Alert explained 31% of the variance in SWB.

Hierarchical regression analyses were completed to evaluate the contribution of the three affect variables, Self-esteem and Optimism on SWB for both groups. Unexpectedly, only the affect Happy makes the strongest unique contribution to SWB for non-disabled group explaining over 53% of variance in SWB, with Self-esteem and



Optimism only adding an additional 1% of variance. Content and Alert, do not contribute to the prediction of SWB in this study for the non-disabled group. Whereas, hierarchical regression for the intellectually disabled group, revealed the best predictor of SWB was Alert followed by Happy. The three pleasant affect items, Content, Happy and Alert explained 31% of the variance in SWB and the affect Content almost reached significance at step 1. At step 2, the pleasant affect Alert and Optimism, each made the strongest unique contribution to the prediction of SWB. The addition of Optimism and Self-esteem significantly improved  $R^2$  and added 14% to the explained variance in SWB. Together, the pleasant affective variables, Content, Happy and Alert, and Self-esteem and Optimism accounted for 46% of variance for SWB for this group. This finding is similar to and confirms previous findings (Davern, 2004).

From these results it can be concluded that the composition of core affect for people with intellectual disability differs from that found in the non-disabled group. In that the core affects Happy and Alert are the best predictors of SWB for intellectually disabled group, while Content and Happy predicted SWB for non-disabled people in Study 3. Furthermore, the amount of variance explained in SWB by core affective for the intellectual disability group (46%) is within the same range as for non-disabled group (52%). These findings are similar to Davern's (2004) findings, in which she reported the combined affects of happy, content and excited explain 66% of the variance in SLAW.

### 6.15 Discussion Study 3

The purpose of Study 3 is to explore HPMood in relation to people with intellectual disability. Research from Davern (2004) found the pleasant affective terms, contentment, excitement, and happiness explained 66 percent of the variance in SLAW. Furthermore, personality did not independently predict SWB, as is typically reported in the literature. Affect, and its contribution to SWB, has now been incorporated into the SWB homeostasis theory by Cummins and colleagues (Cummins, 2010; Davern, et al., 2007). However, the contribution of HPMood to SWB has not been previously investigated in terms of people with intellectual disability. This study attempts to fill this gap. Additionally, Study 3 seeks to replicate and further extend Study 2 and our understanding of the maintenance of SWB of people with intellectual disability. These results will now be discussed.

## 6.16 Scale Verification for Study 3

### 6.16.1 *Personal Wellbeing Index*

Study 2 established the PWI-ID as a valid and reliable measure for use with people with an intellectual disability. However, data analysis of Study 3 for the intellectually disabled group indicate low Cronbach's alpha for the PWI and, also the Optimism (LOT) scale ( $\alpha = 0.50$  and  $0.33$  respectively). For this reason it was decided to run CFA and SEM on both sets of data for this group, in order to further investigate the phenomenon of low internal reliability.

Structural Equation Modelling on the PWI revealed one general PWI factor with a sub-factor. The main factor consists of the five domains; Health, Achievement, Feeling Safe, Community Connectedness and Future Security, while the sub-factor comprises Standard of Living and Personal Relationships. The resultant structure (i.e., Model 5, as shown in Figure 6.3) does not resemble current factorial structure for the PWI (e.g., Lau, Cummins, & McPherson, 2005; McGillivray, et al., 2009), or the results of the factor analysis on PWI data in Study 2, in which a single stable factor accounting for 40% of variance was established. However, this SEM structure can be explained by current thinking around homeostasis and SWB (Cummins, 2010).

As indicated in Table 6.2 the PWI domains of Standard of Living and Personal Relationships have a significant positive correlation ( $r = 0.22$ ,  $p = 0.05$ ). No other domain correlated with Standard of Living. This correlation makes sense when considered from the SWB homeostasis theory, in that both Standard of Living and Personal Relationships comprise predominate external buffers. As argued by Cummins (2010), both have the capacity to support or challenge SWB. Taking wealth first, it has been proposed to act as a flexible resource that assists homeostasis, thereby protecting SWB (Cummins, 2000c). Having sufficient income allows people to minimise challenges in the environment that would otherwise defeat the homeostatic system, resulting in a loss of SWB. For example, having sufficient income to pay for housing, food, education, and health costs relevant to one's need. Not being able to meet these needs, is likely to result in chronic negative life events that will eventually defeat the SWB homeostatic system.

However, of interest to note, is that for most of the intellectually disabled group, their income source is a Government Disability benefit and therefore their actual income level is lower than that of the average income level for non-disabled people. Yet despite this, their satisfaction with Standard of Living was the highest mean score of all the domains (81.88%SM). A possible explanation is that most of the high cost items of daily living, such as housing, furniture, transport, and health care, are provided for by Human Service Organisations and therefore it is not the responsibility of people with intellectual disability to provide these items for themselves, but they nevertheless get the benefit of such items. Furthermore, with the focus on Quality of Life outcomes, community inclusion and normalisation principles, in the development of services for this group, it could be that people with intellectual disability are enjoying a standard of living that is better than anything they have experienced in the past. Especially when compared with the standard of living that they may have experienced living in institutions.

The second external buffer is a close personal relationships with other adults, as this moderates the influence of potential environmental stressors on SWB (Cummins, 2010). Evidence for this relationship was provided by examining partner support and SWB and the nature of household structure. In the first instance Cummins et al. (2005), showed that those individuals with the highest levels of support (i.e., 80%) were associated with the highest or normative levels of SWB and as the levels of support decreased, so did SWB. The level of support that intellectually disabled people receive from caregivers may well act in the same manner as the support identified in the study by Cummins and colleagues. Secondly, people living with a partner had SWB levels that were either higher than, or within, the normative SWB range. On the other hand, people living in circumstances that did not include a partner had consistently lower SWB (Cummins, et al., 2009). It is precisely this type of living situation that people with intellectual disability are more likely to experience, which may explain why satisfaction with personal relationships is the lowest mean score for this group. This point will be discussed in the following section.

According to SWB homeostasis theory, the domains Standard of Living and Personal Relationships comprise the predominate external buffers; each having the capacity to support or challenge SWB (Cummins, 2010), however there is no good reason to account for why these two domains formed a subfactor from the main general factor in

the SEM analyses. This seems particularly strange, as the people with intellectual disability were significantly satisfied with their standard of living and yet significantly dissatisfied with their personal relationships, which is opposite to what is expected according to theory. A possible explanation is that this result is an artefact of the low Cronbach's alphas obtained for this scale, resulting in unreliable data. Nevertheless, a sound factor structure for the PWI was established in Study 2 as well as another study (McGillivray, et al., 2009), using the PWI with an intellectually disabled sample. Therefore with the above limitation noted, it is reasonable to conclude that the seven items of the PWI can be legitimately aggregated into one scale score as intended. Clearly, further research is needed to determine whether the explanation offered here is valid to explain the internal structure of PWI for intellectually disabled people in general, or whether these findings are an artefact of this particular participant group.

#### *6.16.2 Optimism (LOT)*

Structural Equation Modelling revealed the underlying structure of the LOT for the intellectually disabled group, comprised one factor with the four negatively worded items. That is, on this occasion the negatively worded items are the best fit for the data. No good explanation for this finding is immediately evident. Notably, this result is opposite to the factor analysis in Study 2, where the four positively worded items were a better fit of the data. Furthermore, this finding does not fit with current logic, as previously argued, which suggests that negatively worded items with which the respondents rate their agreement, place an unacceptably high cognitive load on understanding. As noted by Scheier and Carver (1985), negatively worded items pose a level of semantic complexity that is not present when positively worded items are used, and thus may form the basis of different responding between the positive and negative items. The authors made this observation in relation to the general population, however, the problem is likely to be exacerbated for people with cognitive and language impairments, resulting in them becoming confused in their responding.

Given the inconsistencies of factor analysis results for the LOT for Study 2 (i.e., 1-factor structure consisting of four positively worded items) and CFA for Study 3 (i.e., 1-factor with the four negatively worded items), and the overall difficulty in obtaining a simple factorial structure for the LOT, it can be concluded that for the intellectually

disabled group, the use of negatively worded items in scales is problematic or the use of this scale is problematic.

This inconsistency could be explained by the low internal reliability of the scale and therefore any factor analysis or CFA statistics are also unreliable. For example, Cronbach's alphas obtained on the LOT for both Study 2 and 3 were low (.54 and .33 respectively), particularly for Study 3. Furthermore, low internal reliability was obtained in the study by Shogren et al. (2006), which had also used the LOT with students with intellectual disability compared to non-disabled students (.56, .75 respectively). As noted by these authors the LOT scale has not previously been evaluated in students with intellectual disability and the obtained low reliability indicates a need for further evaluation of using the LOT with this group. Consequently, when involving this group in research endeavours, either some consideration should be made in regard to either dropping all negatively worded items, or making all negatively worded items positive. It is evident that the current suitability of the LOT to measure optimism in people with intellectual disability is in doubt.

For the reasons stated above and in order to compare the optimism data between people with intellectual disability and the Australian longitudinal non-disabled study, it was decided to conduct a factor analysis on the intellectually disabled sample using all six items in the LOT scale (three negatively worded and three positively worded items) as used by the comparison group. This time a satisfactory solution was found. Thus, a 6-item two-factor solution for both groups was established. This two-factor solution explained a total 49% of variance, with the three positively worded items (1, 3, and 6) loading on Factor 1 and three negatively worded items (2, 4, and 5) loading on Factor 2. As this factor structure was deemed suitable for the intellectually disabled group and supports current literature for a 2-factor model (Marshall, et al., 1992), it was decided to proceed cautiously with further analyses. However, these results again strongly indicate the need for further evaluation of the LOT as used by intellectually disabled people.

### *6.16.3 Summary*

Overall, the findings from the SEM and factor analyses on the PWI and LOT scales as used by people with intellectual disability are mixed. Results of SEM on the PWI revealed a structure that was inconsistent with Study 2 factor structure and also with recent research findings that also use people with intellectual disability as participants

(e.g., Lau, et al., 2005; McGillivray, et al., 2009). Current thinking around SWB homeostasis theory, suggests the domains Standard of Living and Personal Relationships comprise the predominate external buffers and this was proposed as a possible explanation for this structure. However, no good reason could be found to account for why two domains (Standard of Living and Personal Relationships) formed a subfactor from the main general factors (Health, Achievement, Feeling Safe, Community Connectedness, and Future Security). It seems possible that, for some unknown reason, the PWI data in the current study are not reliable, as evident by the low internal reliabilities.

Results from SEM on the LOT revealed similar inconsistencies between factor analysis in Study 2 and CFA in Study 3, which could also be explained by low internal reliability. However in order to compare the optimism data between people with intellectual disability and the Australian longitudinal non-disabled study, further factor analysis was conducted on the intellectually disabled sample using all six items in the LOT scale (three negatively worded and three positively worded items) as used by the comparison group. This time a satisfactory solution was found. Similar to the findings of Study 2, difficulties of obtaining a simple factor structure of LOT, as used by people with intellectual disability, were experienced in this study. These results indicate that the use of negatively worded items for this group, as demonstrated in both Studies 2 and 3 is problematic and, furthermore, that the LOT may be an unreliable scale to use with this population. These findings indicate the need to further investigate the Optimism scale, to understand the responses that people with intellectual disability make to such scales.

### 6.17 Subjective Wellbeing of Intellectually Disabled and Non-disabled People

An important finding from this study is the confirmation that the SWB of people with intellectual disability lies within the normative Western range. Furthermore, when their mean scores were compared against the normative Australian PWI domain ranges they fell within, or exceed these values.

### *6.17.1 Subjective wellbeing: Group differences*

Satisfaction with life-as-a-whole for the intellectually disabled group (82%SM) is higher than both the non-disabled group (72%SM) in this study and compared to the normative range (75.8–79.2%SM). In Study 2, satisfaction with the life-as-a-whole score (75.31%SM) fell within the normative range, a value that is more in keeping with the value (75.26%SM) obtained by McGillivray and colleagues (2009) for people with mild to moderate intellectual disability. One possible explanation for the higher mean in the current study, is social desirability (Babbie, 2001), in that people with intellectual disability may feel they should report that they are satisfied with their life. Efforts to minimise the influence of response bias were conducted prior to data analysis. This involved the use of a pre-testing protocol of the PWI-ID (Cummins & Lau, 2004b) designed to check for acquiescence responses (i.e., participants who agree with every question, regardless of the appropriate response) and secondly, the removal of respondents who scored at the extreme ends of the response scale across all seven domains. Thus, given these steps it may be concluded that people with intellectual disability in this study, despite being marginalised and not experiencing the same opportunities as other members of society for a life of quality, report SWB levels that are near to or, within the expected Western normative range. However, this was not the case for the non-disabled group whose satisfaction with life-as-a-whole score is below the normative range. A possible explanation is that this particular group is not representative of the general population of non-disabled due to sampling bias. This comparison group is a subset from a larger data set (AU-5.2) collected as part of the Australian Unity Wellbeing longitudinal (Auoqol public db 02-09-2008 v6.2) study.

Another possible explanation for low SWB scores may be related to income levels. As shown by Cummins et al. (2007), personal wellbeing of people aged 26–55 years is highly sensitive to low incomes. In this comparison group, 64% of people were in the age bracket 21–59 years, with almost 56% reporting incomes less than \$31,000. Thus, more than 50% of people reporting low incomes may well account for the low SWB for the non-disabled sample in this study. While other demographic influences such as unemployment and marital status also have a strong effect on personal wellbeing, no details on these demographic were available. These high-normal levels of SWB for the intellectually disabled group provide empirical evidence for homeostasis operating within intellectually disabled populations. According to theory, so long as homeostatic

control is maintained and not under threat or defeated by powerful sources or challenges, then variations in life circumstances will have very little influence on SWB (Cummins, et al., 2003). Thus, a conclusion that can be drawn from this current study is that in spite of the presence of an intellectual disability, this group maintains levels of SWB that are similar to non-disabled people.

#### *6.17.2 Life domains: Group differences*

While no between-group difference was found for the PWI, an examination of the domains revealed that this was due to an averaging effect. People with intellectual disability were significantly more satisfied with their Standard of Living, Achievements, Community Connectedness and Future Security, and significantly less satisfied with Personal Relationships than non-disabled people. Interestingly, they also had almost identical satisfaction scores for Health (69.53%SM intellectually disabled and 69.40%SM non-disabled), and Safety (73.53, 73.91, respectively). These findings partly support McGillivray et al. (2009), who also found significant differences between intellectually disabled and non-disabled for the domains of Achievements and Community Connectedness. Curiously, however they found people with intellectual disability were significantly less satisfied with Standard of Living and Health, than non-disabled people; a finding not supported by Study 3.

While, similarities exist between the intellectually disabled groups in McGillivray et al. (2009) and Studies 2 and 3, there are however two notable differences. In the study by McGillivray et al., satisfaction with personal relationships was not only the highest mean score for the intellectually disabled group (82.06%SM), but together with the domain of Safety made the largest unique contribution to the prediction of life-as-a-whole. Thus it appears that for the intellectually disabled Australian sample, feeling safe and being satisfied with one's personal relationships, predicts SWB even though, both domains were not significantly different from the non-disabled group. Whereas, in both Study 2 and 3 people with intellectual disability consistently report satisfaction with personal relationships, as the lowest mean score (69.06%SM and 68.94%SM respectively). Furthermore, these scores fell well below the Australian normative mean domain ranges (77.2–81.6). This is a difference of 8.14 point below the bottom of the normative range for Study 2 and 8.26 point below the normative range for Study 3. Thus, the results for Studies 2 and 3 strongly indicate intellectually disabled people in



New Zealand are less satisfied with their personal relationships, than their peers in Australia. They are also less satisfied with their personal relationships than non-disabled people in both Australia and New Zealand.

One possible explanation could be the difference in living situations of the intellectually disabled groups between the two samples. Within the Australian sample more than 67% of people with intellectual disability were either living with family, spouse/partner or alone, while 23% were living in supervised group homes or hostels. This contrasts with the New Zealand sample that was mainly living in supervised group homes, with a small number living in supported flatting situations. The difference is not solely the type of living situation (e.g., group homes, supported or independent living with formal paid support, versus informal non-paid supported living with family), although differences in living situations have been related to levels of choice and self-determination that residents exercise (Wehmeyer & Bolding, 2001). Rather, it is the opportunity to experience relationships that are intimate and reciprocal and thereby more satisfying, which is more likely to occur when living with family, or spouse/partner.

In support of this view, Seltzer and Krauss (2001), report a body of literature, which suggests that adults with intellectual disability living with family tend to experience close relationships, in which there is an exchange of support and emotional involvement. For example, Greenberg and colleagues (1993) investigated the quality of family relationships between aging parents and their adult son/daughter with intellectual disability who lived at home. The authors found a mean score of 50 points on a 60-point scale that measures closeness, trust, affection and respect between members of a family. Furthermore, these family relationship scores were almost identical to scores between non-disabled adult child-parent relationships. Thus the authors concluded that the parent-child relationship among adults with intellectual disability living at home reflect similar levels of closeness and affection as found between non-disabled parents and their adult children (Greenberg, et al., 1993).

While, further research is required to confirm these country-specific differences, the results from life domains highlight specific areas of vulnerability for homeostatic defeat and provide direction for possible intervention in order to enhance a person's quality of

life. In particular the low satisfaction with relationships within Studies 2 and 3 clearly indicate the need for further support.

The second point of difference concerns the life domain Health. The study by McGillivray et al. (2009), reported that people with intellectual disability were significantly less satisfied with their health (70.49%SM) than non-disabled people (76.20%SM). In contrast the mean scores for Health in Study 3 were non-significant, with the values almost identical between the two groups (69.53%SM intellectually disabled and 69.40%SM non-disabled). However, for both groups their mean score lies below the normative range for health (73.9–76.2); representing a difference of 4.4 to 4.5 points. An implication is that satisfaction with health may also be an indicator for potential vulnerability for homeostatic failure. Further research is required in which both objective and subjective data are collected from New Zealand and Australian intellectually disabled samples to further investigate this possibility.

Finally, the lack of differences for age and gender, within the intellectually disabled sample in Study 3 are also reported in the McGillivray et al. study. These findings are consistent with previous reports in non-disabled groups (Cummins, Woerner, Tomy, Gibson, et al., 2007) and supports the viewpoint that age and gender do not have a strong influence on SWB (Diener, et al., 1999).

In conclusion, an examination of the domains revealed that people with intellectual disability were significantly more satisfied with their Standard of Living, Achievements, Community Connectedness and Future Security, and significantly less satisfied with Personal Relationships than non-disabled people. This highlights the possibility that specific domains can be used as diagnostic indicators, as low mean score in particular domains can indicate a potential vulnerability for homeostatic defeat. Once identified, the indicated areas can then be targeted for intervention. Results from this study suggest the need to intervene and provide support to people with intellectual disability around the domain Personal Relationships, as this domain has consistently been scored the lowest mean score for both studies of this thesis. Low scores for the domain Health may also be an indicator for homeostatic defeat.

### 6.17.3 *Predicting satisfaction with life-as-a-whole*

The unique variance contributed by each domain when regressed against the global question “How satisfied are you with your life-as-a-whole?”, provides further information on the construction of SWB. Thus it is of interest to determine which life domains predict satisfaction with life-as-a-whole, and whether this pattern differs across intellectually disabled and non-disabled groups. Life domains represent the first level of deconstruction of the global satisfaction with life-as-a-whole and have been shown to explain 30–60% of unique and shared variance (International Wellbeing Group, 2006).

Consistent with findings from Study 2, the results from regression analyses indicate differences between the two groups in Study 3. However, correlations for the intellectually disabled group are very low and most of the PWI domains do not positively correlate with the life-as-a-whole question. This was not the case for the non-disabled group in which all domains correlated with life-as-a-whole, as expected. For the non-disabled group four life domains (Standard of Living, Life Achievements, Personal Relationships and Community Connectedness) contributed to the prediction of life-as-a-whole, whereas, for the intellectually disabled group only one domain (Future Security) contributed to satisfaction with life-as-a-whole. The domain Future Security as a predictor of satisfaction with life-as-a-whole is consistent with results from Study 2.

It can be concluded that for people with intellectual disability the domain Future Security strongly contributes to SWB, however, the non-contribution of the other domains indicates that on this occasion the PWI did not work as intended. It was expected that the seven domains would correlate positively with the question satisfaction with life-as-a-whole, as well as individually contribute significant unique variance to the prediction of satisfaction with life-as-a-whole (Cummins & Lau, 2004b). For reasons unknown, this group does not appear to have consistently used the PWI-ID scale in Study 3, as indicated with the low Cronbach’s alpha. Administration of the scale during interviews was carried out, with due care and in accordance with manual process, and thus, data were not corrupted at that point. Furthermore, all intellectually disabled people included in Study 3 participated in the pre-testing protocol used in the PWI-ID, to ascertain participant understanding of the scale and level of response choice complexity they can use. All participants passed.

These results suggest the possibility that the intellectually disabled group, in the current study, did not fully understand the question “How satisfied are you with your life-as-a-whole?” and their responses reflect guessing. However, at the same time, their mean total PWI and domain scores fall within normative Western ranges, suggesting that their responses to satisfaction with life and PWI scale, are not random either. This finding is fairly inexplicable, particularly as the intellectually disabled group in Study 2 did not appear to have any problems using the PWI-ID and the data behaved as expected (see Table 5.14). That is, in Study 2 regression analysis on life-as-a-whole revealed two life domains (Safety and Future Security) made a unique contribution to the prediction of life-as-a-whole, with the seven life domains contributing 20% unique variance and 41% shared variance to life-as-a-whole, for the intellectually disabled group.

Evidence indicating that people with intellectual disability can reliably and validly use the PWI-ID, is provided by McGillivray et al. (2009), who found that all domains of the intellectually disabled group correlated significantly with life-as-a-whole, with a range between .27 and .44. Additionally, all domains were statistically significant contributors (adjusted  $R^2 = .27$ ) to life-as-a-whole, with Personal Relationships and Safety making the largest unique contribution ( $sr^2 = .34$  and  $sr^2 = .45$  respectively). Moreover, they found Cronbach  $\alpha$ -value of .76, with scale items demonstrating an item-total correlation of .30. These results clearly demonstrate that people with mild to moderate levels of intellectual disability can reliably and validly respond to the PWI-ID. Therefore, it seems that, for some unknown reason, participants with intellectual disability in Study 3, have not understood the global question “How satisfied are you with your life-as-a-whole?” They have, however, understood the satisfaction with the seven domains as reflected in domain scores and PWI scores that fall within the normative Western range.

To summarise, regression analyses revealed differences in the prediction of SWB between the two groups. Four of the seven life domains contributed to the prediction of life-as-a-whole for the non-disabled group, whereas only the domain, Future Security contributed to the prediction of life-as-a-whole for the intellectually disabled group. These results for the intellectually disabled group are contrary to expectation and are inconsistent with previous research using the PWI-ID with people with intellectual disability (McGillivray, et al., 2009). However, the finding that Future Security predicts

SWB of people with intellectual disability, partly supports the findings of Study 2, in which it was proposed that for people with intellectual disability Future Security and Safety strongly contribute to the maintenance of SWB. This has relevance for service provision, in that an important consideration for the maintenance of SWB for people with intellectual disability is that their future remains stable and secure, and they are free from personal threats to their safety.

### 6.18 Approach and Avoidant Control and Intellectual Disability

This section discusses results on the buffers of Approach and Avoidant Control, as measured by the CRI (Moos, 1993). Results from Study 2 found that people with intellectual disability were significantly more likely to use avoidance control strategies than non-disabled people and significantly less likely to use approach control strategies to deal with problems. Thus, it appears that people with intellectual disability are more likely to accept or become resigned to their situation, and actively avoid thinking about their problems and seeking alternative rewards, as effective strategies to deal with difficulties in their life. If this finding is valid and not just particular to this participant sample then a similar pattern of responding should be found for the intellectually disabled sample in Study 3. As there were no control variables available from the Australian non-disabled comparison sample, a comparison was instead made between the two intellectually disabled samples comprising Studies 2 and 3.

An examination of between-group difference for these two intellectually disabled samples found almost no differences within the eight subscales, or on the total Approach and Avoidant scales. The exception is Emotional Discharge from the Avoidant scale, in which Study 2 had higher means (38.83 vs. 30.86). This general lack of difference between the two disabled groups supports the conclusion that people with intellectual disability use avoidant coping strategies more than non-disabled people. Furthermore, these results lend support for the argument made in Study 2 that, for intellectually disabled people SWB is maintained within a normative range by the use of avoidant control strategies. This conjecture is supported by the Study 2 findings that avoidant control had a significantly positive correlation with PWI ( $r = .25$ ) for the intellectually disabled group. A significant positive correlation between avoidant control and PWI ( $r = .22$ ) was also obtained in Study 3, for this group. This suggestion

is consistent with previous research on the use of approach and avoidant control with intellectually disabled populations (Hartley & MacLean Jr, 2008).

In conclusion, it appears that people with intellectual disability are more likely to use avoidant control strategies when experiencing difficulties in their lives, whereas, non-disabled people are more likely to use approach control strategies. Moreover, the use of avoidant control strategies is likely to be adaptive for intellectually disabled people because they are less able to exercise control and take charge of their own life. Consequently, their ability to modify their environment or stressful situations is limited. In these situations the use of avoidant or ignoring control strategies may well be related to positive psychological outcomes, such as normative SWB found in this study, because they do not make futile attempts to modify situations that are beyond their control. Additionally, intellectually disabled people are taught to be compliant, to cooperate with a range of staff, and generally not behave in an autonomous and self-determining manner (Hartley & MacLean Jr, 2008). Consequently, opportunities to use approach control strategies are limited compared to non-disabled people and this may account for their higher use of avoidant control strategies.

## 6.19 Subjective Wellbeing, Affect, Self-esteem and Optimism

### *6.19.1 PWI, Self-esteem and Optimism: Group differences*

Consistent with findings from Study 2, there were no differences in PWI scores between the intellectually disabled and non-disabled groups (75.38%SM, 71.51%SM respectively). This finding provides compelling evidence that people with intellectual disability experience similar levels of SWB as non-disabled people. In the current study however, people with intellectual disability reported higher scores than non-disabled people for both Self-esteem (74.59 vs. 58.28) and Optimism (72.16 vs. 65.44) respectively.

The finding that people with intellectual disability have levels of self-esteem and optimism that are comparable with or higher than non-disabled people is at odds with previous research. A number of authors have reported that people with intellectual disability have lower levels of self-esteem than non-disabled people (Garaigordobil & Perez, 2007; Masi, et al., 1999). For example, a study by Garaigordobil and Perez

(2007) found that people with mild intellectual disability had significantly lower self-esteem than non-disabled people (29.9, 31.5 respectively).

An explanation for these differences may be that homeostatic control was operating effectively for the intellectually disabled group in this study. According to the SWB homeostasis model, self-esteem, optimism for the future, along with a sense of control, acts as a buffer for the maintenance of SWB (Cummins & Lau, 2004a). If the three cognitive buffers work together as a system, then it is expected they would show a strong positive relationship to one another. This positive association was found in the current study for the intellectually disabled group as evident by the moderate significant correlations ( $r = .37$  to  $r = .49$ ), and to a lesser extent for the non-disabled group in which self-esteem had a non-significant correlation with PWI, while optimism had a weak correlation. This is most unusual and may well account for the between-group difference.

#### *6.19.2 Affect and Subjective Wellbeing: Group differences*

The contribution of HPMood to SWB has not been investigated in terms of people with intellectual disability. The term HPMood is the dominant affective state of SWB and also the set-point that homeostasis defends. It is also part of all cognitive processes, in particular those processes pertaining to self (Cummins, 2010).

Results from this study reveal the only other significant between-group difference was the affect Happy, in which people with intellectual disability were happier than non-disabled people (85.36%SM vs. 72.55%SM), although Alert almost reached significance. Moderate to strong positive associations were also found between the three affect items (Content, Happy and Alert) with SWB for both groups. These positive associations are consistent with Watson and Tellegen's (1985) discussion of a 2-factor model of affect. The authors argue that mood terms located within the same octant will be highly positively correlated, as is the case with affects Content and Happy, which occupy the octant labelled Pleasantness. The affect Alert occupies the octant High Positive Affect, which is adjacent to the affects Content and Happy and is moderately correlated with SWB, Content and Happy ( $r = .32, .38, .38$  respectively) for the non-disabled group and  $r = .49, .27, .34$  for the intellectually disabled group. This indicates that the affect variables are behaving in a manner consistent with the circumplex theory of affect (Watson, et al., 1988; Watson & Tellegen, 1985).

Importantly, the pattern of affect correlations obtained for the intellectually disabled group suggests that the circumplex theory of affect is applicable to this population. That is, the moderate to strong positive associations found for the affect items Content, Happy and Alert with SWB by the intellectually disabled group, conforms to the prediction of the circumplex theory. They are also similar to values obtained by the non-disabled group, and therefore, can be tentatively viewed as evidence of normal homeostatic functioning.

### *6.19.3 Prediction of SWB by Core Affect, Self-esteem and Optimism*

This section deals with the issue of whether the composition of HPMood, as parsimoniously represented by the affects Content, Happy and Alert, is the same for intellectually disabled as it is for non-disabled people. There is also the question of whether the amount of variance explained in SWB by HPMood is within the same range as for non-disabled people.

For non-disabled people, the strongest predictor of satisfaction with life-as-a-whole is Content ( $sr^2 = .09$ ), followed by Happy ( $sr^2 = .07$ ). Alert did not make a significant contribution to satisfaction with life-as-a-whole. Together, 54% (54% adjusted) of the variability in satisfaction with life was predicted by knowing scores on these three independent variables of affect rating. This result is similar to the value obtained by Davern (2004) in her study where the three affect adjectives Contentment, Excitement, and Happiness, explained 66% of the variance in satisfaction with life-as-a-whole. The affect Content was also found by Davern (2004), to be the most powerful predictor of satisfaction with life-as-a-whole, confirming the results for the non-disabled group in Study 3.

However, a different pattern was found for the intellectually disabled group when satisfaction with life-as-a-whole is the dependent variable. Results revealed that none of the three core affect variables contributed to satisfaction with life-as-a-whole. This non-significant result indicates the possibility that for this group, they have not fully understood the question "How satisfied are you with your life-as-a-whole?". For this reason further regression analyses were conducted using PWI as the dependent variable.

When PWI is the dependent variable, regression analyses for the non-disabled group revealed that Happy ( $sr^2 = .13$ ) is now the strongest predictor, followed closely by



Content ( $sr^2 = .03$ ), and together the affect variables explained 52% of variance in PWI. Whereas, for the intellectually disabled group, Alert ( $sr^2 = .11$ ) made the strongest contribution followed closely by Happy ( $sr^2 = .05$ ), while Content just failed to reach significance. Together, scores on these three affect variables explained 31% (29% adjusted) variance in PWI. Thus, there are major differences in the composition of HPMood, between the two groups. This difference probably reflects the low-shared variance consistently found in the regression equations for the intellectually disabled group. This indicates that the respondents are seeing the questions as fundamentally different from the non-disabled group, and may reflect a lack of understanding. Some of the low Cronbach's alpha reliability coefficients obtained in preliminary data analysis for the PWI and Optimism scales, also reflect the lower shared variances obtained by this group.

Finally, the study sought to explain the role of Self-esteem and Optimism in predicting SWB. Within Study 2 both variables significantly contribute to the prediction of SWB, for both groups. When all three variables were included in a Hierarchical Regression analyses for the non-disabled group, only Happy made a unique contribution to the prediction of SWB, explaining 53% of variance, while Self-esteem and Optimism only added an additional 1% of variance. Content almost reached significance for this group, while Alert did not add any unique variance in satisfaction with SWB. Thus, these results confirm that for non-disabled people the affect Happy explains over 50% variance in SWB, while Self-esteem and Optimism only add an additional 1% of variance.

In comparison, for the intellectually disabled group the two affects Happy and Alert explain 31% of variance, with the inclusion of Self-esteem and Optimism an additional 14% of variance is explained, increasing explained variance from 31% to 46%. However, these values are still lower than obtained in all of the non-disabled group regressions. This constitutes a major difference between the two groups. It suggests that both Optimism and Alert are powerful determinants of SWB for people with intellectual disability, while only the affect Happy is a determinant of SWB for non-disabled people.

The finding that Optimism contributes significantly to the prediction of SWB along with the affect Alert is inconsistent with Davern's (2004) findings in which pleasant

affect is the major component of SWB. A possible explanation for this inconsistency is that in the current study the prediction of SWB was done using PWI as the dependent variable, whereas, Davern used satisfaction with life as a whole. The relative contribution of cognition and affect to SWB will be dependent on the nature of the measure of SWB. The more abstract the measure of SWB (e.g., SLAW) the more the relative contribution made by HPMood will be, due to increased level of congruence between non-specific mood-state of affect and the appraisal of an abstract sense of personal satisfaction. When PWI is the measure, judgements are no longer abstract but become more specific due to focus on domains and overlap (Davern, et al., 2007). It could be that for the intellectually disabled group, satisfaction with life domains (as represented by PWI score) is being influenced by Optimism. However some caution regarding the findings relating to Optimism must be taken due to the low reliability obtained from the LOT scale by the intellectually disabled group. Further research using a larger sample of people with intellectual disability is required, to tease out more fully the relationship between Optimism and affect variables of Contentment, Happiness and Alertness.

Two conclusions can be drawn from these findings. First, the composition of HPMood appears to differ between intellectually disabled and non-disabled people. For people with intellectual disability it comprises Optimism and Alert, whereas, for non-disabled people it is the affect Happy only. Second, the amount of variance explained in SWB by HPMood differs for both groups, with lowest variance explained found in the intellectually disabled group (non-disabled 53% vs. 46% intellectually disabled). However, these results are only exploratory, as the contribution of HPMood to SWB has not been previously investigated in terms of people with intellectual disability. Further research is required to test the relationships reported in this study to provide a fuller understanding of the SWB of people with intellectual disability.

## 6.20 Implications of HPMood for People with intellectual disability

As argued by Davern (2004) and Cummins (2010) the affective component of SWB is HPMood that provides the affective background against which cognitions of life satisfaction are made. As such, HPMood is evaluated in terms of valence and activation. HPMood is proposed to be a neurophysiological state (i.e., experienced as a feeling, affect trait or mood) that occurs without conscious awareness, in much the same

way as felt body temperature. It operates in the background but when asked about can be accessed (J. A. Russell, 2003; J.A. Russell & Barrett, 1999). HPMood is the major component of people's feelings when they think about their life in general. Within the SWB homeostasis framework, HPMood constitutes the minimal number of adjectives needed to explain the affective variance in SWB. In the current study the affect adjectives Content, Happy and Alert explain 44–52% of variance in PWI, and together represent the activated and deactivated pleasant quadrants of the affective circumplex.

The relationship between HPMood and SWB homeostasis is considered by Cummins (International Wellbeing Group, 2006) to utilise the affect heuristic. That is, when making judgments of satisfaction with life-as-a-whole, people use their mood or how they feel at the time, as a parsimonious indicator of overall wellbeing. This perspective was demonstrated by Schwarz and Strack (1991, 1999) who showed that sunny days rather than rainy days, spending time in a pleasant room rather than an unpleasant room, or watching their favourite soccer team win a game, all resulted in increased reports of satisfaction with life-as-a-whole. The authors, therefore argue that mood serves an informative function for the individual. The use of mood is a much simpler strategy for making satisfaction with life-as-a-whole judgements than using the more complex cognitive evaluations based on comparison information.

While the results of the study generally supported the idea that SWB predominantly comprises positive affect, the affective content varied between the non-disabled and intellectually disabled groups. The affective content for the non-disabled sample predominantly comprised Content and Happy, while for the intellectually disabled group the predominant affect was Alert. Thus, there appears to be a difference in the composition of HPMood between intellectually disabled and non-disabled people.

The influence of HPMood is also reflected in the normative SWB means reported by the intellectually disabled group in this study, while the role of the buffers is evidenced in their attachment to HPMood. For this group, Self-esteem was significantly correlated with affect Alert, while Optimism was significantly correlated with affect Happy. Their normative SWB suggests that due to HPMood and homeostasis, people with intellectual disability generally feel good about themselves despite difficult life circumstances (e.g., disrupted social relationships, unemployment, health-related issues, and experiencing discrimination). Thus, due to these self-beliefs being held at an abstract level, the

internal buffers are able to dismiss most threats to their personal wellbeing and thus define SWB at the set-point. So the processes of homeostasis may well operate in just the same way for people with an intellectual disability as for non-disabled people. When the “satisfaction with life” question is asked this invokes the affective heuristic, which uses HPMood as information to guide their response (Cummins, 2010).

From this perspective it could be argued that for people with intellectual disability, HPMood is the first line of defence in the maintenance of SWB. If this proposition is correct, then it highlights the importance for caregivers and service providers of people with intellectual disability to reduce the threat of homeostatic failure, by facilitating internal resources via support that enhances a sense of control, optimism and importantly a positive self-view. Thus, the implication of HPMood and its relationship with SWB homeostasis is that it provides a very useful framework to explain the normative levels of SWB reported by people with intellectual disability, particularly when these normative SWB values are considered against the marginalised status that this group has in society. That is, they are far more likely to experience, disrupted social relationships, unemployment, health-related issues, and discrimination (I. Brown & Radford, 2007; Sheppard-Jones, et al., 2005). Yet due to SWB homeostasis defending HPMood, people with intellectual disability against all odds, report SWB that falls within the normative range.

### 6.21 Conclusions of Study 3

In conclusion, the findings from Study 3 indicate that people with intellectual disability can respond reliably and validly to subjective data. However, similar to the findings from Study 2, caution needs to be exercised in regard to using response scales that employ negatively worded items, as there are mixed findings on whether people with intellectual disability can fully understand such items. As noted by Scheier and Carver (1985) negatively worded items can pose a higher level of cognitive challenge, as they are semantically more complex than positively worded items. Results from the intellectually disabled group indicate that this statement is particularly relevant for this group.

Results from this study confirm findings from Study 2, that there is no difference between intellectually disabled and non-disabled groups for SWB. Thus, it can be

concluded that in spite of the presence of an intellectual disability and their marginalised status in society, this group maintains levels of SWB that are similar to non-disabled people and furthermore, fall within the normative range. At the same time, examination of the domains revealed that people with intellectual disability were significantly more satisfied with their Standard of Living, Achievements, Community Connectedness and Future Security, and significantly less satisfied with Personal Relationships than non-disabled people. Such domain differences highlight the possibility that specific domains can be used as diagnostic indicators, as low mean score in particular domains can indicate a potential vulnerability for homeostatic defeat. Such identified life areas can then be targeted for intervention. Importantly, results from this study suggest the need to provide additional support to people with intellectual disability around the domain Personal Relationships, as this domain has consistently had the lowest mean score across Studies 2 and 3. Low scores for the domain of Health also indicate an area of homeostatic defeat.

One strange feature of the results from Study 3 is that, for the intellectually disabled group, Future Security was the only life domain to contribute to the prediction of satisfaction with life-as-a-whole. This is contrary to expectation and is inconsistent with previous research using the PWI-ID with people with intellectual disability (McGillivray, et al., 2009). However, this finding may relate to the results from Study 2, which indicate that an important consideration for the maintenance of SWB for people with intellectual disability is that their future remains stable and secure. Thus, if this concern became too strong, it could dominate the variance shared with life-as-a-whole and so crowd-out the contributions from the other domains. Further research is required to investigate this phenomenon.

Other results from Study 3 confirmed that people with intellectual disability are more likely to use avoidant control strategies when experiencing difficulties in their lives and less likely to use approach control strategies. Thus, it can be concluded that the tactics of approach and avoidant control might have quite different consequences for SWB between people with intellectual disability and non-disabled people.

Findings also suggest that people with intellectual disability have levels of self-esteem and optimism that are comparable with or higher than non-disabled people. Thus, notwithstanding the higher risk of low self-esteem and optimism due to negative social

comparison and their stigmatised and deviant social status, they feel good about themselves and their future. An explanation for these findings is that effective homeostatic control was operating and, indeed, this is reflected in the normal range of SWB of this group (Cummins & Lau, 2004a).

Finally, the contribution of HPMood to SWB of people with intellectual disability revealed the activated affect Alert made the strongest contribution to PWI, followed closely by the pleasant affect Happy, while Content almost reached significance, whereas, for the non-disabled group, Happy is the strongest predictor of PWI followed closely by Content.

In conclusion, despite the finding that the composition of HPMood appears to differ between intellectually disabled and non-disabled people, the amount of variance explained in SWB by HPMood for the intellectually disabled group (46%) is similar to that found for non-disabled group (52%). Certainly, these findings are lower than Davern's (2004), who reported the combined affects of Happy, Content and Excited explain 66% of the variance in SLAW. However, the results from the current study are only exploratory, as the contribution of HPMood to SWB has not been previously investigated in terms of people with intellectual disability. Further research is required to test the relationships reported in this study to provide a fuller understanding of SWB of people with intellectual disability.

## Chapter Seven

### Summary and Conclusions

#### 7.1 Introduction

This chapter explores the implications of the findings from this thesis for service providers and caregivers of people with intellectual disability and the conditions required such that SWB homeostatic control is not defeated. The chapter first summarises the findings of the three studies, explores some implications for practice, identifies limitations of the current research, discusses future research possibilities and then presents conclusions regarding this thesis.

This thesis investigated the SWB of people with intellectual disability compared to non-disabled people. Specifically, an examination was conducted into the processes of homeostatic control and the influence of internal buffers or cognitive mechanisms, of perceived control, self-esteem, and optimism for the maintenance of SWB for people with mild to moderate intellectual disability compare to non-disabled people. The literature suggests that the mechanism for the maintenance of SWB operates in the same manner for people with or without disabilities (Cummins & Lau, 2004a). This thesis set out to test this premise as there is currently very little empirical evidence to support this proposition. Furthermore, it is expected that by understanding the internal buffering system and the homeostatic maintenance of SWB for people with intellectual disability, this will enhance understanding by service providers and caregivers in regard to the type of conditions that have to be met in order for homeostatic control of SWB to remain undefeated.

Findings from this thesis build on, and contribute to, past work in the intellectual disability field, in understanding more fully the SWB of this group. A review of the literature pertaining to the goal of this thesis revealed that the QOL of people with intellectual disability has not been comprehensively investigated, although studies are beginning to emerge. Moreover, the homeostatic maintenance of SWB and its application to intellectually disabled people has not been investigated although, one other recent study by McGillivray et al. (2009) has investigated the homeostatic maintenance of SWB of intellectually disabled people.

## 7.2 Summary of Studies

### 7.2.1 *Study One*

In order to examine the determinants of SWB and the maintenance of homeostatic control for people with mild to moderate intellectual disability, it was first necessary to establish the discriminative response capacity for this group. Thus, Study 1 was conducted to determine the level of response scale complexity that people with intellectual disability can reliably make. It was also conducted to determine if the respondent is able to validly respond to a SWB questionnaire that is sufficiently sensitive to assess actual changes in the phenomenon under investigation. Study 1 involved a small group of people with mild to moderate intellectual disability, with an aim to address the gap in understanding the level of scale complexity that can be reliably and validly used by this group. This understanding is important because if people with mild intellectual disability can reliably use a Likert-type scale above 7-point response discrimination, then concerns about scale sensitivity will be addressed and new information regarding the discriminative capacity of people with mild intellectual disability will be available.

Results from this study clearly support the view that people with mild intellectual disability can reliably and validly respond to SWB scales at a level of complexity that is sensitive enough to record changes in life satisfaction as a whole and across life domains. Evidence for this was provided by the minimal difference between results obtained using the 7-point or the 11-point response categories. Specifically, while Cronbach's alphas were higher for the 11-point response format, there was a non-significant difference between participants' responses when using the 7- and 11-point response choice scales. Participants were divided as to which scale version was easier to use. Finally, support for the meaningfulness of participants' responses to the 7- and 11-point response choice format, comes from the findings that total mean scores obtained are within the range for those obtained from normative population data (Cummins, 1998b).

These findings, on balance support the decision to use more complex scales (e.g., 11-point) over more coarse scales (7-point) for Studies 2 and 3. As a more complex scale response format has been shown to be more sensitive to SWB data (Cummins & Gullone, 2000), then the 11-point scale has a better chance of measuring small changes



in SWB. This is an important consideration in regard to SWB data, as it has a high trait component, and small deviations can be highly meaningful and have significance. It can become particularly important when applied to members of vulnerable groups in society who are at risk for homeostatic failure, such as those with disabilities. Additionally, confidence in using a 0–10 end-defined response format is warranted, given the response scale complexity was not outside the cognitive capacity of the participants in this study; all participants could count beyond 10.

In summary, the results from Study 1 have twofold importance; they provide new information on the discriminative capacity of people with mild intellectual disability and they also address concerns about scale sensitivity. Results indicate the response complexity that people with mild intellectual disability can reliably make is larger than the 3- to 5-point response choice format typically employed in SWB research. More recently evidence supporting the use of a more complex response format came from McGillivray et al (2009) validation study of the PWI-ID scale as used by people with mild to moderate intellectual disability.

### *7.2.2 Study Two*

Study Two explored the determinants of SWB and the maintenance of homeostatic control for a large group of people with mild to moderate intellectual disability compared to non-disabled people. This involved an investigation into self-esteem, optimism and perceived control, which have been proposed to buffer SWB. It is proposed that these three linked variables combine to absorb the impact of changing need states to maintain the steady output of SWB, within the set-range as reported by Cummins and Cahill (2000). Results from this study provide empirical evidence of the operation of the buffers as applied to people with mild to moderate intellectual disability.

As reported by Ager and Hatton (1999), the effective measurement of self-report data from people with intellectual disability is fraught with difficulties and raises concerns about the adequacy of such data. Preliminary analyses, indicating low reliability estimates on some of the scales as used by the intellectually disabled group, highlighted the need to establish the psychometric adequacy of such data derived from this population. This was achieved by the systematic examination of the factorial structure of each measurement instrument prior to formal data analyses.

Overall, the findings from factor analyses on the scales used in this study are mixed. On the positive side, a similar factor structure of PWI was found for both groups. Additionally, factor analyses for the CRI run separately on each of the two groups confirmed the underlying structure of the CRI. However, similar factor structures for both the Self-esteem and Optimism scales were more difficult to obtain. This was due to the difficulty of obtaining valid data from negatively worded items for people with mild to moderate intellectual disability. This finding clearly indicates the need to further investigate the Optimism and Self-esteem scales, to understand more fully the responses that people with intellectual disability make to such scales. These results are important as they indicate the difficulty of gaining reliable and valid data from people with intellectual disability, particularly difficulties that can arise when negatively worded items are used, and also the importance of verifying self-report data from this group.

The results from Study 2 support the hypothesis that the SWB scores for people with intellectual disability will be within the same normative range (e.g., 70%SM to 80%SM) as found for non-disabled people. This is true of the most abstract-personal indicator, SLAW, as well as the total mean score for PWI. Thus, it would appear that despite people with intellectual disability being marginalised in society and not experiencing the same opportunities as other members of society for a life of quality, they report SWB levels that are within the expected Western normative range. This finding is generally consistent with other SWB research (McGillivray, et al., 2009; Verri, et al., 1999), that compared intellectually disabled and non-disabled populations, in which the mean group values for total satisfaction scores fell within the normative range as established by Cummins (1995).

Examination of life domains provides important additional information, as lowered satisfaction across life domains can be used for diagnostic purposes to identify specific domains that may threaten SWB and defeat the homeostatic system. Differences in life domains between the two groups revealed that people with intellectual disability were significantly more satisfied with the domains of Community Connectedness and Future Security and reported lower satisfaction for Health, Personal Relationships and Safety. Future Security exerted the most influence on the difference between the two groups, and along with Safety significantly predicted SLAW for the intellectually disabled group. Satisfaction with the other five remaining life domains plays less of a role in the

prediction of SLAW for the intellectually disabled group. This is a somewhat unexpected finding and contradictory to other research (McGillivray, et al., 2009). As noted in Chapter 5, the highest rated domain contributing to life satisfaction in general populations is Intimacy or Personal Relationships (Campbell, et al., 1976), yet this life domain did not feature as a prediction of life satisfaction in the intellectually disabled group.

The hypothesis that the three buffers will interact with SWB in the same way between people with intellectual disability and non-disabled people was not fully supported in this study. That is, results indicate that the buffering system works differently for each group. First, the two groups differ on how control strategies were utilised. People with intellectual disability used more avoidant control strategies, while non-disabled people used more approach control strategies in maintaining SWB. Specifically, SWB was positively correlated with Approach Control and negatively with Avoidant Control for the non-disabled group, while Avoidant Control had a significantly positive correlation with SWB in the intellectually disabled group. Thus, it seems for intellectually disabled people, Avoidant Control has a positive function in relation to the maintenance of SWB, but this was not the case for the non-disabled group.

Second, there was a subtle difference in how the buffers Self-esteem and Optimism worked between the two groups. While, Self-esteem makes an important contribution to SWB homeostasis for both groups it makes the strongest unique contribution to SWB for the non-disabled group. Optimism on the other hand, makes the strongest unique contribution to SWB for intellectually disabled group. Additionally, the buffers of Self-esteem and Optimism appear to be more fragile for the intellectually disabled group, as evident by the consistently lower correlations between these two buffers and SWB, whereas, these buffers had strong significant correlations with SWB for the non-disabled group.

Finally, lower correlations were generally found for all buffer variables in the intellectually disabled group, with the exception of the correlation between Avoidant and Approach Control, which is larger for the intellectually disabled group ( $r.50$  vs.  $r.23$ ). These lower correlations found in the intellectually disabled group may indicate that the buffering system has to work harder to maintain homeostatic control. Nevertheless, the homeostasis system appears to be operating effectively as evidenced

by the presence of normative SWB scores. The importance of these results is they test the theory of SWB homeostasis as applied to people with intellectual disability and also provide new data on the precise nature of the buffering system and its adequacy to describe homeostatic control for this group.

In summary, results from Study 2 support the hypothesis that people with intellectual disability will report SWB within the same normative range (e.g., 70%SM to 80%SM) as found for non-disabled people, dispelling the notion that the presence of intellectual disability will reduce one's SWB. Results also establish that the theory of homeostasis control of SWB can be applied to people with intellectual disability. Although the overall lower correlations for the buffer variables for the intellectually disabled group suggest the buffering system has to work harder to maintain homeostatic control.

### 7.2.3 *Study Three*

Results from Study 3, generally confirm and extend the findings from Study 2. Specifically, there is no difference between intellectually disabled and non-disabled groups for SWB. Examination of the domains revealed that people with intellectual disability were significantly more satisfied with their Standard of Living, Achievements, Community Connectedness and Future Security, and significantly less satisfied with Personal Relationships than non-disabled people. People with intellectual disability are more likely to use avoidant control strategies when experiencing difficulties in their lives and less likely to use approach control strategies and they have levels of self-esteem and optimism that are comparable with or higher than non-disabled people.

The results of the study generally support the idea that SWB predominantly comprises positive affect. However, the composition of HPMood appears to differ between intellectually disabled and non-disabled people. For the intellectually disabled group the contribution of HPMood to SWB revealed that Alert made the strongest contribution to PWI, followed closely by Happy, while Content almost reached significance. For the non-disabled group Happy is the strongest predictor of PWI followed closely by Content. However, the amount of variance explained in SWB by HPMood for the intellectually disabled group (46%) is similar to that found for non-disabled group (52%). These findings are lower than Davern's (2004), who reported that the combined affects of Happy, Content and Excited explain 66% of the variance in SLAW. The

difference in explained variance between Study 3 results and Davern could be the measure of SWB used. In Study 3 the SWB measure was PWI, while Davern used SLAW, as the measure. As noted by Davern et al. (2007), the relative contribution of cognition and affect to SWB will be dependent on the nature of the measure of SWB. The more abstract the measure of SWB (e.g., SLAW) the more relative the contribution made by HPMood will be, due to increased level of congruence between non-specific mood-state of affect and the appraisal of an abstract sense of personal satisfaction.

The importance of HPMood and its relationship with SWB homeostasis is that it potentially provides a useful framework to explain the normative levels of SWB reported by people with intellectual disability, particularly when these normative SWB values are considered against the marginalised status that this group has in society. That is, the normative SWB reported by people with intellectual disability suggests that due to HPMood and homeostasis, they generally feel good about themselves despite difficult life circumstances (e.g., disrupted social relationships, unemployment, health-related issues, and experiencing discrimination). Thus, due to these self-beliefs being held at an abstract level, the internal buffers are able to dismiss most threats to their personal wellbeing and thus defend SWB at their set-point. When the “satisfaction with life” question is asked this invokes the affective heuristic, which uses HPMood as information to guide their response (Cummins, 2010).

### 7.3 Implications of Findings

The major importance of this research flows from the argument advanced in Chapter 3, which proposed the assessment of SWB of people with intellectual disability should underpin service design and service delivery. As noted by Cummins (2005a) this approach incorporates the principles of normalisation (Wolfensberger, 1972) where objective QOL replicates the standard that is acceptable to the general population, and subjective QOL indicates the extent to which an individual’s environment permits them to experience SWB within the normative range as experienced by the general population. The use of satisfaction measurement within the disability field is also advocated by Schalock (1996a), who argues, that such measures provide a common understanding shared by service recipients, policy makers, service providers and researchers in the assessment of consumer needs and satisfaction. However, such investigations can only draw valid conclusions if the data obtained accurately represent

the actual feelings of respondents. Thus, the argument can be made, that having a better understanding of the SWB of people with intellectual disability is essential to the delivery of quality services that meets their needs, while also ensuring their personal fulfilment and life satisfaction.

The conceptual framework of this investigation is that, any sort of disability is likely to be a source of challenge to the homeostatic system, additional to the normal life-challenges experienced by the general population (Cummins, 2005a). Consequently, even when reporting SWB within a normative range, the homeostatic system of people with disabilities is likely to be more fragile, compared to non-disabled people. As a consequence of this additional stress, their ability to regulate SWB will be compromised. The extent to which their disability will actually be evident as a source of stress is dependent on the individual's external and internal resources. When resources are enough to neutralise the additional demands caused by disability, the homeostatic system will maintain SWB within normative levels, relative to that person's set-point range. However, if the demands overwhelm resources, then homeostasis will fail and SWB will fall below the normative range (Cummins, 2005a). Results from this thesis provide guidance and direction to areas or domains of possible vulnerability for people with intellectual disability.

Empirical examination into life domains highlights specific areas of vulnerability for homeostatic defeat and provides direction for possible intervention in order to enhance a person's quality of life. This means that specific domains can be used as diagnostic indicators, as a low mean score in particular domains can indicate a potential vulnerability for homeostatic defeat. Such indicated areas can then be targeted for intervention. For example the low satisfaction scores for the domain Personal Relationships clearly indicate the need for further support, as this domain has consistently been scored the lowest mean score for the studies in this thesis. The highest rated domain contributing to life satisfaction in general populations is Intimacy or Personal Relationships (Campbell, et al., 1976), yet this life domain did not feature as a prediction of life satisfaction in the intellectually disabled group. Thus, one way to boost homeostatic control of SWB for this group is to target the domain Personal Relationships for intervention. Strategies could range from assisting people with intellectual disability to develop new friendships, to providing assistance for them to

maintain positive relationships with existing friends and family. Low scores for the domain Health may also be an indicator for homeostatic defeat.

Additionally, for the intellectually disabled group, two life domains (Safety and Future Security) were shown to significantly contribute to satisfaction with life-as-a-whole. This finding has implications for service providers in meeting the needs of people with intellectual disability in their service, as this result indicates that an important consideration for the maintenance of SWB for this group is that their life is stable and things do not change unexpectedly (Future Security), and they are free from personal threats to their safety.

The findings reported in this thesis also shed light on the precise nature of the buffering system and its adequacy to describe homeostatic control for people with intellectual disability. As with the life domains, this knowledge provides a focus by which to target interventions that will directly ensure homeostasis does not fail for this group. The findings that Optimism and Self-esteem are important predictors of SWB for people with intellectual disability highlights the importance of providing care and support that facilitates high self-esteem and optimism levels, particularly for those people who report levels of unhappiness or dissatisfaction with their lives. For example, caregivers can provide support to individuals with intellectual disability, which empowers the person by bolstering levels of self-esteem and personal confidence (Cummins, 2005a). This can be achieved by, supporting the individual with disabilities to obtain skills related to wielding greater control in areas of life that are important to them, developing a sense of belonging or connectedness and purpose in life, and above all else enhancing their self-esteem and optimism.

Finally, an important aim of this research was to provide comparative data, between people with intellectual disability and non-disabled people on their levels of reported SWB, within a New Zealand context. This research addresses this gap in empirical data on the SWB of a New Zealand sample of intellectually disabled people, and also demonstrates their reported levels of SWB conform to those reported in other countries such as, Australia, the United States and the United Kingdom.

## 7.4 Limitations of Studies

There are several limitations that must be taken into account when interpreting the results of this thesis. Primarily limitations have to do with sample size and sampling procedure for people with intellectual disability. The sample for all three studies was relatively small and was less than obtained for the non-disabled sample. This meant group size was unequal and participant's demographic details could not be matched. A larger sample of people with intellectual disability would have allowed for more powerful statistical analysis and model testing of independent and dependent variables to be conducted.

A further limitation is the use of convenience sampling procedure for the recruitment of the intellectually disabled sample. People were recruited through one or two major formal service providers. As a consequence, all participants lived in formal residential support services. This excluded those people with intellectual disability who live with their family or had other informal support. This bias in sampling means that results in this thesis may not generalise to overall population of individuals with intellectual disability. Furthermore the results of this thesis can only be applied to people with mild to moderate intellectual disability, as currently the methodology used to ask people with intellectual disability about their SWB does not allow the involvement of people who have a level of cognitive impairment that is beyond moderate impairment.

An important consideration for the interpretation of results for this thesis is the variation in data collection procedures between two groups. Data collection for the intellectually disabled sample involved a 1:1 interview procedure, with the principal investigator using the survey questionnaire, whereas, the non-disabled sample filled out the self-report questionnaire and returned it by post. As shown by Antaki and Rapley (1996) interviewing people with intellectual disability can result in a number of deviations in psychometric assessment procedures. For example, distortions occurred when interviewers edited questions to be more in line with the cognitive capacity of the interviewees, or paraphrased complex items, which can result in questions that no longer resembled the original scale item. Any distortion can change the self-report data from people with intellectual disability and create responses that may not accurately reflect their actual SWB, and also reproduce responses so discrepant between the two groups that the results become statistically different. However, such problems can be



avoided with the stringent and careful use of quality of life instruments, in which interviews are conducted using well established psychological testing procedures (Anastasi & Urbina, 1997).

The second variation in data collection procedures between two groups has to do with the use of a parallel version of the questionnaire for the intellectually disabled sample. As outlined in Study 1, not only were changes made to simplify the wording of numerous items within the questionnaire but people with intellectual disability also used a parallel version of the PWI (PWI-ID). This means that the questionnaires for the two groups were not identical and may in fact be measuring something slightly different. Only through further systematic research in which wording is changed and response differences recorded, can we fully understand the subtle differences in parallel version of this scale.

## 7.5 Future research

The results from this thesis have highlighted a couple of key areas for future research. The first is to replicate this research with a larger sample and to recruit a more representative sample of people with intellectual disability, to include those living with family as well as those living in formal service provider agencies. A larger sample would allow the use of more powerful statistical analysis and model testing. A longitudinal design would also allow the possibility of establishing causal variables. As noted by Schalock (2004b), development of policy, funding and service delivery should target empirically identified predictors of personal wellbeing. Such determination will allow individualised supports for people with intellectual disability to be more sharply focused on enhancing core quality of life domains and indicators.

Both the Self-esteem and Optimism buffers significantly contributed to the homeostatic control for SWB for the intellectually disabled group. However, the difficulty of obtaining a simple factorial structure for both the Self-esteem and Optimism scales as used by this group warrants further research. It needs to be established whether they respond differently to personality scales, and the extent to which their responses are influenced by method effects and the confusion that arises from negatively worded items. Certainly as argued previously (Dagnan & Sandhu, 1999; Davis, et al., 2009; Zigler, et al., 1999), the assessment of self-esteem and optimism is an important

consideration for this population. Furthermore, a few studies have used the Rosenberg Self-esteem scale with people with intellectual disability, so we have some knowledge of how this scale performs as used by this group. However, only one other study (Shogren, et al., 2006) was found which had used the LOT scale with this group. Further research is required to determine whether the LOT is the most suitable scale to measure optimism with this group, as valid research into this area is only possible with the use of appropriately constructed instruments that are easily understood by this population.

Further research into control strategies as used by people with intellectual disability and their relationship to the maintenance of SWB compared to non-disabled people is required. Such research is important in order to determine whether a fundamental difference between the two groups exists as suggested by the findings of this thesis, and whether the results can be generalised to a wider group.

The inconsistency of some of the findings of this thesis with previous research also warrants further investigation. In particular, in Study 3, the apparent lack of understanding of satisfaction with life-as-a-whole question, as evident by the failure of all but one domain to contribute to the prediction of life satisfaction, is curious and in need of replication. Additionally, further research is needed to determine whether the explanations offered in this thesis are valid to explain the internal structure of PWI for intellectually disabled people in general or whether these findings are an artefact of this particular participant group.

Finally, research into composition of the HPMood component of SWB for people with intellectual disability is new, and a more systematic and rigorous investigation is required to test the relationships reported in this study. As noted, the importance of HPMood and its relationship with SWB homeostasis is that it potentially provides a useful framework to explain the normative levels of SWB reported by people with intellectual disability.

## 7.6 Conclusions

The findings from this thesis indicate that people with mild to moderate intellectual disability can respond reliably and validly to subjective data. Furthermore they are able to do this at a level of scale complexity that is sufficiently sensitive to assess changes in SWB. However, caution needs to be exercised in regard to using response scales that employ negatively worded items, as there are mixed findings on whether people with intellectual disability can fully understand such items. Results suggest that scales employing negatively worded items introduce a level of unnecessary complexity for people with intellectual disability and therefore should not be used.

Importantly, results also strongly suggest that people with intellectual disability do not differ from the non-disabled people in terms of SWB and have the same or higher levels of self-esteem and optimism. Thus, it can be concluded that having an intellectual disability does not mean the factors that make up a life of quality will be any different from those factors that make up a life of quality for non-disabled people.

The results also support the idea that the theory of homeostatic control of SWB can be applied equally to people with intellectual disability and to non-disabled people. However, results also suggest that the buffers act differently between the two groups in the maintenance of SWB. In particular, the type of control or coping strategies used by the two groups differ. People with intellectual disability are more likely to use avoidant control strategies, while non-disabled people use approach control strategies. The positive relationship found between avoidant control and SWB for people with intellectual disability confirms previous research (Hartley & MacLean Jr, 2008). Thus it can be concluded that for intellectually disabled people avoidant control has a positive function in relation to the maintenance of SWB, which is not the case for non-disabled group.

The cognitive buffers of Optimism and Self-esteem appear to be important predictors of SWB for both groups. However, there were subtle differences in how these buffers worked between the two groups. Self-esteem was the most significant predictor of SWB for non-disabled people, while Optimism made the most significant contribution to the prediction of SWB for intellectually disabled people. As noted, this difference in functioning of the buffer system provides key information for service providers and

caregivers supporting people with intellectual disability, as it identifies areas for possible intervention to ensure that clients will maintain SWB within normative levels, relative to their set-point range.

Additionally, examination of life domains can also be used to detect the presence of low SWB, which in turn can be targeted for intervention by service providers and caregivers. This means that, similar to the buffers, specific life domains can be used as diagnostic indicators, as a low mean score in any of these areas can indicate a potential vulnerability for homeostatic defeat. Such indicated areas can then be targeted for intervention. From this perspective, it can be concluded that the purpose of monitoring the SWB of people with intellectual disability, and arguably the general population, is to detect homeostatic failure and provide appropriate resources to overcome this deficit. The role of caregivers then, is to facilitate either the provision of external resources (e.g., income or relationships) to reduce the possible threat of homeostatic failure, or facilitate internal resources via support that strengthens the buffer system by enhancing a sense of control, optimism and self-esteem (Cummins, 2010). The importance of monitoring SWB of people with intellectual disability is highlighted from the suggestion that they have a more fragile homeostatic system than non-disabled people, as indicated by the overall lower correlations between buffers obtained for this group.

Finally, it can be concluded that SWB predominantly comprises positive affect. Results from Study 3 however, indicate that there is a difference in the composition of HPMood between intellectually disabled and non-disabled people. The affective content for the non-disabled group predominantly comprises Content and Happy, while for the intellectually disabled group the predominant affect was Alert. The influence of HPMood is also reflected in the normative SWB means reported by the intellectually disabled group in this thesis, while the role of the buffers is evidenced from their attachment to HPMood. For this group, Self-esteem was significantly correlated with affect Alert, while Optimism was significantly correlated with affect Happy.

Their normative levels of SWB for people with intellectual disability suggests that, due to HPMood and homeostasis, such people generally feel good about themselves despite experiencing difficult life circumstances (e.g., disrupted social relationships, unemployment, health-related issues, and experiencing discrimination). Thus, due to

these self-beliefs being held at an abstract level, the internal buffers are able to dismiss most threats to their personal wellbeing and thus maintain SWB around the set-point.

Finally, deinstitutionalisation of people with disabilities has meant that provision and planning of support now occurs within a community perspective. People with disabilities now live in community settings with naturalistic and generic support systems. This change has led to an interest by researchers and workers in the disability field to question the life quality of people with disabilities, particularly, as it became apparent that changing living environments for people did not necessarily change the quality of their life. Deinstitutionalisation has meant people with intellectual disability can now hope for a better, even ordinary life and in order to support them, services need to have the expectation that these goals are achievable. The findings on the maintenance of SWB for this group will assist service providers and caregivers to support people with intellectual disability, to fulfil their hopes and dreams and assist them to experience quality of life.

## Appendices

## Appendix A



**DEAKIN UNIVERSITY HUMAN RESEARCH ETHICS COMMITTEE**  
**CONSENT FORM: Participant with disability**

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I,.....of.....

**Hereby consent** to be part of a study undertaken by Kathy Martindale

I have read, or someone has read to me, the information letter and I have had the chance to ask any questions and I understand the information she gave to me. I understand that the purpose of the study is to find out about how I feel about my life, how happy I am with the things that happen in my life, and how satisfied I am with these things, what control I have in my life and how I feel about myself and the future.

**I understand**

1. That I will be interviewed on a one-off occasion and answer questions about my life, and that any possible benefits and possible discomfort from these questions have been explained to me.
2. That I am the one who decides if I want to take part in this study and freely give my consent to participation in the study.
3. I understand that the results of this study will be used for research purposes and may be reported in scientific and academic journals.
1. That my name and the names of others in the study will not be used in the write up of the study or given to any other person except at my request and on my permission. And also that I will not be able to be identified by any information collected about me.
5. That I can stop being part of the study at any time, if I don't like it and that my participation in the study will immediately stop and any information collected from me will not be used and returned to me if I ask.

Signature:

Date:

## Appendix B



**DEAKIN UNIVERSITY HUMAN RESEARCH ETHICS COMMITTEE  
CONSENT FORM – For Institutions/Organisations**

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I, ..... of.....

**Hereby give permission for**

.....  
to be involved in a research study being undertaken by Kathy Martindale, and I understand that the purpose of the research is to investigate participant's core affect of subjective wellbeing and the maintenance of homeostatic control. In particular how people maintain levels of life satisfaction and happiness and the role that perceived control, optimism and self-esteem may have in subjective wellbeing.

And that involvement for the institution means the following:-

- Provide the names of people with mild intellectual disability who have indicated their interest to participate in the study, and the provision of a place for Kathy Martindale to hold a meeting to discuss the aims and purpose of the study to potential participants, invite participation and gain consent.
- To allow access to the premises of the organization in which to administer the questionnaires to participants at a prearranged time.

**I acknowledge**

1. That the aims, methods, and anticipated benefits, and possible risks/hazards of the research study, have been explained to me.
2. That I voluntarily and freely give my consent for the institution/organisation to participate in the above research study.
3. That I am free to withdraw my consent at any time during the study, in which event participation in the research study will immediately cease and any information obtained through this institution/organisation will not be used if I so request.
4. I understand that aggregated results will be used for research purposes and may be reported in scientific and academic journals.

**I agree that**

5. The institution/organisation **MAY / MAY NOT** be named in research publications or other publicity without prior agreement.
6. **I / We DO / DO NOT** require an opportunity to check the factual accuracy of the research findings related to the institution/organisation.
7. **I / We EXPECT / DO NOT EXPECT** to receive a copy of the research findings or publications.

Signature:

Date:



## Appendix C



**DEAKIN UNIVERSITY HUMAN RESEARCH ETHICS COMMITTEE**  
**CONSENT FORM: Non-disabled participant**

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I,.....of.....

**Hereby consent** to be a subject of a human research study to be undertaken by Kathleen Phillips and I understand that the purpose of the research is to investigate subjective wellbeing and homeostatic maintenance. In particular how people maintain levels of life satisfaction and happiness and the role that perceived control, optimism and self-esteem has in subjective wellbeing.

**I acknowledge that**

1. My questionnaire will be coded and my name and address kept separately from it.
2. Any information that I provide will not be made public in any form that could reveal my identity to an outside party i.e. that I will remain fully anonymous.
3. Aggregated results will be used for research purposes and may be reported in scientific and academic journals.
4. Individual results **will not** be released to any person except at my request and on my authorization.
5. That I am free to withdraw my consent at any time during the study in which event my participation in the research study will immediately cease and any information obtained from me will not be used.

Signature:

Date:

## Appendix D



**DEAKIN UNIVERSITY HUMAN RESEARCH ETHICS COMMITTEE**  
**PLAIN LANGUAGE STATEMENT**  
**Plan Language statement for participant with disability**

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**Title: The maintenance of Subjective Quality of Life: A comparison between people with intellectual disability and non-disabled people**

Researcher: Kathleen Martindale

Position: Senior Lecturer Faculty of Education, University of Auckland.

Phone: (09) 6238899, Extension 48685.

Dear Sir or Madam,

I am a student in the graduate programme of the School of Psychology, at Deakin University, Melbourne Australia and conducting a research study into quality of life of people with disabilities.

I am writing to invite you to assist me by answering some about how you feel about your life, how satisfied you are with some areas of your life, what is important in your life, and how happy you are. This information will help Organisations to understand how to support people with disabilities in a way that will assist your quality of life.

Your name has been given to me by the Organisation that provides you with support either at home or day services. If you agree to assist me, I will talk to you at a time and place that is suitable to you. I will ask you some general questions about yourself to begin with, then I will ask you some questions that are to do with the study and I will record all your answers. The talk could take about half an hour to finish. You can stop the questions at any time during the talk and we don't have to continue. Any information I have collected about you will not be used and will be destroyed at the appropriate time, or returned to you if you asked for it. I promise that all the names of people participating in the study will be kept private and in the write up of the study no one will be able to know what you said.

If you agree to take part, you will need to sign the consent form and return it to me. Your consent form and your answers to my questions will be kept safe in a locked cabinet in my home, separate from each other until six years after the study is finished when all information collected will be destroyed. Your answers to my questions will only be seen by my supervisor and myself and will be respected and looked after.

I am available to you at the completion of our talk, if you feel that you wish to talk about anything that might come up as a result of talking with me. The results of my study will be written up and put into the Deakin University Library, also articles will be submitted for publication in academic journals and results will be presented at conferences.

This study has received ethical approval from the Deakin University Human Research Ethics Committee. Should you have any questions regarding your potential involvement in the study please feel free to contact me directly or my supervisor at the contact details below.

Kathy Martindale (09) 6238899, Extension 48685 (Student)  
Faculty of Education  
The University of Auckland.  
PO Box 92601  
Symonds Street,  
Auckland.  
Email: k.martindale@auckland.ac.nz

or

Professor Robert Cummins (Supervisor)  
Ph. No: 61 3 92446845 Fax No: 61 3 92446858  
Email: cummins@deakin.edu.au  
Faculty of Health and Behavioural Sciences  
School of Psychology  
Deakin University  
221 Burwood Highway,  
Burwood, VIC 3125  
Australia.

Thank you for your time and consideration to participating in this study.

Yours truly,

Kathy Martindale

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Should you have any concerns about the conduct of this research project, please contact the Secretary, Ethics Committee, Research Services, Deakin University, 221 Burwood Highway, BURWOOD VIC 3125. Tel (03) 9251 7123 (International +61 3 9251 7123) or email [research-ethics@deakin.edu.au](mailto:research-ethics@deakin.edu.au).

## Appendix E



**DEAKIN UNIVERSITY HUMAN RESEARCH ETHICS COMMITTEE**  
**PLAIN LANGUAGE STATEMENT**  
**Plan Language statement for Non-disabled participant**

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**Title: The maintenance of Subjective Quality of Life: A comparison between people with intellectual disability and non-disabled people.**

Researcher: Kathleen Martindale  
 Position: Senior Lecturer in Special Education  
 Ph. (09) 6238899, Extension 8685.

Dear Sir or Madam,

I am currently enrolled as a student in the graduate programme of the Faculty of Health and Behavioural Sciences, School of Psychology, at Deakin University in Melbourne, Australia. I am working to complete a Doctorate in Psychology.

I am writing to invite you to take part in a study on subjective wellbeing (your feelings) and what factors contribute to the maintenance of wellbeing, life satisfaction and/or happiness. The questionnaire will ask you to indicate the extent you agree or disagree with a series of statements about your life (e.g., “how satisfied are you with the things you own?” or “On the whole, I am satisfied with myself”), about your level of optimism (e.g., “In uncertain times I usually expect the best”), and your sense of perceived control (e.g., “think of different ways to deal with the problem”).

Your name has been selected at random from the Electoral Roll. Participation in this study will involve you filling in the attached questionnaire and returning it to me in the reply-paid envelope, along with your consent to participate in the study. Consent forms will be stored separately from filled in questionnaires, in a locked filing cabinet. While your questionnaire will have a numerical code, this will only be used for the purpose of checking off returned questionnaires should the need for a second mail-out be required. Filling in the questionnaire will take approximately 20 minutes of your time. Your answers will be treated with complete confidentiality. Responses to the questionnaire will be used in the write up of my thesis and it will not be possible for you to be identified personally, nor any particular information to be linked to you. While no other person beside my supervisor, and myself will see the questionnaires, grouped data will go to Melbourne, Australia for checking by my supervisor. All data will be kept in a lock filing cabinet and destroyed in accordance with guidelines ten years after completion of the study. Should you agree to participate you have the right to withdraw from the study without prejudice at any time, and your information will not be used in the study and will be destroyed at the above stated time, or returned to you upon request.

It is not anticipated that you should experience any discomfort or experience risk from filling in this questionnaire.

The final write up of this study will go towards a thesis that will be lodged in the Deakin University Library, articles will be submitted for publication in academic journals and results will be disseminated at conferences.

This study has received ethical approval from the Deakin University Human Research Ethics Committee and the Auckland Ethics Committee. Should you have any questions regarding your potential involvement in the study please feel free to contact me directly or my supervisor at the contact details below.

Kathleen Martindale (09) 6238899, Extension 8685 (Student)  
Auckland College of Education  
PO Box  
Symond Street,  
Auckland.  
k.phillips@ace.ac.nz

or

Professor Robert Cummins (Supervisor)  
Ph. No: 61 3 92446845 Fax No: 61 3 92446858  
Email: cummins@deakin.edu.au  
Faculty of Health and Behavioural Sciences  
School of Psychology  
Deakin University  
221 Burwood Highway,  
Burwood, VIC 3125  
Australia.

Thank you for your time and consideration to participating in this study.

Yours truly,

Kathy Phillips

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Should you have any concerns about the conduct of this research project, please contact the Secretary, Ethics Committee, Research Services, Deakin University, 221 Burwood Highway, BURWOOD VIC 3125. Tel (03) 9251 7123 (International +61 3 9251 7123) or email [research-ethics@deakin.edu.au](mailto:research-ethics@deakin.edu.au).

## Appendix F



**DEAKIN UNIVERSITY HUMAN RESEARCH ETHICS COMMITTEE**

**PLAIN LANGUAGE STATEMENT**

**Plan Language statement for Institution/Organisation**

---

**Title: The maintenance of Subjective Quality of Life: A comparison between people with intellectual disability and non-disabled people**

Researcher: Kathleen Martindale

Position: Senior Lecturer Faculty of Education, University of Auckland.

Phone: (09) 6238899, Extension 48685.

Dear Sir or Madam,

I am currently enrolled as a student in the graduate programme of the Faculty of Health and Behavioural Sciences, School of Psychology, at Deakin University in Melbourne, Australia. I am working to complete a Doctorate in Psychology. The topic of my research is quality of life of people with intellectual disability. Specifically the subjective wellbeing of this group of people compared to the general population.

I wish to investigate the subjective wellbeing of people with mild to moderate intellectual disability and how they maintain levels of life satisfaction and happiness and the role that perceived control, self-esteem, optimism and core affect may have on subjective wellbeing. This is the second study in this thesis in which people with intellectual disability have already previously participated. It is expected that this type of information will help Organisations to understand how to better support people with disabilities.

Involvement for your organization will mean the following:-

- Approach potential participants in your service who are mild to moderately intellectually disabled, have good verbal skills and have a reasonable level of understanding of abstract ideas and seek their interest in talking to me.
- Forward the names of the above potential participants to me and provide a place for me to hold a meeting to discuss the aims and purpose of the study to potential participant's inviting their participation and gaining consent.
- Allow access to the premises of the organization or residences of the potential participants, in which to administer the questionnaires at a prearranged time.

It is expected that interviews with potential participants will only take between 30-50 minutes maximum. The name of your organization will not appear in any published results and will remain anonymous. All results from potential participants will be aggregated for the purpose of reporting and no individual participant will be identified in the write up of the study. It is expected that talking to me will not result in potential personal risk or stress to any participants, as the questions being asked are benign and

do not pose any stress beyond that found in everyday life. However, should any participant become stressed from the interview, then I will make myself available to them to discuss the problem at the completion of the interview.

This study has received ethical approval from the Deakin University Human Research Ethics Committee. Should you have any questions regarding your potential involvement in the study please feel free to contact me directly or my supervisor at the contact details below.

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Australia.

Thank you for your time and consideration to participating in this study.

Yours truly,

Kathy Martindale

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Should you have any concerns about the conduct of this research project, please contact the Secretary, Ethics Committee, Research Services, Deakin University, 221 Burwood Highway, BURWOOD VIC 3125. Tel (03) 9251 7123 (International +61 3 9251 7123) or email [research-ethics@deakin.edu.au](mailto:research-ethics@deakin.edu.au).





**5. How satisfied are you with how safe you feel?**

Completely  
dissatisfied

Neither dissatisfied  
nor satisfied

Completely  
satisfied

A horizontal scale with 11 empty square boxes, each containing a number from 0 to 10, connected by a thin line.

**6. How satisfied are you with feeling part of your community?**

Completely  
dissatisfied

Neither dissatisfied  
nor satisfied

Completely  
satisfied

A horizontal scale with 11 empty square boxes, each containing a number from 0 to 10, connected by a thin line.

**7. How satisfied are you about your future security?**

Completely  
dissatisfied

Neither dissatisfied  
nor satisfied

Completely  
satisfied

A horizontal scale with 11 empty square boxes, each containing a number from 0 to 10, connected by a thin line.

**Core Affect.**

**Instructions:** Now thinking about your life “please indicate how each of the following describes your feelings when you think about your life in general.” There are no right or wrong answers.

**1. Content**

Not at all  
satisfied

Neither

Completely  
Satisfied

A horizontal scale with 11 empty square boxes, each containing a number from 0 to 10, connected by a thin line.

**2. Happy**

Not at all  
satisfied

Neither

Completely  
Satisfied

A horizontal scale with 11 empty square boxes, each containing a number from 0 to 10, connected by a thin line.

**3. Alert**

Not at all satisfied

Neither

Completely Satisfied

A horizontal scale with 11 empty boxes, each containing a number from 0 to 10. The boxes are connected by a thin horizontal line.

**Coping Response Inventory**

**Instructions:** People often have difficulties or problems in various aspects of their lives. Please think about three aspects of your life in which you have difficulties or problems and then indicate on the scale 1-10 (1-Never; 5- mixed; 10-All the time) the rate of frequency of the difficulties that you previously identify. There are no right or wrong answers.

Never

Mixed

Yes, all the time

A horizontal scale with 11 empty boxes, each containing a number from 0 to 10. The boxes are connected by a thin horizontal line.

Now indicate the extent to which you use each of the following statements when dealing with difficulties, on the scale 0-never, 5-mixed to 10-Yes, all the time. There are no right or wrong answers.

**1. Think of different ways to deal with the problems**

Never

Mixed

Yes, all the time

A horizontal scale with 11 empty boxes, each containing a number from 0 to 10. The boxes are connected by a thin horizontal line.

**2. Tell yourself things to make yourself feel better.**

Never

Mixed

Yes, all the time

A horizontal scale with 11 empty boxes, each containing a number from 0 to 10. The boxes are connected by a thin horizontal line.



**9. Talk with a friend about the problem.**

Never

Mixed

Yes, all the time

A horizontal scale with 11 boxes numbered 0 to 10, connected by a line. Each box is empty.

**10. Know what has to be done and try hard to make things work**

Never

Mixed

Yes, all the time

A horizontal scale with 11 boxes numbered 0 to 10, connected by a line. Each box is empty.

**11. Try not to think about the problem.**

Never

Mixed

Yes, all the time

A horizontal scale with 11 boxes numbered 0 to 10, connected by a line. Each box is empty.

**12. Realise that you have no control over the problem – nothing you can do about the problem.**

Never

Mixed

Yes, all the time

A horizontal scale with 11 boxes numbered 0 to 10, connected by a line. Each box is empty.

**13. Take a chance and do something risky.**

Never

Mixed

Yes, all the time

A horizontal scale with 11 boxes numbered 0 to 10, connected by a line. Each box is empty.

**14. Try to see the good side of the situation.**

Never

Mixed

Yes, all the time

A horizontal scale with 11 boxes numbered 0 to 10, connected by a line. Each box is empty.







**33. Take things a day at a time, one step at a time.**

Never

Mixed

Yes, all the time

A horizontal scale with 11 empty boxes, each containing a number from 0 to 10. The boxes are connected by a horizontal line.

**34. Try to deny how serious the problem/situation really is.**

Never

Mixed

Yes, all the time

A horizontal scale with 11 empty boxes, each containing a number from 0 to 10. The boxes are connected by a horizontal line.

**35. Lose hope that things will ever be the same.**

Never

Mixed

Yes, all the time

A horizontal scale with 11 empty boxes, each containing a number from 0 to 10. The boxes are connected by a horizontal line.

**Rosenberg Self-Esteem Scale**

**Instructions:**

Below is a list of statements dealing with your general feelings about yourself. Read each statement and indicate on the scale 1-10 (1-do not agree at all to 10-agree completely) the number that best represents your agreement with each statement.

**1. On the whole, I am satisfied with myself.**

Do not Agree at all

Mixed

Completely agree

A horizontal scale with 11 empty boxes, each containing a number from 0 to 10. The boxes are connected by a horizontal line.

**2. At times, I think I am no good at all.**

Do not Agree at all

Mixed

Completely agree

A horizontal scale with 11 empty boxes, each containing a number from 0 to 10. The boxes are connected by a horizontal line.











## Appendix H

**Scales and items of the Coping Response Inventory prior to Factor Analysis.  $n=35$** 

<b>Scale</b>	<b>Items</b>	
<b>Approach Control Scales</b>		
<b>Logical Analysis</b>	<b>1</b>	Think of different ways to deal with the problem.
	<b>7</b>	Try to step back from the situation and be more objective.
	<b>18</b>	Try to anticipate how things will turn out.
	<b>25</b>	Try to understand what you need to learn from the situation.
	<b>30</b>	Try to anticipate the new demands that will be placed on you
<b>Positive Reappraisal</b>	<b>2</b>	Tell yourself things to make yourself feel better.
	<b>8</b>	Remind yourself how much worse things could be.
	<b>14</b>	Try to see the good side of the situation.
	<b>19</b>	Think about how you are much better off than other people with similar problems.
	<b>26</b>	Try to tell yourself that things will get better.
	<b>31</b>	Think about how this event could change your life in a positive way.
<b>Seeking Guidance and Support</b>	<b>9</b>	Talk with a friend about the problem.
	<b>20</b>	Seek help from persons or groups with same type of problem.
	<b>27</b>	Try to find out more about the situation.
	<b>32</b>	Pray for guidance and/or strength.
<b>Problem Solving</b>	<b>3</b>	Make a plan of action and follow it.
	<b>10</b>	Know what has to be done and try hard to make things work.
	<b>15</b>	Decide what you want and try hard to get it.
	<b>21</b>	Try at least two different ways to solve the problem.
	<b>28</b>	Try to learn to do more things on your own.
	<b>33</b>	Take things a day at a time, one step at a time.
<b>Avoidance Control Scales</b>		
<b>Cognitive Avoidance</b>	<b>4</b>	Try to forget the whole things.
	<b>11</b>	Try not to think about the problem.
	<b>22</b>	Try to put off thinking about the situation, even though you know you will have to at some point.
	<b>29</b>	Wish the problem would go away or somehow be over with.
	<b>34</b>	Try to deny how serious the problem really is.
<b>Acceptance or Resignation</b>	<b>5</b>	Feel that time will make a difference; the only thing to do is wait
	<b>12</b>	Realise that you have no control over the problem.
	<b>16</b>	Think that the outcome will be decided by fate.
	<b>23</b>	Accept it; nothing can be done.
	<b>35</b>	Lose hope that things will ever be the same.
<b>Seeking Alternative Rewards</b>	<b>17</b>	Try to make new friends
<b>Emotional Discharge</b>	<b>6</b>	Take it out on other people when you feel angry or depressed.
	<b>13</b>	Take a chance and do something risky.
	<b>24</b>	Yell or shout to let off steam.





## References

- Abbey, A., Andrews, F. M., & Halman, L. J. (1992). Infertility and subjective well-being: The mediating roles of self-esteem, internal control and interpersonal conflict. *Journal of Marriage and the Family*, 54, 408-417.
- Abramson, L. Y., Seligman, M. E. P., & Teasdale, J. D. (1978). Learned helplessness in humans: Critique and reformulation. *Journal of Abnormal Psychology*, 87(1), 49-74.
- Ager, A. (2002). 'Quality of Life' Assessment in critical context. *Journal of Applied Research in Intellectual Disabilities*, 15, 369-376.
- Ager, A., & Hatton, C. (1999). Discerning the appropriate role and status of 'quality of life' assessment for persons with intellectual disability: A reply to Cummins. *Journal of Applied Research in Intellectual Disabilities*, 12(4), 335-339.
- American Association on Mental Retardation. (2002). *Mental retardation: Definitions, classifications, and systems of support* (10th ed.). Washington, DC.: American Association on Mental Retardation.
- Anastasi, A., & Urbina, S. (1997). *Psychological testing* (7th ed.). Upper Saddle River, NJ: Prentice Hall.
- Andrews, F. M. (1984). Construct validity and error components of survey measures: A structural modeling approach. *Public Opinion Quarterly*, 48, 409-442.
- Andrews, F. M., & Robinson, J. P. (1991). Measures of subjective well-being. In J. P. Robinson, P. R. Shaver & L. S. Wrightsmans (Eds.), *Measures of personality and social psychological attitudes: Volume 1 in Measures of social psychological attitudes series*. (pp. 61-114). San Diego: Academic Press.
- Andrews, F. M., & Withey, S. B. (1976). *Social indicators of well-being: American's perception of life quality*. New York: Plenum Press.
- Antaki, C. (1999). Interviewing persons with a learning disability: How setting lower standards may inflate well-being scores. *Qualitative Health Research*, 9(4), 437-451.
- Antaki, C., & Rapley, M. (1996). 'Quality of life' talk: The liberal paradox of psychological testing. *Discourse & Society*, 7(3), 293-316.
- Antaki, C., & Rapley, M. (1996). Questions and answers to psychological assessment schedules: Hidden troubles in 'quality of life' interviews. *Journal of Intellectual Disability Research*, 40(5), 421-437.
- Argyle, M., & Lu, L. (1990). The happiness of extraverts. *Personality and Individual Differences*, 11(10), 1011-1017.
- Babbie, E. (2001). *The practice of social research*. Australia: Wadsworth.



- Bach, M. (2007). Changing perspectives on developmental disabilities. In I. Brown & M. Percy (Eds.), *A comprehensive guide to intellectual & developmental disabilities* (pp. 35-43). Baltimore: Paul H. Brookes.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: W.H. Freeman.
- Bank-Mikkelsen, N. E. (1969). A metropolitan area in Denmark: Copenhagen. In R. Kugel & W. Wolfensberger (Eds.), *Changing patterns in residential services for mentally retarded* (pp. 227-245). Washington DC: President's Committee on Mental Retardation.
- Barrett, L. F. (2009). Variety is the spice of life: A psychological construction approach to understanding variability in emotion. *Cognition and Emotion*, 23(7), 1284-1306.
- Benson, B. A., & Ivins, J. (1992). Anger, depression and self-concept in adults with mental retardation. *Journal of Intellectual Disability Research*, 36, 169-175.
- Best, C. J., Cummins, R. A., & Kai Lo, S. (2000). The quality of rural and metropolitan life. *Australian Journal of Psychology*, 52(2), 69-74.
- Bradburn, N. M. (1969). *The structure of psychological well-being*. Chicago: Aldine Publishing Co.
- Braddock, D., & Parish, S. L. (2002). An institutional history of disability. In D. Braddock (Ed.), *Disability at the dawn of the 21st Century: And the state of the States* (pp. 3-43). Washington, D.C.: American Association on Mental Retardation.
- Bray, A. (1999). *Research involving people with Intellectual Disabilities: Issues of informed consent and participation*. (Research report). Dunedin, New Zealand: Donald Beasley Institute.
- Brickman, P., Coates, D., & Janoff-Bulman, R. (1978). Lottery winners and accident victims: Is happiness relative? *Journal of Personality and Social Psychology*, 36(8), 917-927.
- Briggs, S. R., & Cheek, J. M. (1986). The role of factor analysis in the development and evaluation of personality scales. *Journal of Personality* 54(1), 106-148.
- Brown, I. (2007). What is meant by intellectual and developmental disabilities. In I. Brown & M. Percy (Eds.), *A comprehensive guide to intellectual & developmental disabilities* (pp. 3-16). Baltimore: Paul H. Brookes.
- Brown, I., & Radford, J. P. (2007). Historical overview of intellectual and developmental disabilities. In I. Brown & M. Percy (Eds.), *A comprehensive guide to intellectual & developmental disabilities* (pp. 17-34). Baltimore: Paul H. Brookes.
- Brown, I., Raphael, D., & Renwick, R. (1997). *Quality of life of adults with developmental disabilities in Ontario: results of the cross-sectional study*. Toronto, Ontario: Centre for Health Promotion

- Brown, R. I., & Brown, I. (2005). The application of quality of life. *Journal of Intellectual Disability Research, 49*(10), 718-727.
- Byrne, B. M. (2005). Factor analytic models: Viewing the structure of an assessment instrument from three perspectives. *Journal of Personality Assessment, 85*(1), 17-32.
- Campbell, A. (1981). *The sense of well-being in America: Recent patterns and trends*. New York: McGraw-Hill.
- Campbell, A., Converse, P. E., & Rodgers, W. L. (1976). *The quality of American Life: Perceptions, evaluations and satisfactions*. New York: Russell Sage Foundation.
- Campbell, A., & Rodgers, W. L. (1972). *The human meaning of social change*. New York: Russell Sage.
- Cantril, H. (1965). *The pattern of human concerns*. New Jersey: Rutgers University Press.
- Carlson, N. R., & Buskit, W. (2007). *Psychology: The science of behavior* (6th ed.). Boston: Allyn & Bacon.
- Carver, C. S., & Scheier, M. F. (1990). Origins and functions of positive and negative affect: A control-process view. *Psychological Review, 97*, 19-35.
- Carver, C. S., Scheier, M. F., & Weintraub, J. K. (1989). Assessing coping strategies: A theoretically based approach. *Journal of Personality and Social Psychology, 56*(2), 267-283.
- Chang, E. C. (1998). Does dispositional optimism moderate the relation between perceived stress and psychological well-being?: A preliminary investigation. *Personality and Individual Differences, 25*(2), 233-240.
- Cheung, G. W., & Rensvold, R. B. (2002). Evaluating goodness-of-fit indexes for testing measurement invariance. *Structural Equation Modeling, 9*(2), 233-255.
- Costa, P. T., & McCrae, R. R. (1980). Influence of extraversion and neuroticism on subjective well-being: Happy and unhappy people. *Journal of Personality and Social Psychology, 38*(4), 668-678.
- Costello, A. B., & Osborne, J. W. (2005). Best practices in exploratory factor analysis: Four recommendations for getting the most from your analysis. *Practical Assessment, Research & Evaluation, 10*(7), 1-9.  
doi:<http://pareonline.net/getvn.asp?v+10n=7>
- Cousins, R. (2001). *Predicting subjective quality of life: The contributions of personality and perceived control*. Unpublished Doctoral (Clinical), Deakin University, Melbourne.
- Cox, E. P. I. (1980). The optimal number of response alternatives for a scale: A review. *Journal of Marketing Research, 17*, 407-422.

- Crocker, J., & Major, B. (1989). Social stigma and self-esteem: The self-protective properties of stigma. *Psychological Review*, 96(4), 608-630.
- Cropanzano, R., Weiss, H. M., Hale, J. M. S., & Reb, J. (2003). The structure of affect: Reconsidering the relationship between negative and positive affectivity. *Journal of Management*, 29(6), 831-857.
- Cummins, R. A. (1995). On the trail of the gold standard for subjective well-being. *Social Indicators Research*, 35, 179-200.
- Cummins, R. A. (1996). The domains of life satisfaction: An attempt to order chaos. *Social Indicators Research*, 38, 303-328.
- Cummins, R. A. (1997a). Assessing quality of life. In R. I. Brown (Ed.), *Quality of life for people with disabilities: Models, research and practice* (2nd ed., pp. 116-150). Cheltenham: Stanley Thornes
- Cummins, R. A. (1997b). Comprehensive Quality of Life Scale -Adults (ComQol-A) (5th ed.). Deakin University, Melbourne: School of Psychology, Deakin University.
- Cummins, R. A. (1997c). Comprehensive quality of life scale: Intellectual/cognitive disability (ComQOL-15) (5th ed.). Deakin University Melbourne.: School of Psychology Deakin University.
- Cummins, R. A. (1997d). Self-rated quality of life scales for people with an intellectual disability: A Review. *Journal of Applied Research in Intellectual Disability*, 10(3), 199-216.
- Cummins, R. A. (1998a). *The measurement of subjective health outcomes: Issues of concern*. Paper presented at the Conference of the Australian Health Outcomes Collaboration, Canberra.
- Cummins, R. A. (1998b). The second approximation to an international standard for life satisfaction. *Social Indicators Research*, 43, 307-334.
- Cummins, R. A. (1999). A psychometric evaluation of the comprehensive quality of life scale-fifth edition. In L.L. Yuan, B. Yuen & C. Low (Eds.), *Urban quality of life: Critical issues and options* (pp. 20-34). Singapore: University of Singapore Press.
- Cummins, R. A. (2000a). Directory of instruments to measure quality of life and cognate areas of study (5th ed.). Melbourne School of Psychology Deakin University.
- Cummins, R. A. (2000b). *A homeostatic model for subjective quality of life*. Paper presented at the ICQOLC The Second International Conference on Quality of Life in Cities, Singapore.
- Cummins, R. A. (2000c). Personal income and subjective well-being: A review. *Journal of Happiness Study*, 1, 133-158.

- Cummins, R. A. (2001a). Living with support in the community: Predictors of satisfaction with life. *Mental Retardation and Developmental Disabilities Research Review*, 7, 99-104.
- Cummins, R. A. (2001b). Self-rated quality of life scales for people with an intellectual disability: A reply to Ager & Hatton. *Journal of Applied Research in Intellectual Disabilities*, 14(1), 1-11.
- Cummins, R. A. (2002a). Proxy responding for subjective well-being: A review. *International Review of research in Mental Retardation*, 25, 183-207.
- Cummins, R. A. (2002b). The validity and utility of subjective quality of life: a reply to Hatton & Ager. *Journal of Applied Research in Intellectual Disabilities*, 15, 261-268.
- Cummins, R. A. (2003). Normative life satisfaction: Measurement issues and a homeostatic model. *Social Indicators Research*, 64(2), 225-256.
- Cummins, R. A. (2005a). Caregivers as managers of subjective wellbeing: A homeostatic perspectives. *Journal of Applied Research in Intellectual Disabilities*, 18(4), 335-344.
- Cummins, R. A. (2005b). Instruments assessing quality of life. In J. Hogg & A. Langa (Eds.), *Assessing adults with intellectual disability: A service providers' guide* (pp. 119-137). Malden, MA: Blackwell Publishing.
- Cummins, R. A. (2005c). Issues in the systematic assessment of quality of life. In J. Hogg & A. Langa (Eds.), *Assessing adults with intellectual disability: A service providers' guide* (pp. 9-22). Malden, MA: Blackwell Publishing.
- Cummins, R. A. (2005d). Moving from the quality of life concept to a theory. *Journal of Intellectual Disability Research*, 49(10), 699-706.
- Cummins, R. A. (2010). Subjective wellbeing, homeostatically protected mood and depression: A synthesis. *Journal of Happiness Studies*, 11, 1-17.
- Cummins, R. A., & Baxter, C. (1993, July). *A case for the inclusion of subjective quality of life data in service-delivery evaluations*. Paper presented at the Australian Evaluation Society International, Conference., Brisbane.
- Cummins, R. A., & Cahill, J. (2000). Progress in understanding subjective quality of life. *Intervencion Psicosocial: Revista sobre igualdad y calidad de vida (in press)*.
- Cummins, R. A., Eskersley, R., Pallant, J., van Vugt, J., & Misajon, R. A. (2003). Developing a national index of subjective wellbeing: The Australian unity wellbeing index. *Social Indicators Research*, 64(2), 159-190.
- Cummins, R. A., & Gullone, E. (2000). *Why we should not use 5-point Likert scales: The case for subjective quality of life measurement*. Paper presented at the Second International Conference on Quality of Life in Cities, Singapore.

- Cummins, R. A., Gullone, E., & Lau, A. L. D. (2002). A model of subjective well-being homeostasis: The role of personality. In E. Gullone & R. A. Cummins (Eds.), *The universality of subjective wellbeing indicators* (Vol. 16, pp. 7-46). Dordrecht: Kluwer Academic Publishers.
- Cummins, R. A., & Lau, A. L. D. (2004a). The motivation to maintain subjective well-being: A homeostatic model. In H. Switzky (Ed.), *International review of research on mental retardation: Personality and motivational systems in mental retardation*. (Vol. 28, pp. 255-301). Amsterdam: Elsevier Academic Press.
- Cummins, R. A., & Lau, A. L. D. (2004b). Personal Wellbeing Index: Intellectual Disability (English) (2nd ed.). Deakin, University Melbourne: School of Psychology Deakin University.
- Cummins, R. A., McCabe, M. P., Romeo, Y., Reid, S., & Waters, L. (1997). An initial evaluation of the Comprehensive Quality of Life Scale - Intellectual disability. *International Journal of Disability, Development and Education*, 44(1), 7-19.
- Cummins, R. A., & Nistico, H. (2002). Maintaining life satisfaction: The role of positive cognitive bias. *Journal of Happiness Studies*, 3, 37-69.
- Cummins, R. A., Woerner, J., Gibson, A., Weinberg, M., Collard, J., & Chester, M. (2009). *Australian Unity Wellbeing Index: Report 21.0 - The wellbeing of Australians - Gambling, chocolate and swine flu*. Melbourne: Australian Centre on Quality of Life, School of Psychology, Deakin University.
- Cummins, R. A., Woerner, J., Tomy, A., Gibson, A., & Knapp, T. M. (2007). *Australian Unity Wellbeing Index, Report 17: The wellbeing of Australians: Work, wealth and happiness*. Melbourne: Australian Centre on Quality of Life, School of Psychology, Deakin University.
- Cummins, R. A., Woerner, J., Tomy, A., Knapp, T. M., & Gibson, A. (2005). *Australian Unity Wellbeing Index: Report 14.0 - The wellbeing of Australians - Personal relationships*. Melbourne: Australian Centre on Quality of Life, School of Psychology, Deakin University.
- Cummins, R. A., Woerner, J., Tomy, A., Lai, L., & Collard, J. (2007). *Australian Unity Wellbeing Index, Report 18 Part A: The wellbeing of Australians: Changing conditions to make life better*. Melbourne: Australian Centre on Quality of Life, School of Psychology, Deakin University.
- Dagnan, D., & Sandhu, S. (1999). Social comparison, self-esteem and depression in people with intellectual disability. *Journal of Intellectual Disability Research*, 43(5), 372-379.
- Davern, M. T. (2004). *Subjective wellbeing as an affective construct*. Unpublished Doctoral Thesis, Deakin University, Melbourne.
- Davern, M. T., Cummins, R. A., & Stokes, M. A. (2007). Subjective wellbeing as an affective-cognitive construct. *Journal of Happiness Studies*, 8(4), 429-449.

- Davis, C., Kellett, S., & Beail, N. (2009). Utility of the Rosenberg Self-Esteem Scale. *American Journal on Intellectual and Developmental Disabilities, 114*(3), 172-178.
- Day, H., & Jankey, S. G. (1996). Lessons from the literature: Towards a holistic model of quality of life. In R. Renwick, I. Brown & M. Nagler (Eds.), *Quality of life in health promotion and rehabilitation: Conceptual approaches, issues and applications*. (pp. 39-50). Thousand Oaks: Sage Publications.
- DeNeve, K. M. (1999). Happy as an extraverted clam? The role of personality for subjective wellbeing. *Current Directions in Psychological Science, 8*(5), 141-144.
- DeVellis, R. F. (2003). *Scale development: Theory and applications* (2nd Edition ed. Vol. 26). Thousand Oaks: Sage Publications.
- Diener, E. (1984). Subjective well-being. *Psychological Bulletin, 95*(3), 542-575.
- Diener, E., & Biswas-Diener, R. (2002). Will money increase subjective wellbeing? A literature review and guide to needed research. *Social Indicators Research, 57*, 19-169.
- Diener, E., & Diener, M. (1995). Cross-cultural correlates of life satisfaction and self-esteem. *Journal of Personality and Social Psychology, 68*(4), 653-663.
- Diener, E., Emmons, R. A., Larson, R. W., & Griffen, S. (1985). The Satisfaction with Life scale. *Journal of Personality Assessment, 49*, 71-75.
- Diener, E., & Lucas, R. E. (1999). Personality and subjective well-being. In D. Kahneman, E. Diener & N. Schwarz (Eds.), *Well-being: The foundations of hedonic psychology* (pp. 213-229). New York: Russell Sage Foundations.
- Diener, E., Lucas, R. E., & Scollon, C. N. (2006). Beyond the hedonic treadmill: Revisign the adaptation theory of well-being. *American Psychologist, 61*(4), 305-314.
- Diener, E., Napa Scollon, C., & Lucas, R. E. (2003). The evolving concept of subjective well-being: The multifaceted nature of happiness. *Advances in Cell Aging and Gerontology, 15*, 187-219.
- Diener, E., Oishi, S., & Lucas, R. E. (2003). Personality, culture and subjective well-being: Emotional and cognitive evaluations of life. *Annual Review of Psychology, 54*, 403-425.
- Diener, E., Sandvik, E., Seidlitz, L., & Diener, M. (1993). The relationship between income and subjective well-being: Relative or absolute? *Social Indicators Research, 28*, 195-223.
- Diener, E., Smith, H., & Fujita, F. (1995). The personality structure of affect. *Journal of Personality and Social Psychology, 69*(1), 130-141.

- Diener, E., & Suh, E. (1997). Measuring quality of life: Economic, social, and subjective indicators. *Social Indicators Research*, 189-216.
- Diener, E., Suh, E., & Oishi, S. (1997). Recent findings on subjective well-being. *Indian Journal of Clinical Psychology*.
- Diener, E., Suh, E. M., Lucas, R. E., & Smith, H. L. (1999). Subjective well-being: Three decades of progress. *Psychological Bulletin*, 125(2), 276-302.
- Emerson, E., & Hatton, C. (2008). Self-reported well-being of women and men with intellectual disabilities in England. *American Journal on Mental Retardation*, 113(2), 145-155.
- Ericsson, K., & Mansell, J. (1996). Introduction: Towards deinstitutionalization. In J. Mansell & K. Ericsson (Eds.), *Deinstitutionalisation and community living: Intellectual disability services in Britain, Scandinavia and the USA* (pp. 1-16). London: Chapman & Hall.
- Eysenck, H. J. (1970). *The structure of human personality* (3rd ed.). London: Methuen.
- Fabrigar, L. R., Visser, P. S., & Browne, M. W. (1997). Conceptual and methodological issues in testing the circumplex structure of data in personality and social psychology. *Personality and Social Psychology Review*, 1(3), 184-203.
- Felce, D., & Perry, J. (1995). Quality of life: Its Definition and Measurement. *Research in Developmental Disabilities*, 16(1), 51-74.
- Felce, D., & Perry, J. (1996). Quality of life: Its definition and measurement. In R. A. Schalock (Ed.), *Quality of life: Conceptualisation and measurement* (Vol. 1, pp. 63-72). Washington D.C.: American Association on Mental Retardation.
- Felce, D., & Perry, J. (1997). Quality of life: The scope of the term and its breath of measurement. In R. J. Brown (Ed.), *Assessing quality of life for people with disabilities* (pp. 56-71.). Cheltenham, England: Stanley Thornes.
- Folkman, S. (1984). Personal control and stress and coping processes: A theoretical analysis. *Journal of Personality and Social Psychology*, 46(4), 839-852.
- Folkman, S., Lazarus, R. S., Dunkel-Schetter, C., DeLongis, A., & Gruen, R. J. (1986). Dynamics of a stressful encounter: Cognitive appraisal, coping, and encounter outcomes. *Journal of Personality and Social Psychology*, 50(5), 992-1003.
- Frederick, S., & Loewenstein, G. (1999). Hedonic Adaptation. In D. Kahneman, E. Diener & N. Schwartz (Eds.), *Well-being: The foundations of hedonic psychology* (pp. 302-3329). New York: Russell Sage Foundation.
- Frisch, M. B. (2000). Improving mental and physical health care through quality of life therapy and assessment. In E. Diener & D. R. Rahtz (Eds.), *Advances in quality of life theory and research* (Vol. 4, pp. p.207-241.). Dordrecht: Kluwer Academic Publishers.

- Fujita, F., & Diener, E. (2005). Life satisfaction set point: Stability and change. *Journal of Personality and Social Psychology*, 88(1), 158-164.
- Garaigordobil, M., & Perez, J. I. (2007). Self-concept, self-esteem and psychopathological symptoms in persons with intellectual disability. *The Spanish Journal of Psychology*, 10(1), 141-150.
- Gardner, J. F., & Chapman, M. S. (1985). *Staff development in mental retardation services: A practical handbook*. Baltimore: Paul H. Brooks.
- Garner, W. R. (1960). Rating scales, discriminability, and information transmission. *The Psychological Review*, 67(6), 343-352.
- Gonzales, N. A., Tein, J. Y., Sandler, I. N., & Friedman, R. J. (2001). On the limits of coping: Interaction between stress and coping for inner-city adolescents. *Journal of Adolescent Research*, 16(4), 372-295.
- Goode, D. A. (1999). Thinking about and discussing quality of life. In R. L. Schalock (Ed.), *Quality of life: Perspectives and issues* (pp. 41-57). Washington, DC: American Association on Mental Retardation.
- Gray-Little, B., Williams, V. S. L., & Hancock, T. D. (1997). An item response theory analysis of the Rosenberg Self-Esteem Scale. *The Society for Personality and Social Psychology*, 23(5), 443-451.
- Green, S. B., & Salkind, N. J. (2003). *Using SPSS for Windows and Macintosh: Analyzing and understanding data*. (3rd ed.). New Jersey: Prentice Hall.
- Greenberg, J. S., Seltzer, M. M., & Greenley, J. R. (1993). Aging parents of adults with disabilities: The gratification and frustrations of later life caregiving. *Gerontologist*, 35, 542-550.
- Greenberger, E., Chen, C., J., D., & Farruggia, S. P. (2003). Item-wording and the dimensionality of the Rosenberg Self-Esteem Scale: do they matter? *Personality and Individual Differences*, 35, 1241-1254.
- Grob, A. (2000). Perceived control and subjective well-being across nations and the life span. In E. Diener & E. M. Suh (Eds.), *Culture and subjective well-being* (pp. 319-339). Cambridge, Massachette: The MIT Press.
- Hartley, S. L., & MacLean Jr, W. E. (2005). Perceptions of stress and coping strategies among adults with mild mental retardation: Insights into psychological stress. *American Journal on Mental Retardation*, 110(4), 285-297.
- Hartley, S. L., & MacLean Jr, W. E. (2008). Coping strategies of adults with mild intellectual disability for stressful social interactions. *Journal of Mental Health Research in Intellectual Disabilities*, 1(2), 109-127.
- Hatton, C. (1998). Whose quality of life is it anyway? Some problems with the emerging quality of life consensus. *Mental Retardation*, 36(2), 104-115.



- Hatton, C., & Ager, A. (2002). Quality of life measurement and people with intellectual disabilities: a reply to Cummins. *Journal of Applied Research in Intellectual Disabilities, 15*(3), 254-260.
- Headey, B., Holmstrom, E., & Wearing, A. (1985). Models of well-being and ill-being. *Social Indicators Research, 17*, 211-234.
- Headey, B., Veenhoven, R., & Wearing, A. (1991). Top-down versus bottom up theories of subjective well-being. *Social Indicators Research, 24*, 81-100.
- Headey, B., & Wearing, A. (1989). Personality, life events, and subjective well-being: Towards a dynamic equilibrium model. *Journal of Personality and Social Psychology, 57*(4), 731-739.
- Headey, B., & Wearing, A. (1992). *Understanding happiness: A theory of subjective well-being*. Melbourne: Longman Cheshire.
- Heller, W. (1993). Neuropsychological mechanisms of individual differences in emotion, personality, and arousal. *Neuropsychology, 7*, 476-489.
- Helson, H. (1964). *Adaptation level theory: An experimental and systematic approach to behaviour*. New York: Harper & Row.
- Hensel, E. (2001). Is satisfaction a valid concept in the assessment of quality of life of people with intellectual disabilities? A review of the literature. *Journal of Applied Research in Intellectual Disabilities, 14*, 311-326.
- Hensel, E., Rose, J., Kroese, B. S., & Banks-Smith, J. (2002). Subjective judgments of quality of life: a comparison study between people with intellectual disability and those without disability. *Journal of Intellectual Disability Research, 46*(2), 95-107.
- Herman-Stahl, M. A., Stemmler, M., & Peterson, A. C. (1995). Approach and avoidant coping: Implications for adolescent mental health. *Journal of Youth and Adolescence, 24*(6), 649-665.
- Howell, D. C. (2007). *Statistical methods for psychology* (6th ed.). Belmont, CA: Thomson Wadsworth.
- Hoyle, R. H., & Duvall, J. L. (2004). Determining the number of factors in exploratory and confirmatory factor analysis. In D. Kaplan (Ed.), *The Sage handbook of quantitative methodology for the social sciences* (pp. 301-315). Thousand Oaks: Sage Publications.
- Huebner, E. S. (1994). Preliminary development and validation of a multidimensional life satisfaction scale for children. *Psychological Assessment, 6*, 149-158.
- Human Services Research Institute. (2001). *Consumer survey phase II technical report*. Cambridge, MA: National Association of State Directors of Developmental Disabilities Services and Human Service Research Institute.

- International Wellbeing Group. (2006). Personal wellbeing index (4th ed.). Melbourne: Australian Centre on Quality of Life, Deakin University.
- Jones, L. V., & Thurstone, L. L. (1955). The psychophysics of semantics. *Journal of Applied Psychology*, *39*, 31-36.
- Kahneman, D. (1999). Objective happiness. In D. Kahneman, E. Diener & N. Schwartz (Eds.), *Well-being: The foundations of hedonic psychology* (pp. 3-25). New York: Russell Sage Foundation.
- Kahneman, D., Diener, E., & Schwarz, N. (Eds.). (1999). *Well-being: The foundations of hedonic Psychology*. New York: Russell Sage Foundation.
- Keith, K. D. (2007). Quality of life. In A. Carr, G. O'Reilly, P. Noonan Walsh & J. McEvoy (Eds.), *The handbook of intellectual disability and clinical psychology practice*. London: Routledge Taylor & Francis Group.
- Keith, K. D., & Bonham, G. S. (2005). The use of quality of life data at the organization and system level. *Journal of Intellectual Disability Research*, *49*(10), 799-805.
- Kerr, A. W., Hall, H. K., & Kozub, S. A. (2002). *Doing Statistics with SPSS*. London: Sage Publication.
- Kim, S., Larson, S. A., & Lakin, K. C. (2001). Behavioural outcomes of deinstitutionalisation for people with intellectual disability: A review of US studies conducted between 1980 and 1999. *Journal of Intellectual & Developmental Disability*, *26*(1), 35-50.
- Komorita, S. S., & Graham, W. K. (1965). Number of scale points and the reliability of scales. *Educational and Psychological Measurement*, *XXV*(4), 987-995.
- Kozma, A., Stone, S., & Stones, M. J. (2000). Stability in components and predictors of subjective well-being (SWB): Implications for SWB structure. In E. Diener & D. R. Rahtz (Eds.), *Advances in quality of life theory and research* (Vol. 4, pp. p.13-30.). Dordrecht: Kluwer Academic Publishers.
- Lachapelle, Y., Wehmeyer, M. L., Haelwyck, M. C., Courbois, Y., Keith, K. D., Schalock, R. A., et al. (2005). The relationship between quality of life and self-determination: An international study. *Journal of Intellectual Disability Research*, *49*(10), 740-744.
- Lai, J. C. L. (1997). Relative predictive power of the optimism versus the pessimism index of a Chinese version of the Life Orientation Test (LOT). *Psychological Record*, *47*(3), 399-408.
- Lance, C. E., Lautenschlager, G. J., Sloan, C. E., & Varca, P. E. (1989). A comparison between bottom-up, top-down and bidirectional models of relationships between global and life facet satisfaction. *Journal of Personality* *57*(3), 601-624.
- Lance, C. E., Mallard, A. G., & Michalos, A. C. (1995). Tests of the causal directions of global - life facet satisfaction relationship. *Social Indicators Research*, *34*, 69-92.

- Land, K. C. (1983). Social Indicators. *Annual Review of Sociology*, 9, 1-26.
- Land, K. C. (1996). Social indicators and the quality of life: Where do we stand in the mid-1990's. *SINET*(Winter), 5-8.
- Land, K. C. (2000). Social Indicators. In E. F. Borgatta. & R. V. Montgomery (Eds.), *Encyclopeida of Sociology* (Revised Ed ed.). New York: Macmillan.
- Larkin, K. C., Bruininks, R. H., & Sigford, B. B. (1981). Early perspectives on the community adjustment of mentally retarded people. . In R. H. Bruininks, C. E. Meyers, B. B. Sigford & K. C. Larkin (Eds.), *Deinstitutionalization and community adjustment of mentally retarded people*. (pp. 28-50). Washington, DC: American Association on Mental Deficiency.
- Larsen, R. J., & Diener, E. (1992). Promises and problems with the circumplex model of emotion. In M. S. Clark (Ed.), *Review of personality and social psychology: Emotion* (Vol. 13, pp. 25-59). Newbury Park: CA: Sage.
- Larsen, R. J., Diener, E., & Emmons, R. A. (1985). An evaluation of subjective well-being measures. *Social Indicators Research*, 17, 1-17.
- Larson, R. (1989). Is feeling "in control" related to happiness in daily life? *Psychological Reports*, 64, 775-784.
- Lau, A. L. D., Cummins, R. A., & McPherson, W. (2005). An investigation into the cross-cultural equivalence of the personal wellbeing index. *Social Indicators Research*, 72, 403-430.
- Lazarus, R. S. (1966). *Psychological stress and the coping process*. Ne York: McGraw-Hill.
- Lemay, R. (2006). Social role valorization insights into the social integration conundrum. *Mental Retardation*, 44(1), 1-12.
- Lewinsohn, P. M., Redner, J. E., & Seeley, J. R. (1991). The relationship between life satisfaction and psychosocial variables: New perspectives. In F. Strack, M. Argyle & N. Schwartz (Eds.), *Subjective well-being: An interdisciplinary perspective* (pp. 141-196). Oxford: Pergamon Press.
- Li, E. P.-Y., Tam, A. S.-F., & Man, D. W.-K. (2006). Exploring the self-concepts of persons with intellectual disabilities. *Journal of Intellectual Disabilities*, 10(1), 19-34.
- Likert, R. (1932). A technique for measurement of attitudes. *Archives in psychology*, 140, 1-55.
- Lucas, R. E., Clark, A. E., Georgellis, Y., & Diener, E. (2004). Unemployment alters the set point for life satisfaction. *Psychological Science*, 15, 8-15.
- Lucas, R. E., Clark, L. A., Georgellis, Y., & Diener, E. (2003). Reexamining adaptation and the set point model of happiness: reactions to changes in marital status. *Journal of Personality and Social Psychology*, 84(3), 527-539.

- Lucas, R. E., Diener, E., & Suh, E. (1996). Discriminant validity of well-being measures. *Journal of Personality and Social Psychology*, *71*(3), 616-628.
- Lyubomirsky, S., Tkach, C., & Dimatteo, M. R. (2006). What are the differences between happiness and self-esteem? *Social Indicators Research*, *78*(3), 363-404.
- MacMahon, P., & Jahoda, A. (2008). Social comparison and depression: People with mild and moderate intellectual disabilities. *Journal of Intellectual Disability Research*, *113*(4), 307-318.
- Mallard, A. G. C., Lance, C. E., & Michalos, A. C. (1997). Culture as a moderator of overall life satisfaction: Life facet satisfaction relationships. *Social Indicators*, *40*, 259-284.
- Mansell, J. (2006). Deinstitutionalisation and community living: progress, problems and priorities. *Journal of Intellectual & Developmental Disability*, *31*(2).
- Manuel, J. C., Balkrishnan, R., Camacho, F., Peterson Smith, B., & Korman, L. A. (2003). Factors associated with self-esteem in pre-adolescents and adolescents with cerebral palsy. *Journal of Adolescent Health*, *32*, 456-458.
- Marriage, K., & Cummins, R. A. (2004). Subjective quality of life and self-esteem in children: The role of primary and secondary control in coping with every day stress. In A. Dannerbeck, F. Casas, M. Sadurni & G. Coenders (Eds.), *Quality of life research on children and adolescents* (Vol. 23, pp. 107-122). Dordrecht: Kluwer Academic Publications.
- Marsh, H. W. (1996). Positive and negative global self-esteem: A substantively meaningful distinction or artifacts? *Journal of Personality and Social Psychology*, *70*(4), 810-819.
- Marsh, H. W., Hau, K. T., Balla, J. R., & Grayson, D. (1998). Is more ever too much? The number of indicators per factor in confirmatory factor analysis. *Multivariate Behavioural Research*, *33*(2), 181-220.
- Marshall, G. N., Wortman, C. B., Kusulas, J. W., Hervig, L. K., & Vickers, R. R. J. (1992). Distinguishing optimism from pessimism: Relations to fundamental dimensions of mood and personality. *Journal of Personality and Social Psychology*, *62*(6), 1067-1074.
- Martin, C. R., Thompson, D. R., & Chan, D. S. (2006). An examination of the psychometric properties of the Rosenberg Self-esteem Scale in Chinese acute coronary syndrome (ACS) patients. *Psychology, Health & Medicine*, *11*(4), 507-521.
- Masi, G., Mucci, M., Favilla, L., & Poli, P. (1999). Dysthymic disorder in adolescents with intellectual disability. *Journal of Intellectual Disability Research*, *43*(2), 80-87.
- Matell, M. S., & Jacoby, J. (1971). Is there an optimal number of alternatives for Likert scale items? Study 1: Reliability and validity. *Educational and Psychological Measurement*, *31*, 657-674.

- Matikka, L. M. (1996). Effects of psychological factors on the perceived quality of life of people with intellectual disabilities. *Journal of Applied Research in Intellectual Disabilities, 9*(2), 115-128.
- McGillivray, J. A., Lau, A. L. D., Cummins, R. A., & Davey, G. (2009). The utility of the Personal Wellbeing Index Intellectual disability scale in an Australian sample. *Journal of Applied Research in Intellectual Disabilities, 22*, 276-286.
- McKinnell, A. C., & Andrews, F. M. (1983). Components of perceived quality of life. *Journal of Community Psychology, 11*, (April), 98-110.
- McVilly, K. R., & Rawlinson, R. B. (1998). Quality of life issues in the development and evaluation of services for people with intellectual disability. *Journal of Intellectual & Developmental Disability, 23*(3), 199-218.
- Mellor, D., Cummins, R. A., & Loquet, C. (1999). The gold standard for life satisfaction: Confirmation and elaboration using an imaginary scale and qualitative interview (student version). *International Journal of Social Research Methodology Theory and Practice, 2*, 263-278.
- Meyen, E. L., & Skrtic, T. M. (1995). *Special education and students with disabilities: An introduction*. Denver: Love Publishing.
- Michalos, A. C. (1985). Multiple discrepancies theory (MDT). *Social Indicators Research, 16*, 347-413.
- Ministry of Health. (2005). *Living with intellectual disability in New Zealand: Key results on intellectual disability from the 2001 Household Disability Survey and the 2001 Disability Survey of Residential Facilities*. Wellington: Ministry of Health, NZ.
- Moos, R. H. (1993). Coping Responses Inventory (CRI-Adult Form): Professional Manual. Florida: Psychological Assessment Resources, Inc.
- Moos, R. H. (1997). Assessing Approach and avoidance coping skills and their determinants and outcomes. *Indian Journal of Clinical Psychology, 24*(1), 56-64.
- Moos, R. H., & Moos, B. S. (1983). Adaptation and the quality of life in work and family settings. *Journal of Community Psychology, 11*, 158-170.
- Moos, R. H., & Schaefer, J. A. (1993). Coping resources and processes: Current concepts and measures. In L. Goldberger & S. Breznitz (Eds.), *Handbook of stress: Theoretical and clinical aspects* (2nd Ed. ed., pp. 234-257). New York: The Free Press.
- Mroczek, D. K., & Spiro, A. I. (2005). Change in life satisfaction during adulthood: Findings from the veterans affairs normative aging study. *Journal of Personality and Social Psychology, 88*(1), 189-202.
- Nirje, B. (1969). The normalization principal and its human management implications. In R. Kugel & W. Wolfensberger (Eds.), *Changing patterns in residential*

*services for mentally retarded* (pp. 179-195). Washington DC: President's Committee on Mental Retardation.

- Nowicki, S., & Duke, M. P. (1974). A locus of control scale for college and noncollege adults. *Journal of Consulting and Clinical Psychology, 38*, 136-137.
- O'Brien, P., Thesing, A., Tuck, B., & Capie, A. (2001). Perceptions of change, advantage and quality of life for people with intellectual disability who left a long stay institution to live in the community. *Journal of Intellectual & Developmental Disability, 26*(1), 67-82.
- Oatley, K., & Johnson-Laird, P. N. (1987). Towards a cognitive theory of emotions. *Cognition and Emotion, 1*, 29-50.
- Ormel, J., & Schaufeli, W. B. (1991). Stability and change in psychological distress and their relationship with self-esteem and locus of control: A dynamic equilibrium model. *Journal of Personality and Social Psychology, 60*(2), 288-299.
- Pajares, F., Hartley, J., & Valiante, G. (2001). Response format in writing self-efficacy assessment: Greater discrimination increases prediction. *Measurement and Evaluation in Counselling and Development, 33*(4), 214-222.
- Pallant, J. (2001). *SPSS survival manual: A step by step guide to data analysis using SPSS for Windows (Version 10)*. Crows Nests: Allen & Unwin.
- Pavot, W., Diener, E., Colvin, C. R., & Sandvik, E. (1991). Further validation of the satisfaction with life scale: Evidence for the cross-method convergence of well-being measures. *Journal of Personality Assessment, 57*(1), 149-161.
- Pavot, W., Diener, E., & Fujita, F. (1990). Extraversion and happiness. *Personality and Individual Differences, 11*(12), 1299-1306.
- Peabody, D. (1962). Two components in bipolar scales: Directions and extremeness. *Psychological Review, 69*(2), 65-73.
- Peterson, C. (1999). Personal control and well-being. In D. Kahneman, E. Diener & N. Schwartz (Eds.), *Well-being: The foundations of Hedonic Psychology* (pp. 288-301). New York: Russell Sage Foundation.
- Peterson, C. (2000). The future of optimism. *American Psychologist, 55*(1), 44-55.
- Preston, C. C., & Colman, A. M. (2000). Optimal number of response categories in rating scales: reliability, validity, discriminating power and respondent preferences. *Acta Psychologica, 104*, 1-15.
- Prosser, H., & Bromley, J. (1998). Interviewing people with intellectual disabilities. In E. Emerson, C. Hatton, J. Bromley & A. Caine (Eds.), *Clinical psychology and people with intellectual disabilities* (pp. 99-113). Chichester: Wiley.
- Ralph, A., Merralls, L., Hart, L., Porter, J. S., & Tan Su-Neo, A. (1996). Peer interaction, self-concept, locus of control and avoidance of social situations of early adolescents. *Australian Journal of Psychology, 47*(2), 110-118.

- Renwick, R., Brown, I., & Raphel, D. (1994). Quality of life: Linking a conceptual approach to service provision. *Journal on Developmental Disabilities, 3*(2), 32-44.
- Robertson, J., Emerson, E., Gregory, N., Hatton, C., Kessissoglou, S., Hallam, A., et al. (2001). Social networks of people with mental retardation in residential settings. *Mental Retardation, 39*(3), 201-214.
- Roseman, I. J., Spindel, M. S., & Jose, P. E. (1990). Appraisal of emotion-eliciting events: Testing theory of discrete emotions. *Journal of Personality and Social Psychology, 59*, 899-915.
- Rosenberg, M. (1979). *Conceiving the self*. New York: Basic Books.
- Roth, S., & Cohen, L. J. (1986). Approach, avoidance and coping with stress. *American Psychologist, 41*, 813-819.
- Rothbaum, F., Weisz, J. R., & Snyder, S. S. (1982). Changing the world and changing the self: A two-process model of perceived control. *Journal of Personality and Social Psychology, 42*(1), 5-37.
- Rotter, J. B. (1990). Internal versus external control of reinforcement: a case history of a variable. *American Psychologist, 45*(4), 489-493.
- Russell, C. J., & Bobko, P. (1992). Moderate regression analysis and Likert scales: Too coarse for comfort. *Journal of Applied Psychology, 77*(3), 336-342.
- Russell, J. A. (1980). A circumplex model of affect. *Journal of Personality and Social Psychology, 39*(6), 1161-1178.
- Russell, J. A. (2003). Core affect and the psychological construction of emotion. *Psychological Review, 110*(1), 145-172.
- Russell, J. A. (2009). Emotion, core affect, and psychological construction. *Cognition and Emotion, 23*(7), 1259-1283.
- Russell, J. A., & Barrett, L. F. (1999). Core affect, prototypical emotional episodes, and other things called emotion: Dissecting the elephant. *Journal of Personality and Social Psychology, 76*(5), 805-819.
- Russell, J. A., & Carroll, J. M. (1999). On the bipolarity of positive and negative affect. *Psychological Bulletin, 125*(1), 3-30.
- Schalock, R. L. (1996a). Reconsidering the conceptualization and measurement of quality of life. In R. L. Schalock (Ed.), *Quality of life: Conceptualisation and measurement* (Vol. 1, pp. 123-139). Washington, D.C: American Association on Mental Retardation.
- Schalock, R. L. (2004a). The concept of quality of life: what we know and do not know. *Journal of Intellectual Disability Research, 48*(3), 203-216.

- Schalock, R. L. (2004b). The emerging disability paradigm and its implications for policy and practice. *Journal of Disability Policy Studies, 14*(4), 204-215.
- Schalock, R. L. (Ed.). (1996b). *Quality of life: Conceptualisation and measurement* (Vol. 1). Washington, D.C: American Association on Mental Retardation.
- Schalock, R. L., Bonham, G. S., & Marchand, C. B. (2000). Consumer based quality of life assessment: A path model of perceived satisfaction. *Evaluation and Program Planning, 23*, 77-87.
- Schalock, R. L., Borthwick-Duffy, S. A., Bradley, V. J., Buntinx, W. H. E., Coulter, D. L., Craig, E. M., et al. (2010). *Intellectual Disability: Definition, classification and systems of support* (11th ed.). Washington, DC.: American Association on Intellectual and Developmental Disabilities.
- Schalock, R. L., Brown, I., Brown, R., Cummins, R. A., Felce, D., Matikka, L. M., et al. (2002). Conceptualization, measurement, and application of quality of life for persons with intellectual disabilities: Report of an international panel of experts. *Mental Retardation, 40*(6), 457-470.
- Schalock, R. L., & Felce, D. (2004). Quality of life and subjective well-being: Conceptual and measurement issues. In E. Emerson, C. Hatton, T. Thompson & T. R. Parmenter (Eds.), *International handbook on applied research in intellectual disabilities*. (pp. 261-279.). Chistester, West Sussex: John Wiley & Sons.
- Schalock, R. L., Luckasson, R. A., & Shogren, K. A. (2007). The renaming of Mental Retardation: Understanding the change to the term Intellectual Disability. *Intellectual and Developmental Disabilities, 45*(2), 116-124.
- Schalock, R. L., & Verdugo, M. A. (2002). *Handbook on quality of life for human service practitioners*. Washington, D.C: American Association on Mental Retardation.
- Scheier, M. F., & Carver, C. S. (1985). Optimism, coping and health: Assessment and implications of generalised outcomes expectancies. *Health Psychology, 4*, 219-247.
- Scheier, M. F., & Carver, C. S. (1992). Effects of Optimism on psychological and physical well-being: Theoretical overview and empirical update. *Cognitive Therapy and Research, 16*(2), 201-228.
- Scheier, M. F., Carver, C. S., & Bridges, M. W. (1994). Distinguishing optimism from neuroticism (and Trait Anxiety, Self-Masters, and Self-Esteem): A reevaluation of the Life Orientation Test. *Journal of Personality and Social Psychology, 67*(6), 1063-1078.
- Scheier, M. F., Carver, C. S., & Bridges, M. W. (2001). Optimism, pessimism, and psychological well-being. In E. C. Chang (Ed.), *Optimism and pessimism: Implications for theory, research and practice* (pp. 189-216). Washington, D.C.: American Psychological Association.



- Schkade, D. A., & Kahneman, D. (1998). Does living in California make people happy? A focusing illusion in judgements of life satisfaction. *Psychological Science*, 9(5), 340-346.
- Schmitt, N., & Bedeian, A. G. (1982). A comparison of LISERAL and two-stage least squares analysis of a hypothesized life-job reciprocal relationship. *Journal of Applied Psychology*, 67, 806-817.
- Schulz, W. (1995). Multiple discrepancies theory versus resource theory. *Social Indicators Research*, 34, 153-169.
- Schwartz, C. (2003). Self-appraised lifestyle satisfaction of persons with intellectual disability: the impact of personal characteristics and community residential facilities. *Journal of Intellectual & Developmental Disability*, 28(3), 277-240.
- Schwartz, N., & Strack, F. (1991). Evaluating one's life: A judgement model of subjective well-being. In F. Strack, M. Argyle & N. Schwarz (Eds.), *Subjective well-being: An interdisciplinary perspective* (pp. 27-47). Oxford: Pergamon Press.
- Seligman, M. E. P., & Csikszentmihalyi, M. (2000). Positive psychology: An introduction. *American Psychologist*, 55(1), 5-14.
- Seltzer, M. M., & Krauss, M. W. (2001). Quality of life of adults with mental retardation/developmental disabilities who live with family. *Mental Retardation and Developmental Disabilities Research Review*, 7, 105-114.
- Sheppard-Jones, K., Prout, H. T., & Kleinert, H. (2005). Quality of life dimensions for adults with developmental disabilities: A comparative study. *Mental Retardation*, 43(4), 281-291.
- Shogren, K. A., Lopez, S. J., Wehmeyer, M. L., Little, T. D., & Pressgrove, C. L. (2006). The role of positive psychology constructs in predicting life satisfaction in adolescents with and without cognitive disabilities: An exploratory study. *Journal of Positive Psychology*, 1(1), 37-52.
- Skinner, E. A., Chapman, M., & Baltes, P. B. (1988). Control, means-ends, and agency beliefs: A new conceptualization and its measurement during childhood. *Journal of Personality and Social Psychology*, 54(1), 117-133.
- Snyder, C. R., Hoza, B., Pelham, W. E., Rapoff, M., Ware, L., Danovsky, M., et al. (1997). The development and validation of the Children's Hope scale. *Journal of Pediatric Psychology*, 22, 399-421.
- Stancliffe, R. J. (1999). Proxy respondents and the reliability of the Quality of Life Questionnaire Empowerment factor. *Journal of Intellectual Disability Research*, 43(3), 185-193.
- Steiger, J. H. (2000). Point estimates, hypothesis testing, and interval estimation using the RMSEA: Some comments and a reply to Hayduk and Glaser. *Structural Equation Modeling*, 7(2), 149-162.

- Stevens, J. (1996). *Applied multivariate statistics for social sciences* (3rd ed.). Mahway, NJ: Lawrence Erlbaum.
- Stones, M. J., & Kozma, A. (1991). A magical model of happiness. *Social Indicators Research*, 25(1), 31-50.
- Streiner, D. L., & Norman, G. R. (2003). *Health measurement scales: A practical guide to their development and use* (3rd ed.). Oxford: Oxford University Press.
- Suh, E., Diener, E., & Fujita, F. (1996). Events and subjective well-being: Only recent events matter. *Journal of Personality and Social Psychology*, 70(5), 1091-1102.
- Symonds, P. M. (1924). On the loss of reliability in rating due to coarseness of the scale. *Journal of Experimental Psychology*, 7, 456-461.
- Tabachnick, G. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). Boston: Pearson and Allyn and Bacon.
- TASH. (1979). Deinstitutionalisation Policy: TASH resolutions and policy statements. Seattle: Author.
- Taylor, S. E., & Brown, J. D. (1988). Illusion and Well-being: A social psychological perspective on mental health. *Psychological Bulletin*, 103(2), 193-210.
- Taylor, S. E., & Brown, J. D. (1994). Positive illusions and well-being revisited: Separating fact from fiction. *Psychological Bulletin*, 116(1), 21-27.
- Thayer, R. E. (1996). *The origins of everyday moods: Managing energy, tension, and stress* New York: Oxford University Press.
- Thompson, S. C. (1981). Will it hurt less if I can control it? A complex answer to a simple question. *Psychological Bulletin*, 90(1), 89-101.
- Thompson, S. C., & Spacapan, S. (1991). Perceptions of control in vulnerable populations. *Journal of Social Issues*, 47(4), 1-21.
- Thompson, S. C., Thomas, C., Rickabaugh, C. A., Tantamjarik, P., Otsuki, T., Pan, D., et al. (1998). Primary and secondary control over age-related changes in physical appearances. *Journal of Personality*, 66(4), 583-605.
- Tomas, J. M., & Oliver, A. (1999). Rosenberg's self-esteem scale: Two factors or method effects. *Structural Equation Modeling*, 6(1), 84-98.
- Tomberg, T., Toomelea, A., Puver, A., & Tikk, A. (2005). Coping strategies, social support, life orientation and health-related QOL following traumatic brain injury. *Brain Injury*, 19(14), 1181-1190.
- U.S. Department of Health. (1969). *Towards a Social Report*. Washington, D.C: U.S. Government Printing Office.
- Vassar, M., & Hale, W. (2007). Reliability reporting practices in youth life satisfaction research. *Social Indicators Research*, 83, 487-496.

- Veenhoven, R. (1991). Question on happiness: classical topics, modern answers, blind spots. In F. Strack, M. Argyle & N. Schwartz (Eds.), *Subjective well-being: An interdisciplinary perspective* (pp. 7-26). Oxford: Pergamon Press.
- Veenhoven, R. (1996). Developments in satisfaction research. *Social Indicators Research, 37*, 1-46.
- Verri, A., Cummins, R. A., Petito, F., Vallerio, E., Monteath, S., Gerosa, E., et al. (1999). An Italian-Australian comparison of quality of life among people with intellectual disability living in the community. *Journal of Intellectual Disability Research, 43*(6), 513-522.
- Watson, D., & Clark, L. A. (1997). Measurement and mismeasurement of mood: Recurrent and emergent issues. *Journal of Personality Assessment, 68*(2), 267-296.
- Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54*(6), 1063-1070.
- Watson, D., & Tellegen, A. (1985). Towards a consensual structure of mood. *Psychological Bulletin, 98*(2), 219-235.
- Wehmeyer, M. L., & Bolding, N. (2001). Enhanced self-determination of adults with intellectual disability as an outcome of moving to community-based work or living environments. *Journal of Intellectual Disability Research, 45*(5), 371-383.
- Wehmeyer, M. L., & Lopez, S. J. (2003). *The Adolescent Self-determination Assessment*. Lawrence KS: Kansas University Centre on Developmental Disabilities.
- Wiener, B. (1985). Attributional theory of achievement motivation and emotion. *Psychological Review, 92*, 548-573.
- Wolfensberger, W. (1972). *The principle of normalisation in Human Service*. Toronto: National Institute on Mental Retardation.
- Wolfensberger, W. (1983). Social role valorization: A proposed new term for normalisation. *Mental Retardation, 21*(234-239).
- Wolfensberger, W., & Thomas, S. (1983). *Program Analysis of Service Systems' Implementation of Normalisation Goals (PASSING): Normalisation Criteria and Rating Manual*. Toronto: National Institute on Mental Retardation.
- Yazbeck, M., McVilly, K., & Parmenter, T. R. (2004). Attitudes towards people with Intellectual Disabilities. *Journal of Disability Policy Studies, 15*(2), 97-111.
- Yik, M. S. M., Russell, J. A., & Feldman Barrett, L. (1999). Structure of self-reported current affect: Integration and beyond. *Journal of Personality and Social Psychology, 77*(3), 600-619.

- Young, L., Sigafoos, J., Suttie, J., Ashman, A., & Grevell, P. (1998). Deinstitutionalisation of persons with intellectual disabilities: A review of Australian studies. *Journal of Intellectual & Developmental Disability, 23*(2), 155-170.
- Zajonc, R. B. (1980). Feeling and thinking: Preferences need no inference. *American Psychologist, 35*(2), 151-175.
- Zigler, E., Bennett-Gates, D., & Hodapp, R. M. (1999). Assessing personality traits of individuals with mental retardation. In E. Zigler & D. Bennett-Gates (Eds.), *Personality Development in individual as with mental retardation* (pp. 206-225). Cambridge, UK: Cambridge University Press.