The Relationship of Healthy Eating, Exercise and Sleep with Subjective Well-being

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I, the undersigned, declare that this Empirical Report is less than the specified word limit, and that it comprises original work and writing by me, and that due acknowledgement has been made to all other material used.

Signed_____**Dated**_____

Acknowledgements

Thanks to my family and friends for all the support and encouragement, and letting me get out of doing the dishes when I needed to study! Thanks Mum for always believing in me, and Nicole for always giving good advice. Troy, your unconditional faith in me and my ability to do anything I set my mind is unfaltering.

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Abstract

A considerable body of data is know available to support the relationship between perceived health and subjective well-being (SWB), but most research to date has focused on health in the negative and general sense. The aim of this study was to investigate how health, conceptualized in both a positive and specific way, related to SWB, and it was predicted that perceived healthy eating, exercise and sleep would predict SWB. In order to test this, it was necessary to create a scale to measure subjective healthy lifestyle wellbeing (HLWB) and subjective healthy lifestyle experiences (HLE), which consisted of an aggregate of satisfaction with, and experiences of, healthy eating, exercise and sleeping respectively. Participants (n=195) were administered the Australian Unity Wellbeing Index, which included the HLWB and HLE scales. Statistical analysis indicated that both scales are valid and reliable measures, and a factor analysis revealed that items within the HLWB scale grouped together to form a distinct index. The model of SWB homeostasis is a theoretical framework which has received considerable research support, and was used to explain the nature of the health-SWB relationship. A regression analysis supported the inclusion of healthy lifestyle experiences in the homeostatic model, which accounted for a small but significant additional amount of variance in SWB.

When asked to judge the importance of various domains of their lives, respondents rated "good health" as number one (Diener, 1999), a finding that is not surprising considering the preponderance of statements such as "as long as I've got my health" and "the best wealth is health". Considering this, it seems natural that how healthy a person feels would be strongly related to how happy a person feels. Subjective well-being (SWB), a concept concerned with an individual's satisfaction with life, is a topic that has received considerable attention in psychology over recent years. Diener (2000) proposed that SWB has three components: positive affect, the experience of pleasant mood and emotions; negative affect, the experience of unpleasant mood and emotions; and an overall cognitive evaluation of general life satisfaction, including specific domain satisfaction. This study investigated the health-SWB relationship, specifically how perceived healthy eating, physical activity and quality sleep relate to SWB.

Although there is general acknowledgement that health plays an important role in SWB (Benyamini, Leventhal, & Leventhal, 2003; Zautra & Hempel, 1984; Zhang-Hampton, 2004), little is known about the psychological constructs and processes that underlie this relationship. Roysamb et al. (2003) concluded that the association between perceived health and SWB was due to a person's general outlook tendencies. Thus when a person tends to view the world in a positive light this is reflected in positive perceptions of their health, and vice-versa. Other studies have proposed models of the psychological constructs which may explain the health-SWB link. For instance, Okun and George (1984) proposed that the influence of self-rated health on SWB is mediated by personality, specifically neuroticism, and demonstrated support for this hypothesis by

finding that the relationship between SWB and self-rated health is weakened when the effects of personality are partialled out.

The model of SWB homeostasis (Cummins, Gullone & Lau, 2002) provides a theoretical framework for understanding the psychological nature of the health-SWB relationship. A central premise of the model is that SWB is regulated at a consistently stable and high positive level by the operation of cognitive buffers (self-esteem, optimism, and perceived control) which interact with personality (extraversion, neuroticism) and environmental factors (for example, major life events). The model has been tested with a Personal Well-being (PWB) scale (Cummins et al., 2001) in which satisfaction with one's health is a key domain and highly related to SWB. Based on this model, Roysamb et al's (2003) finding of a relationship between general positive outlook and perceived health could be explained in terms of a relationship between optimism level and health satisfaction. Okun and George's (1984) finding of an influence of neuroticism on the link between health and SWB could also be accounted for by the interaction of personality factors as predictors of SWB. The homeostatic model also provides a framework for understanding how health experiences may interact with psychological factors in predicting SWB. Figure 1, based on the homeostatic model (Mellor, Cummins, Karlinski & Storer, 2003), illustrates how individual's perceptions of three health experiences (eating, exercise and sleep), as salient environmental experiences together with major life event experiences, might interact with personality and cognitive factors in predicting SWB level. Positive health experiences would not necessarily alter SWB, as positive extrinsic influences are only able to raise SWB if it is at a low level initially. They would however be expected to positively reinforce the buffering system. Negative experiences would require more

cognitive investment by the buffers to keep SWB at a constant level. If the experiences are only perceived to be mildly negative, then the homeostatic system would adapt to them. If the experiences are perceived negatively enough to exceed the adaptive capacity of the homeostatic system, it could result in below normal levels of SWB.
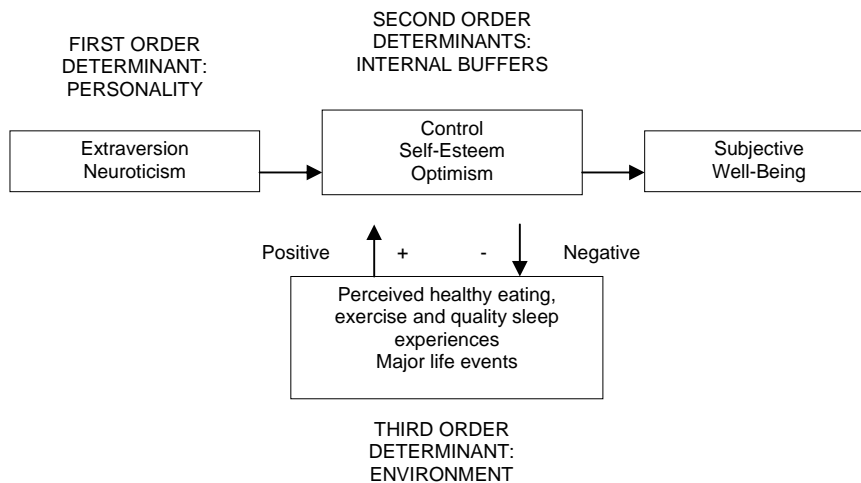
Figure 1. Homeostatic Model of Subjective Well-Being and Health (adapted from Mellor et al., 2003).

To further understand the nature of health experiences on SWB, it is important to determine whether there are specific kinds of experiences that act as domains of "healthy experiences". Cummins et al. (2003) argues that the more specific and less abstract a measure is, the easier it is for individuals to identify their satisfaction within that domain. Potential candidate healthy experience factors are a person's subjective experience of a balanced diet, regular physical exercise and quality sleep. Some existing studies have established a relationship between one of these three domains and SWB, but there appears to have been no previous study that has attempted to see how the three combine with psychological factors to predict SWB.

Most studies of sleep experience and SWB (or the closely related construct, quality of life) have reported a positive relationship both in terms of quantity (Ito et al., 2000; Konu, Lintonen & Rimpela, 2002; Nakayama & Amagasa, 2004) and quality (Kelly, 2004; Zeitlhofer et al., 2000) of sleep. In a study of sleep apnea patients, D'Ambrosio, Bowman and Mohsenin (1999) reported that patients' quality of life was significantly impaired until treated for sleep apnea, when their quality of life returned to normal levels. This finding suggests a link between sleep quality and SWB, and is consistent with SWB homeostasis, which states that SWB may be challenged when extrinsic influences are sufficiently negative, but will bounce back when either the homeostatic system adapts or the factors cease (Cummins et al., 2002). Pilcher (1998) observed college students over a three month period, and reported that when quality of sleep (determined by an increase of time asleep matched with no increase in time spent in bed) increased over the course of a school semester, SWB remained stable. The findings by Pilcher (1998) may also be explained by SWB homeostasis, which specifies that positive extrinsic influences will only raise SWB if its initial levels were already below the positive set-point range. If the students used in this study were already within this positive range, then no increase in SWB would be expected. Alternatively, based on the finding that objective health is far less related to SWB than subjective health, results may have been different had sleep been measured subjectively. Some support for a sleep-SWB is apparent in these results, although all reports used objective measures of sleep.

Studies of healthy exercise experience and SWB, suggest a positive relationship although most studies have used objective measures of exercise experiences, such as amount of physical activity (e.g. Hong & Dimsdale, 2003; Katja, Paivi, Marja-Terttu, & Pekka,

2002; Rejeski et al., 2001; Sale, Guppy & El-Sayed, 2000), rather than individuals' subjective experiences of physical exercise. Koukouvou et al. (2004) performed a study in which chronic heart failure patients underwent an exercise training rehabilitation program. They reported an association between physical activity and SWB, independent of gains in aerobic fitness. This finding suggests that the positive association between exercise and SWB is due to the physical experience of exercise rather than fitness level. If participants' level of SWB was initially impaired due to their chronic health condition, then elevated SWB post-training can be explained by the homeostatic model of SWB. Fox (1999) proposed that exercise has a moderating effect on self-esteem, reduced state and trait anxiety, and that mood is positively enhanced by the effects of aerobic exercise. This proposal is consistent with the model proposed in Figure 1.

Surprisingly, there appears to be little existing research on the relationship between healthy eating experience and SWB. Individuals' perceptions of whether they have a healthy diet would be expected to relate to their perceptions of their own general health. One study (Takami et al., 2004) reported that satisfaction with eating facilitated mental health. Another study of the effects of perceived eating control and body mass index (BMI) on SWB supported an eating-SWB relationship (Greeno, Jackson, Williams, & Fortmann, 1997). The study concluded that perceived overeating was a better predictor of SWB level than was actual weight (Greeno et al., 1997).

A dimension relevant to the measurement of satisfaction is the degree to which a measure is relevant to oneself. A proximal measure is one which is close to one self, or highly personal, while a distal measure is further from the self, and relates more to societal or global factors (Cummins et al., 2003). SWB is related very strongly to personal well-

being, and as such is more concerned with factors that relate to the self. It would be expected that perceived healthy eating, exercise and sleep, as factors primarily concerned with the self, would also be proximal factors.

Based on previous findings and gaps evident in health experience and SWB research, the present study of healthy experience and SWB examined the relationships between subjective healthy eating habits, physical activity habits, and sleep, and SWB within the theoretical framework of the homeostatic model (Cummins et al., 2002). A new subjective health scale, the healthy lifestyle well-being (HLWB) index, was developed to test the salience of the three domains of health satisfaction, and to determine the contribution of perceived health to SWB. Several predictions were tested.

First, the three factors of perceived healthy eating habits, physical activity habits, and quality sleep will factor to form a healthy lifestyle measure. This prediction will be tested by measuring the reliability of items forming the scale, a factor analysis to see if a distinct scale is formed, and a validity test of the relationship of these items to health satisfaction on the Personal Wellbeing scale, relative to other non-health items in the scale. In addition to this, the scales relationship with SWB will be analyzed, with the prediction that a significant relationship between the two variables will exist.

Secondly, as representative of specific experiential influences in the homeostatic model, it is predicted that positive levels of health experiences will relate to high levels of SWB, and the reverse for negative levels of health experiences, and that these health experiences will interact with the personality, cognitive buffer and major life event factors consistent with the homeostatic model of SWB. These predictions will be tested by estimating the unique contribution of healthy life experience to SWB, beyond the

existing factors in the model. The main interest will be in whether healthy life experience makes an additional contribution to the prediction of the homeostatic model of SWB.

Third, following the proximal-distal hypothesis of Cummins et al. (2003), it is predicted that HLWB will be closer conceptually to PWB as a life dimension in the prediction of SWB, than either national well-being (NWB) or neighborhood well-being (NeiWB), given its greater self-relevance. This prediction will be tested by estimating the independent contributions of the four types of well-being in estimating life satisfaction.

Method

Participants

The sample consisted of 195 adults from the Australian Unity Wellbeing project database, selected as representative of the Australian population. The age range of participants was 24 to 88 years (M = 59.47 years). Some participants did not indicate their gender, of those who did 90 were female and 77 were male.

Measures

The questionnaire used was the Australian Unity Wellbeing Index (Appendix A) which included scales to measure personal wellbeing, life events, personality, self-esteem, optimism and perceived control. Participants also filled out a separate demographic questionnaire (Appendix A).

General life satisfaction was measured by the single question "How satisfied are you with your life as a whole?" All items were measured on 11 point end-defined scales ranging from "strongly disagree" (0) to "strongly agree" (10). After examining the

reliabilities of each scale, scores for items on all scales were transformed to %SM

scores for easy comparison.

Personal Wellbeing. The Personal Wellbeing Scale developed by Cummins et al.

(2001) was used to measure Personal Wellbeing (PWB). Each item is prefaced with

"How satisfied are you with..." The PWB stems are: "your standard of living"; "your

health"; "your achievements in life"; "your personal relationships"; "how safe you

feel"; "feeling part of your community" and "your future security". Cummins et al.

(2001) reported a reliability coefficient of .82. The corresponding coefficient in this

study was .86. Previous studies have reported normative group mean studies of 70 to

80 for the PWI, with a normative range of 50 to 100 for individual scores. The

expected range was obtained for the group distribution scores, which had a mean of

72.51 (SD = 14.93). The distribution is shown in Figure 2.
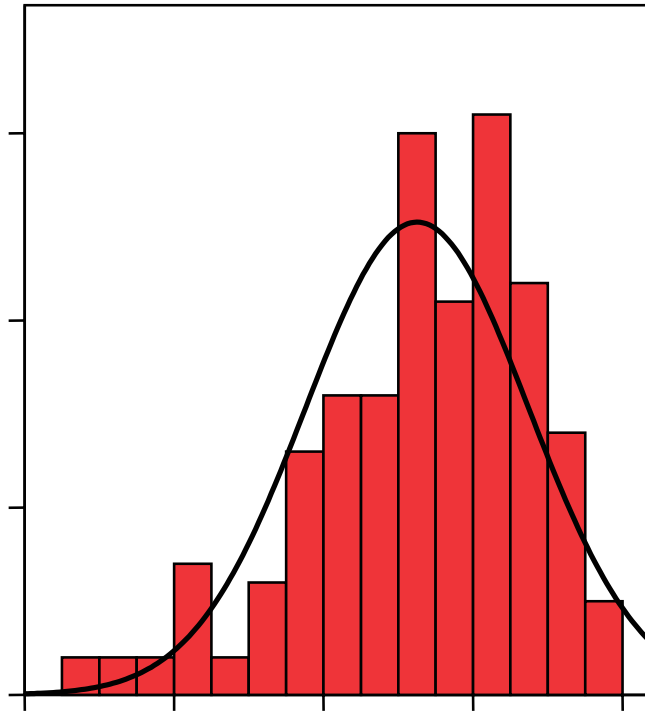
Figure 2. Frequency Distribution of Personal Well-being Index Scores

Life events. A measure of recent life events was used as a measure of extrinsic

factors. Respondents were asked "Has anything happened to you recently causing you

to feel happier or sadder than normal?" Participants indicated "Yes, happier", "Yes,

sadder" or "No". Responses on this question were used to create a life events scale.

Personality Factors. Measures of extraversion and neuroticism were based on the four

items measuring extraversion and emotional stability from Gosling, Rentfrow and

Swann's (2003) Ten Item Personality Inventory (TIPI). This scale was developed as a

brief measure of the Big Five personality dimensions. Participants read statements such

as "I see myself as extraverted and enthusiastic" or "I see myself as anxious and easily upset", and responded on a 7-point Likert scale ranging from "Disagree strongly" to "Agree strongly", with "Neither agree nor disagree" as a mid point. From their normative study, Gosling et al. (2003) reported alphas of .68 for the extraversion scale and .73 for the emotional stability scale. Consistent with these results, in the present study the corresponding alphas for both measures were .60 (Extraversion) and .54 (Emotional Stability). In this study an 11-point scale rather than a 7-point scale was used for consistency with the other scales in the survey.

Cognitive Buffer Factors. Self-esteem, optimism and perceived control scales were used to measure the cognitive buffer factors.

Self-esteem. The Rosenberg Self-Esteem Scale (SES) (Rosenberg, 1965) was used as a measure of self-esteem as one of the three proposed cognitive buffer factors. This widely used global evaluation of self-concept, asks participants to indicate their level of agreement with statements such as "I take a positive attitude to myself". The ten item SES scale has high reliability with Cronbach's alphas for adult samples ranging from .72 to .90, using a 5-point Likert scale (Gary-Little, Williams & Hancock, 1997; Robins, Henden & Trzesniewski, 2001). Adapting the items to an 11 point scale, the alpha coefficient was .88 for this sample.

Optimism. The Revised Life Orientation (LOT-R) scale was used to measure optimism as the second cognitive buffer factor. Based on the earlier scale of Scheier and Carver (1985), the revised scale used here was developed by Scheier, Carver and Bridges (1994) to measure optimism, defined as "generalized expectations of good versus bad outcomes in life". The scale consists of 6 items with 5-point Likert scales ranging from "strongly

disagree" (0) to "strongly agree" (4). Based on the performance of a large adult sample, Scheier et al (1994) reported the scale had an alpha of .78. In this study an 11 point scale was used. The Cronbach's alpha obtained for this sample was .88.

Perceived Control. The Perceived Control scale (Chambers, Hollway, Parsons, & Wallage, 2003) was used to measure perceived control. Participants indicate their agreement to nine items on an 11 point end-defined scale ranging from "strongly disagree" (0) to "strongly agree" (10). The items begin with "When something bad happens to me, I…" followed by a stem designed to measure primary control (e.g., "ask others for help or advice"); secondary control (e.g., "remind myself something good may come of it") or relinquished control (e.g., "don't do anything as nothing can help"). There are three items to measure each type of control. A Cronbach's coefficient alpha of .76 was reported by Chambers et al. (2003) for the Perceived Control scale, with the three relinquished control items reversed coded. In this study the wording of one relinquished control item differed, with the substitution of "let feelings out by crying or yelling" with "let my feelings out so others know how I feel". A Cronbach's alpha of .62 was obtained for the nine item Perceived Control scale in this sample.

Healthy Lifestyle Wellbeing

The Healthy Lifestyle Wellbeing (HLWB) index was created for the purposes of this study, and consists of 4 items assessing satisfaction with eating, exercise and sleeping. Each item is prefaced with "How satisfied are you with…" The HLWB stems are "how well you sleep", "how well you eat", "how well you exercise" and "that your diet is healthy". A reliability coefficient of .80 was obtained.

Healthy Lifestyle Experiences

The Healthy Lifestyle Experiences (HLE) index was the second scale created for the purposes of this study. Participants indicate their agreement to 7 items on an 11 point end-defined scale ranging from 0 = "strongly disagree" to 10 = "strongly agree". The items begin with "How much do you agree with the following statements…" followed by three stems addressing quality of sleep, two stems addressing healthy food choices and two stems addressing amount of exercise achieved (for a full list of questions see the Australian Unity Wellbeing Index in Appendix A).

  Procedure

Participants randomly selected from the Australian Unity Wellbeing project database were sent a questionnaire along with a plain language statement (Appendix B), a brief letter explaining the project and their rights (Appendix B) and a reply paid envelope. Although the current study was part of a larger study, separate ethics approval was obtained from the Deakin University Ethics Committee. Participants consented to participate by the act of filling in the questionnaire and mailing it back. The response rate was 54%.

<div align="center">Results</div>

The variables were screened for errors, missing data and outliers using SPSS 12.0 Explore. Outliers were defined as anything outside the 11-point response choice range given each item. There was just one value outside this range, a score of 88 for question 101 on case 53. This value was treated as a data entry mistake and deleted. Scale scores were computed following reverse coding of negatively worded items. The distributions of

scores on continuous variables were checked for normality. All scales (PWB, NWB,

NeiWB, HLWB, extraversion, life events, self-esteem, optimism, perceived control and

HLE) were found to be negatively skewed except neuroticism, which was positively

skewed. This was expected since research on well-being measures indicates that most

people consider themselves to be happy (Biswas-Diener, Fiener and Tamir, 2003) and do

have higher than average satisfaction scores. Therefore no transformation was taken to

normalize the distributions of these variables.

Hypothesis 1: Healthy Lifestyle Well-being Scale

The scale reliability of the items measuring HLWB was computed. A Cronbach's alpha

of .80 was obtained. From Table 1 it can be seen that the HLWB items generally

correlated higher with the health satisfaction item on the personal well-being scale than

with other domains on the scale. It can also be seen that each item of the HLWB scale

significantly correlated with life satisfaction. These results establish that the HLWB

index forms a reliable scale, and has some construct validity. It also shows that HLWB is

related to SWB.

Table 1

*Healthy Lifestyle Well-being Scale Item Reliabilities and Bivariate Correlations with Life
Satisfaction and Personal Well-being Index items*

HLWB Scale Item	a	b	1	2	3	4	5	6	7	8
Well you sleep	0.48	0.82	0.33**	0.23**	0.37**	0.37**	0.21**	0.35**	0.36**	0.33**
Well you eat	0.74	0.70	0.32**	0.31**	0.37**	0.29**	0.18*	0.30**	0.22**	0.22**
Well you exercise	0.58	0.77	0.36**	0.28**	0.43**	0.34**	0.21**	0.18*	0.19**	0.18**
Diet is healthy	0.71	0.71	0.28**	0.20**	0.33**	0.28**	0.22**	0.18*	0.16*	0.14
HLWB			0.32**	0.25**	0.37**	0.32**	0.28**	0.18*	0.23**	0.13

Note: a = Item-total correlation; b = Alpha if Item deleted. 1 = Life Satisfaction, 2 = Standard of Living, 3
= Health, 4 = Achieve in Life, 5 = Personal Relationships, 6 = Safe, 7 = Community, 8 = Future Security.
** $p < .01$. *$p < .05$ (2-tailed).

The next analysis tested whether the Healthy Well-being Scale items were distinct from the three types of subjective well-being already identified: personal, neighbourhood and national. A factor analysis was performed on the items on the new scale and the items from the other three scales using SPSS DATA REDUCTION, Maximum Likelihood extraction method for four factors, and an oblique rotation (Direct Oblimin). These options were selected after considering the purpose of the analysis, and preliminary analysis of the data. Four factors were selected on theoretical grounds to test the hypothesis. In addition to this, inspection of the scree plots indicated that less than 5% variance would be added with the inclusion of another factor, but that it would make the factor structure harder to interpret. The oblique rotation was selected since the factors could not be considered independent, given many of the items loaded on Factor 1 of the initial solution, with this factor accounting for 37% of the variance. The pattern matrix for the final model is presented in Table 2.

Table 2

Factor Analysis Pattern Matrix for Items on Subjective Well-being Scales

	Factor			
Item	1	2	3	4
your standard of living				0.57
your health				0.38
what you are currently achieving in life				0.69
your personal relationships				0.49
how safe you feel				0.57
Feeling part of your community	0.31			0.76
your future security				0.64
level of trust in your neighbourhood	0.69			
Amount of social participation in your neighbourhood	0.80			
common goals and values in your neighbourhood	0.92			
state of the natural environment in your neighbourhood	0.69			
availability of public resources in your neighbourhood		.33		
Amount of people's sharing & borrowing in your neighbourhood	0.56			
economic situation in Australia		.66		
Natural environment in Australia		.80		

social conditions in Australia	.86			
government in Australia	.81			
business in Australia	.85			
national security in Australia	.62			
how well you sleep			.40	0.38
how well you eat			.82	
how well you exercise			.64	
your diet is healthy			.94	
Initial Eigenvalues	8.13	2.19	2.08	.93
% Variance Explained	37.27	11.41	9.93	5.51
Total Variance Explained = 64.1%				

Extraction Method: Maximum Likelihood. a. Rotation Method: Oblimin with Kaiser Normalization.

It can be seen that there is good separation of the four factors with NeiWB items loading on Factor 1, healthy lifestyle items loading on Factor 2, NWB items loading on Factor 3, and personal well-being items loading on Factor 4. There were few items that loaded higher on a different factor. These items were "feeling part of your community", which loaded higher on Factor 4 than Factor 2; and "how well you sleep" which loaded slightly higher on Factor 3 (HLWB) than Factor 4. These findings provide support for Hypothesis 1.

Hypothesis 2: Healthy Lifestyle Experience and the Homeostatic Model predictors of Subjective Well-being.

The next analyses tested whether HLE significantly predicts SWB, beyond the variance already predicted by the general factors proposed in the homeostatic model of SWB. Initially conceptualized as individual measures of eating, exercise and sleeping experiences, inspection revealed that the items worked better as a scale. The HLE index was created as an aggregate of healthy eating, exercise and sleep experiences, forming a reliable scale, with a Cronbach's alpha of .87, with all items making a strong contribution (see Table 3).

Table 3

Healthy Well-being Experience Scale

Item	a	b
I usually sleep well	0.60	0.85
I usually fall asleep at night easily	0.57	0.86
I usually feel refreshed after a night's sleep	0.68	0.84
I generally make food choices that improve my health	0.64	0.85
The food choices I make help me to feel healthier	0.69	0.84
I get enough exercise	0.68	0.84
The amount of exercise I get makes me feel healthy	0.67	0.85

Note: a = Item-total correlation; b = Alpha if Item deleted

A hierarchical regression was conducted with life satisfaction as the dependent measure. The homeostatic model factors of life events, extraversion, neuroticism, self-esteem, optimism and perceived control were entered in Model 1, and HLE entered in Model 2. The results are presented in Table 4. Analysis was performed using SPSS 12.0 REGRESSION. The results of the regression are presented in Table 5. The homeostatic model factors in Model 1 accounted for a significant 33% of the variance, $F (6, 176) =$ 14.31, $p < .001$, with life event (2%), self-esteem (4%) and optimism (4%) accounting for unique variance, and shared variance amounting to 23%. In Model 2, with the addition of HLE, and additional 3% of variance was accounted for, F Change $(1, 175) = 4.44$, $p <$ .05. In Model 2, the same variables provided unique variance, life event (2%), elf-esteem (3%) and optimism (3%), with healthy lifestyle contributing 2% unique variance, and 23% of shared variance. This result provides support for Hypothesis 2. Table 4

Regression Summary of Homeostatic Factor and Healthy Lifestyle Experience on Life Satisfaction

Model	Variable	B	sr^2	R	R^2	ΔR^2
1				0.57	0.33***	
	Life Event	0.15*	0.02			
	Extraversion	0.07				
	Neuroticism	0.08				
	Self-esteem Scale	0.27**	0.04			

Optimism	0.27**	0.04				
Perceived Control	0.10					
2				0.59	0.35***	0.03*
Life Event	0.13*	0.02				
Extraversion	0.07					
Neuroticism	0.07					
Self-esteem Scale	0.24**	0.03				
Optimism	0.23**	0.03				
Perceived Control	0.07					
Healthy Lifestyle Experience	0.16*	0.02				

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

Hypothesis 3: HLWB will be conceptually closer to PWB than NeiWB or NWB

The factor analysis above has already demonstrated that the only overlap on item

loadings above .3 of the items on the Healthy Lifestyle Well-being scale and other factors

was the loading of the "how well you sleep" item on Factor 4 which also loaded on one

of the items on the Personal Well-being scale. Table 5 presents the means and inter-scale

correlations for the four well-being scales.

Table 5

Means and Correlations of Well-being Scales and Life Satisfaction

Variable	*M*	*SD*	*N*	LS	PWB	HWB	NeiWB	NWB
Life Satisfaction (LS)	77.8	16.9	195	1.00				
Personal Well-being (PWB)	72.5	14.9	189	0.77**	1.00			
Healthy Lifestyle Well-being (HWB)	69.8	24.2	194	0.32**	0.33**	1.00		
Neighborhood Well-being (NeiWB)	64.7	16.1	193	0.45**	0.65**	0.22**	1.00	
National Well-being (NWB)	62.1	18.4	195	0.37**	0.47**	0.23**	0.49**	1.00

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

Consistent with the proximal-distal hypothesis, the HLWB mean was intermediate

(69.8%SM) to the mean for personal well-being (72.5%) and NeiWB (64.7%), and higher

again than the mean for NWB (62.1%). It was also expected that variability would rise

with distance from self. This was the case for the three established scales, but not the

HLWB scale (SD = 24.2). It can also be seen that the inter-scale correlations of this scale were generally lower than for the established scales. These results provide some support for Hypothesis 3.

Discussion

Overall, the results indicated that a valid and reliable healthy lifestyle measure was successfully created. To date, no studies have investigated how perceived positive eating, exercise and sleep combine to relate to SWB, and so it was necessary to make a scale which measures satisfaction with these facets of healthy living. The domains of eating, exercise and sleeping were measured and the healthy lifestyle well-being (HLWB) index consists of the aggregate of satisfaction in these domains.

Further support was provided for the HLWB index by the results of a factor analysis, which indicated that the individual index items group together to create a distinct scale. These findings suggest that not only is the scale forming a factor distinct from all others, but that its underlying theme is healthy lifestyle. The HLWB index was also found to be related to SWB, indicting that high scores on the HLWB are synonymous with a high level of SWB. This extends on previous findings that general health is related to SWB by identifying specific indicators of "general health" and by conceptualizing health in a positive sense.

The hypothesis that healthy lifestyle experiences would add to the prediction of SWB beyond the variance already predicted by general factors of the homeostatic model was also supported. It was found that the aggregate of healthy eating, exercise and sleep experiences combined to form a reliable scale. It can be seen from the results of a regression that healthy lifestyle experiences contributed a significant additional 2% of

variance to SWB above and beyond the variance already accounted for by the general factors of the homeostatic model. This is a small but significant contribution, which reveals that perceived healthy eating, exercise and sleeping experiences, do add to the prediction of the homeostatic model of SWB.

The findings of the current study extend the homeostatic model by revealing what sorts of specific "environmental experiences" interact with established factors in the model. Positive eating, exercise and sleep experiences, it has been shown, do fit into the model of SWB. This indicates that if a person experiences negative, or unhealthy, eating, exercise and sleep experiences, their SWB could become depressed depending on the severity of the experiences. If eating, exercise and sleeping experiences are perceived to be substantially negative, they may exceed the adaptive capacity of the homeostatic system, and level of SWB may be lowered. If, on the other hand, these experiences are perceived to be positive, it does not necessarily mean that SWB will be enhanced. If the individual is already experiencing a level of SWB within their positive set-point range the positive effects will be absorbed by the system.

HLWB was found to be closer conceptually to PWB than NeiWB and NatWB. This provided some support for the third hypothesis, that HLWB would be closer to proximal (self-related) than distal measures of subjective well-being, however other results indicate the need for further research. The HLWB index had a comparatively high standard deviation, suggesting greater variability than the more established scales. In addition to this, the inter-scale correlations within the HLWB were much lower than the inter-correlations of the more established scales. These findings could be due to the instability that can occur during the development of a new scale, alternatively it could be indicating

that HLWB is not a life dimension distinctive in its own right, but rather a domain of another life dimension such as PWB. Although some support is provided for the proximal hypothesis of HLWB, this aspect of the study was very much exploratory and further investigation is needed to clarify the status of Healthy Lifestyle as a construct, and its relation to other domains and dimensions of SWB.

Although research has by now established with little doubt that health is related to SWB, the findings of this report has extended this discovery. To date, most research has measured health in both a negative and general sense. Rather than looking at good health, and how perceiving oneself to be healthy, relates to SWB, much of the health-SWB literature has conceptualized health in a negative way. Measurement of health has also tended to be based on "general health", however general health is an abstract concept, which is far more difficult for an individual to imagine and assess than concrete concepts (Cummins et al , 2003) such eating, exercising and sleeping. Studies which have measured health in a more specific, concrete manner, such as the study by Koukouvou et al. (2004) on the effects of physical exercise on SWB in heart disease patients, have tended to look at health in the objective sense, which it has been established is far less indicative of SWB than subjectively measured health (George & Landerman, 1984).

The finding that healthy lifestyle experiences are predictive of SWB is consistent with previous health-SWB literature. Roysamb et al (2003) suggested that the relationship between perceived health and SWB might be explained by general outlook tendencies. This conclusion fits with the current finding that optimism, or the generalized expectation of good outcomes, consistently relates more than any other one factor to PWB, HLWB,

NeiWB and NatWB. Further support for this can be seen in the finding that HLE contribute to the model of SWB homeostasis, which indicates that their relationship with SWB is mediated by optimism, self-esteem and perceived control.

The findings of the current study provide support for the idea that health need not be conceptualized in a negative sense. The implications of this in the clinical arena may be that if a person is experiencing depressed SWB as a result of a chronic illness, they may be able to strengthen their cognitive buffers and boost their SWB back into its positive set point range by improving their healthy eating, exercise and sleeping experiences, thus enhancing their satisfaction in these domains. In addition, this knowledge may be helpful in the growing epidemic of lifestyle diseases. The physiological benefits of eating healthfully, exercising and getting quality sleep are by now well known. If it can be shown that implementing these habits will also make you "happier", it may be useful in the health promotion domain of psychology.

One limitation of the current study is the mean age of the participants, which was 59 years. It was not intended to use such a restricted sample; however based on individuals registered within the Australian Unity Wellbeing Project it was unavoidable. In order to be able to generalize conclusions to a wider range of the population, future research should gather a wider age range of participants.

More research is needed to clarify how HLWB fits in to the proximal/distal dimension of satisfaction measurement. In addition to this, it would be useful to investigate the HLWB index further, to identify whether it is in fact a distinctive life dimension or one aspect of the health domain of personal well-being.

Conclusion

Results indicate that a reliable and valid scale has been created to measure healthy eating, exercise and sleep. The relationship of the scale with SWB indicates that healthy lifestyle satisfaction in these domains is related to level of SWB experienced. Further, it was found that subjective healthy eating, exercise and sleeping experiences add to the predictive abilities of the SWB model of homeostasis, suggesting that they interact with cognitive buffers, personality, and life events in their relationship with SWB. Results regarding the role of HLWB in the proximal/distal dimension of satisfaction measurement were inconclusive, and further investigation was recommended. and sssssssssssssssssssssssssssssssssssssss And life

References

Benyamini, Y., Leventhal, E.A., & Leventhal, H. (2003). Elderly people's ratings of the importance of health-related factors to their self-assessments of health. *Social Science & Medicine, 56*, 1661-1667.

Biswas-Diener, R., Fiener, E., & Tamir, M. (2004). The psychology of subjective well-being. *American Academy of Arts & Sciences,* 18-25.

Catell, R.B. (1966). The scree test for number of factors. *Multivariate Behavioral Research, 1*, 245-275.

Chambers, S., Hollway, J., Parsons, E-R., and Wallage, C. (November, 2003). *Perceived control and wellbeing*. Quality of Life Conference, Melbourne, Australia.

Cummins, R.A., Eckersley, R., Pallant, J., Van Vugt, J., Shelly, J., Pusey, M., and

    Misajon, R. (2001). *Australian Unity Wellbeing Index: Report #1.* School of

    Psychology, Deakin University, Melbourne.

Cummins, R.A., Gullone, E., and Lau, 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 Well-being Indicators (pp. 7-46). The Netherlands

    (city): Kluwer Academic Publishers.

Cummins, R.A., Eckersley, R., Pallant, J., Van Vught, J., and Misajon, R. (2003).

    Developing a national index of subjective wellbeing: The Australian Unity

    Wellbeing Index. *Social Indicators Research, 64*, 159-190.

D'Ambrosio, C., Bowman, T., and Mohsenin, V. (1999). Quality of life in patients with

    obstructive sleep apnea: Effects of nasal continuous positive airway pressure-A

    prospective study. *Chest, 115*, 123-129.

Diener, E. (2000). Subjective well-being: The science of happiness and a proposal for a

    national index. *American Psychologist, 55*, 34-43.

Diener, E., Suh, E.M., Lucas, R.E., & Smith, H.L. (1999). Subjective well-being: Three

    decades of progress. *Psychological Bulletin, 125*, 276-302.

Fox, K. R. (1999). The influence of physical activity on mental well-being. *Public*

    Health Nutrition, 2, 411-418.

Gary-Little, B., Williams, V.S.L., and Hancock, T.D. (1997). An item response theory

    analysis of the Rosenberg Self-Esteem Scale. *Journal of Personality, 37*, 504-528.

George, L.K., and Landerman, R. (1984). Health and subjective well-being: A replicated

secondary data analysis. *International Journal of Aging and Human Development, 19*, 133-156.

Greeno, C.G., Jackson, C., Williams, E.L., and Fortmann, S.P. (1997). The effect of perceived control over eating on the life satisfaction of women and men: Results from a community sample. *International Journal of Eating Disorders, 24,* 415-419.

Gosling, S.D., Rentfrow, P.J., and Swann, W.B. (2003). A very brief measure of the Big-Five personality domains. *Journal of Research in Personality, 37*, 504-528.

Hong, S., & Dimsdale, J.E. (2003). Physical activity and perception of energy and fatigue in obstructive sleep apnea. *Medicine & Science in Sports & Exercise, 35*, 1088-1092.

Ito, Y., Tamakoshi, A., Yamaki, K., Wakai, K., Kawamura, T., Takagi, K., Hayakawa, T., and Ohno, Y. (2000). Sleep disturbance and its correlates among elderly Japanese. *Archives of Gerontology and Geriatrics, 30*, 85-100.

Katja, R., Paivi, A., Marja-Terttu, T., and Pekka, K. (2002). Relationships among adolescent subjective well-being, health behavior, and school satisfaction. *Journal of School Health, 72,* 243-249.

Kelly, W.E. (2004). Sleep-length and life satisfaction in a college student sample. *College Student Journal, 38*, 428-430.

Konu, A, I., Lintonen, T.P., and Rimpela, M.K. (2002). Factors associated with schoolchildren's general subjective well-being. *Health Education Research, 17*, 155-165.

Koukouvou, G., Kouidi, E., Iacovides, A., Konstantinidou, E., Kaprinis, G., and

Delingiannis, A. (2004). Quality of life, psychological and physiological changes

   following exercise training in patients with chronic heart failure. *Journal of*

   Rehabilitation Medicine, 36, 36-41.

Mellor, D.J., Cummins, R.A., Karlinski, E., and Storer, S.P. (2003). The management of

   subjective quality of life by short-stay hospital patients: An exploratory study.

   Health and Quality of Life Outcomes, 1, 39-47.

Nakayama, T., and Amagasa, T. (2004). Special references to employees' knowledge

about

   depression and suicide: Baseline results of a workplace-based mental health

   support program. *Psychiatry and Clinical Neurosciences, 58*, 280-284.

Okun, M. A., and George, L.K. (1984). Physician- and self-ratings of health, neuroticism

   and subjective well-being among men and women. *Personality and Individual*

   Differences, 5, 533-539.

Pallant, J. (2002). *SPSS Survival Manual* (2nd ed)*.* Sydney: Allen & Unwin.

Pilcher, J.J. (1998). The relationship between sleep and measures of health and well-

   being in college students: a repeated measures approach. *Behavioral Medicine,*

   23, 170-178.

Rejeski, W.J., Shelton, B, Miller, M., Dunn, A.L., King, A.C., and Sallis, J.F. (2001).

   Mediators of increased physical activity and change in subjective well-being:

   Results from the activity counseling trial. *Journal of Health Psychology, 6,* 159-

   168.

Robins, R.W., Henden, H.M., and Trzesniewski, K.H. (2001). Measuring global self-

   esteem: Construct validation of a single-item measure and the Rosenberg Self-

Esteem Scale. *Personality and Social Psychology Bulletin, 27*, 151-161.

Rosenberg, M. (1965). *Society and the adolescent self-image.* Princeton, NJ: Princeton University Press.

Røysamb, E., Tambs, K., Reichborn-Kjennerud, T., Neale, M.C. and Harris, J.R. (2003). Happiness and health: Environmental and genetic contributions to the relationship between subjective well-being, perceived health, and somatic illness. *Journal of Personality and Social Psychology, 85*, 1136-1146.

Sale, C., Guppy, A., and El-Sayed, M. (2000). Individual differences, exercise and leisure activity in predicting affective well-being in young adults. *Ergonomics, 43*, 1689-1697.

Scheier, M. F., and Carver, C. S. (1985). Optimism, coping, and health: Assessment and implications of generalized outcome expectancies. *Health Psychology, 4*, 219-247.

Scheier, M. F., Carver, C. S., and Bridges, M. W. (1994). Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): A reevaluation of the Life Orientation Test. *Journal of Personality and Social Psychology, 67*, 1063-1078.

Takami, K., Gakuen, K., and Ishii, M. (2004). The relationship between eating, sleeping, and evacuation and mental health. *Japanese Journal of Health Psychology, 17*, 11-21.

Zautra, A., and Hempel, A. (1984). Subjective well-being and physical health: A narrative

literature review with suggestions for future research. *International Journal of Aging and Human Development, 19*, 95-110.

Zeitlhofer, J., Schmeiser-Rieder, A., Tribi, G., Rosenberger, A., Bolitschek, J., Kapfhammer, G., Saletu, B., Katschnig, H., Holzinger, B., Popovic, R., and Kunze, J. (2000). Sleep quality of life in the Austrian population. *Acta Neurologica*

Scandinavica, 102, 249-257.

Zhang-Hampton, N. (2004). Subjective well-being among people with spinal cord injuries: The role of self-efficacy, perceived social support, and perceived health. *Rehabilitation Counseling Bulletin, 48*, 31-37.