Personal Wellbeing Index – Adult

(PWI-A)

(English)

5th Edition

The International Wellbeing Group

MANUAL

2013

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1. Introduction

1.1 Defining and Measuring Quality of Life

The quality of life (QOL) construct has a complex composition, so it is not surprising that there is neither an agreed definition nor a standard form of measurement. This is not due to a lack of ideas. The Directory of Instruments (http://www.acqol.com.au/instruments#measures), produced by the Australian Centre on Quality of Life, describes over 1,200 instruments which purport to measure life quality in some form, with each one containing an idiosyncratic mixture of dependent variables.

Notably, however, many of these instruments have been developed for highly selected groups in the population. This is particularly evident in regard to scales devised to monitor QOL in the context of medical conditions or disability. Such scales are unsuitable for use with the general population. Moreover, most scales devised for use with the general population cannot be used with all population sub-sets, such as people with cognitive impairment and children. These are important limitations since it means that the QOL experienced by minority groups cannot be norm-referenced back to the general population.

A further concern is that many QOL instruments fail to make a clear distinction between the objective and subjective dimensions of life quality. This violates the fundamental principle that objective and subjective dimensions are separate entities that normally bear little or no relationship to one another, and so must be separately measured.

With these issues in mind, the Personal Wellbeing Index has been developed to measure the subjective dimension of QOL – Subjective Wellbeing.

1.2 Defining and Measuring Subjective Wellbeing

It is generally agreed that subjective wellbeing (SWB) can be measured though questions of satisfaction directed to people's feelings about themselves. There are three ways in which these feelings can be tapped as follows:

1.2.1 A Single-item

People can be asked to rate their global life satisfaction (GLS). This normally takes the form:

"How satisfied are you with your life as a whole?"

Although this question is an excellent measure of SWB, such single-item measures are less reliable than multi-item scales.

1.2.2 Multi-item scales

There are two approaches to this scale format:

(a) Single Construct scales

This approach combines multiple items, each of which taps to global life satisfaction. The individual items are not intended to have separate meaning within the SWB construct. Rather, they represent variations on the GLS theme. This approach is exemplified by the Satisfaction with Life Scale (SWLS : Diener, Emmons, Larsen, & Griffin, 1985). This instrument comprises five items that, together, provide a measure of global SWB.

(b) Life Domain scales

This approach adopts a domain-level representation of global life satisfaction. Here, individual items refer to specific life domains (life aspects) and the scores are averaged to produce a measure of SWB. A large number of SWB instruments have adopted this approach and the Personal Wellbeing Index is one such instrument. For a review of such scales see Cummins and Weinberg (2013)

1.3 Issues and Principles in the Construction of Life Domain Measures

1.3.1 Choice of domains

A variety of techniques, such as factor analysis, may be employed to reduce the almost infinite number of putative domains to a manageable set. However, the Personal Wellbeing Index is unique in employing the theoretical principle of 'deconstruction' for this purpose. Using this principle, SWB is measured by the minimum set of domains which represent the first-level deconstruction of satisfaction with 'Life as a Whole'.

1.3.2 Domain names and characteristics

No known theory can guide the initial selection of domain names. Thus, three criteria have been employed to narrow the focus of the search to domain names most likely to result in a scale with the simplest conceptual construction.

(a) Each domain name must describe a broad aspect of life which is amenable to both objective and subjective measurement. This is based on the fundamental principle that Quality of Life exists as separate objective and subjective dimensions. While the PWI is concerned only with the subjective dimension, this criterion allows the possibility that a parallel objective scale could be constructed. This criterion also excludes affective adjectives (e.g. Happiness).

(b) Each domain must describe an unequivocal Indicator variable, as opposed to a Causal variable of QOL (for this distinction see Fayers, Hand, Bjordal, & Groenvold, 1997). An indicator variable may be defined as one that can never act alone as a mediator (for a description of the mediator-moderator distinction, see Baron & Kenny (1986) and Appendix C). An example of an indicator variable is 'Satisfaction with your Health' and an example of a causal variable is 'Satisfaction with your control over your life'. Because, the perception of control can mediate the influence of physical disability on health satisfaction, control is not an unequivocal Indicator variable. For a more detailed description of the Causal versus Indicator Variable distinction in relation to SWB and Health Related QOL see Cummins, Lau and Stokes (2004).

(c) Any new domain must meet **both of two** criteria relating to the contribution of unique variance to GLS 'Satisfaction with life as a whole'. These are: (1) In a hierarchical regression predicting GLS, where the 7 domains are entered as step 1, when the new putative domain is entered in

step 2, it must contribute unique variance. (2) The new putative domain must not systematically reduce the contribution of unique variance, made by any of the existing domains, to the point that their contribution becomes non-significant.

This approach to scale construction has a number of advantages:

i. The end product is theoretically constrained and determined, hence, the scale items will form a single tight factor with high construct validity.

ii. It is a parsimonious approach, which results in the minimal domain set necessary to fulfill the 'first-level deconstruction' criterion.

iii. Due to the broad, semi-abstract nature of domains, the scale content is likely to have cross-cultural validity.

The application of this approach has led to the development of the Personal Wellbeing Index.

1.4 Historical Development of the Personal Wellbeing Index

The Personal Wellbeing Index was created from the Comprehensive Quality of Life Scale (ComQol). (Cummins, McCabe, Romeo, & Gullone, 1994). The ComQol comprised both an objective and subjective measure of life quality and details of this test's development have been published (Cummins, 1991; Cummins, McCabe, & Romeo, 1994; Gullone & Cummins, 1999; Marriage & Cummins, 2004). The ComQol domains were initially identified through a review of domain names used in the literature. This was subsequently followed by a three-phase process (Cummins et al., 1994) and empirical validation to generate the seven broad domains that comprised the scale (Cummins, 1997).

In 2001, the ComQol was abandoned due to two major flaws. One was that, despite repeated modification, the objective scale never factored into seven non-complex domains as intended. The other flaw was that domain importance and domain satisfaction were multiplied. A seminal article by Trauer and Mackinnon (2001) convincingly demonstrated that such multiplicative composites are psychometrically invalid. As a result, ComQol was abandoned. The detailed rationale for this action is available in Cummins (2002).

From the ashes of ComQol emerged the Personal Wellbeing Index. This scale retained only the questions on satisfaction and six of the seven domains. The original ComQol domain, 'How satisfied are you with your own happiness?', was replaced by 'How satisfied are you with your future security?'. The 'happiness' domain was removed to fulfill the principle of PWI life-domain scale construction (see 1.3.2a), that any domain must be amenable to both objective and subjective measurement. The new domain title was proposed ad hoc by the inaugural meeting of the Australian Unity Steering Committee. Rather surprisingly, given its origin, the domain has proved to be psychometrically robust.

Another major difference between the PWI and ComQol is a change in the response scale format. This involved the replacement of the original 7-point Likert scale (consisting of adjectival descriptors) with an 11-point (0-10) End-Defined Response Scale (Jones & Thurstone, 1955). There were several reasons for this decision, the details of which have been described in Cummins and Gullone (2000). Of these, the most important issue is avoiding the psychometric confusion caused by applying adjectival descriptors to a numerically interval scale. Such descriptors are not separated by equal psychometric intervals and therefore provide misleading and redundant information. Additionally, the 11-point (0-10) choice is preferred as this optimizes respondent discriminative capacity and is simple to understand.

1.4.1 The International Wellbeing Group

In 2002, Cummins and Lau initiated the International Wellbeing Group (IWbG) (Cummins & Lau, 2003). The major objective of the IWbG is to develop the PWI into a valid cross-cultural instrument. At the time of constructing this 5th edition, over 150 researchers from more than 50 countries and provinces are engaged in this international collaboration (See Appendix A). Members have a commitment to facilitate data collection using the PWI in their own countries, and to make these data available to the Group. Through this process, the PWI undergoes controlled evolution as informed by empirical evidence. To date two changes to the PWI have been approved by the Group as follows:

1. A minor text change has been made to item 3 (life achievement domain) to ensure that the item pertains to the present. This change is as follows:

   From PWI Version #1 (2002) : "…what you achieve in life'
   To current PWI Version #2 (2005): "…what you are achieving in life'.

   The effect of this word change has been to significantly reduce the score for this domain (see Australian Unity Wellbeing Index Report 16.0). The average value over Survey 1 to Survey 10 is 74.47 (SD=0.45). The average value over Survey 11-Survey 16 is 72.75 (SD = 0.59). So the new wording has created an item that is still a highly reliable measure that has stabilised about 2 points below the original version. Its contribution to 'Life as a whole' in a multiple regression has not changed.

2. In November 2006 the Group agreed to add a new domain to the PWI. The wording of this new domain generated much discussion (see Group discussion on Spiritual/Religion domain: http://www.acqol.com.au/instruments#measures). The version adopted is:

   "How satisfied are you with your spirituality or religion?¨

3. In April 2013 the Group agreed to make the Spiritual/Religious domain optional, and thus not part of the core set of PWI domains. The reasoning behind this is given in Appendix F.

1.4.2 Changes implemented for this 5th Edition

After careful discussion within the IWbG, the following substantive changes to the 4th edition have been made for this 5th edition of the manual.

1. The 'spiritual/religious' domain has been relegated to an optional domain, thereby returning the number of core domains to seven. For a detailed description see section 1.4.1 (3) and Appendix F.

2. The original bipolar response scale has been replaced with a unipolar response scale. The reasoning behind this decision is presented as Appendix G.

3. The rules for the inclusion of new domains has been expanded as described in section 1.3.2 (c)

1.4.3 Future development and an invitation

The IWbG, as a community of scholars, is engaged in the process of understanding SWB and the role that the Personal Wellbeing Index can play in its measurement. The Personal Wellbeing Index is not seen as a static device but rather as one which evolves as new data and theory become available. Changes to the Index are determined by a simple majority vote of the membership.

Membership of the IWbG comprises three categories as:

Primary Researchers: Scholars with a commitment to gather data using the PWI from their own country or province, and (if possible) to share those data with the Group.

Discussants: Scholars who advance the Group's purpose through their particular areas of expertise.

Project Researchers: Scholars and students who use the Personal Wellbeing Index for a particular research purpose and share their data with the Group.

The IWbG has a website (http://www.acqol.com.au/collaborators#international-wellbeing-group).

1.5 The Personal Wellbeing Index (PWI) Scale

1.5.1 Contents of the Scale

The PWI scale contains seven items of satisfaction, each one corresponding to a quality of life domain as: standard of living, health, achieving in life, relationships, safety, community-connectedness, and future security. These seven domains are theoretically embedded, as representing the first level deconstruction of the global question: 'How satisfied are you with your life as a whole?'

1.5.2 Psychometric overview

The basic psychometric characteristics of the PWI in Australia have been described (Cummins, Eckersley, Pallant, Van Vugt, & Misajon, 2003). Cumulative psychometric characteristics of the scale and Australian norms are provided in the most recent report on the Australian Unity Wellbeing Index (http://www.acqol.com.au/publications#reports). Detailed results from other countries concerning scale composition, reliability, validity, and sensitivity are provided in the many publications listed at http://www.acqol.com.au/publications#publications.

1.5.3 Construct validity

The seven domains constitute the minimum set of domains that represent the first level deconstruction of 'Life as a whole'. This is verified, using the criterion that each domain must contribute unique variance when the domains are collectively regressed against 'Satisfaction with life as a whole' (see Appendix B and C). The combination of both unique and shared variance by the seven domains typically explains about 40-60 percent of the variance in 'Satisfaction with Life as a Whole'. In relation to the identification of other potential domains, the following can be noted:

i. The domain of 'Safety' never makes a unique contribution in Australia (see Appendix B) but is retained because it does so in other countries (Appendix C).

ii. The discretionary domain of 'Spiritual or religion' makes no unique contribution in Australia (Caras, 2003) but it has been shown to do so in Columbia.

The seven domains also consistently form a single stable factor and account for about 50% of the variance in Australia and other countries.

1.5.4 Convergent validity

A correlation of .78 with the Satisfaction with life scale (Diener, Emmons, Larsen, & Griffin, 1985) has been reported (Thomas, 2005).

1.5.5 Reliability

The combined survey mean scores from 28 surveys of the Australian population have produced a maximum variation of 3.2 percentage points in subjective wellbeing (see Australian Unity Wellbeing Index Report 28.0). Cronbach alpha lies between .70 and .85 in Australia and overseas. Inter-domain correlations are often moderate at round .30 to .55 and item-total correlations are at least .50. The index has also demonstrated good test-retest reliability across 1-2 week interval with an intra-class correlation coefficient of 0.84 (Lau and Cummins, 2005).

1.5.6 Sensitivity

The Reports on the Australian Unity Wellbeing Index, that incorporate the Personal Wellbeing Index, indicate a level of sensitivity between demographic groups that is consistent with the theory of subjective wellbeing homeostasis. This applies both in Australia (e.g. Cummins et al., 2005) and other countries (e.g. Lau et al., 2004; Tiliouine, Cummins & Davern, 2005).

1.6 Parallel Forms the PWI Scale

Parallel forms of the PWI have been created to allow an appropriate version of the scale to be used with all population sub-groups. These parallel forms are:

PWI-A: designed for use with the general adult population, aged at least 18 years.

PWI- SC: designed for use with school-age children and adolescents.

PWI-ID: designed for use with people who have an intellectual disability or other form of cognitive impairment.

For the psychometric equivalence of these parallel forms: see Appendix D.

1.7 PWI Manuals and Translations

Copies of these manuals, and their Cantonese translations, are available from:
http://www.acqol.com.au/instruments#measures

PWI-ID: Cummins, R.A. and Lau, A.L.D. (2005). *Personal Wellbeing Index – Intellectual Disability.* 3rd Edition.

Cummins, R.A. and Lau A.L.D. (2005). *Personal Wellbeing Index – Intellectual Disability.* 3rd Edition (Chinese-Cantonese).

PWI-SC: Cummins, R.A. and Lau, A.L.D. (2005). *Personal Wellbeing Index – School Children.* 3rd Edition.

Cummins, R.A. and Lau, A.L.D. (2005). *Personal Wellbeing Index – School Children.* 3rd Edition (Chinese-Cantonese).

Translations of the Personal Wellbeing Index are available from
http://www.acqol.com.au/instruments#measures

1.8 Publications using the Personal Wellbeing Index

http://www.acqol.com.au/publications#publications

2. Scale Administration

2.1 Guidelines

(a) The PWI-A scale is to be administered with an adult who is at least 18 years of age.

(b) The test items can be administered using either a verbal or written format.

(c) The test items should be SELF-COMPLETED by the respondents themselves.

(d) The test administrator should allow each respondent to respond in an entirely private manner, and assure respondents that their individual data will remain confidential and anonymous.

(e) As the test items are designed to tap life domains which represent the first level deconstruction of life-as-a-whole, the test questions are broadly worded and intended to allow respondents to form their personal interpretation and judgment about them. If the respondent should seek conceptual clarification of these questions (e.g. ask for concrete explanations or examples) from the test administrator, it is important that the test administrator DOES NOT provide them. Rather, reply by re-directing the responsibility of interpreting these questions to the respondent. An example of such responses the test administrator may use is:

> "Just think of the question you have been asked in the way it makes sense to you. There is no right or wrong answer."

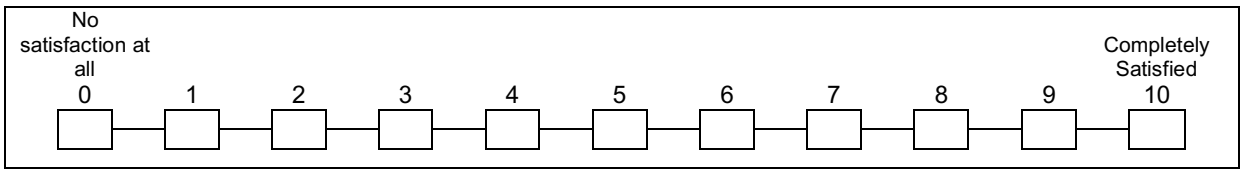
If the person remains unable to provide a response, skip to the next item or terminate.

(f) It should be emphasized that there is NO time limit.

2.2 Specific Procedures: Use of 0-10 end-defined response scale

If the Index is to be provided verbally, it is imperative that the respondent understands the nature of the task they are going to perform prior to administering the index. Thus, the administrator must take respondents verbally over the 11-point satisfaction scale (as shown below), indicating the two response anchors of 'No satisfaction at all/completely satisfied'.

The test administrator should confirm that the required response mode is understood before proceeding with the index items.



Examples of standard instructions relevant to verbal and written administration formats, are provided in the questionnaire shown in the next section of the manual (Section 3).

2.3 The Test Items

2.3.1 The Personal Wellbeing Index Items

The core set of items forming the PWI comprise seven questions of satisfaction with specific life domains as follows:

	Questions	Domains
	How satisfied are you with…?	
1.	your standard of living?	[Standard of Living]
2.	your health?	[Personal Health]
3.	what you are achieving in life?	[Achieving in Life]
4.	your personal relationships?	[Personal Relationships]
5.	how safe you feel?	[Personal Safety]
6.	feeling part of your community?	[Community-Connectedness]
7.	your future security?	[Future Security]

2.3.2 Additional Optional Items

2.3.2.1 General life satisfaction

"Thinking about your own life and personal circumstances, how satisfied are you with your life as a whole?"

This item is NOT part of the PWI. However, it may be usefully added to the 7 core index items to test the construct validity of the PWI. This is achieved by regressing the index domains against 'satisfaction with life as a whole' to determine whether they each contribute unique variance. This procedure can also inform whether a new item should be considered as an additional domain (but see also 1.3.2 for new domain requirements).

This item is routinely included in surveys conducted in Australia (Australian Unity Wellbeing Surveys) and other countries. If it is to be used, then it is recommended that this item be administered as the FIRST item in the questionnaire, prior to the PWI items. This standardization procedure ensures that prior items, including the Personal Wellbeing Index domains, cannot influence this global response.

2.3.2.2 Spirituality or Religion

"How satisfied are you with your spirituality or religion?"

If this domain is included in the PWI, then it can be included in the scores that are summed to yield an average score which represents 'Subjective Wellbeing' (see 2.4). However, if this eighth item on 'spirituality or religion' is reported to be non-relevant (not applicable) to a respondent, only seven domain scores will be summed to produce their SWB score.

2.4 Scoring

Either:

(a) Each of the seven domains (items) can be analysed as a separate variable, or

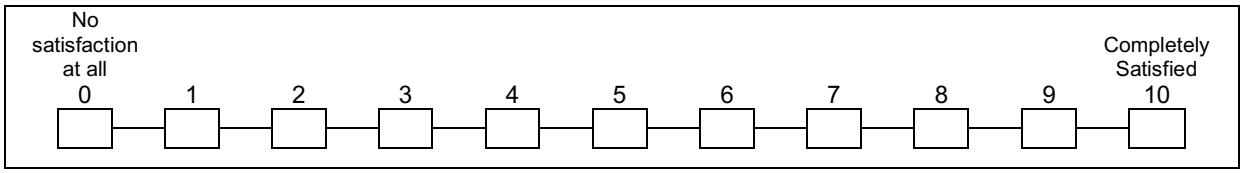
(b) The seven domain scores can be summed to yield an average score which represents 'Subjective Wellbeing'. However, if the eighth item on 'spirituality or religion' is reported to be non-relevant (not applicable) to the respondent, only seven domain scores will be summed to produce the score.

3. Satisfaction with Life as a Whole and the PWI Scale (Verbal Format)

3.1 Instructions for Verbal Format (i.e. respond to test items verbally).

"I am now going to ask how satisfied you feel, on a scale from zero to 10."

"(On this scale,) **Zero** means you feel no satisfaction at all. **10** means you feel completely satisfied."



"Would you like me to go over this again for you?" [If "yes", repeat the above. If "no", proceed to next statement]

"In that case, I will start by asking how satisfied you are with life. So,---------- (Refer to the test items below)"

3.2 Test Items

	Respondent's Rating (0-10)
Part I (Optional item]: Satisfaction with Life as a Whole	
"Thinking about your own life and personal circumstances, how satisfied are you with your life as a whole ?"	
Part II: Personal Wellbeing Index	
"How satisfied are you with…… ?"	
1. your standard of living ?	
2. your health ?	
3. what you are achieving in life ?	
4. your personal relationships ?	
5. how safe you feel ?	
6. feeling part of your community ?	
7. your future security ?	
[optional item]	
8. your spirituality or religion?¨	

4. Satisfaction with Life as a Whole and the PWI Scale (Written Format)

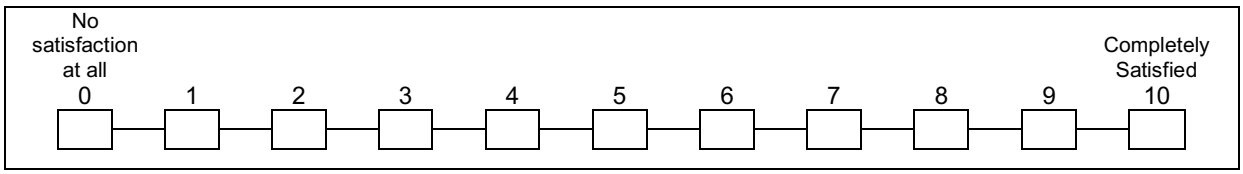
4.1 Instructions for Written Format (i.e. test items answered in written questionnaire)

The following questions ask how satisfied you feel, on a scale from zero to 10. **Zero** means you feel no satisfaction at all and **10** means you feel completely satisfied. "

4.2 Test Items

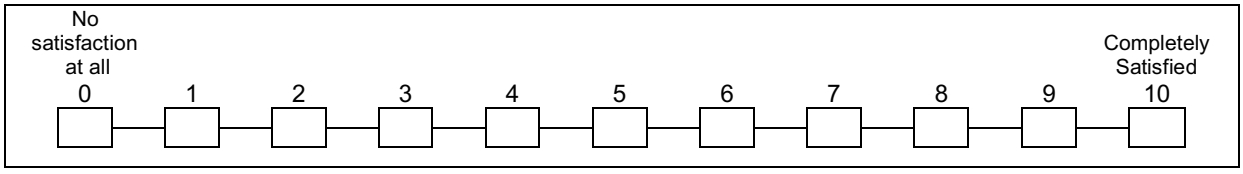
Part 1 [Optional Item]

1. "Thinking about your own life and personal circumstances, how satisfied are you **with your life as a whole ?"**

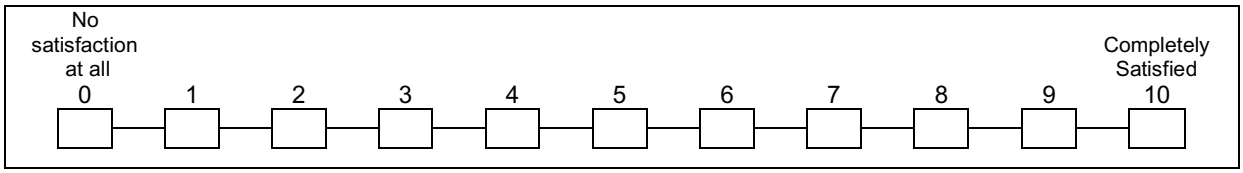


Part 2

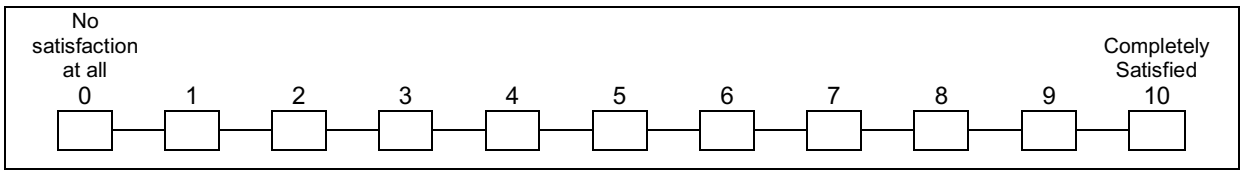
1. "How satisfied are you **with your standard of living ?"**



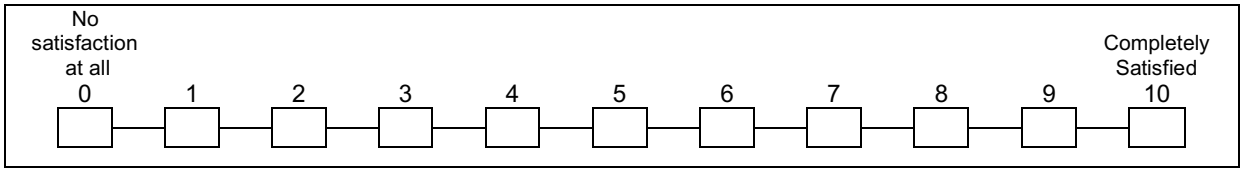
2. "How satisfied are you **with your health ?"**



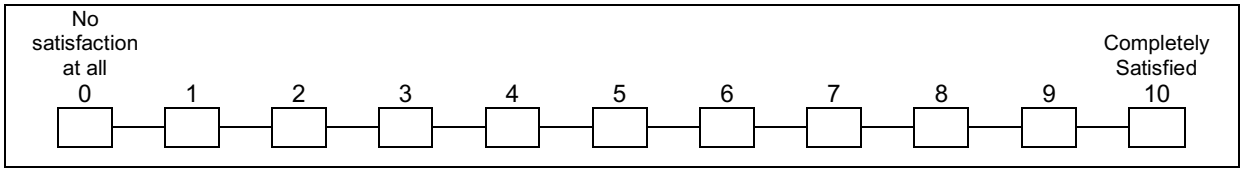
3. "How satisfied are you **with what you are achieving in life ?"**



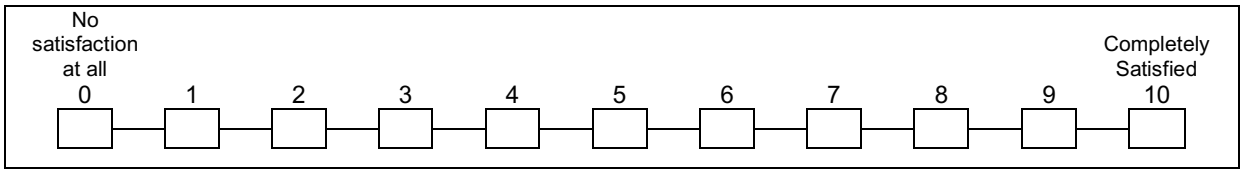
4. "How satisfied are you **with your personal relationships ?"**



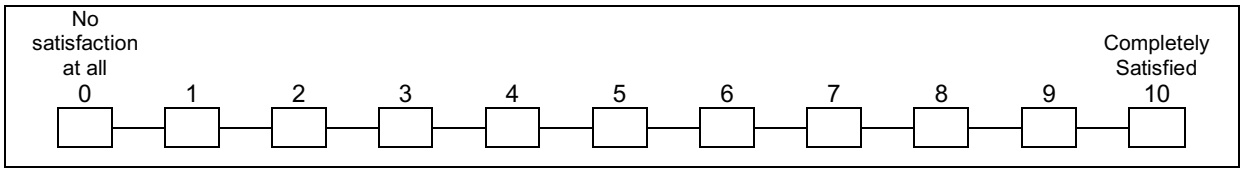
5. "How satisfied are you **with how safe you feel ?"**



6. "How satisfied are you **with feeling part of your community ?"**

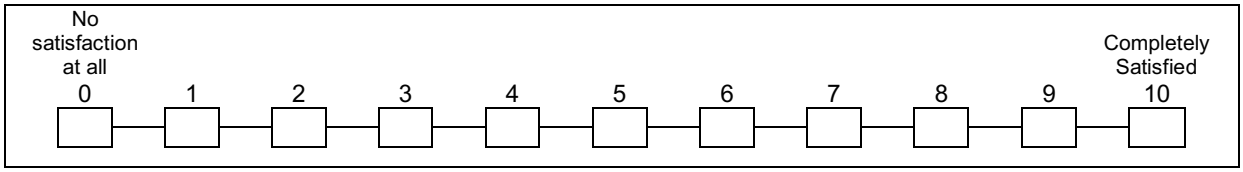


7. "How satisfied are you **with your future security ?"**



[Optional item]

8. "How satisfied are you **with your spirituality or religion ?"**



5. Data Analysis and Interpretation

5.1 Data Cleaning

It is essential that all data are checked for response sets. These are evident when the respondent scores at the top or the bottom of the scale for all seven Personal Wellbeing Index items. Such data may indicate a response set due to either acquiescence or a lack of understanding. No matter the cause, the lack of variation will distort the data analysis. Hence, data sets from individual respondents showing **consistently** maximum or minimum scores on all domains should be eliminated prior to data analysis.

5.2 Conversion of raw scores into the standard 0 – 100 scale format

For the purpose of creating results that can be simply compared with one another, we convert all data to a standard form, which makes it look as though they had all been rated on a 0 – 100 point scale. The values derived from this process are called 'points'. This conversion does not alter the statistical properties of the data, since the process is a simple linear conversion, but it has the advantage that data from the PWI and other scales can be directly compared in terms of their means and standard deviations.

The conversion of PWI scores, which have been derived from a 0 – 10 response scale, is simple. The conversion is achieved by simply shifting the decimal point to the right. E.g. a score of 7 becomes 70 points, or a mean score of 6.56 becomes 65.6 points.

When comparisons are to be made with other data that have been derived from different response scales, such as ones that use a 1 – 5 rating, then the values derived from the scale can be converted to the standard 0 – 100 format through the use of the formula below.

$$\frac{X - k^{min}}{k^{max} - k^{min}} \times 100$$

X = the score or mean to be converted

k^{min} = the minimum score possible on the scale
ie If a scale is score from 1 to 5, then $k^{min} = 1$
If a scale is score from -5 to +5, then $k^{min} = -5$

k^{max} = the maximum score possible on the scale
ie If a scale is score from 1 to 5, then $k^{max} = 5$
If a scale is score from -5 to +5, then $k^{max} = +5$

Example 1

A mean score of 3.5 on a scale rated from 1 to 5.

$$\frac{3.5-1}{5-1} \text{ x } 100 = 62.5\% \text{ points}$$

Example 2

A mean score of +3.5 on a scale rated from -5 to +5.

$$\frac{+3.5-(-5)}{+5-(-5)} \text{ x } 100 = \frac{+8.5}{+10} \text{ x } 100 = 85.0\% \text{ points}$$

5.3 Data Interpretation

Data derived on the Personal Wellbeing Index scale items may be used either at the level of individual domains, or the domain scores may be aggregated and averaged to form the Personal Wellbeing Index (PWI).

The item "Satisfaction with Life as a Whole" **IS NOT** a component of the PWI and hence, should be analysed as a separate variable. This item is used to test the construct validity of the PWI using multiple regression. Each domain should contribute unique variance and the normative data using this technique are shown in Appendix B and C.

The mean of the domain scores derived from the PWI constitutes a measure of Subjective Wellbeing. Such a datum can be referenced to two types of normative data as follows:

(a) If the datum is the score of an individual person, it can be referenced to the normal distribution of individuals within a population. The Australian normative range for individuals is 50-100 points (see the latest Australian Unity Wellbeing Index report).

(b) If the datum is the mean score of a group, it can be referenced to the normal distribution of group means. The normative range for Western means is 70-80 points. The normative range for Australia is 73.4 – 76.4 points (see the latest Australian Unity Wellbeing Index report).

Note: These values are generally 'around 10 percentage points lower for Asian populations' due to a cultural response bias e.g. Chinese (Lau, Cummins & McPherson, 2005, Lau, Chi, Cummins, Lee, Chou & Chung, 2008).

5.4 Normative Data

Click here to see the latest Australian Unity Wellbeing Index Report for cumulative normative data.

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7. Appendices

Appendix A

The International Wellbeing Group Membership

(April 2013)

International Wellbeing Group Website:
http://www.acqol.com.au/collaborators#international-wellbeing-group

Country	Primary Researchers
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	Dr Adrian Tomyn
	Dr Melissa Weinberg
Belgium	Professor Jan L. Bernheim
	Dr. Marc Callens
	Prof. Dr. Peter Theuns
Bhutan	Tshering Phuntsho
Canada	Professor Alex C. Michalos
China (China Regional Coordinator and Hong Kong Principal Researcher)	Dr Anna Lau
China (Beijing)	Dr Ingrid Neilsen
China (Guangdong Province)	Dr Fuming Zheng
China (Macau)	Associate Professor Bing-Shu Cheng
	Ricardo Rato
	Dr Richard Whitfield
China (Qinghai province, Yushu prefecture)	Dr Dave Webb
China (Shandong Province)	Dr Xing Zhanjun
Columbia	Assoc. Prof Eduardo Wills Herrera
Croatia	Dr Ljiljana Kaliterna Lipovean
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Hungary	Professor Anna Vari
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Rwanda	Dr Alex Hakuzimana
Singapore	Dr Lim Lan Yuan
Slovakia	Professor Jozef Dzuka
South Africa	Professor Valerie Moller
	Benjamin Roberts
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Appendix B1

Construct Validity – Australian Data

The Tables below represent the regression of the seven domains of the Personal Wellbeing Index against 'Satisfaction with life as a whole'. Since the theoretical basis for the selection of domains is that they represent the First Level Deconstruction of Life as a Whole, each domain should make a unique contribution to the explained variance.

Each Table is based on a separate analysis for the PWI conducted as a part of the Australian Unity Wellbeing Index regular surveys. Each survey number is indicated in the top-left corner of each table. The full data set for each survey, and the associated full Report, is available from http://www.acqol.com.au/publications#reports.

Each analysis involves a standard multiple regression with an N of about 2,000. The sr^2 statistic describes the amount of unique variance contributed by each domain. It is calculated by squaring the PART coefficients, output from SPSS. For example, in Survey 1 below, the unique contribution of Standard of living to the total explained variance in 'Life as a whole' is .060 x 100 = 6.0%. Between them, the seven domains contribute 14.8% in unique variance. This means that their major contribution to 'life as a whole' is in terms of shared variance (.49 - .148 = .367 , or, 36.7% shared variance)

Three aspects of these Tables are notable as:

1. The outcomes are very consistent with one another
2. The domains make very unequal unique contributions
3. The domain of 'Safety' consistently makes no unique contribution and, so, fails to meet the criterion for inclusion. However, it has been retained since data from other countries (see Appendix C) indicate that it does make a unique contribution in other cultures.

Survey 1	1	2	3	4	5	6	7	B	β	sr^2
1. Life as a whole										
2. Standard of living	.58							.31**	.31	.060
3. Health	.41	.37						.12**	.13	.014
4. Achievements in life	.53	.45	.34					.23**	.21	.030
5. Personal relationships	.45	.32	.24	.38				.19**	.21	,034
6. How safe you feel	.25	.30	.27	.20	.19			-.01	-.01	.002
7. Community connect.	.38	.35	.24	.37	.25	.30		.08**	.09	.006
8. Future security	.44	.50	.34	.44	.29	.40	.43	.05**	.06	.002

Total explained unique variance .148
Total explained shared variance .367

**p<.01; *p<.05
Adj R^2 = .49

[for an explanation of 'unique' and 'shared' see text above]

Survey 2	1	2	3	4	5	6	7	B	β	sr^2
1. Life as a whole										
2. Standard of living	.62							.35**	.34	.070
3. Health	.36	.39						.07**	.08	.005
4. Achievements in life	.52	.45	.29					.21**	.20	.029
5. Personal relationships	.51	.41	.23	.37				.21**	.24	.042
6. How safe you feel	.27	.28	.22	.18	.17			.03	.03	.001
7. Community connect.	.38	.33	.22	.31	.31	.33		.07**	.08	.005
8. Future security	.43	.44	.27	.38	.31	.40	.38	.06**	.07	.003

Total explained unique variance .155
Total explained shared variance .365

**p<.01; *p<.05
Adj R^2 = .52

Survey 3	1	2	3	4	5	6	7	B	β	sr^2
1. Life as a Whole										
2. Standard of Living	.57							.29**	.30	.061
3. Health	.35	.32						.07**	.09	.006
4. Achievements	.53	.39	.30					.23**	.23	.039
5. Relationships	.45	.31	.18	.37				.17**	.21	.034
6. Safety	.31	.30	.26	.24	.21			.03*	.04	.001
7. Community	.30	.25	.18	.29	.29	.27		.03	.03	.001
8. Future security	.48	.49	.30	.39	.24	.42	.32	.13**	.14	.013
								Total explained unique variance		.155
**p<.01; *p<.05								Total explained shared variance		.355
Adj R^2 = .51										

Survey 4	1	2	3	4	5	6	7	B	β	sr^2
1. Life as a Whole										
2. Standard of Living	.61							.36**	.37	.089
3. Health	.39	.34						.10**	.12	.011
4. Achievements	.52	.43	.33					.20**	.20	.027
5. Relationships	.48	.35	.24	.36				.17**	.21	.035
6. Safety	.27	.28	.26	.23	.20			.00	.00	0.00
7. Community	.36	.29	.22	.35	.31	.34		.06**	.07	.004
8. Future security	.43	.47	.27	.41	.30	.43	.41	.04*	.05	.002
								Total explained unique variance		.168
**p<.01; *p<.05								Total explained shared variance		.352
Adj R^2 = .52										

Survey 5	1	2	3	4	5	6	7	B	β	sr^2
1. Life as a Whole										
2. Standard of Living	.56							.29**	.29	.057
3. Health	.36	.36						.10**	.11	.010
4. Achievements	.55	.44	.32					.25**	.25	.043
5. Relationships	.47	.31	.18	.39				.18**	.22	.040
6. Safety	.25	.25	.19	.24	.21			.00	.00	0.00
7. Community	.33	.27	.17	.32	.27	.31		.06**	.07	.004
8. Future security	.39	.44	.24	.37	.27	.46	.36	.05**	.06	.002
								Total explained unique variance		.156
**p<.01; *p<.05								Total explained shared variance		.334
Adj R^2 = .49										

Survey 6	1	2	3	4	5	6	7	B	β	sr^2
1. Life as a Whole										
2. Standard	.55							.29**	.31	.068
3. Health	.36	.29						.10**	.11	.011
4. Achieve	.52	.39	.33					.23**	.24	.042
5. Relationships	.45	.31	.22	.35				.17**	.20	.032
6. Safety	.24	.26	.23	.19	.19			-.02	-.02	.000
7. Community	.34	.33	.17	.32	.29	.27		.05**	.06	.003
8. Future Security	.39	.39	.29	.29	.26	.47	.32	.08**	.10	.007
								Total explained unique variance		.163
**p<.01; *p<.05								Total explained shared variance		.317
Adj R^2 = .48										

Survey 7	1	2	3	4	5	6	7	B	β	sr^2
1. Life as a Whole										
2. Standard	.56							.29**	.30	.059
3. Health	.35	.29						.10**	.12	.012
4. Achieve	.53	.43	.32					.23**	.23	.035
5. Relationships	.46	.33	.22	.39				.19**	.20	.033
6. Safety	.26	.28	.23	.23	.25			-.01	-.01	0.00
7. Community	.31	.34	.17	.31	.26	.32		.02	.02	.000
8. Future Security	.45	.48	.25	.42	.30	.40	.41	.10**	.11	.008
								Total explained unique variance		.147
**p<.01; *p<.05								Total explained shared variance		.333
Adj R^2 = .48										
[a] Total Unique = .15; shared = .33										

Survey 8	1	2	3	4	5	6	7	B	β	sr^2
1. Life as a Whole										
2. Standard	.56							.30**	.29	.060
3. Health	.36	.32						.10**	.12	.012
4. Achieve	.54	.39	.29					.24**	.24	.040
5. Relationships	.51	.33	.19	.41				.21**	.25	.049
6. Safety	.26	.25	.24	.18	.21			.02	.02	0.00
7. Community	.36	.31	.16	.36	.28	.34		.05**	.06	.003
8. Future Security	.42	.42	.27	.38	.29	.43	.40	.06**	.07	.003
								Total explained unique variance		.167
								Total explained shared variance		.353

**p<.01; *p<.05
Adj R^2 = .52

Survey 9	1	2	3	4	5	6	7	B	β	sr^2
1. Life as a Whole										
2. Standard	.54							.26**	.26	.045
3. Health	.35	.32						.08**	.09	.008
4. Achieve	.57	.44	.32					.26**	.27	.049
5. Relationships	.48	.33	.23	.42				.18**	.21	.033
6. Safety	.22	.28	.22	.21	.17			-.03	-.03	.001
7. Community	.39	.34	.19	.35	.30	.26		.08**	.10	.008
8. Future Security	.43	.48	.26	.41	.28	.43	.42	.07**	.08	.004
								Total explained unique variance		.148
								Total explained shared variance		.342

**p<.01; *p<.05
Adj R^2 = .49

Appendix B2

Construct Validity – Other Countries

(Examples)

The Tables below represent the regression of the seven domains of the PWI against 'Satisfaction with life as a whole'. Since the theoretical basis for the selection of domains is that they represent the First Level Deconstruction of 'Life as a Whole' (LAW) domain should make a unique contribution to the explained variance.

Each Table is based on a separate analysis for the indicated survey. The full data set for each survey is available either from **TABLE** or from the researcher concerned.

Each analysis involves a standard multiple regression. The PART r^2(%) column is derived from squaring the PART coefficients, output from SPSS, and describes the percentage of unique variance contributed by each domain.

ALGERIA

Researcher: Habib Tiliouine <htiliouine@yahoo.fr>
Sample: General population N=1417

Variable	LAW	1.	2.	3.	4.	5.	6.	B	β	sr^2
1. Standard of living	.65							.37*	.35	.073
2. Health	.60	.54						.23*	.24	.032
3. Achieve in life	.51	.46	.48					.10*	.09	.005
4. Personal rel/ships	.47	.37	.49	.50				.08*	.09	.005
5. Safety	.43	.42	.42	.38	.42			.00	.00	.000
6. Comm. connect	.48	.39	.45	.42	.45	.50		.09*	.09	.005
7. Future security	.50	.45	.38	.47	.39	.51	.51	.14*	.13	.000
* p<.001						Total explained unique variance				.120
Adjusted R^2 = .57						Total explained shared variance				.450

ARGENTINA

Researcher: Graciela Tonon < gracielatonon@hotmail.com>
Sample: 2002, General population, N=492

Variable		B	β	sr^2
1.	Standard of Living	.28**	.34	.066
2.	Health	.06*	.09	.005
3.	Achieve	.16**	.19	.018
4.	Relations	.01	.01	0.0
5.	Safety	.06*	.10	.006
6.	Community	.11**	.16	.019
7.	Future Security	-.01	-.01	0.0
		Total explained unique variance		.114
Adjusted R^2 = .39		Total explained shared variance		.276
* $p < .05$ ** $p < .001$				

Sample: 2003, General population, N=189

Variable	LAW	1.	2.	3.	4.	5.	6.	B	β	sr^2
1. Standard of living	.69							.38**	.46	.046
2. Health	.44	.48						.05	.06	.008
3. Achieve in life	.62	.58	.43					.24**	.31	.032
4. Personal rel/ships	.40	.36	.29	.48				-.01	-.01	.001
5. Safety	.47	.52	.37	.63	.48			-.06	-.11	0.11
6. Comm. connect	.45	.31	.28	.37	.52	.50		.15**	.23	.028
7. Future security	.45	.55	.36	.51	.23	.62	.34	.01	.01	.001
R^2 = .59						Total explained unique variance				.127
Adjusted R^2 = .57						Total explained shared variance				.443

** p<.001

Sample: 2004, General population, N=268

Variable	LAW	1.	2.	3.	4.	5.	6.	B	β	sr^2
1. Standard of living	.52							.34**	.38	.034
2. Health	.27	.26						.13*	.14	.013
3. Achieve in life	.41	.32	.11					.22**	.23	.020
4. Personal rel/ships	.31	.26	.10	.38				.10	.11	.010
5. Safety	.22	.27	.08	.32	.27			.01	.01	.001
6. Comm. connect	.17	.17	.02	.28	.17	.19		.02	.02	.002
7. Future security	.10	.16	.05	.21	.25	.22	.24	-.04	-.05	.005
							Total explained unique variance			..085
** p<.001 *p<.005							Total explained shared variance			.283
R^2 = .37[a] Adjusted R^2 = .35										

CHINA - HONG KONG

Researcher: Anna Lau <anna.lau@deakin.edu.au>
Sample: General population N=180 (as comparative group with Australian sample N=180)

Variable	LAW	1.	2.	3.	4.	5.	6.	B	β	sr^2
1. Standard of living	.50							.25*	.42	.100
2. Health	.30	.39						.14	.07	.000
3. Achieve in life	.56	.53	.36					.27**	.23	.030
4. Personal rel/ships	.41	.38	.33	.50				.14**	.19	.030
5. Safety	.34	.45	.44	.36	.33			.08	.00	.000
6. Comm. connect	.36	.26	.20	.17	.27	.27		.10	.08	.010
7. Future security	.40	.54	.37	.48	.43	.18	.46	.03	.01	.000
							Total explained unique variance			.170
* p<.005							Total explained shared variance			..390
R^2 = .76[a] Adjusted R^2 = .56										
[a]Unique variability = .17; shared variability = .39										

Sample: General population N=460

Variable	LAW	1.	2.	3.	4.	5.	6.	B	β	sr^2
1. Standard of living	.60							.33**	.32	.060
2. Health	.43	.39						.11**	.13	.010
3. Achieve in life	.60	.55	.41					.32**	.32	.060
4. Personal rel/ships	.40	.49	.46	.44				.01	.07	.000
5. Safety	.46	.44	.47	.43	.45			.01*	.09	.000
6. Comm. connect	.47	.37	.30	.36	.52	.43		.16**	.15	.010
7. Future security	.44	.48	.45	.46	.45	.61	.44	.01	.02	.000
							Total explained unique variance			.140
* p<.005							Total explained shared variance			..360
R^2 = .51[a] Adjusted R^2 = .50										
[a]Unique variability = .15; shared variability = .36										

SLOVAKIA

Researcher: Jozef Dzuka <dzukaj@saris.unipo.sk>
Sample: 2003, General population adults, N=133

Variable	LAW	1.	2.	3.	4.	5.	6.	B	β	sr^2
1. Standard of living	.49							.38	.35	.078
2. Health	.24	.43						-.05	-.05	.002
3. Achieve in life	.31	.42	.46					.05	.04	.001
4. Personal rel/ships	.31	.34	.26	.49				.10	.11	.008
5. Safety	.37	.47	.29	.38	.24			.11	.10	.008
6. Comm. connect	.32	.25	.30	.19	.30	.36		.14	.14	.014
7. Future security	.29	.34	.35	.33	.17	.34	.41	.06	.06	.003
								Total explained unique variance		.114
								Total explained shared variance		.146

* p<.005
R^2 = .31[a] Adjusted R^2 = .26
[a]Unique variability = .08; shared variability = .23

Appendix C

Convergent and Divergent Validity

Richardson, J, Khan, M, Iezzi, A & Maxwell, A. (2013). Subjective Wellbeing, Utility and Quality of Life: Results from the Multi Instrument Comparison Project. Retrieved from http://www.aqol.com.au/documents/MIC/Subjective_Wellbeing_Brochure_V8.pdf

This report compares the PWI with the Satisfaction with Life Scale (SWLS) and a number of multi attribute utility (MAU) measures. Data are drawn from 6 countries with a total N=7,933. The correlation between the PWI and SWLS = .79, and between the PWI and mean utility = .26.

Appendix D

Psychometric Equivalence of PWI-A and PWI-SC

Empirical studies which have compared the adult and parallel forms suggest generally satisfactory psychometric equivalence between these scales (e.g. Lau, 2013; Lai and Lau, 2008).

Psychometric Equivalence of PWI-A and PWI-SC:

Tomyn, A.J., Fuller-Tyszkiewicz, M. & Cummins, R.A. (2013). The Personal Wellbeing Index: Psychometric Equivalence for Adults and School Children. Social Indicators Research, 110, (3), 913-924. doi: 10.1007/s11205-011-9964-9.

This study confirms the psychometric equivalence of the child and adult forms of the Personal Wellbeing Index using multiple-group confirmatory factor analysis. The child sample comprised 1,029 Victorian high-school students (aged 11–20) sampled across three independent studies. The adult sample comprised 1,965 Australian adults drawn from the Australian Unity Wellbeing Index. The results demonstrated strict factorial invariance between both versions, suggesting that the PWI measures the same underlying construct in adolescent and adult populations. These findings provide support for quantitative comparisons between adult and adolescent SWB data as valid.

Appendix E

Normative Data from Report 28.0 of the Australian Unity Wellbeing Index

Normative Ranges Calculated from Individual Data

Table E1: Normative Ranges Calculated from Aggregated Individual Data

	N	Mean	SD	-2 SD	+2 SD
PWI	55764	75.25	12.45	50.35	100.15
Standard	57620	77.82	17.04	43.74	111.90
Health	57616	74.68	19.67	35.34	114.02
Achieving	57284	73.59	18.42	36.75	110.43
Relationships	57366	79.43	21.23	36.97	121.89
Safety	57476	79.02	17.82	43.38	114.66
Community	57302	71.00	19.73	31.54	110.46
Future Security	56802	71.02	19.74	31.54	110.50
Spirit/ Religious	20529	72.93	23.77	25.39	120.47
Life as a whole	57585	77.66	17.10	43.46	111.86
NWI	48805	61.64	14.54	32.56	90.72
Economic situation	54251	64.39	19.40	25.59	103.19
Environment	54694	60.32	18.84	22.64	98.00
Social conditions	54391	62.62	18.25	26.12	99.12
Government	52638	54.10	24.45	5.20	103.00
Business	51139	61.74	17.89	25.96	97.52
National security	51838	65.94	19.46	27.02	104.86
Life in Australia	54976	82.53	17.57	47.39	117.67

Normative Ranges Calculated from Survey Mean Scores

Table E2: Normative Ranges Calculated from Survey Mean Scores

	N	Mean	SD	-2 SD	+2 SD
PWI	26	75.23	.73	73.78	76.68
Standard	26	77.79	1.13	75.54	80.05
Health	26	74.65	.73	73.20	76.11
Achievements	26	73.60	.86	71.88	75.33
Relationships	26	79.45	.99	77.46	81.44
Safety	26	78.95	1.68	75.59	82.31
Community	26	70.94	1.03	68.89	73.00
Future Security	26	71.00	1.26	68.47	73.53
Spiritual (S24-S26)	3	73.82	4.17	65.48	82.16
Life as a whole	26	77.63	.81	76.02	79.24
NWI	25	61.64	1.28	59.08	64.19
Economic situation	26	64.41	3.71	57.00	71.82
Environment	26	60.33	2.43	55.46	65.20
Social conditions	26	62.62	1.50	59.62	65.62
Government	25	54.10	3.67	46.75	61.45
Business	25	61.75	2.05	57.65	65.86
National security	25	65.93	3.22	59.49	72.38
Life in Australia	26	82.53	3.21	76.11	88.95

Appendix F

Mediation and Moderation

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Moderation

Let's assume we have three variables. The *DV* and two main effect variables, A and B. Moderation is the interaction of two variables, *A* by *B* (*AB*, we'll call it *C*), that when combined give rise to a difference in the dependent variable. To calculate moderation effects, first subtract the mean effect from each variable.

ie: $New\_A = A - \overline{A}$ & $New\_B = B - \overline{B}$ where $\overline{A}$ & $\overline{B}$ each represents the mean of *A* and *B*.

We then multiply *New_A* by *New_B* to obtain *C*. This is called centering, and ensures that the interaction variable, *C*, does not correlate with either of the main effect variables. In truth it will correlate, not in a simple manner, but in a higher order non-linear manner that for General Linear Statistics we don't need to worry about (see Figure 1).

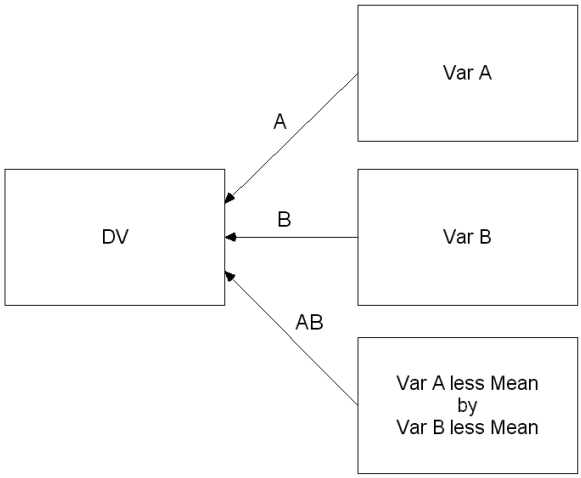

Figure 1: Testing moderation

To test whether our new interaction variable is significant, we need to establish that it adds something more than either *A* or *B* alone. So, first we must test the effect of *A* and then the effect of *B*. To do this we undertake a simple hierarchical regression.

In step one, we enter *A* and *B* as separate effects (note, these are the uncentered variables), and obtain their significance. We enter both at the same time, because as main effects, neither has precedence over the other.

In the second step, we enter *C* and assess if it adds anything to the model by testing its significance. If it adds to the model, the effect will be significant, if it doesn't, the effect will be non-significant. If the interaction is significant, then *A* can be said to moderate *B*, and *B* can be said to moderate *A*. Neither variable has precedence. In other words, *B* differs over levels of *A*, and *A* differs over levels of *B*.

Naturally, if you find significant moderation, there is more that must be done. However, this is a topic for another day.

Example

Everyone knows that the further you go from the city, generally the cheaper land gets. However, the further you go from the city, the more expensive building costs get. Because the price of Home Ownership consists of several costs, including the Cost of Land, and the Cost of Building, the price of Home Ownership does not reduce in proportion with the distance from the city. At great distances, the cost of Home Ownership may get extravagant, because they are so expensive to build. Clearly, Distance from the City and the Type of Cost interact (Figure 2).

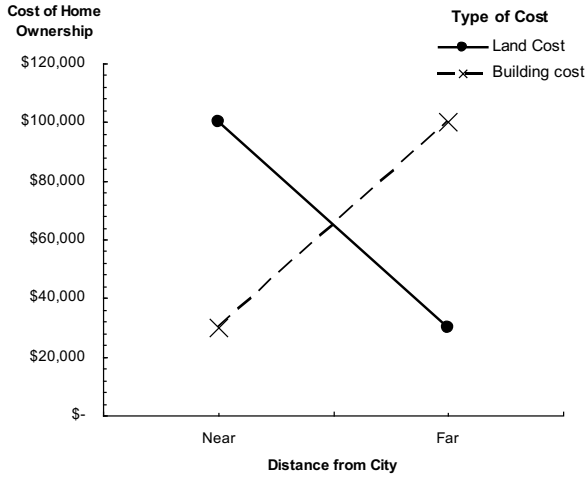

Figure 2: Interaction of the cost and distance

The variables are DV: Cost of Home Ownership, IVA: Distance from the City, IVB: Type of Cost.

First centre the variables. Subtract the average of Distance from City from Distance from City to obtain the centered Distance from City, and then do the same for the Type of Cost, by subtracting the average cost from Type of Cost. Then multiply the Type of Cost by the Distance from City to obtain the interaction term. This removes the linear correlation between the interaction term and each of the IVs.

Next build a Hierarchical Regression model (Figure 3), where in the first step you enter Type of Cost and the Distance from City. Then in the second step, enter the interaction of the two variables. If the interaction is significant, then for some distance from the city the type of cost differs from other distances from the city. If the interaction is not significant, then the main effects of Type of Cost and Distance from City account for the effect of Cost of Home Ownership.

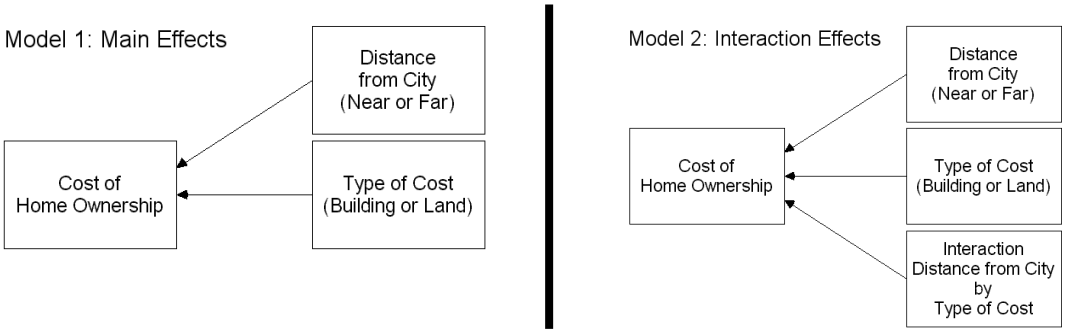

Figure 3: Hierarchical regression model of Interaction. To the left is the first model. Note the interaction term is absent. To the right is the second model with the interaction term included.

Mediation

Of the two concepts, mediation is by far the most difficult to understand. However, a simple, everyday example is fuel prices. Petrol prices are caused by many things. The most obvious one is the price being charged by oil producing nations for a barrel of oil. Another is the greed of petrol companies.

As the cost per barrel of oil increases, petrol prices also increase, as the price of oil per barrel decreases, the price of petrol decreases. These two observations suggest a direct relationship between the price of oil and the price of petrol. However, if oil company executives at Starfish Oil decide that when the price of oil per barrel goes down, they will only lower the price of fuel by half that amount, the greed of the petrol company mediates the price of petrol. Experience teaches us that the price of petrol is more under the control of petrol companies than it is the prices of barrels of oil, though; clearly the price of a barrel of oil is important.

If we call the relationship between the price of a barrel of oil and the price of petrol A, the relationship between the price of oil and the greed of petrol companies B, and the relationship between the greed of oil companies and the price of petrol C, then we have specified a mediating relationship (see Figure 4).

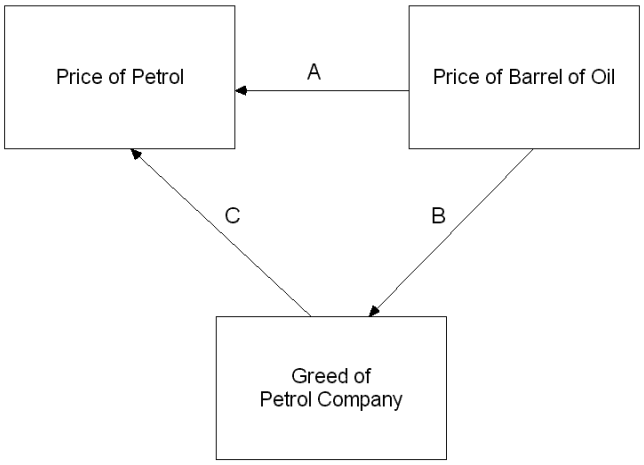

Figure 4: Mediation model.

We test mediation in one of several ways, but the easiest and clearest is to test the relationships in a hierarchical model. First test relationship A, then test relationship B, then test relationship C. We then have three b-weights and their standard errors. Then in a fourth model test A and C. If the relationship A goes non-significant, and C is significant, we have prima facie evidence that there is a

mediating relationship. However, mediation is rarely this clear, so we use a formula to asses if the indirect effect of B through C is significant.

The formula is: $$Z = \frac{BC}{\sqrt{\left(B^2 \times SE_C^2 + C^2 \times SE_B^2 + SE_C^2 \times SE_B^2\right)}}$$. The result we obtain is a straight forward Z-score that we look up in a table of Z-scores to obtain the level of significance. If this is significant, then we have a significant mediator, even if the relationship A is also significant.

Mediating Moderators & Moderating Mediators

It is possible to have a mediating variable that is the moderator. To test this, construct the moderator variable, interaction, as before (ie: variables A by B), and test the mediating pathways as described in mediation (see Figure 5).

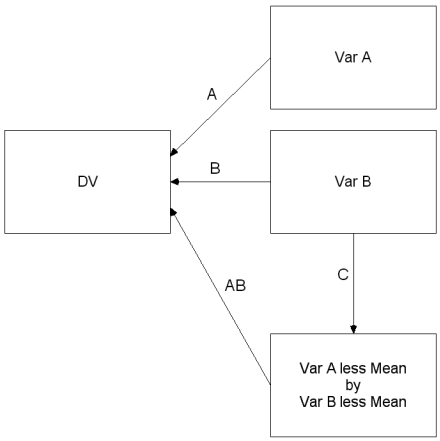

Figure 5: Mediating Moderator

It is also possible to have a moderating mediator, which is not the same as a mediating moderator. To test this, first establish if two or more variables are significant mediators, and then derive their interaction as before, and then test this interaction (see Figure 6). If significant, the mediators are moderating, which may then be checked further to see if the interaction variable also mediates. If it does, then you have a mediating moderator mediator. This process may proceed ad infinitum.

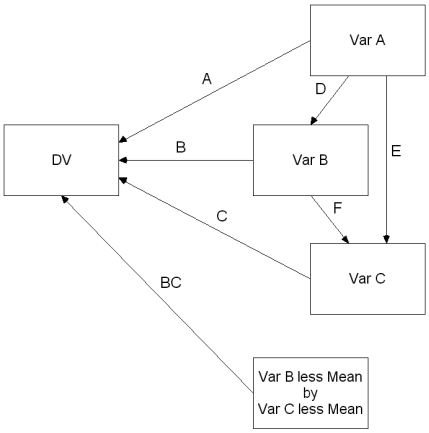

Figure 6: Mediating Moderator

Appendix G

"The domain of 'spiritual or religious beliefs"

This appendix concerns the discretionary inclusion of an eighth domain as 'satisfaction with spiritual or religious beliefs'. Over the life of the 4th edition of this manual (2006 to 2013), this domain was introduced as 'satisfaction with spiritual or religious beliefs'. Extensive testing revealed that the domain is not relevant for many people, and so the decision was made to remove this domain from the core set of domains that comprise the PWI. It is now a discretionary additional domain

Despite this relegation from the core set, we recognize that the domain meets the criteria for inclusion in some samples where spiritual and/or religious beliefs are commonly held. In such circumstances, researchers wishing to incorporate this domain into the PWI should be aware of the following concerns:

(a) When people are rating their satisfaction with items in a questionnaire, and they come across an item they either do not understand or which appears irrelevant, there is a strong tendency for them to give a satisfaction response anyway. This tendency is very strong in children but is also evident in many adults. The expectation of a response is signaled by the presence of the item in the questionnaire. So, providing a response is the simplest option, which causes no bother. Not responding, on the other hand, may reveal their lack of understanding or a non-conformist attitude indicating that the item is irrelevant.

To defend against this tendency in samples in which not all respondents have spiritual or religious beliefs, a gating question should be introduced before the domain item as:
'Do you have spiritual or religious beliefs?' Yes/No
If 'Yes' then they continue to respond to the domain
If 'No' then they skip the domain.

(b) Satisfaction with 'spiritual or religious beliefs' is a double question. We recommend that researchers wishing to include this domain use two separate questions, one referring to 'spiritual beliefs' and the other referring to 'religious beliefs. This recommendation is based on the following information: (a) double questions are to be avoided since the interpretation of a satisfaction response is ambiguous; (b) respondents may have spiritual beliefs while not belonging to a formal religion; (c) respondents may regard spiritual beliefs to include beliefs that are not religious; (d) respondents may have an aversion to formal religion, but not to spiritual beliefs.

Appendix H

Bipolar vs. Unipolar response scales

The 4th edition of the manual used bipolar response scale. We ask 'how satisfied' people felt on a 0-10 response scale anchored by 'completely dissatisfied' and 'completely satisfied'. This has now been changed to a unipolar format anchored by 'no satisfaction at all' and 'completely satisfied'. Our reasons are:

1. The unipolar form is more sensitive in that it offers most choice in the positive region of the scale.
2. Having said that, curiously it makes no difference to group mean scores. This is good news to those people running longitudinal studies with the bipolar format.
3. The scale is easier to understand and does not include a bothersome mid-point, which has a very ambiguous interpretation.
4. The scale options are true to the question asked. We ask about 'satisfaction', and so providing 'dissatisfaction' as an option is asking about something else.
5. A big and unresolved issue in affect theory is whether the underlying constructs are uni or bi-polar. This can only be investigated using unipolar response scales.
6. Both the OECD and WHO are recommending to their member countries that they measure General Life Satisfaction using a 0 – 10, unipolar response scale as: "Overall, how satisfied are you with life as a whole these days?" Respondents are asked to provide an answer from 0 ("not at all") to 10 ("completely").

Two reports describing the background to this decision are available as:

WHO Regional Office for Europe
Joint meeting of experts on targets and indicators for health and well-being in Health 2020, 5-7 February 2013, Copenhagen

and

OECD (2013), OECD Guidelines on Measuring SubjectiveWell-being, OECD Publishing. http://dx.doi.org/10.1787/9789264191655-en.