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Intervention Efficacy Among 'At Risk' Adolescents: A Test of Subjective Wellbeing Homeostasis Theory

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Abstract This study tests a number of theoretical predictions based on subjective wellbeing (SWB) Homeostasis Theory. This theory proposes that SWB is actively maintained and defended within a narrow, positive range of values around a 'set-point' for each person. Due to homeostatic control, it is predicted to be very difficult to substantially increase SWB in samples operating normally within their set-point-range. However, under conditions of homeostatic defeat, where SWB is lower than normal, successful interventions should be accompanied by a substantial increase as each person's SWB returns to lie within its normal range of values. This study tests these propositions using a sample of 4,243 participants in an Australian Federal Government Program for 'at-risk' adolescents. SWB was measured using the Personal Wellbeing Index and results are converted to a metric ranging from 0 to 100 points. The sample was divided into three sub-groups as 0–50, 51–69, and 70+ points. The theoretical prediction was confirmed. The largest post-intervention increase in SWB was in the 0–50 group and lowest in the 70+ group. However, a small increase in SWB was observed in the normal group, which was significant due to the large sample size. The implications of these findings for governments, schools and policy makers are discussed.

Keywords Subjective wellbeing · Adolescents · Intervention efficacy · Homeostasis theory · Happiness · Positive psychology critique

1 Introduction

An alternative to the traditional indicators of national performance and progress, such as income, high-school completion, and GDP, is the measure known as subjective wellbeing

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(SWB). There has been a dramatic increase in the development and implementation of programs and strategies designed to increase SWB, spurred by the recent and rapid growth of Positive Psychology (Seligman 2002). An extraordinary number of life coaches, motivational speakers, self-help gurus, 'wellness' centres and academics alike, currently promote the pursuit of greater happiness. However, there is a theoretical reason to predict that many such endeavours will fail in their mission to increase SWB. This paper explains why this is so, and then presents confirmatory evidence.

We begin with a brief critique of Positive Psychology, highlighting the uncritical acceptance and promotion of intervention strategies yet to be demonstrated as efficacious. We then describe the SWB construct and introduce Homeostasis Theory as the underlying theoretical paradigm that explains stability and change. Next, a number of theoretical predictions are tested based on this theory.

1.1 A Problem with Positive Psychology

In a recent examination of the Positive Psychology literature, Cummins (2013) highlighted several major problems inherent in this rapidly expanding area. He stated that the presumed benefits associated with a range of Positive Psychology interventions are often exaggerated. He also highlighted that many researchers and proponents of Positive Psychology display an uncritical appreciation of this literature and, thus, promote intervention strategies founded upon questionable, even misleading, research findings. This examination highlights the dangers of endorsing techniques like gratitude and forgiveness as being effective in raising wellbeing. Cummins concluded that a detailed examination of their studies failed to show results that inspire confidence in the ability of positive psychological techniques to raise the SWB who have normal levels of wellbeing. In summary, Cummins' critique of Positive Psychology identifies a number of commonly cited studies that draw positive conclusions about the efficacy of Positive Psychology interventions, either in the absence of reliable evidence or based on small effect sizes.

These concerns receive support from the report by Seligman et al. (2009) on the effectiveness of the Penn Resiliency Program (PRP). This is a cognitive–behavioral group intervention program, designed to prevent depression in young people aged 10–14 years. The authors claim that, compared to control groups, PRP "reduces and prevents symptoms of depression… reduces hopelessness… prevents clinical levels of anxiety… may reduce behavioural problems" (p. 298). However, according to an independent meta-analysis of the PRP conducted by Brunwasser et al. (2009), few of the reported effect sizes even reached statistical significance. Further, these authors conclude that, in relation to the effects of PRP on depressive symptoms, "data available show no evidence that PRP is superior to active control conditions at either post-intervention or 6–8 month follow-up" (pp. 1050). They also conclude that PRP failed to have a significant effect on diagnoses of depression.

Critical analysis of another widely cited experiment, this time by Froh et al. (2008), again highlights problems of reporting in the Positive Psychology literature. As part of this study, the authors investigated the effect of gratitude on SWB and related variables in a sample of 221 grade six and seven school students ($\underline{M}_{age} = 12.17$ years). Participants were randomly assigned into one of three conditions for a period of 2 weeks as: gratitude condition ($n = 76$); hassles condition ($n = 80$); and control condition ($n = 65$). In the gratitude condition, children were asked to list up to five things they were grateful for since yesterday. As part of the hassles condition, children were asked to list up to five hassles that occurred in their life. Finally, the control group simply completed measures of life

satisfaction, positive and negative affect, The Brief Multidimensional Students Life Satisfaction Scale (BMSLSS) (Seligson et al. 2003) was used as an additional measure of Life Satisfaction, together with physical symptoms, reactions to aid, and prosocial behaviour. Based on their findings, the authors conclude that, "Indeed, the majority of hypotheses were confirmed, suggesting that the gratitude induction was related to enhanced well-being, gratitude, and less negative affect" and that "significant change was present at the 3-week follow-up for all dependent variables, in which the gratitude induction was related to optimism, overall life satisfaction, and domain-specific life satisfaction (e.g., school)" (pp. 228).

Closer inspection of their findings, however, casts doubt on the validity of these claims. For example, Froh et al. reported no differences in life satisfaction, measured in three ways, including the two single items 'Life as a whole during the past few weeks' and 'How they expected to feel about their life next week', and the 5-item BMSLSS. Moreover, despite stating on page 223 that "Overall life satisfaction composites were created by summing the five items of Huebner et al.'s (2003) multidimensional scale", the authors only present significant results for three of the items comprising the BMSLSS. One of these reported items, the domain of 'School Satisfaction', hardly constitutes a measure of 'overall life satisfaction' and warrants a re-interpretation of their statement in the abstract that "counting blessings seems to be an effective intervention for well-being enhancement in early adolescents". It is also notable that pre-post intervention scores are not offered in their Tables 3 and 4, which present between-group comparisons for the life satisfaction measures. These matters raise further doubt at the robustness of their conclusion that "counting blessings [e.g., gratitude] was associated with enhanced life satisfaction" (pp. 213). These interpretive problems are compounded by their later assertion (Froh and Bono 2011) that "the best evidence that gratitude can improve youth's well-being comes from three gratitude intervention studies" (referring specifically to the 2008 study in question).

The widespread belief that greater happiness is attainable by everybody exists in a theoretical vacuum. However, a theory that allows predictions to be made regarding the processes involved in sustaining and improving SWB is Homeostasis Theory (Cummins 2010).

1.2 Subjective Wellbeing and Homeostasis Theory

SWB can be defined as a normally positive state of mind that involves the whole life experience. Typically measured through questions of life-domain satisfaction, the responses are traditionally considered to comprise affective and cognitive evaluations (Campbell et al. 1976; Diener and Diener 1996; Diener et al. 2003; Steel and Ones 2002; Veenhoven 1994). However, recent empirical research involving adult and adolescent samples has sought to clarify the relative contributions of affect and cognition to SWB (e.g., Blore et al. 2011; Davern et al. 2007; Tomyn and Cummins 2011a). Using Structural Equation Modelling, these studies provide evidence that the content of SWB is strongly dominated by affect in the form of Homeostatically Protected Mood (HPMood; Cummins 2010). This comprises the three mood affects of content, happy and alert. Cognitive discrepancies (Michalos 1985) play a significant but subsidiary role. Moreover, other models, such as Headey and Wearing's Dynamic Equilibrium Model (1989, 1992) and various personality-based models of SWB (e.g., DeNeve and Cooper 1998; Emmons and Diener 1985; Headey and Wearing 1989, 1992; Vitterso 2001; Vitterso and Nilsen 2002), need to be revisited in the presence of suitable affective controls.

Homeostasis Theory (Cummins 2010) offers a comprehensive description of the SWB construct, including its determination, stability and change across the human lifespan. This theory proposes that SWB is actively maintained and controlled by automatic, neurological devices around a 'set-point', a general idea first described by McGue et al. (1993). More recently it has been proposed that, in a manner analogous to the physiological, homeostatic maintenance of body temperature (Cummins 2010; Cummins and Nistico 2002), SWB homeostasis has the goal of defending the affective core of SWB, which is HPMood and reflects the set-point—a person's genetically-inherited tendency to experience a unique level of felt-positivity (Cummins 2013).

The idea that levels of SWB are under genetic control is not new (e.g., Lykken and Tellegen 1996). What is novel, however, are the findings by Cummins et al. (2014) suggesting that individual set-points normally range between 70 and 90 points on a standard 0–100 point range. Moreover, the distribution of set-points within this range is normal, thus yielding a theoretical population mean score of 80 points. This estimation reasonably corroborates data from the Australian Unity Wellbeing Index—an extant project that has tracked the SWB of the Australian population since 2001. Over the 28 surveys conducted to date, each involving a new and geographically representative sample of 2,000 Australian adults, the mean SWB yielded by each survey has varied within a very narrow 3.0 percentage point range, from 73.7 to 76.7 points (Cummins et al. 2012), demonstrating remarkable stability in population SWB. The discrepancy between this range and the mean set-point of 80 points is proposed to represent the proportional degree of homeostatic failure within the population samples employed.

Homeostasis theory offers a theoretical explanation for the stable and positive nature of SWB observed at the level of individuals and populations. This theory predicts that under normal, relatively unchallenging life circumstances, our sense of personal well-being is controlled by the homeostatic system. Thus, under low threat conditions, people will experience a level of wellbeing that reflects their normal set-point range, which extends some nine percentage points on either side of their set-point (Cummins et al. 2014).

However, when excessive demands are placed on an individual, homeostasis can be overwhelmed. When this occurs, the agent causing the homeostatic failure can assume control over the level of wellbeing. Such homeostatic failure and the subsequent drop in SWB below the set-point range signals a high probability of depression (Cummins 2010). Under these circumstances, SWB will be highly sensitive to the power of resources and challenges since homeostasis is no longer operating as an effective buffering agent (Cummins et al. 2014). Return to set-point is then determined by the strength of a person's adaptive resources (e.g., money, purpose in life and a close interpersonal relationship) matched against the strength of the challenging agent. Thus, for people operating below their set-point range, a successful intervention may restore SWB from the depressed state back to its normal level (Cummins 2013).

Several diagnostic approximations regarding the personal wellbeing of people and groups can be made based on the findings (Cummins et al. 2014) that set-points exist between the levels of 70 and 90 points and have a normal operating range (set-point-range) of around 18–20 points. From this it can be calculated:

1. SWB scores at or above 70 points reflect a normally-functioning homeostatic system.
2. SWB values of equal to or below 50 points (70 - 20 points), represent homeostatic failure.

3. SWB scores between 51 and 69 points cannot be unequivocally interpreted. Any score within this range may represent the homeostatic failure of a high set-point or homeostatic normality of a low set-point.

1.3 Summary and Hypotheses

Much of the Positive Psychology literature promotes a range of intervention strategies designed to improve SWB. Homeostasis Theory, however, proposes that the effectiveness of interventions will be crucially dependent on the baseline. It predicts that an effective intervention will induce an increase in the SWB of people who are below their set-point-range at baseline, to potentially raise their SWB to the point that they regain homeostatic control. However, for people registering a SWB of 70+ points at baseline, the effect of any intervention to raise SWB is limited by each person's set-point-range. Based on this reasoning, it is hypothesised that:

1. For people operating normally within their set-point-range, an effective intervention will achieve a small increase in SWB, at best.
2. For people who are in homeostatic defeat at baseline, the intervention will raise their SWB substantially, potentially to the point that they regain homeostatic control.

2 Method

2.1 Participants

Participants were 4,243 young people aged 12–19 years ($M = 14.91$ years; $SD = 1.58$ years). A slight majority, 2,231 (52.6 %) were male. They were participants in The Australian Federal Government Department of Education's Youth Connections Program, which is described below.

2.2 Measures

2.2.1 General Life Happiness (GLH)

General Life Happiness (GLH) is measured by a single-item that asks 'How happy are you with your life as a whole'? (0 = Very Sad; 5 = Not happy nor sad; 10 = Very Happy).

2.2.2 The Personal Wellbeing Index-School Children

The Personal-Wellbeing Index-School Children (PWI—SC; Cummins and Lau 2005) is a parallel version of the PWI-Adult (IWG 2006). The PWI-SC comprises the same seven domains, however, the language has been simplified to increase understanding and comprehension. It asks respondents to rate their levels of 'happiness' with seven domains as: Standard of living, Health, Achieving in life, Relationships, Safety, Community connection and Future security using the same 11-point end-defined scale described for the measure of GLH. Adequate psychometric properties for this scale have been reported by Tomyn et al. (2013) and Tomyn and Cummins (2011a, b). In this study, SWB correlated 0.68 (pre-program) and 0.70 (post-program) with the single item measure of GLH, indicating

convergent validity. Cronbach's alphas were 0.82 (pre-program) and 0.83 (post-program). To ensure that each item has the same factor loading, justifying the summation of the seven PWI domains into the subjective wellbeing composite, a tau-equivalent measurement model was tested via confirmatory factor analysis (CFA) in AMOS (Graham 2006). Model fit between two single-factor models were compared—an unconstrained and constrained model. As χ^2 is sensitive to sample size and also to minor departures from normality (DiStefano and Hess 2005; Kline 2005), adequacy of model fit is examined using the following criteria: Comparative Fit Index (CFI $\geq$ 0.95 for good fit), Normed Fit Index (NFI $\geq$ 0.95 for good fit), Root Mean Square Error of Approximation (RMSEA $<$ 0.05 for good fit, $<$0.08 for adequate fit) (Byrne 2010; Hu and Bentler 1999). The present study also uses ΔCFI $>$ 0.01 to indicate practical change in fit, as recommended by Cheung and Rensvold (2002).

As shown in "Appendix", the baseline model fit the data very well (CFI = 1.00; NFI = 0.99; RMSEA = 0.000), suggesting that the PWI measures a uni-dimensional construct. Fit indices for the tau-equivalent model shows that although the value for χ^2 is significant, this likely reflects large sample size rather than model misspecification given that the other fit indices (i.e., CFI, NFI and RMSEA) were all within acceptable levels. Moreover, the change in CFI does not exceed the cut-off of 0.01, suggesting that constraining factor loadings did not substantially worsen model fit. Overall model fit is excellent, despite the imposition of equal factor loadings, and so the domain scores are combined to yield a composite measure of SWB.

2.3 Procedure

The Youth Connections Program targets young people 'at-risk' of not attaining year 12 or equivalent, or who have already disengaged from education, employment and training, their families and/or their communities. The aim of the program is to provide these people with individualised, case managed supportive services to help improve educational and employment related outcomes and to assist them in making more positive life choices. Young people participating in the program have been identified as having one or more barriers to progression and/or highly complex personal situations, including, but not exclusively, behavioural problems, socialisation issues, physical and psychological health problems, learning difficulties, parenting and caring responsibilities, homelessness, victims of bullying, drug and alcohol problems and physical and psychological abuse. Young people at-risk are referred to the program in a number of ways, such as by their teachers, parents or guardians, Centrelink (social services) or via self-referral.

The type of supportive/reengagement services a young person receives depends on their particular circumstances and needs. For example, these may include career counselling, advocacy with schools, support with family issues, support to connect with other services such as Centrelink, Headspace (a national youth mental health foundation that assists young people who are going through a tough time by offering mental health and counselling services, education and employment services and alcohol and drug services) or legal aid. Youth Connections providers also run group activities for young people to improve self-esteem, pre-vocational skills, literacy and motivation. Youth Connections providers work closely with other services including Juvenile Justice, Care and Protection, multicultural youth services, the Police and Indigenous organisations. Thus, Youth Connections can be considered a global intervention strategy that targets the cause(s) of youth disengagement/risk as well as offering emotional and counselling/cognitive type support.

At the first meeting that prospective participants had with their Case Manager, young people were invited to take part in this study. As part of this invitation, prospective participants were informed of nature of the study via an explanatory statement as:

> We are interested in how young people in the program are feeling about themselves and about things in their lives. For example, how happy you are you with your life as a whole? One of the ways we can find out this information is by doing some surveys with young people when we first start working together and then once more at the end of the program.

Young people were also informed that participation in the study was completely voluntary and that they were free to withdraw at any time. Once informed consent was provided by the participant and their parents/guardians, case managers showed participants the 0 (Very Sad) to 10 (Very Happy) response scale. This scale provides a visual aid to guide responses. Case managers then proceeded to verbally administer the GLH and PWI-SC items and recorded participants' responses. Verbal administration ensured comprehension and understanding of scale items among participants with below average reading and writing abilities. Case managers then entered the responses by hand into a database that also comprised participants' socio-demographic information (e.g., gender, age, state of residence, post-code, year level at school) and records.

At the conclusion of the young person's time in the Youth Connections Program, defined by obtaining one or more program outcomes (e.g., performance at school or education setting improved over a semester, found/maintained part-time/full-time employment for a period of at least 12 weeks, behaviour at school improved, abstained from drugs/alcohol), participants completed a post-program measure of SWB. The average time between initial and final measures was 132.84 days (SD = 88.13 days) or 4.29 months (SD = 2.84 months).

A secondary, de-identified data set was exported from the government database to the Project Leader at RMIT University for data preparation and analysis using SPSS Version 20.0 (SPSS 2011).

3 Results

3.1 Data Cleaning and Preparation

All cases were examined for response set. This is deemed to occur when a respondent consistently scores at the scale minimum (0) or maximum (10) for all seven of the PWI domains. These cases are considered unreliable and subsequently removed prior to the main analyses, as recommended by the scale authors (Cummins and Lau 2005). From the initial sample of 4,403 participants who completed the PWI-SC pre-program, 55 response sets were evident (1.25 %) and subsequently deleted. From the remaining 4,348 cases, 105 response sets were evident (2.41 %) in the post-program SWB measure and were also deleted, leaving 4,243 cases who completed the assessment on both occasions.

SPSS frequency output revealed no missing data. Examination of z-scores revealed univariate outliers on domain satisfaction variables and SWB composite variables in both pre-post program SWB measures. However, comparison of mean scores on these variables with corresponding means trimmed at the upper and lower 5 % showed that none of these outliers significantly influenced mean scores on key variables. Consequently, these univariate outliers were retained for subsequent analyses (Pallant 2001). Absolute skew and

kurtosis values were within the acceptable ranges of <2.0 and <7.0 respectively (Curran et al. 1996), thus demonstrating that domain scores were normally distributed.

3.2 Pre-Post Program SWB Data

Table 1 displays correlations between GLH and PWI domains pre-post program. The post-program correlations are presented along the horizontal in italics.

The relationship between GLH and the domains ranges between 0.32 and 0.53 pre-program and between 0.34 and 0.55 post-program. The lowest correlations are between the domains of Standard of Living and Community Connection (0.26 pre and 0.27 post).

To test the first hypothesis, that for people operating normally within their set-point-range the intervention will achieve a small increase in SWB, at best, descriptive statistics were examined. Consistent with this hypothesis, mean SWB in the 70 + group increased by only 1.48 points post-program.

To investigate the second hypothesis, that for people suffering homeostatic defeat at baseline, the intervention will raise their SWB substantially, potentially to the point that they regain homeostatic control, three paired samples t-tests were conducted. These compare SWB between pre-program (T1) and post-program (T2) for each of the three score-groupings as: 0–50, 51–69, and 70+ points. The results are presented in Table 2.

Consistent with the second hypothesis, the intervention was associated with substantial improvements in mean SWB in the two groups with lower than normal mean SWB. This increase was 23.75 points in the ≤ 50 group and 12.08 points in the 51-69 group. It is also

Table 1 Correlations between variables pre-post program

Variable	1.	2.	3.	4.	5.	6.	7.	8.
1. GLH	–	*0.55*	*0.50*	*0.51*	*0.51*	*0.52*	*0.34*	*0.51*
2. Standard of living	0.53	–	*0.44*	*0.42*	*0.38*	*0.42*	*0.27*	*0.39*
3. Health	0.47	0.38	–	*0.51*	*0.39*	*0.44*	*0.33*	*0.43*
4. Achieving in life	0.47	0.40	0.44	–	*0.47*	*0.41*	*0.31*	*0.46*
5. Relationships	0.49	0.39	0.39	0.44	–	*0.52*	*0.39*	*0.40*
6. Safety	0.51	0.39	0.40	0.36	0.49	–	*0.41*	*0.43*
7. Community	0.32	0.26	0.31	0.31	0.40	0.40	–	*0.41*
8. Future Security	0.49	0.39	0.40	0.45	0.40	0.40	0.41	–

All correlations are significant ($p < 0.001$). Post-program correlations are presented along the horizontal in italics

Table 2 Significance of difference in mean SWB for each PWI group pre-post program

PWI group (T1)	SWB_T1			SWB_T2			*t* test		
	N	M	SD	N	M	SD	t	df	*p*
1. 0–50	353	41.91	8.48	353	65.66	15.18	−26.935	352	<0.001
2. 51–69	1,104	61.79	4.96	1,104	73.87	11.57	−34.005	1,103	<0.001
3. 70+	2,786	81.78	7.54	2,786	83.26	9.67	−8.048	2,785	<0.001
PWI total	4,243	73.26	14.61	4,243	79.35	12.20	−30.437	4,242	<0.001

T1 = Time point 1 or 'pre-program', T2 = Time point 2 or 'post-program'

Table 3 Mean SWB and standard deviations for young people in each of eight PWI groups pre-post program

PWI group at T1	SWB_T1			SWB_T2			Difference (M2 − M1)
	N1	M1	SD1	N2	M2	SD2	
1. 21–30	26	27.64	2.80	26	70.71	20.21	43.08
2. 31–40	88	36.30	3.03	88	62.91	16.40	26.61
3. 41–50	229	46.94	2.88	229	66.70	12.89	19.76
4. 51–60	444	56.64	2.87	444	72.08	11.96	15.44
5. 61–70	798	66.07	2.84	798	75.47	11.05	9.40
6. 71–80	1,207	75.84	2.81	1,207	80.10	9.19	4.26
7. 81–90	1,025	85.34	2.90	1,025	85.49	8.69	0.15
8. 91–98.57	416	94.13	2.18	416	88.86	8.70	-5.27
PWI total	4,243	73.26	14.61	4,243	79.35	12.20	6.09

interesting to note the substantial variance increase for the two lowest groups. This within-group variance approximately doubled for both groups while showing a far more modest 2.1 point increase for the 70+ group. Finally, it is notable that the overall standard deviation post-program (12.20 points) is consistent with normal data for adult samples collected as part of the Australian Unity Wellbeing Index (Cummins et al. 2012).

A Mixed-model ANOVA was conducted to test the significance of apparent interaction in Table 2. Using Time as the Within-groups variable and the initial PWI group as the between-groups variable this analysis revealed a significant interaction effect $F(2,4240) = 865.984$, $p < 0.001$, partial eta squared $= 0.290$. In further support of the second hypothesis, the increase in mean SWB for the ≤50 group was significantly greater than that achieved by both the 51–69 group and 70+ group.

To provide a more detailed insight into the baseline-score influence over these pre-post group differences, Table 3 displays pre-post program SWB for eight different groups based on individual pre-program scores.

What is most evident from Table 3 is the consistent decline in the influence of the intervention program with increasingly higher initial levels of SWB at baseline. This consistency is also reflected in the increasing post-program variances. Another notable observation is the reduction of 5.27 points post-program in the 91–98.57 group.

4 Discussion

The aim of this study was to test a number of predictions based on Homeostasis Theory concerning the potential for interventions to improve SWB. This theory posits that it will be difficult to substantially increase SWB in samples operating normally within their set-point-range. This is due to homeostatic forces that maintain SWB within a positive range of values around a set-point (Cummins 2010). However, for people experiencing homeostatic defeat, successful interventions should theoretically be accompanied by a substantial SWB increase as it returns to lie within its normal range of values.

Consistent with the first hypothesis, that for people operating normally within their set-point-range, the intervention will achieve only a small SWB increase, the 70 + group increased by only 1.48 points post-program. However, when additional sub-groups were

generated (Table 3), these show differing responses. The smallest increase of 0.15 points occurred within the intermediate 81-90 point group, the highest group actually showed a decrease, while the lowest group increased by 4.26 points.

The explanation of these results in terms of homeostasis theory is as follows:

(a) All members of the highest 91–98.57 group are evidencing scores above the range of set-points, which is 70–90 points (Cummins et al. 2014). Thus, these high values are dominated by emotional responses at T1 rather than reflecting levels of HPMood. Because of this, their values at T2 are likely to be reduced because the positive emotion has likely subsided or disappeared.

(b) The range of 81–90 points falls within the range of set-points. Thus, some respondents at T1 will be operating within their set-point-range. Other respondents, however, will have a set-point below this range, and will have been included due to a positive emotional response. Thus, the small increase of 0.15 points from T1 to T2 is due to two factors. First, homeostasis is opposing rises in SWB for those people operating within their set-point range and, second, regression to their set-point by people who were under the influence of an emotional response at T1.

(c) The T1 range of 71–80 points evidences a rise of 4.26 points. It is likely that the majority of this group will be operating within their set-point-range at T1. Moreover, people who are in this range due to an emotional response will comprise those with a higher set-point (81–90) who are under homeostatic challenge and so in the lower half of their set-range. It may well be, therefore, that the 4.26 point rise in SWB from T1 to T2 is dominated by the influence of this challenged group.

These explanations of the observed changes, from the perspective of homeostasis theory, seem plausible. An additional observation consolidates this view through the obvious operation of ceiling effects. Even though the 81–90 T1 group had an average 15 points of potential movement up to 100 points, the average shift in this direction was just 0.15 points. For the T1 group at 71–80 points, the potential upward shift is an average 25 points, yet the actual shift was 4.26 points. Of course these small increases are also dependent on the efficacy of the intervention to make a change, but this efficacy is very evident in the low T1 groups. All in all it can be concluded that the idea of homeostasis and set-point-ranges is well supported by these results.

The second hypothesis, that for people evidencing homeostatic defeat at baseline, the intervention will raise their SWB substantially, is also supported. Again according to theory, groups below 70 points comprise people who either are operating in the lower portion of their set-point-range, or who have left the range due to homeostatic failure. It is thus predicted that, the further the T1 group mean lies below 70 points, the greater will be the average discrepancy between set-points and measured SWB. As a consequence, in response to an effective intervention, at T2 the magnitude of increase in SWB should be linearly and inversely related to the magnitude of the T1 group mean score. The results reflect this predicted trend, as the lowest-ranking respondents evidence the largest positive responses to the intervention.

These findings are consistent with results reported from another intervention program for at-risk populations. Earlier, we described the Penn Resiliency Program and noted that the authors had drawn positive conclusions based on small effect sizes. However, one effect that did achieve statistical significance was in relation to ‘targeted’ rather than ‘universal’ samples. Targeted samples comprised participants known to be ‘at-risk’ for depression. Universal samples, by contrast, had no such predisposition. The intervention

was found to be most efficacious for adolescent participants who reported elevated depressive symptoms at baseline.

In summary, the efficacy of intervention programs that aim to increase SWB are most evident for samples experiencing homeostatic challenge or defeat at baseline. Then, subject to the intervention providing appropriate supportive resources, it is likely that SWB will rise. However, when participants at baseline are maintaining a normal-range level of SWB there is little likelihood that the intervention will effectively raise SWB.

4.1 Study Implications for Policy and Practice

There is no question as to the value of investing in intervention strategies directed toward improving the psychological wellbeing of people and groups in need. However, in a world of finite resources, it is imperative that governments, schools and policy makers make informed decisions about how to best distribute resources for this purpose. According to Brunwasser et al. (2009) commenting on the implementation of intervention strategies, they recommend that implementation of an intervention is justified only if the existing data show promise. In this light, it is concerning that the popularity of Positive Psychology has seen recent attention directed towards implementing new strategies to increase mood happiness and SWB based on findings which are yet to establish their efficacy.

The results presented in this study contribute to our understanding of the potential for interventions to improve SWB by highlighting the need for targeted-programs. The results clearly demonstrate that people at the lower end of the SWB spectrum will be most responsive to intervention and have the greatest potential to benefit from additional resources.

Our concluding thought is that it may be time to herald an era of 'Resilience Psychology'. Rather than focusing on interventions aimed at enhancing the wellbeing of people who are already well, it is suggested that concerted efforts be directed toward building personal resources and strengthening relationships, with the primary aim to enhance one's defence system against potential threats to SWB homeostasis. It is possible that the promotion of resilience in universal samples may prove more efficacious in the long-term than positive psychology practices that promise immediate improvement for all people, regardless of their current levels of SWB and genetic tendency to experience mood affect.

Appendix

See Table 4.

Table 4 Tau equivalence testing using confirmatory factor analysis (CFA) in AMOS

Model	χ^2	*df*	χ^2/df	CFI	NFI	RMSEA	ΔCFI
Baseline	6.254*	6	1.04	1.00	0.99	0.00	
Tau equivalence	64.43*	12	5.37	0.99	0.99	0.03	0.01

*$p < 0.01$

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