School-Based Subjective Wellbeing Intervention for Adolescents

by

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Submitted in partial fulfilment of the requirements for the degree of

Doctor of Psychology (Health)

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Executive Summary

Subjective Wellbeing (SWB) can be defined as an individual’s perception of their own quality of life (Cummins, 2000a). Despite evidence suggesting that the majority of the population exhibit positive SWB (Cummins, Woerner, Weinberg, Collard, Hartley-Clark, & Horfiniak, 2013; Pew, 2007), people who have very low SWB may also be vulnerable to a range of adverse health consequences, including depression (Cummins, 2010), cardiovascular disease (Williams & Schneiderman, 2002), and poor immune functioning (Howell, Kern, & Lyubomirsky, 2007). Increasingly, there have been calls for targeted intervention in adolescent populations as they have been shown to be vulnerable to low SWB because of mood variability and under-developed coping mechanisms characteristic of this developmental phase (Ben-Zur, 2003; Casas, Malo, Bataller, Gonzalez, & Figuer, 2009; Park, 2004; Patel, Flisher, Hetrick, & McGorry, 2007; Suldo & Huebner, 2004). Prior SWB interventions, however, have provided mixed evidence for efficacy. This may be as a result of not comprehensively and/or adequately addressing the mechanisms perceived to be pertinent in improving SWB.

The present thesis uses the Theory of SWB Homeostasis to guide further investigation as several predictions from this theory may provide important insights. In particular, this theory proposes that: (1) key risk/protective factors need be targeted in intervention to improve SWB, and (2) that those lowest in SWB at baseline will improve most at post-intervention. Thus, the present thesis tested these predictions within the context of a 6-week SWB intervention for adolescents. In addition to standard pre-post and follow-up assessments of the primary outcome of SWB, the Personal Wellbeing Index (PWI; Cummins & Lau, 2005), and alternate SWB outcomes of positive affect and negative affect, the intervention included: (1) measures of proposed change agents targeted in the intervention (resilience,
self-esteem, body satisfaction, perceived social support, and coping), in order to evaluate the extent to which improvement in SWB depended upon change in these buffers, and (2) weekly assessment of change in SWB amongst a subgroup of participants over the intervention period.

Results in Chapter Two of this thesis revealed that the intervention significantly improved the SWB of adolescents at post-intervention relative to control, with the improvements for the intervention group extending to the 3-month follow-up. This improvement coincided with change in several of the intervention-targeted risk/protective factors (i.e., resilience, body satisfaction, and self-esteem). Intervention efficacy was further explored in Chapter Three, by investigating patterns of change that occurred at weekly intervals during the intervention phase. Results showed that those reporting the lowest levels of SWB (i.e., most at-risk) at pre-intervention gained the most by post-intervention. Moreover, these weekly ratings identified that different subgroups of participants (below, equal to, and above mean SWB) had varying trajectories of change across the intervention phase. While the finding that the greatest improvement occurred for those lowest in SWB supports assumptions of Homeostasis Theory, the absence of effects for several risk/protective factors on the improvement in SWB is inconsistent with this framework. Reasons for these null findings are discussed, as well as consideration of potential influential factors (e.g., sample characteristics) that were encountered based on observed findings.
Chapter One: Literature Review

Subjective Wellbeing (SWB) can be defined as a normally positive state of mind that involves the whole life experience (Cummins, 2010). Within the literature, it is generally agreed that SWB comprises both cognitive and affective evaluations of a person’s life and circumstances (e.g., Campbell, Converse, & Rodgers, 1976; Davern, Cummins & Stokes, 2007; Diener & Diener, 1996; Diener, Oishi, & Lucas, 2003; Steel & Ones 2002; Veenhoven, 1994). Two important features of SWB are that it is stable and positive. In evidence of this, among the Australian population, SWB has been measured over 31 surveys conducted as part of the Australian Unity Wellbeing Index (AUWI) since 2001. Each survey has involved a new and geographically representative sample of 2,000 Australian adults, with SWB being measured by the Personal Wellbeing Index (International Wellbeing Group, 2013), a domain-based instrument which generates a composite personal wellbeing score. According to these data, average SWB reported for each survey has varied within a very narrow 3.0 percentage point range, from 73.7-76.9 points (Cummins, Woerner, Weinberg, Collard, Hartley-Clark, & Horfiniak, 2013) represented on a standardised scale from 0-100 points. Moreover, this latest survey report indicates an average population SWB of 75.65 points, suggesting that the majority of Australians experience a positive level of SWB, with only 4.4% of people surveyed scoring 50 points or below (Cummins et al., 2013) and who are most likely Homeostatically defeated.

Whilst a positive level of SWB is believed to be normal (e.g., Cummins, 2010; 2016), associated with low SWB are poor academic functioning (Suldo, Thalji, & Ferron, 2011), low self-esteem (Diener & Diener, 1995), and substance use/abuse (Zullig, Valois, Huebner, Oeltmann, & Drane, 2001), highlighting a need to understand the factors and circumstances that compromise a person’s wellbeing. To do this, a greater understanding of the nature of
SWB is crucial to learning how to best improve SWB, and how to achieve this outcome for people who are experiencing below average SWB. The following section will describe the development of understanding of the concept of SWB, and highlight relevant literature that describes the structure of SWB and its relationship with relevant variables that may support and hinder the experience of normal SWB.

Section I: Theories and Determinants of Subjective Wellbeing

There are a number of commonly cited theories that seek to explain and describe the characteristics of SWB, including the positive and stable nature of this construct as is frequently observed and reported within the literature. Personality models (e.g., DeNeve & Cooper, 1998; Emmons & Diener, 1985; Headey & Wearing, 1989, 1992; Vitterso, 2001; Vitterso & Nilsen, 2002) assert that stability in SWB can be explained by stable personality dimensions, such as extraversion and neuroticism (reverse coded as emotional stability). However, this approach has been criticised due to personality and SWB sharing a modest association. For example, DeNeve and Cooper (1998) conducted a meta-analysis of over 137 personality traits across 148 separate studies and reported an overall weighted correlation of .19 between personality and SWB, suggesting a weak association between these constructs. Headey and Wearing (1989) also endorse the important role of personality in maintaining and stabilising SWB. These authors concluded that, based on longitudinal data collected over a 10 year period as part of the Victorian Quality of Life Panel Study (see Heady & Wearing, 1989), following a downward change in SWB after a major life event, SWB usually returned to baseline levels over time. As such, these authors proposed an ‘equilibrium level’ of SWB, whereby personality is believed to play an important stabilizing role, and in returning SWB to equilibrium. Their explanatory model, however, does not account for a majority of the variance and suggests other, more important variables, have been excluded from the model.
Multiple Discrepancies Theory (MDT; Michalos, 1985) offers an alternative explanation for SWB, and proposes that SWB is largely a cognitive construct that results from ‘discrepancies’ or perceived gaps between the self as we are believed to exist, and in relation to a number of standards of comparison including what others have, the best one has had in the past, and what one perceives they deserve (Michalos, 1985). Michalos (1985) tested his proposal that cognition is foremost to the experience of SWB, with mixed support for his predictions. For example, while cognitive discrepancies together accounted for just over half (53%) the variance in life satisfaction, self-esteem and perceived social support were in fact stronger predictors than any of the perceived cognitive discrepancy variables. These findings may suggest that cognitive discrepancies play a secondary role in the determination of SWB. In a modified version of Michalos’ proposed cognitive model, Diener, Scollon, and Lucas (2003) suggested that the cognitive component of SWB can be conceptualised more broadly as life satisfaction. This concept involves global, cognitive judgements about the conditions of one’s life, one’s sense of the importance of these conditions, and a satisfaction evaluation. Thus, individual differences in cognitive appraisal of life situations that are more pertinent to oneself make a person more or less susceptible to low SWB (Diener, Scollon et al., 2003). Underlying this is the assumption that some ideals are unrealistic, and that through cognitive restructuring, the perception of a difficult event may be acknowledged, and modifications to our expectations and reactions made (Diener, Suh, Lucas, & Smith, 1999).

Alternatively, Andrews and Withey (1976) proposed that SWB is structured by both cognitive and affective components. This understanding of SWB is shared by Diener (1984), who conceptualises SWB as both fundamentally stable, and a genetically-determined level of affect. In existing SWB literature, ‘affect’ has been suggested to be comprised of positive affect (PA), with positive emotional experiences such as enthusiasm and alertness, and
negative affect (NA), which represents negative emotional experiences including subjective
distress and other aversive states (Diener et al., 1985; Watson, Clark, & Tellegen, 1988).
Diener and Diener (1996) explain, however, that emotional responses to environmental
stimuli are generally positive, with momentary fluctuations being returned to a baseline level
of affect by adaptive processes. In this sense, SWB may be influenced by both emotional
responses to situations, and cognitive appraisals made in regards to these environmental
influences, whilst longer-term SWB is stable (Diener, Oishi, & Lucas, 2009). This has been
evidenced in information gathered from participants who reported their levels of ‘pleasant
affect’ at random intervals throughout the day (Diener & Larsen, 1984). It was found that
random measurement of pleasant affect fluctuated, and thus correlated poorly with one
another ($r = .10$). However, it was identified that mean responses were highly stable and
consistent across the 6-week measurement period, emphasising the overall temporal and
cross-situational stability of affect. More recently, Diener et al. (2009) found that correlations
with life satisfaction across a number of contexts (work, social, recreational, and personal)
showed strong links with people’s more enduring characteristic emotional responses across
contexts, despite momentary variations.

In summary, whilst these perspectives suggest stability and positivity of SWB, they
possess limitations in regards to: (1) poor explanatory power as to the structure and function
of SWB. Personality models are limited by their findings of weak associations between
personality traits and SWB, while purely cognitive models such as MDT have found other
variables that appear to be driving a considerably higher proportion of the variance in SWB
than cognition (Michalos, 1985). Moreover, (2) most of the theories fail to offer details of the
psychological processes involved in SWB maintenance and control. As detailed below, the
Theory of SWB Homeostasis (Cummins, 1995; 1998; 2010) is an attractive framework for
understanding SWB because it is not beset by these limitations and, as importantly, offers
among the more complete approaches to understanding SWB, including its determination, stability and change.

**The Theory of Subjective Wellbeing Homeostasis**

SWB Homeostasis Theory (Cummins, 1995, 1998, 2010) asserts that in a manner analogous to the homeostatic maintenance of body temperature, SWB is actively controlled and maintained around a ‘set-point’, a general idea first described by McGue, Bacon, and Lykken (1993). According to recent evidence by Cummins, Li, Wooden, and Stokes (2014), individual set-points normally range between 70 and 90 points on a standard 0 – 100 point range, with a theoretical population mean score of 80 points. This estimation reasonably corroborates the normative range for SWB in the Australian population generated from data gathered as part of the Australian Unity Wellbeing Index described.

At the heart of SWB is a construct named Homeostatically Protected Mood (HPMood; Cummins, 2010). Initially termed ‘Core Affect’ by Russell (2003), HPMood is believed to approximate the SWB set-point and is defined as a “neurophysiological state consciously accessible as the simplest raw (non-reflective) feelings evident in moods and emotion” (Russell, p. 148). Russell further describes Core Affect as being consciously experienced, but not cognitive or reflective, as always present in the background, having no object or cause, and residing at the core of all emotion-laden events. Thus, the notion of Core Affect is perceived to exist as a biologically determined mood, rather than as an emotion. In 2009, however, Russell muddied the waters and offered a new description of Core Affect, stating that Core Affect “can come to be directed at something”. (pp. 7). The conflict here is that this alternate conceptualisation is inconsistent with his 2003 assertion that Core Affect is not linked to emotional states (e.g., has no objective cause), arguing in his 2009 paper that Core Affect may itself be changed by a variety of influences. In response to this
inconsistency, Cummins (2010) coined the term ‘Homeostatically Protected Mood’ to describe the positive mood affect defended by homeostasis.

According to SWB Homeostasis Theory (Cummins, 2010), HPMood reflects the steady set-point that Homeostasis seeks to defend. Thus, HPMood constitutes the affective component of SWB. Recently, across both adult and adolescent samples, investigations into the contribution of affect for SWB have been undertaken (e.g., Blore, Stokes, Mellor, Firth, & Cummins, 2011; Davern et al., 2007; Longo, 2015; Tomyn & Cummins, 2011b), and are supportive of Homeostasis Theory. In particular, support for the importance of HPMood for SWB, and its role in Homeostasis Theory is provided by three recent studies. Firstly, Davern et al. (2007) sought to determine which affect terms could account for the greatest amount of variance in SWB measured using the single global item ‘How satisfied are you with your life as a whole?’. This item is an adaptation from Andrews and Withey’s (1976) original question which asks ‘How do you feel about your life as a whole?’ (p. 66). According to their results, Davern et al. determined that five affective items (content, happy, energised, satisfied, and pleased) accounted 64% of the variance in life satisfaction, suggesting a dominant affective component. Davern et al. placed their findings in the context of Core Affect, as defined initially by Russell (2003), proposing this small group of unique affect predictors as a measure of Core Affect. In a subsequent study, Davern et al. (2007) used Structural Equation Modelling to explore the relative predictive strength of HPMood for SWB in three separate models incorporating cognition (measured according to Multiple Discrepancies Theory; MDT, Michalos, 1985) and all five factors of personality (NEO Personality Inventory; Costa & McCrae, 1992) as competing predictors. According to their results, model fit supported a stronger association between HPMood and SWB than either personality or cognition. Moreover, the Affective-Cognitive model was the best fitting model in terms of fit for the model as a whole and prediction of SWB, explaining 90% of the variance in this construct.
These findings challenge conventional wisdom and suggest that HPMood may be the driving force behind SWB, and not personality and/or cognition as has been frequently reported within the literature. Davern et al. further concluded that since the data appear to suggest that HPMood is driving both personality and SWB, it is feasible that HPMood may be causing personality and SWB to correlate, and that this may be the reason why SWB and personality often appear related.

These findings have been replicated by Blore et al. (2011) in a study of 387 individuals who participated in the 5th AUWI survey. As part of their study, Blore et al. (2011) confirmed, using structural equation modelling, that their affective model of SWB was the best fitting model, and that HPMood accounted for 66% of the variance in SWB, with measured personality dimensions exerting a non-significant (i.e., extroversion) and weak (i.e., neuroticism) relationship with SWB. Similar to Davern et al (2007), Blore et al. concluded that SWB is primarily an affective construct, and best represented by HPMood. These results were again confirmed, this time by Tomyn and Cummins (2011b), using a sample of Australian high-school students aged 13-20 years. These authors determined that three affects representing HPMood (happy, content, and alert) explained 57% of the variance in SWB measured using the PWI-School Children (PWI-SC; Cummins & Lau, 2005). Moreover, similarly to Blore et al., Tomyn and Cummins found that their affectively-driven model of SWB was better fitting than either a personality-driven model of SWB or a cognition-driven model of SWB, explaining 80% of variance. Whilst personality accounted for 78% of the variance in SWB, and MDT accounted for 80%, indices for these alternative models suggested a poorer fit than the affectively-driven model. Collectively, the findings from Davern et al. (2007), Blore et al. (2011), and Tomyn and Cummins (2011) reinforce the proposition that HPMood may be the driving force behind individual SWB set-points and the variable that SWB homeostasis seeks to defend.
In summary, HPMood has been shown to be a dominant, affective trait-like variable that is central to the determination and experience of SWB. HPMood is normally positive and defended by Homeostatic processes within its set-point range. However, if sufficiently challenged by aversive events or circumstances, levels of HPMood and the experience of SWB may be compromised. The ability of the Homeostatic system to adapt and defend HPMood is integral to maintaining positive SWB, and several factors are theorised to be key in its protection. The processes involved in the maintenance of SWB are enumerated in the following section.

**Processes involved in the maintenance of SWB: External and Internal buffers**

The Theory of SWB Homeostasis asserts that under normal life circumstances, a person’s SWB will be maintained within their set point range, which extends approximately 9 percentage points on either side of their set-point (Cummins et al., 2014). Fluctuations within this set-point range reflect normal reactions to positive and negative emotional stimuli in response to a person’s interactions with their environment. Homeostasis Theory also suggests that ceiling effects at the upper end of a person’s set-point range limits long-term improvement in SWB, for example, when an individual reaches saturation with a particular resource (e.g., money or a supportive relationship). As such, the ability of SWB to improve depends upon the strength of the positive event, and an individual’s existing resources, with the Homeostatic system usually restoring temporary increases back to normal range.

In the event of a sufficiently negative threat or stressor (i.e., martial breakdown or unemployment), normal maintenance of SWB within its set-point range can be challenged. If the cause of challenge is persistent and noxious, and in the absence of sufficient and available resources, the Homeostatic system may be overwhelmed and SWB may fall below the normal range. When SWB is challenged, a number of resources operate to restore SWB back within the normal range. A failure of these resources to protect SWB can have negative implications,
including susceptibility for experiencing a loss of wellbeing and associated depression / depression symptomology (Cummins, 2010).

People are frequently exposed to unpredictable environmental influences that have the potential to threaten their SWB set-point. As such, the Homeostatic system will be operating to maintain SWB within the normal range and protect against abnormally high or low levels. Thus, under conditions of challenge, the Homeostatic system will activate its defence system or ‘buffers’ that work to maintain or sustain equilibrium (Cummins, 2010). The first type of buffers are known as external buffers, and these serve to protect SWB by assisting in avoidance or reduction of exposure to negative environmental stressors. The second type of buffers are the internal buffers, which act to minimise the impact of any potential environmental threats to positive SWB through cognitive restructuring. As the fundamental process to protecting positive SWB, these buffers will be discussed in more detail below.

**External Buffers.** External buffers represent any resource in a person’s environment that can be accessed to assist in the process of SWB maintenance and to protect individuals from adversity. External buffers can interact with a person’s behaviour, and assist in helping a person avoid experiences and circumstances that are beyond what is predictable and manageable (Cummins, 2013), allowing them to regain Homeostatic control. For example, if a person loses their job, but has extensive savings, the otherwise detrimental impact of losing one’s job is ameliorated by one’s ability to access their savings. According to Cummins and Nistico (2002), money and relationships are two of the most important external buffers. Money acts as an external buffer to SWB by reducing the likelihood of one’s exposure to daily stressors. For example, SWB is protected when curable health issues are encountered by being able to afford adequate healthcare and other corrective measures (Cummins, 2013). This is evident in existing literature whereby people earning high income also tend to have above average SWB (Cummins, Woerner, Gibson, Weinberg et al., 2009), while people on
low incomes are more susceptible to lower than normal SWB (Cummins, 2010). Cummins and Nistico (2002) also emphasise the importance of supportive relationships and intimacy from another person as important resources that a person can access and which can help defend against threats to personal wellbeing. The important role of social support in the protection and maintenance of SWB is consistent with prior research which has found that people who live alone or are divorced/separated are more likely to experience lower than normal wellbeing (Cummins, Woerner, Gibson, Lai et al., 2009).

**Internal buffers.** The internal buffers work in combination with external buffers by acting to cognitively restructure one’s perceptions of events in a way that will protect a person’s sense of wellbeing (Cummins, Lau, Mellor, & Stokes, 2009; Cummins & Nistico, 2002). These internal buffers consist of self-esteem (Cummins & Nistico, 2002), perceived control (Thompson et al., 1998), and optimism (Peterson, 2000). These three major factors of cognition together make up satisfaction with the self. When Homeostatic balance is challenged by a negative stressor, the internal buffers act to cognitively reframe the situation in order to perceive the situation as less threatening, and more beneficial to oneself (Cummins & Nistico, 2002). Internal buffers are integral to SWB Homeostasis, with a recent study showing these three buffers to be highly related to HPMood (Lai & Cummins, 2013). Supporting these buffers are a set of unconscious processes that, over time, respond automatically to daily challenges and act as a process of adaptation and habituation to stressors that might otherwise impose upon a positive sense of oneself (Cummins, 2013). In particular, these unconscious processes have been suggested to consist of devices including adequate access to positive emotions in the event of a negative event (DeWall et al., 2011), habituation to a repeated situation or stimulus (Thompson, 2009), and domain compensation (Best, Cummins, & Lo, 2000), whereby a threat in one domain (e.g., health) is ‘counterbalanced’ with higher satisfaction in another domain (e.g., relationships). These
processes thereby act in combination with internal buffers to maintain SWB within its normal range, and counteract or neutralise heightened emotional reactions (Cummins, 2013).

Overall, the external and internal buffers work to protect and restore Homeostatic balance, and are central to the stabilisation of one’s SWB. However, buffers may become depleted due to challenging events and, as such, can possess varying amount of strength to engage in protection of one’s SWB. Development and support of the Homeostatic buffering system is therefore crucial to restoring SWB balance (Cummins, 2013). Consequently, return to set-point range can become dependent upon a person’s level of resilience (Cummins & Wooden, 2014; Kennedy et al., 2000). In this sense, an individual’s degree of resilience will influence their capability to utilise means and skills to protect HPMood, and return to their set-point when the Homeostatic system encounters a stressful event (Cummins & Wooden, 2014). Moreover, it has also been suggested that resilience is enhanced by SWB (e.g., Graham & Oswald, 2010), such that people with above average SWB may also be more resilient, while people low on resilience may experience lower than normal SWB. Thus, groups of people with low resilience coupled with lower SWB are likely to be at greater risk for experiencing Homeostatic challenge and defeat in the face of an enduring and harmful stressor such that they will require resources, for example, delivered through an intervention, to increase their capacity to overcome and adapt to the source of challenge.

In consideration of interventions, Cummins (2013) outlines that significant improvements in SWB are theoretically possible only for those people who score below their normal set-point range at baseline. Individuals in this low range are likely in Homeostatic defeat and have resources (e.g., resilience) that are presumably depleted or not available (Cummins, 2013). This, however, renders the person better placed to strengthen their protective buffers and counteract challenges to restore Homeostatic control. Conversely, a person functioning in her/his optimal or natural Homeostatic range is unlikely to report any
rise in their SWB on a long-term basis as a result of ceiling effects for SWB described (Cummins, 2013). Therefore, it is necessary, and more conceivable, to enact change among people with lower than normal SWB and who are most likely experiencing Homeostatic challenge/defeat by providing resources that may assist Homeostasis to assume control back over their sense of personal wellbeing. This also suggests that evaluations of intervention efficacy should take into consideration baseline SWB, as improvements are likely to be contingent upon pre-intervention levels.

In summary, Homeostasis Theory offers the most complete and comprehensive description of the construct of SWB and, accordingly, this conceptual framework will guide understanding in the remainder of this review. As detailed above, mood affect and cognition appear to be fundamental to the determination and experience of SWB, with theoretical assumptions making the following predictions about the nature and drivers of SWB: (1) that SWB is largely affective in nature, with levels of SWB actively controlled and maintained within a narrow range of values around a set-point by a Homeostatic system. For this reason, upward shifts in SWB above set-point will not be sustained in the long-term. However, (2) in the presence of a harmful and pervasive challenge, and in the absence of sufficient resources, homeostasis can be challenged and defeated, resulting in a drop in SWB below the normal range such that a person will be vulnerable to depression. Under these circumstances, HPMood will lose its association with SWB as NA and cognitions directly tied to the challenging agent assume control over feelings of wellbeing (Cummins, 2010). Finally, (3) provided resources become available, it is possible that a successful intervention can restore personal wellbeing back within the normal set-point range for that person, such that Homeostasis is once again in control over SWB.
In the next sub-section, it will be argued that adolescence is a time of substantial change, which may place a young people at greater risk than the general, adult population for experiencing Homeostatic challenge, and subsequently lower levels of SWB.

**Section II: Adolescent Susceptibility to Low SWB**

Whilst it has been reported by Tomyn and Cummins (2011a) that adolescents have an average level of SWB that is within the normal range and comparable to adults, some young people are more susceptible to experiencing lower wellbeing as a result of physical, hormonal, social, and emotional changes and challenges characteristic of adolescence (Blos, 1962; Harden, Kretsch, Moore, & Mendle, 2014; Kandel & Davies, 1982). Moreover, previous studies have identified a range of risk and protective factors that may be predictive of Homeostatic challenge/defeat (Cummins, 2014). These risk/protective factors include, but are not limited to, self-esteem (Diener, 1984; McCullough, Huebner, & Laughlin, 2000; Shapka & Keating, 2005), body image (Harden et al., 2014; Williams & Currie, 2000), stress (Compas, Orosan, & Grant, 1993; Rice, Herman, & Petersen, 1993; Vera et al., 2011), coping (Garnefski et al., 2002; Wills, McNamara, Vaccaro, & Hirky, 1996), social supports (Buhrmester, 1990), and resilience (Garnefski, Legerstee, Kraaij, van den Kommer, & Teerds, 2002; Hoffmann, Cerbone, & Su, 2000). As will be detailed in this section, many of the risk/protective factors are challenged and resources underdeveloped amongst adolescents due to their developmental phase. As such, it will be argued that characteristics of adolescence may place this group at increased risk for low SWB and greater likelihood of Homeostatic defeat.

There are several key developmental stages characteristic of adolescence that makes young people more susceptible to experiencing poorer wellbeing. Firstly, adolescence is a time of immense physical, biological, and hormonal change that is associated with puberty. Both adrenal and gonadal hormones instigate change that affects the biopsychosocial
functioning of the pubertal adolescent (Harden et al., 2014). This is particularly evident for girls who experience these changes at various stages over their early adolescent years, and which can negatively impact both their social perceptions of themselves and from others (Harden et al., 2014). These developments generate a vulnerability to issues with self-esteem, body image, and body dissatisfaction (Williams & Currie, 2000). The impact of pubertal timing for boys (either early or late) has also been shown to manifest in harmful behaviours such as alcohol/drug use/experimentation, externalising behaviours, and depression-type symptomology (Graber, 2003).

There is longstanding evidence in regards to adolescence as a peak period for lability in mood due to hormonal changes (Blos, 1962; Kandel & Davies, 1982; Kovacs et al., 2006; Spear, 2000). The impacts of these rapid hormonal fluctuations can generate susceptibility to NA and potential mood disorders (Andersen & Teicher, 2008; Buchanan et al., 1992; Warren & Brooks-Gunn, 1989). For example, in a study by Larson, Csikszentmihalyi, and Graef (1980), 75 high school students and 107 adults completed measures of self-reported mood over 35 to 70 times across one week using the experience sampling method. Mood variability was more pronounced for the adolescent group than that of the comparative adult sample. This lability may, in part, be attributable to under-developed ability for emotional self-regulation (Kovacs, et al., 2006), thus making management of these mood variations challenging (Weinstein, Mermelstein, Shiffman, & Flay, 2008). Difficulty in this affective self-regulation has been shown to lead to a variety of unhealthy and ineffective coping strategies, such as substance use, as a way of reducing the effects of variable mood (Khantzian, 1997).

Self-esteem is frequently threatened amongst adolescents as they navigate the challenges of this developmental phase. It is often vulnerable to critical examination by the young person as they explore their sense of identity, are challenged by pubertal changes,
develop greater autonomy, place greater value on opinions and comments from others (especially their peers), face developments in cognitive functioning such as formal operational thinking, and endure greater educational expectations associated with secondary schooling (Allen, Hauser, Bell, & O'Connor, 1994; Mullis, Mullis, & Normandin, 1992; Wilkinson, 2004; Williams & Currie, 2000). Thus, global self-concept is fluid in this life stage, and poses a real risk factor for low SWB (Shapka & Keating, 2005). Similar to the theoretical assumptions of MDT (Michalos, 1985), it has been suggested that as young people begin to develop greater cognitive capacities, evaluations of self-worth (or discrepancies between ideal and actual) are made in relation to both feedback from peers and social comparisons (Ruble, Boggiano, Feldman, & Loebl, 1980). As such, it is suggested that adolescents are likely to develop negative discrepancies as they are exposed to negative feedback from teachers, parents, and peers, and these discrepancies may ultimately undermine their self-worth (Eccles, Wigfield, Harold, & Blumenfeld, 1993). This overall evaluation of personal characteristics and individual competencies has been shown to be significantly related to both life satisfaction and PA (McCullough et al., 2000). Therefore, young people with a more poorly defined global self-concept may have comparatively lower SWB (Diener, 1984; McCullough et al., 2000). Consistent with this assertion, in a longitudinal study of more than 3500 adolescents from over 190 schools in Canada, only 14% of males and 7% of females maintained a stable level of self-esteem, either high or low, over the four years of measurement (Abernathy, Massad, & Romano-Dwyer, 1995). Given its capacity to fluctuate over time, these authors highlight the importance for health promotion programs in targeting self-esteem in early adolescence, particularly to support those experiencing self-esteem at low levels. This has been supported by Robins, Trzesniewski, and Donnellan, (2012), who argue that implementation of intervention amongst adolescents will likely instigate change by targeting the malleability of self-esteem to boost SWB.
In the context of SWB Homeostasis Theory, another factor that may threaten a person’s SWB set-point during adolescence is stress (Boekaerts, 1996; Compas et al., 1993; Rice et al., 1993). This can arise from multiple sources, including changes in the parent-child dynamics due to increased independence and peer interactions (Seiffge-Krenke, Aunola, & Nurmi, 2009), identity formation, dissatisfaction with one’s appearance and body (Kroger, 2000), and transitioning to a new school or parental divorce (Compas et al., 1993). Stress can be particularly harmful when coupled with under-developed coping mechanisms (Garnefski et al., 2002; Grant et al., 2003). Evidence suggests that adolescents are typically not as well equipped as adults at coping, and as a consequence, may be susceptible to experiencing lower than normal SWB (Hoffmann, et al., 2000; Vera et al., 2011). This may be because, when faced with these stressors, adolescents use inappropriate or ineffectual strategies to manage these challenges. For example, adolescents are prone to reacting with maladaptive behaviours to adversity and stressful events, often in the form of drug and alcohol use (Hoffmann et al., 2000; Marlatt & Gordon, 1985; Wills, McNamara, Vaccaro, & Hirky, 1996), which can exacerbate and prolong the problem, placing potential strain on SWB. More concerning, while positive strategies and resilience are likely to lead to higher SWB, many adolescents in fact show lower levels of resilience, and a poorer coping repertoire (Garnefski et al., 2002). In a longitudinal study by Suldo and Huebner (2004), 816 students across five schools were measured at two time points, one year apart, to assess judgements of life satisfaction and the relationship to experiences of stressful life events and psychopathology. Results revealed that the students with positive life satisfaction had a reduced chance of developing externalising behaviours when encountering stressful life events. The authors concluded that developing stable, positive cognitive evaluations of (or positive attitudes towards) life stressors, and the associated coping strategies, may provide buffers against the experience of difficult life events.
Another factor that may impact upon adolescent wellbeing is increased independence from parents and siblings. Whereas in pre-adolescence (approximately 10 to 13 years) parents and older siblings were key sources of support, striving for independence in adolescence (approximately 13 to 16 years old) may undermine the social support resources that an adolescent utilises, or perceives they possess, for coping with negative events/stressors (Buhrmester, 1990). This movement away from the family is associated with a greater emphasis on peer support and influence (Steinberg & Monahan, 2007). Adolescents are increasingly reliant upon peers who, like them, may be poorly equipped to offer support or have limited coping strategies to offer in times of need. Research supports this assertion, showing that those who perceive less peer support are more likely to adopt poor health behaviours such as substance use to cope with low perceived support (Brechwald & Prinstein, 2011) and binge eating to ease the aversive effects of NA linked with low peer support (Stice, Presnell, & Spangler, 2002).

Environmental influences such as the school context have also been linked to a young person’s wellbeing (Bond et al., 2004). Existing research into the impact of the school environment on student wellbeing shows that a supportive school atmosphere promotes feelings of belonging, increased educational achievement, and greater health and happiness of a young person (Bond et al., 2004; Goodenow & Grady, 1993; King, Wold, Tudor-Smith, & Harel, 1996; Wentzel, 1994). Negative outcomes can also be encountered when this sense of connectedness is absent, with a challenging school environment having the potential to precipitate or perpetuate health risk behaviours such as substance use, antisocial behaviour, and early initiation of sexual intercourse and low SWB (Patton et al., 2006).

In summary, the presence of risk factors (e.g., pubertal changes, identity formation, stress) and absence of protective factors (social supports, global self-concept, coping, resilience, body satisfaction, and school environment) during adolescence can threaten the
SWB of young people. Thus, many young people may be more vulnerable to experiencing Homeostatic challenge and defeat during adolescence, and will therefore require resources that may assist homeostasis to defend SWB against the source of challenge. In order to provide the skills and resources for improving adolescent SWB, prior research has utilised the school context as an ideal means of implementing interventions. Working with young people through a school-based approach has been argued to be worthwhile given that: (1) the school environment has the potential to foster poor SWB (Carr, 2006; Patton et al., 2006), and (2) provides a catchment area for intervening on a large scale and cost-effective manner (Barrett & Pahl, 2006; Masia-Warner, Nangle, & Hansen, 2006). The following sub-section will describe relevant findings concerning the SWB school-based intervention literature.

Section III: SWB School-Based Interventions

School-based intervention/prevention programs have generated considerable research interest. The school context has been identified as an effective means for the implementation of interventions and strategies designed to improve adolescent wellbeing outcomes and experiences through, for example, targeted skill-based learning and training (Merry, et al., 2011). A substantial number of studies have investigated the ability of programs to improve mental health and decrease symptoms of psychopathology (e.g., anxiety and depression) among adolescents (e.g., Clarke, Hawkins, Murphy, & Sheeber, 1993; Dadds & Roth, 2008; Horowitz, Garber, Ciesla, Young, & Mufson, 2007; Merry, McDowell, Wild, Bir, & Cunliffe, 2004). Health promotion programs have also been implemented in a school context to target health risk behaviours, including smoking (Peterson, Kealey, Mann, & Marek, 2000), substance use (Malmberg et al., 2015), and obesity (see Brown & Summerbell, 2009). Prior school-based intervention studies have also adopted different approaches with some implementing targeted interventions (also know as selective or indicated) to a specific cohort of students that are either at-risk, or already affected by a particular issue such as depression
(Sheffield et al., 2006). Others have utilised a universal approach, both reaching those already affected as well as acting as a preventative measure to all students regardless of risk-status, also avoiding common barriers such as stigma, time, and cost (Calear & Christensen, 2010).

To date, there are only a few known school-based SWB intervention studies that have been published (Froh, Kashdanb, Ozimkowskia, & Millera, 2009; Froh, Sefick, & Emmons, 2008; Proctor, et al., 2011; Suldo, Savage, & Mercer, 2014; Suldo et al., 2015). Whilst these prior school-based interventions have reported positive changes in SWB, they have been mixed in their choices of intervention design (e.g., the indices of SWB, inclusion of a control group, and timeframe for intervention) and in the effect sizes obtained. Commonly in this context, interventions for targeting SWB have fallen under the umbrella of positive psychology, utilising its principles to focus on strengthening positive attributes (e.g., Froh et al., 2008; Froh et al., 2009). As a result of employing this framework, interventions are limited both in their content, and in the breadth of factors that can be targeted. The following sub-section will review existing studies in the adolescent SWB school-based literature, highlighting the positive psychology-based factors that have been targeted, and providing an overview of findings from these studies. As many prior SWB intervention studies do not include a control group, do not measure SWB as their outcome, or do not clearly target the concept of SWB, the below listed studies are limited to those that include these characteristics and provide a comparative framework to that of the present intervention. Key limitations across these studies will be highlighted and reviewed.

First, in a study by Froh et al. (2008), 221 school children \((Mage = 12.17, SD = .67)\) participated in an intervention to enhance SWB through practicing daily gratitude over a two-week period. An alternative condition had participants listing hassles, and a no-intervention control condition was also included. This intervention approach was shown to be successful in reducing NA amongst the gratitude condition; \(F (2, 215) = 6.89, p < .01, \eta^2 = .06, \) but not
for PA (effect not reported in the paper) at post-measurement and 3-week follow-up when compared to the hassles condition. No difference in life satisfaction was seen for the gratitude group compared with hassles when measured by the items of ‘life as a whole during the past few weeks’, ‘how they expected to feel about their life next week’ or the 5-item Brief Multidimensional Students’ Life Satisfaction Scale (Seligson, Huebner, & Valois, 2003). There was, however, a significant main effect for ‘satisfaction with school experience’ amongst the gratitude group relative to the hassles condition; \( F(2, 202) = 4.00, p < .05 \). The use of the hassles group as control was argued to fulfil a negative comparison group, whereby listing hassles acted as a direct contrast to counting blessings rather than using a no-intervention control group. This intervention, therefore, may have gathered preliminary evidence for the influence of gratitude, however the strength of gratitude as a buffer for SWB was not able to instigate change in what has been argued as the core component of SWB, namely PA (Davern et al., 2007). It is not surprising then that Froh et al. (2008) reported effect sizes within only the small to moderate range.

In a related study, Froh et al. (2009) implemented a school-based gratitude intervention among 89 students in grade 3 (32.6%), grade 8 (43.8%) and grade 12 (23.6%) (\( M_{age} = 12.74 \) years) over a 2-week period. As expected, Froh et al. (2009) found that only those low in baseline PA had significantly improved at Time 2 (post-intervention) and Time 4 (two-month follow-up) when compared to the control group. This was attributed to the functioning of an ‘emotional ceiling’, whereby those high in positive affect at baseline were restricted in the extent that they could improve. This theoretical proposition is parallel to that of the Theory of SWB Homeostasis, in that under normal conditions, the system will act to maintain well-being within its Set-point-range and thus results at the higher end of the scale will plateau.
Proctor et al. (2011) also explored the effects of baseline variability on their targeted outcomes. They employed the program ‘Strengths Gym’ to improve the life satisfaction and SWB of 319 adolescents aged 12 to 14 years \((\text{Mage} = 12.98 \text{ years})\) through participation in modules focused on recognising their own individual strengths in areas identified by the Values-In-Action – Inventory of Strengths (VIA-IS; Peterson & Seligman, 2004) such as wisdom and knowledge, courage, humanity, justice, temperance, and transcendence (Park & Peterson, 2006). Implemented over a 6-month period, young people were found to improve their SWB depicted in significantly higher life satisfaction; difference = 0.18, \(t(14) = 2.20, p = 0.045, r_{\text{effect}} = 0.51\), PA; difference = 0.16, \(t(14) = 1.86, p = 0.084, r_{\text{effect}} = 0.45\), but not NA; difference = -0.10, \(t(14) = -1.69, p = 0.11, r_{\text{effect}} = 0.41\) at post-intervention relative to the control group. In contrast to findings of Froh et al. (2009), non-significant findings were obtained for the interactions between baseline levels of condition and life satisfaction, PA, or self-esteem.

In a similarly designed positive psychology intervention, Suldo, Savage, and Mercer, (2014) implemented a 10-week group wellness-promotion intervention in order to improve student’s mental health, specifically in relation to SWB. This intervention targeted happiness-increasing strategies that used a combination of evidence-based positive psychology intervention strategies in the existing literature including hope, gratitude, kindness, character strengths, and optimism (Suldo et al., 2014). This study collected data from 55 students allocated to either intervention \((n = 28)\) or wait-list control \((n = 27)\) at baseline, post-intervention, and at 6-month follow-up. Group by time interactions analysed through repeated measures ANOVA from pre-to post intervention revealed a non-significant finding for life satisfaction; \(F(2, 37) = 2.5, p = .096, \eta^2 = .12\), PA; \(F(2, 37) = .74, p = .484, \eta^2 = .04\), or NA; \(F(2, 37) = .13, p = .89, \eta^2 = .01\) between the intervention and control conditions. Moreover, non-significant findings were also obtained in relation to externalising or internalising...
symptoms of psychopathology. There was, however, a significant improvement in students’ life satisfaction amongst the intervention group from pre- to post-intervention when between-group differences were analysed; $F(1, 19) = 4.81, p = .046, \eta^2 = .10$. The effects of this change still remains marginal, and offers preliminary evidence into the improvement of life satisfaction as a result of participating in the program.

In a more recent study, Suldo et al. (2015) aimed to increase the SWB of 12 school-children ($Mage = 8.83, SD = 1.14$) by targeting character strengths, gratitude, kindness, and relationships in the classroom. Improvements were found in the indicators of SWB from Time 1 to 2 in PA; $t(11) = -2.25, p = .023, d = .52$ and satisfaction with self; $t(11) = -1.86, p = .045, d = .40$ with moderate effect sizes. Global life satisfaction; $t(11) = -1.59, p = .070, d = .40$ and NA; $t(11) = -0.98, p = .174, d = .25$ were not significantly improved, although their associated effect sizes were non-trivial (Cohen, 1988). These findings suggest that self-worth oriented factors targeted by Suldo et al. (2015) may have had a relative influence on SWB, however limitations still exist in the inability to effectively and simultaneously shift all components of SWB.

Whilst an intervention was not delivered by the authors, Tomyn et al. (2015) tracked over four months the SWB of young people involved in an Australian Federal Government-funded global intervention/support program for ‘at-risk’ adolescents. Findings showed that the participants who scored in the lowest range on the SWB measure (below 50 points on a standardised 0-100 point scale) saw the greatest improvement from participation in the program, followed by those who scored 51-60 at Time 1. The least amount of improvement was seen for those scoring 70+, with results in fact portraying a decline for those who scored 90 points at baseline by Time 2. This study does not, however, compare intervention group patterns against natural changes observed in a control group. As such, it is unclear whether these changes are of similar magnitude to natural fluctuations, or whether they reflect genuine
improvements attributable to the program. Moreover, whilst findings support theoretical assumptions regarding management of fluctuations in SWB, and the return of those in deficit to set-point-range, the agents implicated by the buffering system were not assessed.

**Summary of SWB Interventions**

Collectively, the published intervention studies highlight varying results concerning the efficacy of interventions designed to improve SWB and related variables. For example, effect sizes have varied from small to moderate, and there is some indication that baseline levels of SWB/degree of Homeostatic challenge, may be critical to the potential for interventions and programs to improve outcomes. Moreover, most interventions appear to show improvement in only one or two aspects of wellbeing, but not across all targeted constructs measured, suggesting that some interventions may be more effective for improving some aspects of wellbeing than others. Finally, studies have been limited in the range of risk/protective factors that are targeted in existing interventions. These studies lack investigation of intervention-related changes in SWB that coincide with change in these risk/protective factors. In reference to these key limitations, the following sub-section will describe in greater detail how the Theory of SWB Homeostasis offers insight into mechanisms that may influence change, and determine intervention success in relation to these existing interventions.

**Section IV: Addressing Limitations in Prior SWB Interventions through the Theory of SWB Homeostasis**

Clear limitations exist in relation to prior SWB school intervention studies and their mixed approaches to investigate their efficacy. These gaps pertain to the inconsistent findings in relation to the impact of baseline severity, and the breadth of buffers targeted in relation to SWB. Moreover, as a heavily dominated affective construct, the experience of SWB would also be expected to fluctuate. Measurement of this phenomenon over an intervention period
has been largely neglected in the SWB literature despite the likelihood that this would occur. The following will review these facets in relation to the abovementioned existing SWB school intervention studies.

**Effects of Baseline Severity on SWB Improvement**

There are a number of reasons to suspect that baseline SWB score has a bearing upon how individuals respond to intervention. The Theory of SWB Homeostasis argues that when SWB is operating within the normal range, further long-term improvements above set-point cannot be sustained (Tomyn et al., 2015). For these individuals, we would expect to see minimal improvements and attempts to quantify change from baseline to follow-up for these individuals may be expected to show reasonably stable means across time and potential reductions in SWB back to one’s set-point. In light of this, effect size estimates from prior interventions may thus be dampened to the extent that the sample comprises a high proportion of individuals in the healthy SWB range. Table 1.1 provides an overview of the SWB baseline scores for prior school-based intervention studies.

Table 1.1

<table>
<thead>
<tr>
<th>Study</th>
<th>Key Outcomes</th>
<th>Participants under midpoint (%)</th>
<th>Effect size (d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Froh et al. (2008)</td>
<td>NA</td>
<td>1.92</td>
<td>0.51</td>
</tr>
<tr>
<td>Froh et al. (2009)</td>
<td>PA</td>
<td>5.49</td>
<td>0.20</td>
</tr>
<tr>
<td>Proctor et al. (2011)</td>
<td>Life satisfaction</td>
<td>8.53</td>
<td>1.19</td>
</tr>
<tr>
<td></td>
<td>PA</td>
<td>33.87</td>
<td>1.01</td>
</tr>
<tr>
<td>Suldo et al. (2014)</td>
<td>Life satisfaction</td>
<td>54.85</td>
<td>0.74</td>
</tr>
<tr>
<td></td>
<td>PA</td>
<td>1.58</td>
<td>0.41</td>
</tr>
<tr>
<td></td>
<td>NA</td>
<td>62.26</td>
<td>0.20</td>
</tr>
<tr>
<td>Suldo et al. (2015)</td>
<td>Global life satisfaction</td>
<td>0.84</td>
<td>0.40</td>
</tr>
<tr>
<td></td>
<td>PA</td>
<td>18.67</td>
<td>0.52</td>
</tr>
</tbody>
</table>

*Note. NA = negative affect. Percentage beyond cut-off for NA reflects proportion who score above the mean as these are the problematic cases.*
Given the small number of studies to draw upon, the pattern of effect sizes as a function of proportion of participants with low wellbeing at baseline is difficult to immediately discern. However, there is some indication that the studies with larger proportions of individuals below the midpoint (e.g., Proctor et al., 2011; Suldo et al., 2014) had stronger effect sizes, and studies with smaller proportions of cases below the midpoint had weaker effects (Froh et al., 2009). Among those studies that have directly tested moderating effects of baseline severity, results have been mixed. For example, Froh et al. (2009) found that those lowest in PA were in fact the only ones to significantly improve. Moreover, Tomyn et al. (2015) identified that those lowest in SWB exhibited the greatest change at completion of the program. Alternatively, Proctor et al. (2011) failed to find evidence of the impacts of baseline severity despite assessment of this as a contributing factor. When these results are analysed as a one-tailed test, however, baseline life satisfaction is borderline significant ($p = .075$). Evidence therefore remains unclear, with more attention on baseline levels needed to better grasp the likely trajectories of intervention effects upon participants.

Whilst baseline levels of SWB are suspected to influence intervention efficacy, restoring SWB scores to a normal range depends upon two forces: (1) the persistence and burden of a given psychological challenge that is impeding upon experience of SWB, and (2) the psychological resources that each individual possess to regain functioning at set-point range. Therefore, individuals with poorer strength in their buffers are most likely to improve with effective, targeted intervention.

**SWB Buffers and Intervention Effects**

The Theory of SWB Homeostasis describes a set of internal and external buffers that are fundamental to an individual’s ability to protect their SWB, or HPMood, from challenging circumstances (Cummins, 2010). In relation to intervention efficacy, there are
two ways in which components of the program can be assessed: (1) improvement in the measured outcomes of the intervention, and (2) the extent of the influence of the buffers that are incorporated within intervention. Whilst Homeostasis Theory emphasises clear factors for attention in intervention efforts, prior SWB interventions have been mixed both in choice and breadth of key targets, differ in their choice to measure targeted buffers as outcomes, and have found varying effects at post-intervention. These have been reviewed in Table 1.2.

Table 1.2

Prior SWB School Intervention Studies and the Targeted Buffers and Outcomes

<table>
<thead>
<tr>
<th>Study</th>
<th>Buffers</th>
<th>Outcomes</th>
<th>Effect Size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Gratitude</td>
<td>0.41*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NA</td>
<td>0.51**</td>
</tr>
<tr>
<td>Froh et al. (2008)</td>
<td>Gratitude</td>
<td>Gratitude</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PA</td>
<td>0.20</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NA</td>
<td>0.20</td>
</tr>
<tr>
<td>Froh et al. (2009)</td>
<td>Gratitude</td>
<td>Global LS</td>
<td>1.19*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PA</td>
<td>1.01</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NA</td>
<td>0.90</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Self-Esteem</td>
<td>0.68</td>
</tr>
<tr>
<td>Proctor et al. (2011)</td>
<td>Character Strengths</td>
<td>LS</td>
<td>0.74</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PA</td>
<td>0.41</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NA</td>
<td>0.20</td>
</tr>
<tr>
<td>Suldo et al. (2014)</td>
<td>Gratitude, Kindness</td>
<td>LS</td>
<td>0.40*</td>
</tr>
<tr>
<td></td>
<td>Character Strengths</td>
<td>PA</td>
<td>0.52*</td>
</tr>
<tr>
<td></td>
<td>Optimism</td>
<td>NA</td>
<td>0.25</td>
</tr>
<tr>
<td></td>
<td>Hope</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suldo et al. (2015)</td>
<td>Character strengths</td>
<td>Sat Self</td>
<td>0.40</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PA</td>
<td>0.52</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NA</td>
<td>0.25</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Global LS</td>
<td>0.40</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sat Friends</td>
<td>0.43</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sat Living Environment</td>
<td>0.52</td>
</tr>
<tr>
<td></td>
<td></td>
<td>School Sat</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Family Sat</td>
<td>0.06</td>
</tr>
</tbody>
</table>

Note. Intervention group only results. * = significant at p < .05; ** = significant at p < .01. LS = life satisfaction; NA = negative affect; PA = positive affect; Sat = satisfaction.

In relation to these prior SWB intervention studies, efficacy has typically been measured with outcomes of life satisfaction, PA, and NA. These have been selected by the
respective studies as proposed indicators of SWB improvement at post-intervention. As shown in Table 1.2, prior studies have reported varying findings with many tests failing to achieve statistical significance at Time 2. Results appear to generally demonstrate that targeting a broader range of risk/protective factors (e.g., Suldo et al., 2015) will eventuate in larger effect sizes than those that address one, or very few, outcomes (e.g., Froh et al., 2009). Measurement of factors that include ‘perceived social support’ (i.e., satisfaction with school, family, friends, living environment) and self-esteem demonstrated stronger indices than studies that limited their range of wellbeing outcomes. Moreover, greater improvement in change agents appears to be more likely to result in an increase in outcomes of SWB (e.g., Proctor et al., 2011; Suldo et al., 2015). For example, change in the agent of self-esteem, albeit non-significant, was seen to be in the right direction ($r = .32$) and suggests that improvement in broader factors is necessary to promote the same in SWB. Overall, the variation in these studies is vast and highlights the inconsistent nature of the SWB intervention literature. One possible explanation for the variability might lie in the content of the intervention.

Each of the SWB school intervention studies in Table 1.2 has been conceptualised within a positive psychology framework. Implementation of these interventions have included learning material aimed at strengthening an individual’s perceptions / expressions of gratitude (Froh et al., 2008; Froh et al., 2009; Suldo et al., 2014), and positive character attributes (Proctor et al., 2011; Suldo et al., 2014; Suldo et al., 2015). Whilst these have been effective in initiating improvement in SWB (as evidenced by improvements in individual outcomes), they have generally not improved the full range of measured SWB outcomes, with many of the studies observing no change in measurement of either life satisfaction, PA, and/or NA. As such, it is possible that the content of these prior interventions have not possessed the key skills or resources that students needed to bolster SWB. From the tabled
results above, attending to a breadth of buffers in the delivery of an intervention appears to be integral to efficacy.

Another consideration in the interpretation of intervention efficacy is the tendency of SWB to fluctuate as individuals encounter various environmental influences. Aligning with the Theory of SWB Homeostasis, individuals are susceptible to continuous exposure to both positive and negative events. As such, measurement of SWB with traditional pre-post assessment will fail to uncover these more subtle changes that may ultimately affect intervention efficacy. Increasing the measurement intervals to capture change during the intervention period may therefore assist in understanding the inconsistency in prior research. The next sub-section will therefore describe the phenomenon of state level change in SWB, and propose the need for more regular measurement intervals across the duration of an intervention.

**Measurement Intervals in SWB Interventions**

Given the inconsistency in prior research in relation to intervention efficacy, a gap remains in our knowledge as to how SWB responds to intervention efforts. The prior sections of this review have suggested that baseline severity and the buffers of SWB are pertinent to intervention results. However, the functioning of SWB over the course of the intervention also remains unknown. Time measurement intervals are an important factor in order to effectively capture varying trajectories in the intervention phase. The time lag between these intervals are also fundamental in this process, as those that are too short or too long in duration may lead researchers to under-estimate the intervention effect (Timmons & Preacher, 2015). Therefore, careful consideration of the implementation of these intervals is necessary.

The common approach to measurement of intervention efficacy is with time intervals at immediately prior to commencement and after completion of the intervention. This
provides a comparative difference between prior functioning, and the overall amount of improvement at completion. There are some limitations, however, with this method. Firstly, by applying a standard pre-post measurement interval, there is often an assumption of a linear effect over this duration (Timmons & Preacher, 2015). This might be unrealistic as it fails to account for other responses that might include initial worsening of symptoms prior to improvement, or rapid response to the intervention then subsequent plateau. Secondly, the length of interval from pre- to post-intervention fails to capture any spikes in improvement/deterioration that may obscure results. Without a complete picture of the more minor occurrences throughout the intervention period, it is difficult to ascertain the true effects of an intervention on adolescent SWB. Given the tendency of prior SWB school-based interventions to exhibit small to moderate effect sizes, a greater understanding of the subtle changes in SWB is desirable. This might be achieved through the application of more frequent, or shorter intervals, between measurement points.

Experience Sampling Method (ESM; Csikszentmihalyi & Larson, 1987), alternatively called Ecological Momentary Assessment (EMA; Stone & Shiffman, 1994), is an approach that is gaining more attention in the psychological intervention literature as a means of more frequent measurement intervals (Ebner-Priemer & Trull, 2009; Shiffman, 2009). In this method, participants typically complete multiple assessments per day to attain a more precise measurement of their momentary experiences (Shiffman, Stone, & Hufford, 2008). ESM allows for analysis of when effects begin to take place, how long they take to build, and whether there are any particular episodes of deterioration/improvement across the testing phase. Whilst not being implemented in the prior SWB school intervention literature, ESM has been adopted for investigation of the momentary relationships between quality of life, antidepressant medication, and depression (Barge-Schaapveld & Nicolson, 2002). In this study, ESM was able to uncover trends in the data including greater stabilisation in quality of
life ratings for the intervention group compared to control that was not captured by trait level investigations of mean change. Another advantage of this kind of approach is its capacity for greater understanding as to how initial changes, or early responsiveness (whether declines or improvements), may be predictive of outcome by post-intervention, and assist in contextualising findings. For instance, a study in which people get worse initially as they adjust to intervention content and then start to improve clearly differs from an intervention in which the symptoms remain unchanged across the duration of the intervention (non-responders).

Whilst these benefits of ESM offer greater comprehension of intervention effects, it also possesses its own limitations. For example, measurement of students on multiple occasions per day, or even per week, may become a substantial burden and increase attrition. Moreover, the content of the intervention may be shortened to minimise the amount of assessments administered, and thus lessen intervention effects. Achieving a balance between these two approaches (i.e., pre/post or ESM) will allow for insight into the intervention phase, whilst managing the load on participants. As such, utilising weekly time intervals might provide this opportunity.

In summary, this section has explored some of the more notable factors affecting interpretation of intervention efficacy in the SWB literature. It has discussed: (1) the consideration of baseline levels of SWB, (2) the role of change agents on the buffering of challenging events, and (3) the importance of time measurement intervals in the understanding of the trajectory, and nature of change across the intervention phase. The final sub-section of this review (Section V) will provide an overall summary and outline how the present thesis extends upon existing literature with the implementation of a school-based intervention for adolescents as at-risk to low SWB.
Section V: Future Research Directions and Proposed Study

The review of the literature, including theoretical perspectives and relevant empirical findings, identified key determinants of low SWB, but these theoretical frameworks and predictions have been rarely, incompletely, and inconsistently drawn upon in the evaluation of SWB intervention efficacy. These prior studies have been mixed in their efficacy, with varying success in boosting SWB (including its components of life satisfaction, PA, and NA) as well as the buffers targeted through intervention. It was argued that this inconsistency in efficacy may be attributed to (1) the limited range of factors targeted by the intervention relative to the number of risk/protective factors identified in prior literature, (2) the extent of increase in the change agents as an influence on the magnitude of change in SWB, and (3) the number of participants scoring below mid-point at baseline on key outcomes. It is argued that this may in part be due to poor alignment between identified risk factors and those targeted in the existing interventions. Also, there is limited measurement investigating whether the intervention improved these change agents. Some attempt to evaluate the role of baseline severity has been done, although these have been the exception rather than the norm. Timeframe for evaluating change has typically been pre-to-post intervention, whereas more fine-grained analysis during the intervention phase itself is likely to be beneficial in ascertaining information as to the more subtle effects or changes of deterioration/improvement attributable to the intervention.

Proposed Study

The present thesis investigates the effects of a 6-week school-based intervention to improve SWB amongst a group of Year Eight Australian high school students. The measure of SWB is the Personal Wellbeing Index (PWI; Cummins & Lau, 2005). Two alternative outcome measures in PA and NA will also be explored in order to facilitate comparison with
prior intervention literature reviewed earlier. Because of the breadth of the proposed
investigation, the following will be split into two separate chapters.

Chapter Two will assess change at the trait level. Assessments will be made at pre-
intervention (Time 1), immediately post intervention (Time 2), and at three month follow-up
(Time 3) in order to assess changes in SWB (i.e., the PWI), secondary outcomes of PA, and
NA, and the targeted risk/protective factors (resilience, self-esteem, body image, social
supports, and coping). Chapter Three will focus upon weekly changes in SWB during the
intervention phase, and their correspondence to change from baseline to post-intervention and
from post-intervention to the 3-moth follow-up. It is expected that this will give greater
insight into intervention effectiveness in association with baseline-recorded levels of SWB,
providing explanation as to the trajectories of improvement. It is also expected that weekly
recordings will also identify risk of intervention intervention non-responsiveness by
comparing early changes in symptoms for responders vs non-responders during the
measurement phase.
Chapter Two: Intervention Effects at Trait Level

Although evidence suggests that subjective wellbeing (SWB) is an individual difference factor (Cummins, Li, Wooden, & Stokes, 2014), that SWB levels may be more challenged in adolescence than in adulthood (Froh et al., 2008), that level of SWB may be a hinderance to healthy trajectory into adulthood (Cummins, 2014), and that low SWB is linked to a range of adverse health outcomes such as academic functioning (Suldo et al., 2011), self-esteem (see Diener & Diener, 1995), and substance abuse (Zullig et al., 2001), there are few interventions to date that target adolescent SWB in the school context (e.g., Froh et al., 2009; Froh et al., 2008; Proctor et al., 2011; Suldo et al., 2014; Suldo et al., 2015). Moreover, these interventions have been variable in key design choices, such as choice of buffers for SWB that are targeted, and in the effect sizes obtained (see Section IV, Chapter One).

An important area of investigation across several studies to date (Froh et al., 2009; Proctor et al., 2011; Tomyn et al., 2015) has explored whether baseline severity determines extent of improvement in response to intervention. Although the limited investigations have yielded inconsistent results, at least two proposals for how baseline severity may influence efficacy have been proposed. Froh et al. suggest an ‘emotional ceiling’ whereby those with initial high levels of baseline PA are likely to experience lesser gains in SWB than individuals with low baseline PA. Similarly, the Theory of SWB Homeostasis (Cummins, 2010) proposes that each individual possesses a system which works to sustain well-being within an ideal ‘set-point range’, whereby magnitude of improvement is dependent upon baseline levels of SWB. Moreover, this Homeostatic system utilises a range of buffers that are imperative to sustain adequate functioning within this optimal range.

There is considerable evidence for the impact of risk/protective factors or ‘buffers’ of SWB amongst the adolescent cohort. Despite this, prior school-based intervention studies (e.g., Froh et al., 2008; Froh et al., 2009) have been limited in the breadth of factors
addressed. This is despite Theory of SWB Homeostasis’ argument that buffers are essential to moderating positive and negative experiences and are crucial for sustaining well-being at healthy levels (Cummins, 2010). On this basis, the level of SWB at baseline and faculties for improvement (through drivers of SWB) are key determinants of the extent to which one may improve their SWB.

The purpose of the present study is to comprehensively test these predictions with a school-based SWB intervention for adolescents. Measurements were taken at baseline, post-intervention, and at 3-month follow-up to assess whether there is a positive change in SWB measured primarily with the PWI, and alternate outcomes of PA and NA. Moreover, components targeted by the program (i.e., self-esteem, body image, resilience, social supports and coping) will also be measured at each time point. In particular, the present study evaluates:

(1) If the intervention is effective at bolstering the SWB of adolescents, and the targeted risk/protective factors, from baseline (T1) to post-intervention (T2) compared to the wait-list control condition. SWB will be explored for its effects amongst the intervention group at the 3-month follow-up (T3);

(2) If trait level SWB improves from pre- to post-intervention when group differences at baseline are accounted for;

(3) Whether change in scores from Time 1 to 2 (i.e., pre-post program) are best characterised as a linear or logarithmic improvement; and

(4) Whether change in SWB is contingent upon co-occurring change in the buffers of SWB.
Method

Participants

Four Government schools in Victoria participated in the program. Schools were located in a range of areas with two of an inner city location, one in the outer suburbs of Melbourne, and one regionally-based school. Data gathered in 2011 to assess Socio-Economic Indexes for Areas (SEIFA) ranked suburbs to represent social disadvantage (Australian Bureau of Statistics, 2013). Schools involved in the study were explored by the author using the SEIFA data and rankings determined based on their suburb location. Relative to other Victorian suburbs, intervention schools placed in the lower range, both in the first decile (7th percentile) and 2nd decile (14th percentile). Control schools were listed as ranking in the 1st (5th percentile) and 6th (59th percentile) deciles. This indicates that schools involved in the study were largely located in areas of socio-economic disadvantage where students might be more at-risk to poor wellbeing with income a strong predictor of SWB (Cummins, 2000b; Diener, Diener, & Diener, 1995).

Overall, 252 students were involved in the program. Of this sample, 164 students completed the intervention only condition (102 males, 56 females; 6 no report of gender) and 88 (44 males, 43 females; 1 no report of gender) were allocated to the wait-list control condition. Differences in sample size and demographics such as gender between intervention and control groups arose as a product of adhering to random allocation of schools to condition. This was based upon the sequence in which they confirmed their participation in the program and is described in more detail in the procedure section below. The control group subsequently received the program in the following school term. All students were in Year 8 with an average age of 13.6 (SD = .60). Based on T2 sample sizes, alpha = .05 and power = .80, and assuming a modest intra-class correlation of .05, the present study was adequately powered to detect a moderate group difference in depressive symptom severity at post-
intervention of Cohen’s $d > 0.5$. See Figure 2.1 for an outline on participant numbers across the program.

Figure 2.1. Summary of the Number of Participants who Completed Measurements at Time 1, Time 2, and Time 3.

Materials

Student Manual

This booklet consisted of the framework and content of the intervention and the activities to be completed. The material within the student manual was created in consultation
with key stakeholders, particularly teachers, principals, and wellbeing staff from early participating pilot schools in 2012-2013. Initially, the proposed key risk/protective factors for wellbeing were presented to key staff within these pilot schools to ensure their relevance and instigate discussion about how these might be best targeted by a classroom program. These meetings provided direction for composing the content of the program, with key stakeholders making pertinent suggestions including the need for a mix of group and individual work, the importance of having students being able to apply the module content to relatable scenarios, and the need to have all students involved in order to build classroom cohesion and avoid stigmatism. Material was then devised by research assistants at Deakin University to reflect the key factors and revisions made by school staff. The intervention was then trialled in a small group of pilot schools located in regional areas of Victoria. The 6-week intervention was delivered universally and pre- and post-measures administered to gather information as to whether improvements were seen in SWB and the targeted buffers. Qualitative feedback was also obtained in post-intervention group interviews from both teachers and students, with common concerns being held about potential impacts of discussing negative content such as poor body image and poor self-esteem. As such, the present intervention focused upon a slight modification of the program content to reflect positive terminology and discussion regarding the key risk/protective factors. A mixed approach to activities was used with some being small group oriented, others requiring a whole class discussion, and several designed as individual-based tasks. Each module was designed to consolidate the information presented and to generate thought regarding the subject matter. Students were able to retain their booklets at the completion of the intervention. Whilst homework tasks were included within the manuals, this was only suggested to students as an additional activity rather than enforcing that the homework be completed. The intervention design outlines six separate modules that target factors
associated with mental health and wellbeing: (1) positive mental health (‘how positive thoughts promote positive mental health’), (2) problem solving (‘developing coping skills’), (3) self-concept (‘building self-concept – part 1’), (4) positive body image (‘building self-concept – part 2 – body image’) (5) assertiveness (‘developing assertiveness’), and (6) resilience (‘building resilience’). A summary of module objectives are provided in Table 2.1 and the full content is provided in Appendix A.

Table 2.1

Overview of the Modules Included in the Intervention with Main Outcomes Identified

<table>
<thead>
<tr>
<th>Session</th>
<th>Content of Session and Learning Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>How positive thoughts promote positive mental health</td>
<td>Students learn the influence that focusing on positive aspects of one’s life can have for promoting positive wellbeing. They are taught to recognise the effects unhelpful thoughts can have on their feelings, and learn to counter these unhelpful thoughts by focusing on positive aspects of their lives.</td>
</tr>
<tr>
<td>Developing coping skills</td>
<td>Students learn how to communicate more effectively, how to problem solve, and relaxation techniques to overcome unhelpful thoughts and feelings</td>
</tr>
<tr>
<td>Building self-concept, part 1 (general)</td>
<td>Students are taught to identify and appreciate differences in abilities, likes/dislikes, and personality in self and others. They are taught to identify strengths in self and others, in order to build healthy self-concept.</td>
</tr>
<tr>
<td>Building self-concept, part 2 (body image)</td>
<td>Because body image is such an important determinant of self-worth for adolescents, a separate session is devoted to building positive body image.</td>
</tr>
<tr>
<td>Developing assertiveness</td>
<td>Students develop skills to effectively communicate their needs.</td>
</tr>
<tr>
<td>Building resilience</td>
<td>Students are taught a range of behavioural strategies to build resilience, such as perspective-taking, positive self-talk, and active coping.</td>
</tr>
</tbody>
</table>

Teaching Manual, Activities and Materials

The teacher’s manual is an adjunct to the student version with largely overlapping content (see Appendix A). It extends upon the student manual with the addition of an introduction to each section that provides an overview to the upcoming module and is
delivered verbally to participants. The focus of the particular section and its benefits to optimal mental health and wellbeing are highlighted in the passage. The teaching manual has answers and discussion points to prompt and facilitate conversation amongst students.

**Trait Level Measurement**

The program questionnaire was utilised for measurement of trait SWB, as well as change in determinants of SWB. Scales within this reflected targeted modules within the program as well as the key outcome variable (subjective wellbeing): (1) resilience, (2) trait affect, (3) social support, (4) body image satisfaction, (5) coping, and (6) self-esteem. The questionnaire was administered to students immediately prior to the commencement of the first module of the intervention (Time 1) and immediately after the completion of the final module (Time 2). Data were also gathered at a follow-up assessment (T3) three months post-intervention for students who received the intervention at T1.

Prior to the completion of the Time 1 questionnaire, students were asked to construct an ID number with the first 3 letters of their surname and the three numbers of their birth date (e.g., SMI071 for surname Smith born 07\textsuperscript{th} December). This was used to assist in the matching of questionnaires for individual students across all time-points. Questionnaires were completed within their regular classroom setting and under quiet conditions. Students were asked to respond individually and advised that there was no time limit. The program facilitator was present in the room during completion of the questionnaires and assisted students with interpretation of questions if there was any difficulty.

**Demographics.** Several demographic questions were incorporated into the questionnaire to collect information that might detail group level differences in the experience of SWB. Each respondent was asked their age (in years), gender (male/female), weight (kg or lbs), height (m or ft), and place of birth. Slight modifications were made to the demographic section of the Time 2 (post-intervention) questionnaires due to matching of
individual ID codes. Questions that gathered information on BMI (height/weight) were retained in order to contrast any changes students might record after participation in the program. The remainder of the questionnaire maintained the initial structure to measure intended intervention effects. The following sub-section outlines the scales utilised in the measurement of these outcomes.

**Subjective Wellbeing (SWB) and Life Satisfaction.** The Personal Wellbeing Index (PWI; International Wellbeing Group, 2006) is a measure of life satisfaction and SWB. Global life satisfaction is assessed by an item that enquires: ‘How satisfied are you with your life as a whole’. Although this has been deemed to be an effective measure of SWB, it lacks a multi-item system approach that is optimal when considering the reliability of the scale (International Wellbeing Group, 2013). Consequently, the PWI consists of an additional seven life domains (standard of living, health, life achievement, personal relationships, personal safety, community-connectedness, and future security) that together deconstruct the first level question of global life satisfaction. Scores on these domains can be aggregated to provide an appraisal of average SWB (Cummins & Lau, 2005) with a rating on the scale’s adult version ranging 11 points from 0 (‘completely dissatisfied’) to 10 (‘completely satisfied’) (Tomyn & Cummins, 2011a).

To accurately capture the population sub-group of school children and adolescents, a version of the PWI was adapted to represent this cohort. The Personal Wellbeing Index for School Children (PWI-SC; Cummins & Lau, 2005) parallels the adult version with seven domains (standard of living, health, life achievement, personal relationships, personal safety, community-connectedness and future security) that measure SWB (Tomyn & Cummins, 2011a). Several adjustments are made to the domains from the adult version to simplify statements. For example satisfaction with future security is amended to ‘how satisfied are you about what may happen to you later on in life?’, satisfaction with standard of living in the
adult version becomes ‘how happy are you about the things you have e.g., things you own?’ (Tomyn, Fuller-Tyszkiewicz, & Cummins, 2013). Moreover, for the purpose of simplification, items are adjusted in their wording through substitution of ‘satisfied’ with ‘happy’ in order to make the questionnaire more accessible to school aged children (Cummins & Lau, 2005).

Testing of the properties of the PWI-SC has revealed strong internal consistency over a number of studies with scores ranging from 0.82 to 0.85 (Tomyn & Cummins, 2011a; Tomyn, Fuller-Tyszkiewicz et al., 2013). In regards to validity, all domains in the PWI-SC share substantial variance both with one another (.24-.55) and with global life satisfaction (.27-.59) (Tomyn & Cummins, 2011a). Five domains on the PWI-SC have been found to contribute significant unique variance to the prediction of life satisfaction, accounting for 51% of the overall variability (Tomyn & Cummins, 2011a). Specifically, significant beta weights were obtained for standard of living (.23), health (.13), achieving (.28), safety, (.18) and future (.10). This scale has been demonstrated to have an adequate fit by a one-factor solution, with strong loadings across the domains, from .53 (community) to .76 (health) (Tomyn & Cummins, 2011a). In a study of young Indigenous Australians also believed to be at risk for poor SWB, convergent validity was established between SWB and a General Life Happiness (GLH) item with a correlation of .68 (Tomyn, Norrish, & Cummins, 2013).

The equivalence of the PWI adult and School children version (PWI-SC) has been evaluated and results depict that each measure the same constructs (Tomyn, Fuller-Tyszkiewicz et al., 2013). Using a multiple-group Confirmatory Factor Analysis, these authors established that SWB is the same across adult and school children population groups, and that quantitative comparisons can be made for the relevant scales. Findings of comparative means between adolescent and adult scores further supports the theoretical assumptions of the Homeostatic nature of SWB (Tomyn & Cummins, 2011a). In the present
study, Cronbach’s alpha was found to be $\alpha = .85$ (Time 1), $\alpha = .88$ (Time 2), and $\alpha = .87$ (Time 3).

**Resilience.** The Resilience Scale (Wagnild & Young, 1993) was designed to capture elements believed to be indicative of resilience level, namely: perseverance, equanimity, meaningfulness, self-reliance, and existential aloneness (Wagnild, 2009). It is intended for use with a wide age range, from 13 years to adults. Questions are answered on a 7-point Likert scale 1 (‘disagree’) to 7 (‘agree’) and summed with higher scores depicting greater resilience (Ahern, Kiehl, Sole, & Byers, 2006).

For this particular study, the original 25-item scale was adapted in accordance with feedback from school personnel who recommended that the questionnaire reflect positive aspects of resilience. Accordingly, the scale was pared back so that students completed a 10-item version that removed statements with negative connotations or that might evoke difficult feelings. As a result of these changes, the measure of student resilience was assessed through the statements: ‘I usually manage one way or another’, ‘I feel proud that I have accomplished things in my life’, ‘I usually take things in my stride’, ‘I am friends with myself’, ‘I am determined’, ‘I keep interested in things’, ‘my belief in myself gets me through hard times’, ‘my life has meaning’, ‘when I am in a difficult situation, I can usually find my way out of it’, ‘I have enough energy to do what I have to do’.

The Resilience Scale has been utilised across a number of studies. A recent review by one of the scale developer’s evaluated a number of these to assess the scale’s cumulative psychometric properties (Wagnild, 2009). This review found internal consistency to range from .85 to .94, indicating a robustness across different studies and their various sample groups (Wagnild, 2009). Additionally, test-retest reliability estimates attained correlations that ranged from .67 to .84 ($p < .01$) (Killien & Jarrett, 1993, as cited in Wagnild & Young, 1993). In adolescent studies, Cronbach’s alphas for the Resilience Scale range from .72 to .91.
This suggests consistency of the instrument across time (DeNisco, 2011; Wagnild & Young, 1993).

Content validity of the Resilience Scale has been demonstrated in the consideration and inclusion of theoretically linked concepts to resilience and the input by relevant external professionals during the development phase (DeNisco, 2011; Wagnild & Young, 1993). Further evidence of validity of the scale has been demonstrated via associations with similar concepts to that of resilience, with positive relationships with morale and life satisfaction, and a negative association with depression (Wagnild, 2009; Wagnild & Young, 1993). These results emphasise suitability for use of the Resilience Scale amongst the adolescent group (Black & Ford-Gilboe, 2004; Hunter & Chandler, 1999; Rew et al., 2001). In the present study, Cronbach’s alpha was found to be $\alpha = .89$ (Time 1), $\alpha = .90$ (Time 2), and $\alpha = .90$ (Time 3), suggesting that the modifications made to the scale by reducing the negative items still maintained adequate psychometric properties.

**Social Support.** The Multidimensional Scale of Perceived Social Support (MSPSS; Zimet, Dahlem, Zimet, & Farley, 1988) is a 12-item scale with three subsections – Family, Friends, and Significant Other. Items are rated on a 7-point Likert scale that range from 1 (very strongly disagree) to 7 (very strongly agree). Items are summed to produce an overall representation of amount of perceived social support with a maximum of 70 points.

In a study by Canty-Mitchell and Zimet (2000), the reliability and validity of the MSPSS was tested amongst a nonclinical sample of urban adolescents from a diverse range of ethnic/racial backgrounds. Principal axis factor analysis results supported a three factor solution – family, friends, and other (Canty-Mitchell & Zimet, 2000). These three factors accounted for 79.3% of the shared variance between the items of the scale. Items loaded at .66 or higher on their corresponding factors. High Cronbach’s alpha coefficients were found both for the overall scale ($\alpha = .93$), and for each of the subscales (family $\alpha = .91$, friends $\alpha =$
.89, significant other $\alpha = .91$). The present study calculated a total score for the MSPSS rather than for subscales in order to grasp an adolescent’s sense of their broader social supports. Discriminant validity was also demonstrated specifically for the ‘family’ subscale when correlated with the Adolescent Family Caring Scale (AFCS; Canty-Mitchell & Zimet, 2000). For the current study, Cronbach’s alpha for the measurement points were found to be $\alpha = .91$ (Time 1), $\alpha = .92$ (Time 2), and $\alpha = .93$ (Time 3).

**Trait Affect.** In order to capture PA and NA of students, the Trait Affect Scale (TAS; Blore, 2008) was used. This brief scale gathers information across five items on positive (happy, content, satisfied) and negative (unhappy, discontent) affect. Responses to these items are averaged separately to give a score for both PA and NA. Each item is rated on an 11-point Likert scale ranging from 0 (*not at all*) to 10 (*extremely*).

These five items have been shown to accurately represent the two affective states (PA and NA; Davern, 2004; Yik, Russell, & Feldman-Barrett, 1999). Convergent validity has been demonstrated for the Trait Affect Scale, established in strong correlations between both the PWI and Life Satisfaction and constructs of trait satisfaction, contentment and happiness (Blore, 2008; Colautti et al., 2011). Similarly, strong correlations were obtained between pleasant affect components (satisfied, content, happy) and measurements of cognitive buffers, personality, Multiple Discrepancy Theory, and the Depression, Anxiety, and Stress Scale (see Blore, 2008). Amongst undergraduate females, a Cronbach’s alpha of .78 has been obtained for PA and .82 for NA (Colautti et al., 2011). In the present study Cronbach’s alpha was calculated for PA, (T1 $\alpha = .87$; T2 $\alpha = .93$; T3 $\alpha = .91$), and NA (T1 $\alpha = .77$; T2 $\alpha = .84$; T3 $\alpha = .90$).

**Body Image Satisfaction.** The Body Image Satisfaction subscale of the Body Change Inventory (Ricciardelli & McCabe, 2002) was used to measure satisfaction with global aspects of appearance (weight, body shape, and muscle size) as well as satisfaction with
specific body parts (hips, thighs, chest, abdominal region/stomach, size/width of shoulders, legs and arms). The Body Image Satisfaction subscale was implemented to assess change in body satisfaction amongst participants across the assessment points. Each item on the Body Image Satisfaction scale is rated on a 5-point scale from 0 (very unhappy) to 4 (very happy). Scores on each item are summed to produce an overall total score.

For the present study, the incorporated Body Image Satisfaction subscale was a modified version from that designed by Ricciardelli and McCabe (2002). First, Likert scale ratings were replaced from ‘extremely satisfied - extremely dissatisfied’ to ‘very unhappy-very happy’ to be more user-friendly to the adolescent population. These descriptors were modified as a means of simplifying the language for the adolescent population and the school context. This amendment to item wording has been similarly employed in other adolescent based studies using the body satisfaction scale (Cummins, Collard et al., 2009; Fuller-Tyszkiewicz et al., 2012; Mellor et al., 2009; Xu, et al., 2010). Second, due to strong correlations between several of the items ($r > .9$), these items have been condensed to a total of five that together measure overall weight/shape, muscles, lower body, middle body and upper body, as per Fuller-Tyszkiewicz et al. (2012). Third, these items have been reframed due to feedback from previous schools to reconcile with maintaining a sense of positivity throughout the program. Therefore these items request participants to assess how happy they are with each of these elements, and refrain from referring to dissatisfaction with the body. Given that body satisfaction and dissatisfaction are thought to exist on a single continuum, and that other commonly used body image measures also use satisfaction as the key anchor for rating of items (e.g., Kelly, Wall, Eisenberg, Story, & Neumark-Stzainer, 2005; Neumark-Stzainer, Paxton, Hannan, Haines, & Story, 2006), this decision to focus on body satisfaction instead of dissatisfaction is justified and consistent with broader literature.
In a review of studies utilising the Body Image Satisfaction scale with both male and female adolescents \((n = 1732)\), reliability of the scale has been demonstrated with an internal consistency outcome of \(r > 0.92\) (Ricciardelli & McCabe, 2002). The subscale has also independently reflected high reliability with one adolescent based study demonstrating internal consistency of .84 for these five items (Stanford & McCabe, 2005). In a study by Mellor, McCabe, Ricciardelli, and Merino (2008), internal consistency alpha coefficients were reported separately for adolescent boys (0.87) and girls (0.86), highlighting the reliability of the scale both amongst adolescents as a whole, and specifically by gender. In a longitudinal study over eight months, Cronbach’s alpha of 0.88 to 0.94 were found amongst both adolescent boys and girls (McCabe & Ricciardelli, 2004). Test-retest reliability has also been demonstrated in this study \((r = 0.70 – 0.85)\).

Concurrent validity has been demonstrated in analyses with other body image measures including Stunkard’s Figure Body Drawings and the Eating Disorder Inventory – Body Dissatisfaction subscale (Ricciardelli & McCabe, 2002). A similar five item dissatisfaction focused version of the questionnaire has similarly reflected adequate internal consistency \(\alpha > .85\) (Fuller-Tyszkiewicz, et al., 2012) and has produced positive correlations with body satisfaction related concepts including BMI, sociocultural attitudes to appearance and body change behaviours (Mellor, et al., 2008; Mellor, et al., 2009). In the current study Cronbach’s alpha was found to be \(\alpha = .92\) (Time 1), \(\alpha = .94\) (Time 2), and \(\alpha = .95\) (Time 3).

**Coping.** To evaluate situational coping mechanisms of participants, Stone and Neale’s (1984) Daily Coping Inventory (DCI) was included. This scale was initially developed with the use of eight broad coping strategies (distraction, situation redefinition, direct action, catharsis, acceptance, the seeking of social support, relaxation, and religion). However, research has since indicated the need to add or modify coping categories to this initially
developed list to ensure relevance to the phenomenon being investigated (Gunthert, Cohen, & Armeli, 1999).

In this particular study, coping strategies were incorporated on the basis of pertinent coping mechanisms (i.e., self-blame, wishful thinking, information seeking, humour) to exploration of personality characteristics. Various other studies measuring coping methods have modified this original version (Affleck, Tennen, Urrows, & Higgins, 1992; Gunthert et al., 1999; Pottie & Ingram, 2008). The complete version of this scale encompasses written reflections of specific stressors encountered during the day, a rating of the stressfulness of these events, and identification of which coping strategies from a provided list were utilised. In the present study, participants were asked solely to identify which coping strategies they perceived they generally employ in response to a stressful situation or interaction. These were based on nine strategies that were provided to them (distraction, direct action, acceptance, seeking of social support, relaxation, self-blame, wishful thinking, information seeking and humour). Coping styles were chosen based upon Gunthert et al.’s (1999) revisions to the scale. The narrative element of this scale was eliminated and ratings of severity not recorded. This was decided upon in order to meet the needs of assessing a young adolescent cohort and as a result of time restraints. Students were requested to identify the frequency with which each particular strategy was used (0=never, 1=rarely, 2=sometimes, 3=frequently and 4=always).

Inter-rater agreement was established in the development phase of this scale based upon independent sorting of statements into coping categories by members of the research team (Stone & Neale, 1984). Consistent outcomes in regards to matched sorting of coping strategies by the researchers was achieved in this process (inter-rater reliability = .74). Content validity of the DCI was also explored in this study, with narrative responses to the listed coping strategies supporting adequacy of the scale. This approach was replicated in a
study by Gunthert et al. (1999) who utilised the matching of written responses to categories to endorse their inclusion.

Significant inter-correlations between the various coping categories have been found, with problem solving strategies (i.e., direct action) negatively correlated with those that have an emotional basis to them (distraction = -.12, acceptance = -.28), and a positive relationship with seeking of social support (.10) (Stone & Neale, 1984). Specific indices for internal reliability are not reportable as each of the items is a category in itself (Stone & Neale, 1984). Ptacek et al. (1994) examined daily measurements of coping compared to retrospective reporting of coping over a one week period. When daily measurements were averaged across the 7 days, correlations of between .47 and .58 were found with the retrospective measures of coping.

Due to the novelty of utilising the coping scale in its form for the current study, an exploratory factor analysis was conducted to determine where the items of the scale were loading. Using an oblique rotation with maximum likelihood, this analysis revealed that ‘self-blame’ loaded highly on one factor, whilst all others loaded positively onto another. Reliability of the items of the scale was conducted and it was revealed that at Time 1, $\alpha = .60$. This would be improved only to $\alpha = .65$ if item 6 ‘self-blame’ was deleted. For this reason, it was determined that this scale would be retained due to moderate reliability of the overall scale. In the present study Cronbach’s alpha was found to be $\alpha = .61$ (Time 1), $\alpha = .61$ (Time 2), and $\alpha = .63$ (Time 3).

**Self-Esteem.** The 10-item Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965) was used to measure adolescents’ global assessments of their self-worth and self-acceptance (Barrett, Sonderegger, & Sonderegger, 2002). The RSES is the most widely utilised source of measuring self-esteem (Schmitt & Allik, 2005). This scale was initially designed by Rosenberg (1965) to measure self-esteem of secondary school students and features an equal
number of positively and negatively worded items. In order to create a total scale score, negatively worded items are firstly reverse coded. It features a Likert scale of four responses from strongly disagree, to strongly agree, with higher scores indicative of greater self-esteem (Rhea & Thatcher, 2013).

Strong construct validity has been established for the RSES in relation to a negative correlation with measures of depression ($r = -0.64$), and positive relationships with optimism ($r = 0.61$), life satisfaction ($r = 0.61$) and parental warmth and acceptance ($r = 0.42$) (Greenberger, Chen, Dmitrieva, & Farruggia, 2003). The RSES has demonstrated reliability in a longitudinal study spanning over a two year time period, with consistently high Cronbach’s alphas obtained between Time 1 and 2 (.88-.89). Cronbach’s alpha for the current study was found to be $\alpha = .86$ (Time 1), $\alpha = .88$ (Time 2), and $\alpha = .88$ (Time 3).

**Procedure**

Ethics approval was obtained from Deakin Human Research Ethics Committee. The intervention was also approved by the ethics board of the Victorian Department of Education and Early Childhood Development (DEECD). Government schools in the outer suburbs of Melbourne were identified and located using the Department of Education website. Particular effort was made to reach these schools in order to increase the likelihood of obtaining access to at-risk students. A number of both metropolitan and regional schools were chosen and letters sent out to Principals and Wellbeing Coordinators to invite their participation in the study. In response to this, four schools expressed a desire to be involved and meetings were arranged to provide further in-depth information in regards to the requirements and commitments of the school to the study. No response was obtained from the other schools that were contacted via mail out. Meetings conducted at the schools were arranged with school wellbeing representatives whereby the schools were allocated to either intervention or control condition. Order of expression of participation was the basis for assignment into these
groups. First allocation was to the intervention group, followed by control condition. This pattern was repeated for the subsequent two schools who made contact with the research team. Plain Language Statements regarding the study and consent forms were also provided to school staff during this meeting to be administered both to students and parents (see Appendix C).

Facilitators of the program consisted of post-graduate psychology students completing either their clinical Doctorate or PhD in Psychology. These students each attended an initial interview with the research team to provide an overview of expectations and requirements of being a facilitator before being selected. Subsequently, each facilitator attending a group training day whereby program content was discussed to ensure effective and consistent delivery of the intervention. Each facilitator independently delivered the program to the same classroom for the 6 weeks to encourage opportunity for developing rapport with the participating students. Facilitators were required to also arrange for any questionnaires to be completed, to collect these from students, and to deliver them back to the university to the research team. Contact with facilitators was maintained throughout the duration of the program to discuss the progress of the intervention.

Overall, 415 students were enrolled in Year 8 across the four participating schools and all were targeted for involvement in the program. Of this number, 252 (61%) gave consent to participate and completed at least the baseline questionnaire. For those who did not return forms, the opportunity for participation in the program was still provided under the provision of not completing study questionnaires. Alternative out-of-class arrangements were made for any who advised they did not wish to take part.

Intervention schools received the program in Term 3 of the school year. During this same period, wait-list control schools completed questionnaires at parallel time points in order to provide comparison data. The control schools subsequently received the intervention
in the following term. The intervention was run over a six-week period, with one module being delivered per week in the school classroom. Students were kept in their class homerooms with facilitators running the same sessions to generate consistency. Classroom teacher(s) were also present during the session in the interest of behaviour management.

Weekly diaries were initiated to the intervention group a week prior to the commencement of the program and students were directed to complete these at the end of each day. The administration and analysis of these weekly diaries will be discussed in Chapter 3. Pre-intervention data were presented in a manner most convenient to the school, with one school completing prior to Time 1, another doing so online, and other schools completing on the day of commencement of the program immediately prior to initiation of module 1. Each student was provided with a copy of the questionnaire and advised to complete it individually. Once all questionnaires had been returned, the first module was delivered.

Each module was allocated a 45-minute time slot, or one class period. Students were provided with the student manual to record responses to activities and as a way of reinforcing the information from the program. At the introduction to each module, the students were provided with an overview of the topic (e.g., self-esteem) by the facilitator. This was read aloud from the teaching manual to ensure that the same message was delivered to all student groups. Most modules commenced with a group discussion that encouraged students to define the particular topic in their own words, and to record their thoughts in the student manuals provided. Each student was then engaged in a variety of tasks that incorporated whole group discussions and small group activities whilst others were responded to individually. The facilitators were encouraged to move around the room during smaller or individual activities in order to interact more closely with the students and have in-depth discussions about the particular topic and answer any questions they might have had. The
teaching manual was used as required throughout the modules as a guide for the facilitator to assist in delivery of the program.

At the completion of the last module of the intervention, students were given 15 to 20 minutes to complete the Time 2 version of the questionnaire. They were requested to again record an unidentifiable ID code to match with that provided in the previous Time 1 measurement. To conclude, students were advised that if they had any questions to contact the person listed on their student booklet. Follow up data were also obtained at three months post-intervention in order to assess long term outcomes of the intervention. This version reflected that as administered at Time 2 and allowed for the sustainability of the program to be assessed through the measurement of any changes to student wellbeing and other program outcomes. Follow up data was obtained only from those students who participated in the intervention group and not in the wait-list control.

**Data Analytic Strategy**

The data were firstly explored for any patterns in participant attrition. A grouping variable was formed based on whether participants completed T1 and T2, or just T1, and then group difference tests were conducted on baseline variables to evaluate differences between those who dropped out vs those who gave complete data. For categorical baseline variables (such as gender and school), chi square difference tests were used (i.e., 2 x 4 design). Fisher’s exact test was used to determine if there was a significant difference between the 2 x 2 variables. One-way ANOVAs were employed to determine whether meaningful differences existed – based on baseline scores - for those who dropped out compared to those who completed each time point for each of the continuous variables (PWI, PA, NA, resilience, self-esteem, social support, coping, body image) over the course of the intervention (pre, post, and at 3-month follow up). Group (intervention vs control) was added as an IV to assess whether the relation between dropout and these baseline variables differed across groups.
(e.g., PWI x attrition x group). Key assumptions of normality were tested through Shapiro-Wilk’s test, Cook’s Distance was used to assess for univariate outliers, and Mahalanobis Distance for possible multivariate outliers.

Given the breadth of research questions and different operationalisations of the key modelled variables of SWB (i.e., evaluating change in PWI, PA, and NA), several analytic approaches were adopted to comprehensively evaluate the data. To address Hypothesis 1 – that there would be greater improvement both in SWB and the risk/protective factors for the intervention group relative to control participants – a difference score approach was used and implemented through SPSS. In this approach, the DV was calculated by subtracting T1 PWI scores from T2 PWI scores, such that positive scores indicate improvement in SWB from baseline to post-intervention. This difference score was regressed onto group to evaluate whether changes in SWB were significantly greater for the intervention than the control condition. The b weight for the model intercept ($b_0$) represents the average difference in SWB for individuals in the control group since group was coded as $0 = \text{control}$ and $1 = \text{intervention}$. The b weight for the Group IV ($b_1$) thus represents how much greater (positive b weight) or lesser (negative b weight) the average change in PWI was for the intervention group. A one-sample t test was conducted to determine if change in PWI from Time 2 to Time 3 differed significantly from zero. Repeated measures ANOVAs were then conducted to assess the improvement in risk/protective factors as a result of the intervention.

The construction of a difference score also facilitated evaluation of change as a function of baseline SWB level. Whereas the influence of group on change in SWB can be tested within a multiple regression framework (i.e., with T2 PWI regressed onto group, controlling for T1 PWI), this approach does not permit evaluation of the association between

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1 The same principle was used to calculate change in PA and NA. To represent positive change in NA, however, T2 NA was subtracted from T1 NA to indicate improvement
T1 PWI and change in PWI from T1 to T2. In contrast, another common alternative approach (Repeated Measures ANOVA) is problematic because the IV must be categorical, forcing conversion of a continuous variable into categorical form in this instance. MacCallum, Zhang, Preacher, and Rucker (2002) demonstrate the statistical challenges of this approach, and instead recommend that researchers retain the continuous nature of the variable.

Thus, the difference score approach was used to assess Hypothesis 2, which stated that those lowest in SWB would gain the most by post-intervention. SPSS’s curve estimation function was used to test two plausible functions for the relationship between baseline SWB and change in SWB: (1) a linear function, which assumes a linear trend, such that improvement in SWB is greatest for those with low SWB at baseline, and level of improvement uniformly declines for each point increase in baseline SWB; and (2) a logarithmic function, which assumes a non-linear trend, such that magnitude of improvement is not uniform across all levels of SWB and instead plateaus at higher levels of baseline SWB. This second function is consistent with the hypothesis derived from Homeostasis Theory. The two functions were compared by exploring the amount of variance explained ($R^2$) by each model— the function which produced the greater $R^2$ value was considered a better fit for the data. As it is possible that the shape of the baseline PWI-change in PWI relationship differs for control and intervention groups, these models were run separately for control and intervention groups, and Chow’s Test (1960) was conducted to evaluate whether the model differed significantly across groups. This test allows for comparison of model fit across groups (Chow, 1960; Ghilagaber, 2004). The same steps were used to model for the alternate conceptualisations of SWB (i.e., trait PA and NA).

Hypothesis 3 – which predicted that the effects of risk/protective factors would influence change in SWB – was explored through Pearson’s Correlation Coefficients ($r$) and multiple regressions to explore the strength of the relationship between the change in the
buffers and the change in SWB for the sample overall, intervention and control conditions.

As a guideline for interpretation of the size of the obtained effect, $r$ of .1-.3 will suggest a small effect, $r$ of .3 to .5 = a moderate effect and $r$ of > .5 = a large effect (Cohen, 1988, 1992). Moreover, repeated measures ANOVAs were run with SWB continuum as the predictor to assess the change in risk/protective factors for those with low SWB at baseline (<70 points). Variables were all constructed so that a positive score reflected positive change by T2 (T2 minus T1; with the exception of NA, T1 minus T2) as a result of the program.

Hypotheses 1 to 3 were also evaluated using categorical analyses to supplement the continuous variable approaches. This was done using tests of 1 SD change to quantify the number of people who changed substantially as opposed to the average amount of change observed within the groups. Exploration of intervention effects for Hypothesis 1 were conducted to determine the number of participants that improved by one, less than one, and deteriorated by one standard deviation. Individuals were split into groups of those who reported minimal change (no change), improvement (one standard deviation change above the mean) and those who reported deterioration in SWB (one standard deviation below the mean). The number of students reporting SWB scores of below 70 points (i.e., below the population norm) as per Hypothesis 2 were also calculated to evaluate the functioning of this adolescent cohort. Finally, the effects in relation to Hypothesis 3 were conducted to evaluate whether one SD improvement in SWB was associated with change in the buffers from Time 1 to Time 2.

**Results**

**Data Screening**

Overall, 23% of participants dropped out of the study before post-intervention data collection. Participants were more likely to drop-out if they were in the control group (28/88
(31.8%) for control group versus 30/164 (18.3%) for intervention); $\chi^2 (df=1) = 5.91$, $p = .015$,
Cramer’s $V = .15$. Attrition in relation to baseline variables explored as the interaction
between group (control vs intervention) and attrition (drop-out vs completers) was
significant only for resilience [$F(1, 248) = 4.08$, $p = .045$, $\eta^2 = .02$] and perceived social
support [$F(1, 248) = 4.28$, $p = .04$, $\eta^2 = .02$]. Further investigation revealed that those with
higher baseline mean scores on both resilience and perceived social support were more likely
to drop-out. Attrition was not predicted by gender, $\chi^2 (df=1) = 1.86$, $p = .172$, Cramer’s $V = .09$
and belonging to a particular school did not have an effect $\chi^2 (df=3) = .11$, Cramer’s $V = .11$.

Normality was assessed using Shapiro-Wilk’s test, and revealed significant values for
all the IVs. Curran, West, and Finch (1996) identify that absolute skew values between -2 and
+2 and absolute kurtosis of between -7 and +7 indicate normality of scales. As none of the
scales violated this assumption, variables were retained untransformed. Ten univariate
outliers were identified using $z$ score values exceeding 3.29 SDs from the mean. Whilst one
of these outliers had a Cook’s distance greater than 1, covariance and DFBeta statistics were
all adequate and so inclusion vs. exclusion had negligible effect on results. Hence, they were
retained. Malahonobis distance ($D^2$) values were within acceptable range ($p >.001$) for all
cases, and thus all participants were retained for intended analyses.

**Pre- to Post-Intervention Change in SWB and Risk/Protective Factors**

When analysed through difference scores, pre- to post-intervention change in PWI
revealed a greater mean improvement for the intervention group when compared to the wait-
list control. Whilst this change was minimal, the difference scores identified that amongst the
control group, 29 individuals improved 1.43-27.14 points and 28 individuals reported
deterioration between 1.43 and 38.57 points. In the intervention group, 70 individuals
improved between 1.43 and 30 points, whilst 50 individuals deteriorated between .43 and 20
points. As such, it is possible that these effects acted to cancel each other out.
Difference scores from pre- to post-intervention also revealed greater mean change in PA for the intervention group relative to control. Seventeen individuals (28.33%) amongst the control group deteriorated between .07 and 8 points, and 26 participants (43.33%) improved between .33 and 3 points. Amongst the intervention group, 32 individuals (23.88%) had decreased PA of between 3 and .33 points from Time 1 to Time 2. Alternatively, 83 individuals (61.94%) improved between .33 and 4.67 from pre- to post-intervention. As such, the intervention condition had a substantially greater amount of participants that improved their PA than those that deteriorated, and greater amount that improved relative to the control condition.

NA also demonstrated a reduction in average difference scores amongst the intervention group from baseline to post-intervention. The control group, overall, reported an increase in symptoms of negative affect from Time 1 to Time 2. Across those in the control group, 25 individuals had scores that were lower in NA at the post-intervention measurement with scores ranging from .5 to 8.3, and 24 individuals improved between .5 and 8.5. As such, these scores are likely to have cancelled each other out. Amongst the intervention group, 37 individuals reported deterioration in their NA of between .5 and 7 points, whilst 74 students improved with scores of between .5 and 6.5.

Unlike PA and NA, the PWI has a prespecified cut-off for assessing healthy SWB. Thus, additional categorical analyses were conducted on PWI, but not PA or NA. These analyses in regards to the PWI found that 24.2% of the sample scored below the population average range (i.e., lower than 70 points). When assessed at the level of 1 SD improvement amongst the control group, 78 (88.64%) individuals showed no change in PWI at post-intervention. Four individuals (4.55%) reported greater scores on PWI and six (6.82%) indicated a deterioration at time 2. Amongst the intervention group, 142 (86.59%) showed no change, 13 (7.93%) showed an increase of one standard deviation above the mean, nine
(5.49%) reported a deterioration. There were 42 cases (25.6%) of 164 individuals with a baseline score below 70 in the intervention group. Of this group, 3 reported scores consistent with 1 SD improvement, two cases that had one SD deterioration, and 37 cases had less than one SD change either side of the mean at T2. At 3-month follow up, it was found that an additional 4 individuals in the intervention group had a change of one SD (total 16.6%). No further cases were detected as deteriorating by this kind of change.

Regression analysis revealed that group accounted for only 1.4% of variance in change in PWI from pre- to post-intervention. The intercept value indicated that, on average, individuals in the control group experienced slightly reduced wellbeing from baseline to post-intervention, although this difference was non-significant ($b_0 = -.93, p = .217$). Average change in PWI was 2.39 units higher for those in the intervention group relative to change in the control group ($b_1 = 2.39, p = .048$). In other words, for the average participant in the intervention, PWI improved by 1.46 units ($b_0 + b_1 = -.93 + 2.39$). This finding is broadly consistent with mean and standard deviation values reported in Table 2.2. Mean change in PWI from Time 2 to Time 3 was not significantly different from zero, $t(78) = -1.58, p = .12$. 
Table 2.2

Comparison of Group Means for SWB and Change Agents across Baseline, Post Intervention and 3-Month Follow-Up.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Intervention</th>
<th></th>
<th>Control</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td><strong>PWI</strong></td>
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<td>12.23</td>
<td>76.40</td>
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<tr>
<td></td>
<td>T2</td>
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<tr>
<td></td>
<td>T3</td>
<td>77.35</td>
<td>13.92</td>
<td></td>
</tr>
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<td>T1</td>
<td>7.21</td>
<td>1.56</td>
<td>7.22</td>
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<td></td>
<td>T3</td>
<td>7.56</td>
<td>1.87</td>
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</tr>
<tr>
<td><strong>NA</strong></td>
<td>T1</td>
<td>3.43</td>
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<td>3.05</td>
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<td></td>
<td>T3</td>
<td>3.72</td>
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<tr>
<td><strong>Resilience</strong></td>
<td>T1</td>
<td>52.65</td>
<td>9.97</td>
<td>54.94</td>
</tr>
<tr>
<td></td>
<td>T2</td>
<td>55.29</td>
<td>10.53</td>
<td>56.32</td>
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<tr>
<td></td>
<td>T3</td>
<td>55.89</td>
<td>9.02</td>
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<tr>
<td><strong>Body Satisfaction</strong></td>
<td>T1</td>
<td>3.41</td>
<td>1.09</td>
<td>3.47</td>
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<tr>
<td></td>
<td>T2</td>
<td>3.50</td>
<td>1.14</td>
<td>3.46</td>
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<tr>
<td></td>
<td>T3</td>
<td>3.60</td>
<td>1.10</td>
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<td><strong>Social Support</strong></td>
<td>T1</td>
<td>54.78</td>
<td>11.78</td>
<td>58.58</td>
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<tr>
<td></td>
<td>T2</td>
<td>53.78</td>
<td>14.47</td>
<td>56.05</td>
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<tr>
<td></td>
<td>T3</td>
<td>64.19</td>
<td>13.26</td>
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<td><strong>Self-Esteem</strong></td>
<td>T1</td>
<td>29.86</td>
<td>5.35</td>
<td>29.97</td>
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<tr>
<td></td>
<td>T2</td>
<td>31.41</td>
<td>5.65</td>
<td>30.10</td>
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<tr>
<td></td>
<td>T3</td>
<td>31.23</td>
<td>5.49</td>
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<tr>
<td><strong>Coping</strong></td>
<td>T1</td>
<td>21.27</td>
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<td>T2</td>
<td>20.81</td>
<td>5.75</td>
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<td></td>
<td>T3</td>
<td>21.35</td>
<td>5.51</td>
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</tr>
</tbody>
</table>

Note. As per design, the control group did not complete 3-month follow up.

Change in PA from pre- to post-intervention was also analysed through regression analyses, revealing that group contributed to 0.6% of the variance. Results demonstrated that individuals in the control group typically experienced increased PA from T1 to T2 although this difference was not significant ($b_0 = .20, p = .13$). Amongst the intervention group, average PA was .23 units higher than change in the control group however findings were
non-significant \((b_1 = .23, p = .14)\). As such, differences between the intervention and control conditions from baseline to post-assessment was negligible. Measurement of NA demonstrated that group accounted for 0.7% of the variance in change from baseline to post-intervention. On average, individuals in the control group report a slight, non-significant decrease in their experience of NA \((b_0 = -.03, p = .46)\). The intervention group instead, on average, had increased levels of NA by post-intervention \((b_1 = .42, p = .13)\) although this finding was non-significant.

Regression analysis in relation to the targeted change agents revealed that only self-esteem showed significant change from Time 1 to Time 2 amongst the intervention condition, improving on average 1.42 units \((p = .03)\). Group was found to account for 2.4% of the variance. Remaining risk/protective factors demonstrated a non-significant trend in the right direction from T1 to T2 amongst the intervention group (see Table 2.2). Whilst non-significant, resilience was found to improve by 1.26 units \((p = .34)\), with group accounting for 0.5% of the variance. Body satisfaction improved by an average of .11 units \((p = .44)\), group explained 0.3% of the variance. Social support had 1.84 units of improvement \((p = .28)\) from pre- to post-intervention with group accounting for 0.6% of the variance. Finally, coping demonstrated a decrease of an average of -.74 units \((p = .40)\) and group accounted for 0.4% of its variance.

**SWB Baseline Scores and Post-Intervention Change**

For the control group, the linear function provided a better fit than the logarithmic function for the relationship between baseline PWI level and post-intervention change in SWB; \(R^2 = .16, p = .001\) vs \(R^2 = .14, p = .004\) (see Figure 2.2). For the intervention group, neither the linear \((R^2 = .02, p = .082)\) nor the logarithmic function \((R^2 = .03, p = .069)\) significantly differed from zero (see Figure 2.3). Table 2.3 provides coefficients based on linear and logarithmic functions. Chow’s Test results confirmed that both functions were
significantly better fit for the control group than for the intervention group; linear: $\chi^2_{(df=2)} = 428.23, p < .001$, quadratic: $\chi^2_{(df=2)} = 330.10, p < .001$.

**Figure 2.2.** Change in control group PWI scores from T1 to T2 as a linear and logarithmic function

**Figure 2.3.** Change in intervention group PWI scores from T1 to T2 as a linear and logarithmic function.

For the relationship between baseline PA level and post-intervention change in PA amongst the control group, neither the linear function nor the logarithmic function
significantly differed from zero; \( R^2 = .02, p = .20 \) vs \( R^2 = .00, p = .89 \). For the intervention group, the linear function provided a better fit than the logarithmic function for the relationship between baseline PA level and post-intervention change in PA; \( R^2 = .05, p = .004 \) vs \( R^2 = .02, p = .053 \).

Amongst the control group, both the linear function and the logarithmic function significantly differed from zero for the relationship between baseline NA and post-intervention change in NA; \( R^2 = .17, p = .001 \) vs \( R^2 = .06, p = .02 \). This demonstrated a better fit for the linear function amongst the control condition. For the intervention group, the linear function provided a nearly equal fit as the logarithmic function for the relationship between baseline NA level and post-intervention change in NA; \( R^2 = .14, p = .001 \) vs \( R^2 = .07, p = .001 \). Table 2.3 also provides coefficients based on linear and logarithmic functions for PA and NA.

Table 2.3

<table>
<thead>
<tr>
<th>DV</th>
<th>Function</th>
<th>Intercept ( (b_0) )</th>
<th>Slope ( (b_1) )</th>
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</thead>
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<tr>
<td></td>
<td></td>
<td>( b )</td>
<td>( t )</td>
</tr>
<tr>
<td>PWI</td>
<td>Intervention</td>
<td></td>
<td></td>
</tr>
<tr>
<td>linear</td>
<td>9.95</td>
<td>2.03</td>
<td>.04</td>
</tr>
<tr>
<td>logarithmic</td>
<td>37.48</td>
<td>1.90</td>
<td>.06</td>
</tr>
<tr>
<td>Control</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>linear</td>
<td>23.31</td>
<td>3.20</td>
<td>.00</td>
</tr>
<tr>
<td>logarithmic</td>
<td>77.95</td>
<td>3.00</td>
<td>.00</td>
</tr>
<tr>
<td>PA</td>
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<tr>
<td>Linear</td>
<td>1.45</td>
<td>3.78</td>
<td>.00</td>
</tr>
<tr>
<td>Logarithmic</td>
<td>1.33</td>
<td>2.61</td>
<td>.01</td>
</tr>
<tr>
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<td></td>
<td></td>
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<tr>
<td>Linear</td>
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<td>1.51</td>
<td>.13</td>
</tr>
<tr>
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<td>.49</td>
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<tr>
<td>NA</td>
<td>Intervention</td>
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<td>Linear</td>
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<td>3.27</td>
<td>.00</td>
</tr>
<tr>
<td>Logarithmic</td>
<td>.17</td>
<td>1.02</td>
<td>.31</td>
</tr>
<tr>
<td>Control</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Linear</td>
<td>-1.39</td>
<td>3.58</td>
<td>.00</td>
</tr>
<tr>
<td>Logarithmic</td>
<td>-3.30</td>
<td>1.24</td>
<td>.22</td>
</tr>
</tbody>
</table>

Notes. \( N = 252. *p < .05; **p < .01 \). The linear and logarithmic functions are tested in separate models.
Correlations between SWB and change agents

Correlations \((r)\) were calculated to assess the relationship of change in SWB (PWI, PA, and NA) from T1 to T2, with that in each of the change agents. These are reported for the PWI in Table 2.4 below. In relation to the PWI, significant associations with change in factors were found for the intervention group with resilience \((r = .35, p < .001)\), body satisfaction \((r = .28, p < .001)\), self-esteem \((r = .32, p < .001)\), and social support \((r = .18, p < .05)\). Change agents of resilience and body satisfaction were also found to be significant for the control group.

Changes with PA found significant relationships with change in resilience \((r = .37, p < .001)\), and self-esteem \((r = .21, p < .01)\). Whilst the control group had a similarly significant relationship with change in resilience, findings also demonstrated that change in body satisfaction was significantly associated with change in PA \((r = .28, p < .01)\), a relationship not detected amongst the intervention condition.

Finally, significant associations of a reduction in NA amongst the intervention group was found with agents of resilience \((r = .16, p < .05)\), body satisfaction \((r = .21, p < .01)\), and self-esteem \((r = .35, p < .001)\). The control group demonstrated similar findings for resilience and self-esteem, with the addition of social support \((r = .23, p < .05)\), which was not detected amongst the intervention condition.
### Table 2.4

**Correlation Analyses of the Change in SWB with the Change in the Targeted Risk/Protective Factors**

<table>
<thead>
<tr>
<th>Measure</th>
<th>ΔPWI</th>
<th>ΔPA</th>
<th>ΔNA</th>
<th>ΔSE</th>
<th>ΔRES</th>
<th>ΔBS</th>
<th>ΔSS</th>
<th>ΔCOP</th>
</tr>
</thead>
<tbody>
<tr>
<td>ΔPWI</td>
<td>-</td>
<td>.59**</td>
<td>-11</td>
<td>.15</td>
<td>.59**</td>
<td>.31**</td>
<td>.04</td>
<td>.17</td>
</tr>
<tr>
<td>ΔPA</td>
<td>.48**</td>
<td>-</td>
<td>-54**</td>
<td>.17</td>
<td>.51**</td>
<td>.28**</td>
<td>.04</td>
<td>.15</td>
</tr>
<tr>
<td>ΔNA</td>
<td>.20**</td>
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<td>-</td>
<td>.28**</td>
<td>-22*</td>
<td>-09</td>
<td>.23*</td>
<td>-01</td>
</tr>
<tr>
<td>ΔSE</td>
<td>.32**</td>
<td>.21**</td>
<td>.20*</td>
<td>-</td>
<td>.12</td>
<td>.25*</td>
<td>.08</td>
<td>.09</td>
</tr>
<tr>
<td>ΔRES</td>
<td>.35**</td>
<td>.37**</td>
<td>.16*</td>
<td>.19**</td>
<td>-</td>
<td>.20*</td>
<td>-01</td>
<td>.09</td>
</tr>
<tr>
<td>ΔBS</td>
<td>.28**</td>
<td>.14</td>
<td>.21*</td>
<td>.18**</td>
<td>.15*</td>
<td>-</td>
<td>.28**</td>
<td>.21*</td>
</tr>
<tr>
<td>ΔSS</td>
<td>.18*</td>
<td>.10</td>
<td>.07</td>
<td>.29***</td>
<td>.14*</td>
<td>.08</td>
<td>-</td>
<td>.00</td>
</tr>
<tr>
<td>ΔCOP</td>
<td>-.01</td>
<td>.01</td>
<td>-.11</td>
<td>-.08</td>
<td>.17*</td>
<td>-.10</td>
<td>.05</td>
<td>-</td>
</tr>
</tbody>
</table>

*Note.* Values shown above the main diagonal are correlations for the control group (n= 88), whereas those below the diagonal are for the intervention group (n = 164). *p < .05; **p < .01 level (2-tailed). PWI = Personal Wellbeing Index; PA = positive affect; NA = negative affect; SE = self-esteem, RES = resilience; BS = body satisfaction; SS = social support; COP = coping.

### Predicting change in SWB from pre-post scores of change agents

To assess the role of change agents and their prediction of change in SWB, the following predictor variables were entered into a series of regressions, each with a different conceptualisation of SWB as the outcome (PWI, PA, and NA): resilience, self-esteem, social support, coping, and body satisfaction. Results for the intervention group revealed that this model was successful in predicting change in PWI; $F(5, 158) = 9.28, p < .001$. Altogether, 23% ($R^2 = .23$) of the variance in change in PWI was accounted for, with significant unique contributions only from resilience ($\beta = .84, t = 6.12, p < .001$). Body satisfaction also approached significance ($\beta = 2.53, t = 1.92, p = .059$). Whilst this model was also found to significantly predict change in PWI when run for the control group; $F(5, 82) = 10.61, p < .001$, mean change scores show the intervention to be more successful in changing PWI and
the targeted change agents. 39% of the variance in change in PWI was accounted for ($R^2 = .39$), accounting for a greater 16% of the variance than the intervention group. Resilience, ($\beta = .26, t = 3.72, p < .001$), body satisfaction ($\beta = 1.78, t = 2.61, p < .01$), and self-esteem ($\beta = .44, t = 2.78, p < .01$) all made significant unique contributions.

The regressions model for predicting change in PA was found to be significant for the intervention group; $F(5, 158) = 6.1, p < .001$, with 16% of the variance being accounted for ($R^2 = .16$). Significant unique contribution was made only from resilience ($\beta = .05, t = 4.44, p < .001$). Amongst the control group, the model was also found to significantly predict change in PA from pre- to post-intervention; $F(5, 82) = 7.14, p < .001$, with 30% of the variance accounted for ($R^2 = .30$). Resilience was the only significant predictor of change amongst the control group ($\beta = .11, t = 4.91, p < .001$).

Finally, predicting change in NA was found to be significant for the intervention group; $F(5, 158) = 3.15, p < .010$, accounting for 9.1% of the variance. Significant unique contribution was made only from body satisfaction ($\beta = .38, t = 1.98, p < .05$). The control group was also found to predict change in NA; $F(5, 82) = 4.48, p < .001$, with several significant contributing factors of resilience ($\beta = -.08, t = -2.14, p < .04$), self-esteem ($\beta = .19, t = 3.24, p < .01$), and social support ($\beta = .06, t = 2.54, p < .013$).
Table 2.5

Summary of a Regression Analysis for Risk/Protective Factors Predicting Change in SWB from Pre- to Post-intervention.

<table>
<thead>
<tr>
<th></th>
<th>Intervention</th>
<th></th>
<th></th>
<th></th>
<th>Control</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>b</td>
<td>t</td>
<td>sr</td>
<td>p</td>
<td>b</td>
<td>t</td>
<td>sr</td>
<td>p</td>
</tr>
<tr>
<td>PWI</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>RES</td>
<td>.26</td>
<td>3.72</td>
<td>.26</td>
<td>.00**</td>
<td>.84</td>
<td>6.12</td>
<td>.53</td>
<td>.00**</td>
</tr>
<tr>
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<td>.18</td>
<td>.01**</td>
<td>2.53</td>
<td>1.92</td>
<td>.17</td>
<td>.06</td>
</tr>
<tr>
<td>SE</td>
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<td>2.78</td>
<td>.19</td>
<td>.00**</td>
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<td>0.42</td>
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<td>-0.99</td>
<td>-0.01</td>
<td>0.93</td>
</tr>
<tr>
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<td>-0.03</td>
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<td>0.17</td>
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</tr>
<tr>
<td>RES</td>
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<td>4.91</td>
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</tr>
<tr>
<td>SS</td>
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<td>0.10</td>
<td>0.01</td>
<td>0.92</td>
<td>-0.00</td>
<td>-0.09</td>
<td>-0.01</td>
<td>0.93</td>
</tr>
<tr>
<td>COP</td>
<td>0.02</td>
<td>-0.45</td>
<td>-0.03</td>
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<td>0.68</td>
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<td>BS</td>
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<td>1.98</td>
<td>0.15</td>
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<td>-1.90</td>
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<tr>
<td>SE</td>
<td>0.07</td>
<td>1.62</td>
<td>0.12</td>
<td>0.11</td>
<td>0.19</td>
<td>3.24</td>
<td>0.32</td>
<td>0.00**</td>
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<tr>
<td>SS</td>
<td>0.00</td>
<td>0.11</td>
<td>0.01</td>
<td>0.92</td>
<td>0.06</td>
<td>2.54</td>
<td>0.25</td>
<td>0.01*</td>
</tr>
<tr>
<td>COP</td>
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<td>-1.39</td>
<td>-0.11</td>
<td>0.17</td>
<td>0.01</td>
<td>0.23</td>
<td>0.02</td>
<td>0.82</td>
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</table>

Note. Dependent Variables = PWIchangescore; PAchangescore; NAchangescore. PA = positive affect; NA = negative affect; Body Sat = body satisfaction. *p < .05; **p < .01, ***p < .001. Intervention N = 164; Control N = 88. PWI = Personal Wellbeing Index; PA = positive affect; NA = negative affect; SE = self-esteem, RES = resilience; BS = body satisfaction; SS = social support; COP = coping.

Baseline SWB and Effects on Change Agents

For the 42 individuals with PWI scores below 70 at baseline, a high proportion of these had scores below the mean on buffers of resilience (83.33%), self-esteem (83.33%), body satisfaction (78.57%), social support (78.57%) and coping (76.19%). At Time 2, for those with low baseline PWI scores, change was linearly and inversely, related with PWI level at baseline. Only self-esteem demonstrated significant change, with resilience also
showing a trend in the right direction ($p = .08$). For those amongst the experimental condition that had the most meaningful change at post-intervention, change in the agents of resilience, body satisfaction, self-esteem was observed at post-intervention (see Table 2.6).

Table 2.6

<table>
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<th>Buffer</th>
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<th>Baseline Average</th>
<th>Average Improvement</th>
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<tr>
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<td>Body Satisfaction</td>
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<tr>
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<tr>
<td>Intervention</td>
<td></td>
<td>29.77</td>
<td>5.46</td>
</tr>
</tbody>
</table>

Note. Sample = intervention $N +$ control $N$.

Discussion

The present study sought to investigate the efficacy of an intervention for bolstering the SWB of adolescents and the targeted risk/protective factors (‘buffers’). In addition to assessing the overall ability of the intervention to achieve this, the sample was also explored for: (1) effects of baseline scores of SWB and, in particular, whether results were consistent with proposed ‘ceiling effects’ with the greatest change observed for those low in SWB prior to the intervention; and (2) analysis of the risk/protective factors to determine if enhancement in these was a predictor of change in SWB, giving greater depth to understanding of the mechanisms driving intervention-related improvement in SWB. Results will firstly be detailed for the PWI as the primary measure of SWB, followed by the identification of differences in findings when PA and NA were measured as alternative conceptualisations of SWB.
As was expected, students involved in the program showed a significant improvement in the PWI as the primary measure of SWB from Time 1 to Time 2 when compared with controls. From post-intervention (T2) to 3-month follow-up (T3), a slight non-significant decrease was observed in PWI scores, however this was still above baseline mean levels. Exploration of the risk/protective factors identified self-esteem as the only buffer to significantly improve amongst the experimental group at post-intervention when compared with control. Whilst mean level change demonstrated marginal improvement in SWB, the sample was further explored for the effects of baseline severity. Specifically, those with baseline scores below 70 points on the PWI corresponding with Homeostatic challenge were investigated for meaningful change. This showed that amongst the intervention group, only 7% of cases (3 of 42) reported a substantial change of one standard deviation from pre- to post-program. At 3-month follow-up, it was observed that only an additional 9.7% (total 16.6%) of those in the intervention group with a SWB baseline score below 70 points had improved by one standard deviation. Whilst there were only a handful of individuals below the norm (i.e., less than 70 points) who improved from intervention efforts, this finding differs from prior SWB studies (Froh et al., 2009), and similar depression studies (Sheffield et al., 2006; Spence, Sheffield, & Donovan, 2003) whereby the greatest improvement was seen amongst this most challenged cohort.

SWB Homeostasis Theory assumes that those scoring below their set-range vary in the circumstances by which this occurs (i.e., reason for scoring below 70 points, and strength of buffers). Accordingly, the intervention would have been expected to benefit those with lowest SWB only to the extent that buffers were restored through intervention. Consistent with abovementioned assumptions of Homeostasis Theory, the limited effects seen in the present study for those lowest in SWB may have therefore been influenced by the absence of
improvement in the all of the buffers except self-esteem, therefore dampening the amount of change that might otherwise have occurred in SWB.

It was also postulated that a non-linear effect would characterise overall pre- to post-change, confirming assumptions outlined by the Theory of SWB Homeostasis that those lowest in SWB will improve the most through intervention, and that the system will then moderate it within this restored range. Investigations of this assumption demonstrated non-significant findings and was unable to support moderated efficacy by baseline severity. However, whilst findings were non-significant, coefficients showed that effects were in the right direction but were possibly weak, and lacked sufficient power. As such, these results are suggestive, but not conclusive, of Homeostasis’ Theoretical assumptions that effects would plateau once SWB was returned to set-point range.

A second component of the study involved evaluation of the role of buffers, with change in SWB believed to be dependent upon these factors. Results from the present study extended upon prior SWB intervention studies (e.g., Froh, et al., 2009; Froh, et al., 2008; Proctor, et al., 2011; Suldo, et al., 2014; Suldo, et al., 2015) by exploring other risk/protective factors demonstrated to be linked to SWB. It was shown that change in targeted agents of resilience, self-esteem, body satisfaction, and social support were associated with change in the PWI as a result of the intervention. This suggests that each function in a joint relationship whereby improvement/deterioration in one might instigate the same in the other. Coping, however, did not appear to have the same significant effect with SWB. There are a number of reasons why this may have occurred. It is possible that the students did not acquire the skills that were necessary in coping to instigate positive effects on SWB. Elements of the intervention in this case may not have provided sufficient opportunity for development of knowledge in these domains. Alternatively, it is possible that this factor is less influential
upon a direct improvement in SWB, and that it may instead have worked as a secondary influence, working in conjunction with the other key change agents.

Notably, a change in resilience was found to significantly contribute to pre-post shifts in the PWI across both intervention and control groups, and when analysed through varying statistical methods of investigation (i.e., correlational and regression analyses). According to Homeostasis Theory, natural processes are constantly working to correct deterioration in SWB from normal set-point range. Therefore, the control group is influenced by this natural Homeostatic force and as such, the intervention is required to outperform this process in order to demonstrate an effect. Resilience has been identified as being integral to the Homeostatic system’s ability to combat challenging events (Cummins, 2014). Therefore, the inter-relation of this key buffer with SWB would explain the corresponding increases/decreases both through intervention-related and natural influences.

Investigation was also conducted into the possible varying effects when SWB was alternatively measured with the outcomes of PA and NA. Consistent with the PWI, both PA and NA were found to have greater mean change from pre- to post-intervention. Overall, findings suggested that PA and NA function as secondary outcomes to the experience of SWB as they demonstrated consistent improvement over the duration of the intervention, however change in fewer of the risk/protective factors was associated with change in either of these alternate outcomes.

The present study possesses several limitations that should be noted. Firstly, there was a student drop-out rate of nearly one-quarter that was observed between the commencement of the program and post-intervention measurement. This loss of participants was investigated to determine if it could be explained by any of the information obtained at baseline. Whilst not dependent upon demographic and situational factors (i.e., condition, gender, school), both resilience and social support were identified as significant predictors of drop-out. Amongst
those who dropped out by Time 2, scores at baseline were found to be above the mean for both resilience (55% students), and social support (76% students). Particularly in relation to social support, this suggests that a significant proportion of the participants would have had less capacity to improve given already high levels on these factors and therefore, based upon the Theory of SWB Homeostasis, intervention efforts would not have had considerable impact. A second limitation resides in the lack of control data at Time 3 (3-month follow-up) assessment point. Although this design was done for ethical and practical reasons, and is consistent with prior studies (e.g., Berry & Hunt, 2009; Masia-Warner et al., 2005), change from Time 2 to Time 3 in the intervention group cannot be compared against natural change amongst the control condition for the same period. As such, the Time 2 to Time 3 data for the intervention group was used to address a slightly different research question – whether-intervention related improvements at post-intervention were maintained at follow-up.

In summary, when viewing changes based solely on baseline and post-intervention measures, findings were able to show positive improvement in SWB by targeting at-risk adolescents in lower SES regions through school-based intervention. At the trait level, it appears that the intervention had mild effects for the SWB of the students involved. The current program extends upon existing literature to convey that targeting self-esteem, resilience, social support, and body satisfaction is worthwhile to bolstering the SWB of adolescents. Therefore, in accordance with the Theory of SWB Homeostasis, findings from this Study support the notion that an intervention involving pertinent buffers identified in prior literature can lead to improvement in SWB, as change in these buffers was associated with change in SWB. Further exploration, however, found limited support for the notion that the intervention would provide greatest benefit for those with low SWB, and for those with low buffer functioning at baseline.
Chapter 3 provides further insights into efficacy of the intervention by exploring weekly data capture during the intervention phase. In so doing, it is able to explore Homeostasis theory-derived hypotheses in a different manner, and address questions of: (1) amount of change from week to week, and (2) whether early improvements were related to change observed in this chapter from baseline to post-intervention (or even to predict follow-up scores). As will be shown, although this more granular approach provided many results consistent with the pattern of findings in this chapter, it also provided several additional insights about time course and nature of improvement related to intervention.
Chapter Three: Intervention Effects at Level of Week

Although the use of self-report instruments is heavily entrenched in the field of psychological research (Shiffman et al., 2008; Walz, Nauta, & aan het Rot, 2014), greater accuracy in the representation of participant responses to intervention efficacy has been largely neglected. More frequent measurement over the course of intervention could help with elucidating the typical timeframe for changes in symptoms, repeated monitoring of symptoms and/or provision of summary feedback, adopt an individual-focused rather than variable-focused approach (Sterba & Bauer, 2010), and finally, is able to capture insights into the mechanisms responsible for attrition (Barge-Schaapveld & Nicolson, 2002).

Appropriate consideration of the time-lag effects, or length of measurement intervals, is pertinent when utilised in intervention research (Timmons & Preacher, 2015). One approach to this is EMA – also known as Experience Sampling Method (ESM; Csikszentmihalyi & Larson, 1987) – which involves multiple daily or weekly recordings over time periods that span days, weeks, or months, and which probe into momentary experiences (i.e., how someone is feeling or behaving right now) rather than retrospective reflection upon the target event (Shiffman, et al., 2008). Despite this, it possesses considerable limitations in the burden upon participants and, as such, is commonly implemented across shorter time lapses. To address this, weekly diary assessment offers the possibility of measurement of more frequent fluctuations in participant responses than standard pre-post measurement, whilst relieving the time and cost burden. This approach paves the way for effective management of these limitations, particularly when augmented with that of traditional intervention assessment designs. To the author’s knowledge, the use of weekly ratings for evaluating efficacy of SWB school-based interventions has not been explored.

This chapter sought to demonstrate the additional strengths of weekly diary assessment within the context of a school-based intervention for SWB. Baseline and post-
intervention assessments were taken of PWI as the primary measure of SWB, and PA and NA as secondary outcomes, amongst the intervention group. These were supplemented with capture of weekly affect ratings in order to evaluate whether:

(1) changes in weekly affect ratings over time predicts change in symptoms derived from baseline and post-intervention assessment points (i.e., traditional time points for assessment of efficacy);

(2) trajectory of improvement in weekly affect ratings is best characterised as linear (stable change) or quadratic (e.g., initial improvement followed by plateau or decline); and

(3) trajectory of weekly affect ratings depends on baseline trait-level differences in trait affect.

Weekly data was based upon PA and NA (as opposed to the PWI) as these state-based measures of affect have been used previously. However there is no literature, to the author’s knowledge, in which the PWI has been used at the state-level.

**Method**

**Participants**

Across the two intervention schools, 78 students of 164 (47.6%) provided weekly data.

**Design Overview**

Details in relation to trait-based methodology are reviewed in Chapter Two. The remaining subsections below pertain only to additional items utilised in the context of state level investigations.

**Weekly Affect Measures**

Data was gathered from students through weekly diaries from baseline (Week 0) to completion of the program (Week 6). Students were asked to construct an ID number with the first 3 letters of their surname and the three numbers of their birth date (e.g., SMI071 for
surname Smith born 07th December) to match participants with their trait level questionnaires. Questions were framed to ask students to reflect on the particular day and presented them with identical scales and questions.

**Weekly Affect.** Week-level PA and NA items are an adaptation from the Trait Affect Scale (Blore, 2008) described above (Chapter Two). Items were reworded so that participants reflect on their affective experience over the past week, as opposed to life in general. For example, participants were asked *‘on average, how happy did you feel this week?’* using the same 11-point, end-defined scale described for the measure of trait PA and NA. Previous studies have shown this measure to be sensitive to detect changes within and across days (Blore, 2008; Colautti et al., 2011) and associated with SWB (Karatzias, Chouliara, Power, & Swanson, 2006). Using Geldhof, Preacher, and Zyphur's (2013) method for calculating internal consistency of scales used in repeated measures designs, the maximal reliability estimates were .84 for the weekly state affect ratings.

**Procedure**

During the intervention phase, participants in the intervention group completed weekly affect diaries at the end of each week (including a baseline time-point in the week prior to commencement of the intervention) up to, and including, the week of the final module. Facilitators and teachers of one particular school informed the research team that due to the low socioeconomic areas that these students lived in, that they felt that completing the weekly measurements was a burden upon the students language and literacy capabilities. Therefore in order to increase the incentive to complete these questionnaires, this school was offered the opportunity to win one of six $30 vouchers. Some schools allocated time to complete weekly diaries at their convenience, maintaining consistency by selecting the most appropriate day based upon school commitments. Other schools completed weekly diaries at the time of the program, with five to ten minutes at the beginning of the module dedicated to
completing the measure. Facilitators were responsible for ensuring that time was allocated to weekly diary completion and instructed to have this completed at the start of the module in the classroom each week as a repeated measures procedure. The modules. Weekly diaries were kept on site at the school location for the duration of the intervention and then collected by the program facilitators at the conclusion of the program and returned to the research team.

**Data Analytic Strategy**

To evaluate correspondence between weekly change and pre-post change in DV, difference scores were obtained. For the weekly data, Week 0 (baseline) PA data were subtracted from each subsequent week of PA data so that positive scores on these change variables reflect improvement in symptoms. A similar approach was used for trait level data, such that baseline scores on PWI, PA, and NA were subtracted from post-intervention scores. These change scores were then correlated using Pearson’s correlations.

Trajectory of weekly PA data was modelled using MLM with weekly PA rating regressed onto Week (W = 0, 1, …, 6) and Week² (W² = 0, 1, …, 36) at Level 1 to model linear and quadratic trends in the data:

\[ Y_{ij} = \beta_{0j} + \beta_{1j} \times \text{week} + \beta_{2j} \times \text{week}^2 + e_{ij} \]

The coefficients for \( \beta_{1j} \) and \( \beta_{2j} \) were allowed to vary across individuals, and thus could be predicted on the basis of trait differences in PA:

\[ \beta_{1j} = \gamma_{00} + \gamma_{01} \times \text{trait PA} + u_{1j} \]

\[ \beta_{2j} = \gamma_{00} + \gamma_{01} \times \text{trait PA} + u_{2j} \]

This multilevel framework was applied also to models with weekly ratings for NA, and also with trait NA and PWI score as potential Level 2 predictors, consistent with the notion that PWI, NA, and PA are alternate conceptualisations/components of SWB.
Results

Correlations between change in weekly affect ratings and pre-post change scores

Improvements in trait measures from pre- to post-intervention were correlated with changes in weekly ratings (compared against the baseline weekly rating). As shown in Table 3.1, early increases in weekly PA ratings were not reliably associated with trait-level changes in PWI, NA, or PA. In fact, weekly data were only reliably correlated with trait-level change in the second half of the intervention phase (i.e., from Week 4 onwards). As shown below, changes by Week 5 and 6 are most predictive of trait-level change in SWB scores from baseline to post-intervention. Similarly, early changes in weekly NA ratings were largely unrelated to trait changes, with the exception of Week 1 changes in NA predicting improvement in SWB from baseline to post-intervention. Later improvements in weekly NA ratings (from Week 4 onwards) were generally predictive of improvements from baseline to post-intervention for the trait variables.
Table 3.1

**Correlations between Weekly Affect Changes and Trait Measures**

<table>
<thead>
<tr>
<th>Weekly changes</th>
<th>Trait measures (post score – pre score)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAW1 – W0</td>
<td>.21</td>
</tr>
<tr>
<td>PAW2 – W0</td>
<td>.11</td>
</tr>
<tr>
<td>PAW3 – W0</td>
<td>-.09</td>
</tr>
<tr>
<td>PAW4 – W0</td>
<td>-.05</td>
</tr>
<tr>
<td>PAW5 – W0</td>
<td>.55***</td>
</tr>
<tr>
<td>PAW6 – W0</td>
<td>.51***</td>
</tr>
<tr>
<td>NAW0 – W1</td>
<td>.33**</td>
</tr>
<tr>
<td>NAW0 – W2</td>
<td>.01</td>
</tr>
<tr>
<td>NAW0 – W3</td>
<td>.18</td>
</tr>
<tr>
<td>NAW0 – W4</td>
<td>.28*</td>
</tr>
<tr>
<td>NAW0 – W5</td>
<td>.38**</td>
</tr>
<tr>
<td>NAW0 – W6</td>
<td>.52***</td>
</tr>
</tbody>
</table>

*Note.* *p < .05; **p < .01; ***p < .001. NA = negative affect; PA = positive affect.

**Trajectory of Change in Weekly Affect Ratings**

A final set of multilevel analyses evaluated the shape of change in weekly ratings of PA and NA. For the intervention group as a whole, neither the linear ($b = -.02$, $t = 0.17$, $p = .431$) nor the quadratic ($b = .01$, $t = 0.62$, $p = .269$) components significantly accounted for trend in weekly PA data. However, PWI ($b = .01$, $t = 2.10$, $p = .018$) and trait PA ($b = .08$, $t = 2.64$, $p = .004$) were predictive of the linear component of the weekly change in PA ratings. Figure 3.1 shows the average effect (for the sample as a whole) as well as trends for individuals above and below the mean for trait PA to illustrate effect of trait level differences at baseline on the weekly affect ratings. Individuals with lower trait PA at baseline exhibited declining weekly PA ratings for the first three weeks of intervention, before experiencing improvements in PA. In contrast, individuals with higher baseline trait PA scores experienced
most of their gains in weekly affect in the first 3 weeks before experiencing a plateau or slight decline in ratings in the second half of the intervention phase. Clearly, neither group is well described by the trend line for the sample as a whole.

For the intervention group as a whole, both the linear ($b = .25, t = 1.68, p = .046$) and the quadratic ($b = -.04, t = -1.60, p = .054$) components accounted for trend in weekly NA data. Trait level differences in PWI and NA were predictive of the linear ($b = -.01, t = -2.23, p = .013$, and $b = .10, t = 3.10, p = .001$, respectively) and quadratic ($b = -.01, t = 1.63, p = .050$, and $b = .02, t = 2.79, p = .003$) components of the weekly change in PA ratings. Figure 3.2 shows that individuals with lower trait NA (below the mean) at baseline exhibited initial worsening of weekly NA ratings, but improve by the end of the intervention phase. Those with above average trait NA at baseline experienced worsening weekly NA ratings over the course of the intervention, which is counter to the trend for the sample as a whole, showing

Figure 3.1. Baseline trait PA score (above, below mean or average) and trajectory of change.
initial decline followed by improvement in NA ratings.

![Graph showing baseline trait NA score and trajectory of change](image)

**Figure 3.2.** Baseline trait NA score (above, below mean or average) and trajectory of change.

**Discussion**

Traditionally, intervention effectiveness has been evaluated with a snapshot of symptom development from baseline to post program, and with emphasis on group-level changes. Such approaches fail to inform about changes that occur during the intervention phase. In contrast, more intensive person-centred assessment during the interval between baseline and post-intervention allows for investigation of individual differences in the level of improvement and rate of change attributable to the intervention. The present study sought to demonstrate these advantages for a CBT-based adolescent wellbeing intervention by augmenting baseline-post intervention assessments of SWB (PWI, PA, and NA) with weekly affect ratings. While several findings were consistent across the data collection methods, additional insights were gained from incorporating weekly diary data capture.

Viewing the baseline-post intervention data in isolation, one may conclude that the intervention had negligible impact on SWB both immediately post-intervention and at the...
follow-up. While descriptive statistics across the intervention phase show clearly that the PWI, NA, and PA scores all improved for the intervention group and declined for the control group (except for PA) during the intervention phase, the magnitude of these changes were small. Moreover, scores on these variables tended to regress towards baseline levels at the 3-month follow-up. Such findings are not uncommon for whole of school or whole of year level interventions conducted with adolescents (Brunwasser, Gillham, & Kim, 2009; Spence & Shortt, 2007). Moreover, these findings are consistent with Homeostasis Theory of SWB (Cummins, 1995), which suggests that individuals will typically function around a set-point, with difficulty in sustaining large changes in wellbeing above this point for healthy individuals. It is also possible that a targeted intervention may have produced different results, with ‘at-risk’ students perhaps experiencing greater benefit from the intervention.

However, findings from the weekly diary data capture suggest that the intervention effects are more complicated, and cannot be entirely satisfied by Homeostasis Theory-based explanations. While the magnitude of change observed in weekly ratings of PA and NA from baseline (Week 0) to post-intervention (Week 6) mirrored findings at the trait level (i.e., baseline-post intervention change), the growth trajectory for this change during the weeks of the intervention was revealing. The growth trajectory for weekly NA ratings suggested that individuals’ NA slightly worsened in the initial stages of intervention, and eventually returned to baseline levels by the end of the intervention phase. In contrast, intervention-related changes in weekly PA ratings were slow to commence (not being observed until Week 2 or 3 of the intervention), but showed a steady improvement from Week 3 onwards, with no indication of plateauing of effects. If that growth trajectory continued after the final week of intervention, post-intervention assessments of changes in trait PA may have missed the full extent of change and thus under-estimated the intervention effect. The impact of measurement intervals on observing effect size has been demonstrated in other contexts, such
as studies of smoking behaviour (Collins & Graham, 2002) and child development trajectories (Adolph, Robinson, Young, & Gill-Alvarez, 2008), and is discussed extensively by Timmons and Preacher (2015).

Individual differences were evident for the growth trajectories. Participants with lower than average trait PA at baseline tended to experience initial declines in weekly PA ratings, followed by steady improvements from Week 3 onwards. In contrast, individuals with elevated trait PA at baseline exhibited the opposite trajectory, with steady improvements from the start of intervention until Week 3, followed by a plateau or mild decline of PA ratings (but still above the baseline PA levels). Similarly, although the growth trajectory suggested initial decline in NA followed by subsequent improvements for the sample as a whole, individuals with greater trait NA at baseline experienced continued increase in weekly NA rather than eventual improvement. Collectively, this pattern of findings is consistent with arguments raised that one-size-fits-all interventions are unrealistic (Merry et al., 2004; Spence & Shortt, 2007) and ignore the heterogeneity of intervention effects across participants. While it is possible to explore differential effects at the trait level (e.g., by correlating baseline trait scores against baseline-post intervention change scores), the additional data points obtained using weekly diary data allows for a more detailed plot of change during intervention and, thus, is more sensitive to detecting individual differences in intervention effects.

Finally, it was found that initial change was not reliably associated with level of change at follow-up, and that changes in week-by-week affect ratings were only reliably predictive of trait level change in the latter stages of the intervention (i.e., Weeks 5 and 6). These results are counter to arguments that early change is a determinant of end-point intervention response (see Mendlewicz, 2010). However, initial intervention non-responsiveness may predict lower level of engagement with the intervention regime or
participant drop-out (as per Barge-Schaapveld & Nicolson, 2002), and thus signal need to consider ways to bolster motivation and participation of those who have early, adverse reactions to intervention. Clearly, the intervention implications of early response patterns warrant further consideration. This and other issues are taken up in the General Discussion, to follow.
Chapter Four: General Discussion

Homeostasis Theory proposes that SWB is generally stable and maintained within a positive range through a set of internal and external risk/protective factors or buffers, including self-esteem (Diener & Larsen, 1984; McCullough et al., 2000), stress (Murray, Rieger, & Byrne, 2013), resilience (Hoffman et al., 2000), and identity formation (Vera et al., 2011). However, when exposed to challenging circumstances, SWB can temporarily dip below one’s internal set-point (Cummins, 2010). This reduced wellbeing might endure if individuals are exposed to severe stressors for a prolonged period, and do not possess adequate strength in their buffers to restore SWB back to its normal range (Cummins & Nistico, 2002). Adolescence is a period of increased risk for this scenario (i.e., low SWB) as many of these aforementioned buffers are under-developed, and thus a young person’s ability to prevent adverse ongoing difficulties is compromised. Attendance to both the degree of severity of SWB at baseline, and strength of the buffering system, are factors that will likely moderate intervention efficacy in situations where SWB is targeted for improvement.

Interventions for SWB in adolescence are few in number, and have yielded inconsistent results (Froh et al., 2008; Froh et al., 2009; Proctor et al., 2011; Suldo et al., 2014; Suldo et al., 2015). This inconsistency may be partially attributed to differences in design and/or characteristics of the sample. The present thesis explored, using Homeostasis Theory as a framework, the possibility that intervention effects depend on: (1) baseline severity of SWB, (2) level of depletion of buffers at baseline, and (3) extent to which the intervention improves poorly functioning buffers (as a mediator of improvement in SWB). Finally, standard pre-post assessment was augmented with weekly report data in order to provide a more fine-grained evaluation of changes related to intervention. This Chapter summarises key findings from the present intervention, with particular emphasis on alignment between present findings and both past research and theory, as well as
consideration of how these findings progress understanding of the pertinent considerations to bolster the SWB of at-risk adolescents. This detailing of results is broken into sections, evaluating efficacy of the intervention globally (i.e., for the sample as a whole) and then locally (i.e., whether it was more effective for subgroups within the sample).

**Was the intervention efficacious for the sample as a whole?**

When evaluated at the trait level (i.e., pre- to post-intervention differences in self-reports of wellbeing *in general*), this intervention was successful in improving the mean SWB of the intervention group relative to the wait-list control condition ($d = .28$) when analysed through the PWI. This improvement was not significant at the 3-month follow-up measurement for the intervention group. Additional evidence in favour of intervention efficacy was in the improvement of a small proportion of adolescents ($n = 13, 9.70\%$) by more than one standard deviation in the intervention condition at post-intervention, with only four students (6.66\%) exhibiting comparable level of change in the control condition. As such, both continuous and categorical approaches demonstrated the intervention to have modest improvements for the sample as a whole. Whilst PA and NA demonstrated change in the anticipated direction at Time 2, findings were non-significant and hence weaker than those of the PWI. Differences in findings between the PWI, and secondary outcomes of PA/NA will be discussed in further detail later in this section.

Intervention effects for the targeted risk/protective factors were seen only in relation to self-esteem, with this key buffer the only significant effect (among proposed change agents) at post-intervention. Despite this minimal impact upon the range of buffers, the factors of self-esteem, resilience, social support, and body image significantly predicted change in the PWI from Time 1 to Time 2. A limited amount of these buffers reliably predicted change in the alternate outcomes of PA (i.e., resilience), or NA (i.e., body satisfaction). In fact, of the targeted buffers, improvement in resilience was found to be
associated with improvements both in the PWI and PA across both groups, and NA of the control group, at post-intervention. The prominence of resilience in the present findings, as well as prior evidence of a link between resilience and SWB (Burns, Anstey, & Windsor, 2011; Cummins, 2016; Graham & Oswald, 2010) suggests that its omission from prior SWB interventions is both important and problematic. Graham and Oswald (2010) suggest that those higher in SWB frequently possess greater levels of resilience. Cummins (2016) explains further that, in relation to Homeostasis, resilience encompasses the system’s ability to utilise resources to protect against challenges.

The present study obtained significant effect sizes comparable to that of the majority of existing SWB intervention studies to date (i.e., Froh et al., 2008; Froh et al., 2009; Suldo et al., 2014; Suldo et al., 2015). Present effects were, however, less than that of another SWB study whereby greater improvements were made at post-intervention $d = 1.19$ (Proctor et al., 2011). One potential reason for this larger effect is the greater duration and thus amount of intervention that participants received in Proctor et al.’s study. Whereas the present intervention was implemented across 6-weeks with 6 modules targeting a range of risk/protective factors, Proctor et al.’s program consisted of 24 lessons delivered over a 6-month period building skills across different sorts of character strengths such as wisdom and knowledge, courage, humanity, justice, temperance, and transcendence. Therefore, whilst the present thesis focused upon a breadth of topics or risk/protective factors, Proctor instead went for depth, and over a number of modules targeted student’s self-identified character strengths in order to boost SWB. As such, this suggests that adequate coverage of content is important, and that the present thesis did not give sufficient coverage to the important topics needed to see greater effects in SWB. In this light, it may be speculated that the modest improvements in SWB observed in the present intervention are a reflection of the minimal impact that the intervention had on these proposed risk/protective factors. In other words, had the
intervention led to greater improvements in these factors, we may have observed greater improvements in SWB as a flow-on effect.

Evidence was also obtained from weekly data reporting on the time course, and duration, of symptom change seen over the course of the intervention. This weekly assessment revealed that neither linear, nor quadratic trends, could be significantly accounted for by the data in the intervention group. Instead, the pattern of results over the testing period could not be differentiated from no-change as a result of intervention (i.e., a flat line).

Contrary to what was predicted, it was also found that early gains (i.e., Weeks 1 to 4) were not indicative of overall change at post-intervention, and that instead, the greatest improvements were linked with change that occurred in the latter weeks of the intervention (i.e., Weeks 5 to 6). This pattern of responses to the intervention may be accounted for by a number of explanations. First, it is possible that the weekly trend lines are detecting the modest improvements seen at trait level measurement. This would suggest that reporting across the duration of the intervention had similarly weak effects and/or lacked power to detect effects. Second, findings from Week 1 to 4 might suggest a period for which the intervention was ineffective either as a result of time needed to accrue benefits, or because the content did not adequately address the targeted factors. As findings demonstrate the greatest change in latter modules targeting assertiveness and resilience, this suggests that the content delivered was integral to the improvement in SWB. Existing literature has identified resilience as essential to the Homeostatic system in protecting/returning SWB within its set-point-range (e.g., Cummins, 2016; Graham & Oswald, 2010), and therefore improvement/deterioration in resilience would be expected to correspond with that in SWB. It is also not surprising, therefore, that results showed change in resilience to be consistently significantly associated with change in SWB across both intervention and control groups.
Third, it may be that the intervention had variable effects, and thus these acted in a way of cancelling each other out.

Overall, results for the sample suggest that the intervention was mildly effective in improving the SWB of adolescents at post-intervention. As detailed in the next section, however, there are indications that the intervention may have been more beneficial for specific subgroups of participants, including those with the influence of baseline scores on temporal duration of intervention effects.

**Who benefited most/least from the intervention?**

Although the intervention was mildly effective for the sample as a whole, person- and intervention-related characteristics were investigated for their influence on outcomes. In relation to the impact of baseline severity of SWB, findings were mixed. Exploration of trait level data in Chapter Two revealed that improvement was no greater for individuals with below average SWB on the PWI (i.e., less than 70 points) at baseline than other subgroups (i.e., equal to or above the mean). Further exploration of the data did however uncover additional insight. For example, categorical investigations revealed that a small proportion of those with PWI < 70 points experienced the greatest positive change, indicating a trend in the predicted direction. Moreover, whilst a non-linear trend was observed for the PWI amongst the intervention group, the finding was non-significant. This may be attributed to the weak effect size ($R^2 = .03$) and therefore difficulties in detecting a prominent trend. Present findings might also have been affected by the limited number of participants reporting SWB within a particularly severe range (i.e., PWI < 50 points), therefore possibly causing effects to be truncated (Stone-Romero, Alliger, & Aguinis, 1994).

Although baseline levels of the PWI were not able to meaningfully account for pre-post intervention improvement at trait level, it was predictive of the pattern of change that occurred during the intervention phase. Specifically, the role of baseline severity in Chapter
Three utilising weekly assessment showed that change in PA over the course of the intervention varied depending upon participants’ scores at baseline (i.e., below, equal to, or above the mean). Of particular interest, and contrary to results obtained in Chapter Two, this thesis found using weekly assessment that those reporting the lowest levels of trait PA at pre-intervention gained the most by post-intervention. This finding is both consistent with the present thesis’ expectations, and aligns with the Theoretical assumptions of SWB Homeostasis that adolescents most at-risk will gain the most from intervention. Moreover, it reflects existing SWB intervention-based evidence whereby baseline severity has been identified as a determinant of overall program efficacy amongst an adolescent cohort (Froh et al., 2009; Tomyn et al., 2015), and in other depression-focused studies (e.g., Stallard et al., 2012). The identification of anticipated effects at weekly, but not trait, level likely resulted from the greater sensitivity afforded by this approach to detect fluctuations occurring during the intervention phase. To the author’s knowledge, this phenomenon is novel in the SWB intervention literature yet more broadly supports research conducted in the contexts of quality of life (Barge-Shaapveld & Nicolson, 2002), and depression (Wijnhoven et al., 2014), whereby weekly measurement identified change that was not observed at trait level.

In addition, exploration of weekly assessment also provided insight into the timing of symptom change over the intervention phase. The results captured by weekly assessment revealed that in general, those with initially high mean scores of PA at baseline had an early peak in weekly PA, with a plateau following Week Three of the intervention, whilst individuals with average levels of PA at pre-intervention experienced a slow but steady improvement. Conversely, participants low in mean PA at baseline were found to get worse until Week Five, whereby results subsequently indicated a significant improvement in symptoms. This is of particular interest, given prior research has argued that early intervention response is integral to post-intervention improvement (see Mendlewicz, 2010).
In fact, further investigation detailed that the changes that occurred early in the intervention were unrelated to change by post-intervention for those below mean PA at baseline, and a significant relationship was found only for the latter stages of the program (i.e., Weeks 5 to 6).

Results in relation to baseline severity assessed through weekly diary data thus support the assumptions of the Theory of SWB Homeostasis, whereby those below average SWB will gain the most from intervention efforts. As Homeostasis Theory proposes, those with higher SWB appear to have been restored to their set-point-range post initial temporary increase as was observed in the week-by-week reporting. The time course of improvement for those lowest at baseline might also suggest the importance of particular modules (i.e., resilience and assertiveness) as opposed to earlier ones (i.e., thinking styles, coping skills, self-concept, body satisfaction) as being more pertinent to bolstering SWB of adolescents.

To ascertain the role of risk/protective factors on the change in SWB based on the PWI, investigations were conducted to determine if: (1) differences existed across the sample in relation to baseline severity both in SWB and the buffers, and (2) if improvement/deterioration in these buffers corresponded with change in SWB. Firstly, evidence showed that individuals with low PWI at baseline (i.e., less than 70 points) were likely to also report low scores on their buffers. Despite this, categorical-based analyses revealed that those with the lowest scores on the PWI in the intervention condition showed that significant improvement within this subgroup was shared only with self-esteem. Further exploration of intra-individual change through correlations between the PWI and change in buffers at post-intervention across the entire intervention condition (i.e., all groupings of baseline severity) revealed significant outcomes for all factors except coping. As such, the prediction that those lowest in SWB would improve most based upon intervention, and adequate strength in their buffers, was not entirely supported here. Instead, findings
demonstrate that this effect is more widely seen across the range of baseline SWB scores and not just those most at-risk. One reason for this variation in findings, however, may be that group difference tests focus on trends at the group level, whereas correlations have greater sensitive to individual differences in magnitude of change and seek to correlate this individual difference in change across variables. Therefore, effects may have been more readily detected by correlational investigations of the relationship between buffers and SWB.

In summary, it is evident that the present school-based intervention has integrity in increasing the SWB of Year 8 adolescents at post-intervention. Several important insights have been gained from the present findings. Firstly, only one of the targeted risk/protective factors demonstrated meaningful change at post-intervention. This might suggest that improvements across the entire range of buffers may have generated greater improvement in SWB. This intervention was also found to be most effective for those low in baseline SWB as evidenced through weekly diary ratings, and different subgroups of participants (as measured through baseline scores) showed varied week-by-week trajectories of change. Novel to this literature, change in agents and their prediction of change in SWB was investigated, with findings depicting that improvement/deterioration in the buffers resembled that of the fluctuations in SWB. Finally, it appears that the way that SWB is operationalised seems to have an effect on post-intervention findings as results were not consistent across its measures (PWI, PA, and NA). Whilst all outcomes demonstrated a significant change over the duration of the intervention, secondary outcomes of PA and NA exerted less influence upon the range of key risk/protective factors. SWB has been shown to be heavily dominated by the stable, core affective state of HPMood in a number of empirical studies to date (Blore et al., 2011; Davern et al., 2007; Tomyn & Cummins, 2011), therefore it is not surprising that the more fleeting emotional-based responses of PA and NA would not possess the same influence on,
or association with, identified risk/protective factors of SWB as the PWI. These findings should be interpreted in consideration of the limitations that are listed below.

**Limitations**

The present study possesses several limitations that should be noted. Firstly, drop-out from Time 1 to Time 2 was found to be 23% across the sample, with significantly greater drop-out for the control (28/88, 31.8%) relative to the intervention condition (30/164, 18.3%), suggesting some possible disengagement from students within the control group. Despite this, overall attrition for the present study is broadly consistent with other Australian school-based interventions with drop-out ranging from roughly 3 to 30% by post-intervention (see Merry et al., 2011), and suggested to be common in prevention/intervention studies (Spence & Shortt, 2007). Other significant baseline predictors of drop-out, resilience and social support, may also have influenced the pattern of change detected at post-intervention in SWB as a result of their being missing. It was found that more participants scored above the mean for scores on both baseline resilience (55%), as well as baseline social support (76%). This suggests that a significant proportion of the participants would have had less capacity to improve given already high levels on these factors, and may possibly have dropped out due to poor tailoring of the intervention to the group. Despite the level of drop-out, students voiced positivity in regards to the intervention itself, in particular with the increased opportunities for group work and collaborating with their peers. To enhance further engagement in the program, greater emphasis might therefore be placed upon increased time dedicated to group-related activities that are interactive with the facilitator, and reduced amounts of individualised classroom based question and answer learning. A process evaluation was not conducted in the present study, however could be used in the future to develop greater insights in the barriers to implementation and participation (Oakley, Strange, Bonell, Allen, & Stephenson, 2006).
Secondly, several design-related concessions were made in order to overcome school barriers to implementation. For example, both intervention material, as well as items within the scales, were altered to reflect positive content to adopt feedback from pilot schools. Despite this, reliability of the measures affected by this change remained high, and correlations with these variables and others are still of similar magnitude to prior studies. The changes made to emphasise positivity, however, may have limited the participants’ ability to build upon skills in perceived ‘negative’ areas (e.g., negative aspects of poor self-esteem or body image), altered the measurement of these risk factors, and influenced intervention efficacy.

Prior to implementation, the intervention was designed to minimise overburdening participants with extensive amounts of measurement, and in consideration of teacher’s allocated class time. Following completion of the intervention, rather than withholding intervention, the control condition was offered the opportunity to commence the intervention during follow-up in order to maintain ethical considerations such as not withholding intervention, and time constraints. This design has been implemented in other studies (Berry & Hunt, 2009; Masia-Warne, et al., 2005). As a result, no comparative data are held for sustained intervention effects beyond Time 2 (post-intervention). Therefore, conclusions and generalisations can be confidently made about post-intervention effects, and whilst speculation regarding potential maintenance gains can be made, the preservation of effects at follow-up cannot be distinguished from what might be found naturally. Moreover, weekly diary data collection was not extended beyond the intervention phase to follow-up due to study aims to explore the changes throughout the intervention phase. This therefore limits understanding of effects and generalisability of findings beyond Time 2 of the intervention.

Third, it is also possible that prolonged duration of measurement was needed before improvements were seen amongst this at-risk group. Measurements taken at the three-month
mark reveal that only an additional four individuals of those with low baseline SWB had improved by one standard deviation from Time 2 to Time 3 (3-month follow-up) assessment. In a review of school-based depression conducted by Spence and Shortt (2007), interventions measuring improvement relative to control found the most significant differences when measured between three- to 11-months of follow-up (e.g., Possel et al., 2004; Quayle et al., 2001; Shochet et al., 2001). It is therefore possible that skills were not yet consolidated amongst the intervention group by this time point. Possel et al. (2004) argue that intervention benefits are seen in accordance with a ‘sleeper effect’ whereby follow-up periods over a number of years better allow for the young people to utilise the resources gained to manage difficult situations. Unfortunately, constraints of the doctoral course prevented more extensive follow-up of the present sample, and hence follow-up was restricted to three months post-intervention for practical reasons. Whilst time is important for the measurement of efficacy in intervention research, efforts should also be directed to find quicker solutions to improve mental health and wellbeing.

Lastly, the delivery of the intervention by several facilitators may have resulted in some variation in engagement of the students, and in the method of teaching of the content. Despite this, facilitators were selected with the prerequisite of a Postgraduate qualification in psychology in accordance with prior review that stipulates mental health professionals as more effective facilitators than teachers for school-based prevention/interventions (Calear & Christensen, 2010). Facilitator effects were also attempted to be minimised by adopting a manualised approach, by conducting group training prior to commencement of the program, and by ensuring consistency in designated facilitators for each class.

**Clinical and Theoretical Implications**

Findings from the current thesis highlighted several outcomes that may have clinical implications for effectively improving the SWB and associated health outcomes for
adolescents. Results from the present study revealed that adolescents are, as expected, susceptible to low SWB, with one quarter of students scoring below the normative range at baseline. The considerably higher number of individuals scoring below the population norm is likely to be a function of several things. Firstly, adolescents are theoretically at greater risk of SWB deterioration than adults, as detailed in Section II of Chapter One. Limited comparative studies exist in relation to the SWB of Australian adolescents. As such, present data were considered relative to Tomyn et al.’s (2015) sample participating in a Government program for at-risk young people whereby 34.34% scored below 70 points at baseline. This study may, however, similarly over-estimate the wider population group given its sampling of vulnerable adolescents. Secondly, sampling of groups in the present study was conducted amongst those that may be at elevated risk for other reasons (e.g., low SES). The participating schools each qualified within the lower SES areas of Melbourne (SEIFA, 2011), and therefore the rates of adolescents scoring below average SWB may be reflective of sampling in these areas. Overall, however, the finding that one quarter of young people in the present study scored below the norm warrants the need for further SWB interventions as a priority for adolescents in lower SES groups.

Understanding that low SWB is likely to co-occur with, and be a consequence of, lowered buffers signifies that these should be targeted for improvement in order to promote wellbeing. Results from the present study demonstrate that improvements in buffers were associated with positive change in SWB, and that a wide array of buffers (all except coping) showed this pattern. Although ultimately only self-esteem improved significantly as a result of the intervention, the pattern of findings suggests that interventions which are able to target a broader range of these buffers may be more beneficial than interventions that limit the extent of associated factors to SWB. While change in the buffers accounted for one third of the variance in change in SWB for the intervention group, much of this change was
unaccounted for by proposed models. It is likely then that this additional variance was due to non-specific intervention factors, such as novelty effects, attention from researchers, and promotion of hope in relation to intervention roll-out.

While intervention effects were observed for SWB using the conventional approach (i.e., pre-post comparisons), weekly affect findings provided understanding of average time-course for improvement of symptoms, as well as identifying individual variation in level and trajectory of improvement. These data show that the intervention had a more immediate impact for those with heightened wellbeing at baseline, whereas individuals with lower wellbeing at baseline experienced initial worsening of affect before eventually improving. Accordingly, and to the extent that these results generalise to other SWB interventions, this pattern of findings suggests that low responsiveness/improvement in symptoms early in intervention may not be reason to discontinue or alter intervention, particularly for those with low levels of SWB at baseline. Conversely, identification of plateauing effects – as was observed for those higher than average SWB at baseline - may be indication to cease or modify intervention for those meeting clinical endpoint early, or to modify intervention for those not yet at endpoint range and non-responsive to intervention. The use of adaptive intervention strategies has become increasingly popular in clinical trials literature (Bierman, Nix, Maples, & Murphy, 2006; Connell, Dishion, Yasui et al., 2007; McKay, 2005), and augmenting this design with weekly or daily diary data may be an effective way to get a better sense for intervention-related improvements and need to escalate intervention strategies. In a review of health behaviour interventions utilising momentary assessments, Heron and Smyth (2010) concluded that augmenting this type of measurement with dynamic and individualised interventions is an ideal means of developing effective content and delivery of interventions. Indeed, in the present study, the weekly diary approach was agreeable for participants, not overwhelming them with the volume of surveys typical of
more intensive data capture schedules as are common in experience sampling (e.g., multiple assessments per day), whilst ensuring sufficient data to obtain meaningful and sensitive measures of change in symptoms over time. The response rate to this component of the intervention was good, and provides further evidence of feasibility of incorporating weekly data capture into the standard pre-post intervention design.

Conclusions and Future Research Directions

Enriching the existing literature on SWB school-based intervention (Froh et al., 2008; Froh et al., 2009; Proctor et al., 2011; Suldo et al., 2014; Suldo et al., 2015), the present thesis has demonstrated several important insights to complement and extend upon what is already known in this area. In particular, present findings provide some answers to issues central to any intervention: who benefits, how, and over what timeframe?

Who benefited from this intervention?

Evidence from the present thesis found mixed evidence for the proposal by SWB Homeostasis that those scoring below the norm in SWB at baseline would experience the greatest improvement at post-intervention. Whilst trait level measurement failed to find any evidence for this theoretical assumption, effects for the role of baseline severity was seen when analysed through weekly affect ratings. Despite weekly measurement being novel to the SWB school intervention area, these results align with prior empirical research (e.g., Proctor et al., 2011; Tomyn et al., 2015), whereby baseline SWB was shown to exhibit influence on the extent of improvement. Whilst supporting the notion that baseline level is both influential and quantifiable for determination of patterns of change, the present findings suggest that timeframe for assessment is critical for observing some of the proposed changes predicted by Homeostasis Theory. Therefore, it is possible that these change processes in SWB occur at the weekly level, rather than over more extended pre-post measurement timeframes that is characteristically adopted by intervention studies.
How did the intervention work?

The corresponding improvement/deterioration of buffers and SWB supports theoretical assumptions that the Homeostatic system is crucial to the experience of wellbeing, and that under-resourced or depleted buffers are likely to correspond with lower than average SWB. Moreover, current findings extend upon prior empirical studies in the SWB school-based intervention area that have utilised a positive psychology framework to target a limited range of factors (e.g., gratitude). Instead, present findings suggest that targeting a broader range of risk/protective factors is likely to promote positive change in wellbeing and have a clear association with fluctuations in SWB.

Time-course for improvement

Neglected in prior SWB school-intervention research, the function and influences of week-by-week timing of intervention effects became evident in weekly diary data. This highlighted the more complicated (i.e., non-linear) pattern of change amongst participants, and the presence of time-lagged effects, without which erroneous assumptions about efficacy might have been made. The different trajectories that were observed may indicate reactivity to: (1) type of intervention (i.e., different modules works better for some individuals, and worse for others), (2) amount of intervention (some individuals require limited amount of intervention, whereas others require longer periods of intervention), or (3) the content itself (i.e., some participants may struggle initially because the intervention encourages them to actively focus on – rather than avoid - stimuli that are likely to be upsetting, such as negative thoughts). The first type of reactivity may be tested by modifying order of presentation of content in the current program to see whether trajectories of change differ, and may also be addressed by seeking qualitative feedback regarding each of the modules. In contrast, the second form of reactivity may be assessed by modifying duration of intervention. These offer future avenues for exploration of modification to intervention designs.
Adaptive interventions allow for this individualised approach, with adjustments to therapy possible in response to the nonlinear progression of individuals (Laurenceau et al., 2007). This fits with the notion of the Sequential Multiple Assignment Randomized Trials (SMART; Murphy, 2005; Murphy, Collins, & Rush, 2007) which allows freedom to adjust the intervention to alternate components of intervention based on ongoing evaluation of progress (Collins, Murphy, & Strecher, 2007); for example, comparison of different intervention phases, and adaptation of the dose and duration that individuals are exposed to intervention (Nahum-Shani et al., 2012). If baseline severity is key, understanding areas in need of further development at baseline could be useful for tailoring the modules that the individual needs most. For instance, if an individual has good self-esteem but poor coping ability, priority should be given to improving coping ability. For another student who has poor self-esteem, that may be the basis for initial intervention. Moreover, the variation in trajectories observed through weekly diaries has implications for roll-out of interventions that target SWB. For instance, some individuals with higher than average wellbeing at baseline actually worsen initially. This is consistent with the nature of universal programs whereby the focus is upon targeting a breadth of factors at a whole group level. As such, it is possible that some participants began encountering negative thoughts brought about by intervention content that previously had not been present. For these individuals, a more targeted approach with greater emphasis upon positive interventions such as relaxation, mindfulness, or positive psychology principles may be more appropriate and may prevent (temporary) decline. In contrast, the intervention effects for those with lower wellbeing at baseline suggests that they will start to experience benefits by Week 4 but plateau post-intervention as captured in the follow up assessment. At this point, more intensive intervention may be required if the current level of wellbeing is still below a desirable level.
Finally, based upon the present findings, e-health interventions may be a superior means of delivering similar interventions. This kind of approach allows for greater ease with an approach that is data intensive (i.e., the inclusion of weekly diary data to manipulate and determine future course of participant intervention) and personalised (i.e., redirection or discontinuation of intervention for those who do not appear to benefit from the intervention). Recently, e-health programs have been identified as effective for anxiety and depression (Christensen, Leach, Barney et al., 2006; Clarke, Eubanks, Reid et al., 2005; Marks, Mataix-Cols, Kenwright et al., 2003) and have been shown to be as effective as face-to-face therapy (see Barak, Hen, Boniel-Nissim, & Shapira, 2008 for a review). These e-health interventions have additional benefits that allow for anonymity, an engaging interface, and diminished concern about less opportunities or services in regional and remote areas (Clarke, Kuosmanen, & Barry, 2015; Marks, Cavanagh, & Gega, 2007). These kinds of approaches might hold the key to future successful interventions, allowing for increased access, individualisation, and efficacy. Whilst this kind of technology guides the implementation of interventions, direction is required to assist with tailoring these programs to effectively and appropriately address the characteristics of the participating individuals. The Theory of SWB Homeostasis – based on present findings – may provide that necessary guidance to ascertain those most in need of intervention, key targets for interventions efforts, and likely participant responsiveness.
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Appendix A

EAA *Think Health and Wellbeing* intervention.

“In the first session we are going to learn about how focusing on the positive aspects of our life can help our overall wellbeing. When we think about the positive aspects of our lives it can help us feel happy and satisfied with ourselves and protect us against negative or unhelpful thoughts. By recognising how a focus on only the negative aspects of our lives affects our feelings, our social interactions and our overall mood for the day we can try and steer ourselves away from these negative thoughts. We will also learn about how we can counteract negative thoughts and distinguish between those aspects of our lives we can change and those we cannot change to give us a better perspective on our negative experiences.”

Discuss the importance of recognising in life the things we have to be happy or positive about. Whether the positive aspects in our lives be big (having a loving family and a big group of friends) or small (appreciating a favourite band, movie etc) they all have the potential to impact positively on our lives.

List below 15 things that you feel really positive about in your life right now:

1. ______________________________________________________
2. ______________________________________________________
3. ______________________________________________________
4. ______________________________________________________
5. ______________________________________________________
6. ______________________________________________________
7. ______________________________________________________
8. ______________________________________________________
Have the students reflect on these 15 things they wrote above, how do they make the students feel about their lives in general?

Want to encourage/prompt answers such as leave me feeling satisfied and content with my life. Feel much better, happier about my life because I didn’t actually realise how many things I had to be happy about. Feel better knowing that I can rely on my family or watching a movie to help me feel happy if I come across something challenging or sad.
Helpful Vs Unhelpful Outlook

Use the scenario below as a class discussion around how you can react differently to different situations if your mood if different.

Imagine the scenario below happens to you;

You are hanging out with a group of friends at lunchtime. You are joking around about a party a friend is having the next weekend when the friend having the party jokes that you will no longer be invited because you said you couldn’t arrive until late as you had a family dinner on the same night.

1. How would you respond if you were feeling the following?
   a) Sad- If I were sad I’d take my friend’s joke seriously and be upset that I couldn’t go to the party. I’d also be worried that they didn’t like me, was actually mad with me.
   b) Angry- I’d probably yell at my friend and say an insult back to them to make myself feel better about not being invited. Or, would yell at them that it wasn’t a funny joke and create a fight out of it.
   c) Happy- I’d brush off their joke with another joke (e.g. about how you didn’t actually want to come anyways) and would not take any offense from their comment.

2. How would your different moods then affect your social interactions with your friends after this happened?
   If I had been angry or sad they may have avoided talking to me or been mad/worried/frustrated with me as I misunderstood the joke whereas if I was in a happy mood their interactions would have remained the same as I would have joked back in response.

3. How would your friends react if you were to act out one of the different responses according to your mood?
   If the response was particularly mad or sad they’d probably react fairly strongly. They might become instantly concerned that I’m not behaving like myself or be unimpressed that I had overreacted.

4. Using one of the moods as an example, detail how that mood and that response to the specific interaction would then affect your mood for the rest of the day and your corresponding behaviours.
   If you were sad you may continue to withdraw from your friends, remain quiet in class, worry about your friendships, be quiet and upset at home and avoid all interaction for fear of being rejected.
   If you were angry you may react heatedly to any other challenging situations or interactions throughout the day, pushing away even more people. You may
continue to be mad throughout the course of the day and find that little things niggle you even more.

Encourage the students to make the link between how we're feeling can affect not only how we behave but how our social interactions play out and how we can then have effects on our friends and their moods.
# Helpful Vs Unhelpful Outlook

Draw this line on the board with positive on one side and negative on the other- have a class discussion to come up with some examples of what you may feel if you only focus on one aspect of life. Don’t fill in too many that the students can copy off- just do a few to get them started.

<table>
<thead>
<tr>
<th>POSITIVE ASPECTS</th>
<th>Vs</th>
<th>NEGATIVE ASPECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Happy</td>
<td></td>
<td>Worried</td>
</tr>
<tr>
<td>Content</td>
<td></td>
<td>Sad</td>
</tr>
<tr>
<td>Satisfied</td>
<td></td>
<td>Dissatisfied</td>
</tr>
<tr>
<td>Strong</td>
<td></td>
<td>Upset</td>
</tr>
<tr>
<td>Resilient</td>
<td></td>
<td>Concerned</td>
</tr>
<tr>
<td>Comfortable</td>
<td></td>
<td>Unsafe</td>
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<tr>
<td>Relaxed</td>
<td></td>
<td>Stressed</td>
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<tr>
<td>Loved</td>
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<td>Overcome</td>
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<tr>
<td>Safe</td>
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<td>Angry</td>
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<tr>
<td>Proud</td>
<td></td>
<td>Depressed</td>
</tr>
<tr>
<td>Calm</td>
<td></td>
<td>Worthless</td>
</tr>
<tr>
<td>Protected</td>
<td></td>
<td>Alone</td>
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</tbody>
</table>

- Discuss differences between focusing on negative aspects of your life compared to positive aspects. When you focus on only the negative aspects of life it can leave you feeling sad and depressed, and can affect how you interact with people and how you go through your everyday experiences in an unhelpful way. If you think about your positive aspects in life it not only improves your mood but leaves you feeling stronger and more resilient as you go through your day and will help you strengthen relationships and be more confident in achieving goals.
- Have the students fill out individual activity sheets for their own feelings in relation to when they have these different focuses.
- Go through the four C’s of combating unhelpful thoughts. Just read them and perhaps have the students highlight what they think the key point to each step is.

- The four C’s of combating unhelpful thoughts
  1. **Catch** yourself in the unhelpful thought. Recognise that you are having this reaction and consciously make the decision to deal with it in the moment.
  2. **Challenge** the thought- consider evidence confirming and rejecting your unhelpful thoughts. Am I leaping into this unhelpful thought without considering the counterargument? Is there other evidence that goes against this thought? Are there possible other explanations? How would I react if this were happening to someone else?
  3. **Change** your perspective- consciously analyse the unhelpful thought to ensure you are not blowing things out of proportion.
  4. **Convince** yourself that there is a more helpful, constructive thought you could be having instead of the original unhelpful thought.
Have the students complete the exercise below:

“We are going to look at the exercise below to evaluate situations that may be familiar to us and that may have left us feeling a bit down. What we want to recognise is that sometimes things happen that we cannot control and we need to accept these and resist the urge to only focus on the unhelpful thoughts these situations may bring to mind. Instead we need to re-evaluate the situation and try and approach it in a better way.

Read the following three situations which may represent similar situations you have been in. In small groups, discuss one of the scenarios in detail identifying what aspects you can actively change and which aspects are out of your control. Highlight changeable aspects in one colour, and those that cannot be changed in another colour. ” Instruct the students to discuss what aspects they believe they can change and those they can’t.

Scenario #1

One morning over breakfast your Mum requests that you do some washing for her and prepare dinner for you and your siblings that night as she has a long day at work and will be unable to get home in time to do it herself. You get distracted that afternoon as a friend comes over to work on an assignment and you are having too much fun socialising. When your Mum gets home you have not completed any of the tasks and she is incredibly grumpy after her long day. When she discovers you did not complete anything she yells at you about being an irresponsible and ungrateful child, you do not say anything in response nor do you offer an apology.

What are three key things in this situation you could change about your own behaviour or attitude?

*Being distracted from your homework

*Not saying anything in response to your Mum when she yells

*Not apologising for your behaviour, not recognising that your Mum asked that you do something and you let her down
Scenario #2
You stay up late completing an assignment for your English class the next day and fall asleep with the assignment sitting there finished on your desk. The next morning you’re running late for the bus and neglect the assignment, forgetting that it is due that day. At class that day your teacher makes a note that you have forgotten your work, disappointed that you have failed to turn in the assignment in time.

*What are three key things in this situation you could change about your own behaviour or attitude?*

*Completing assignments late

*Not remembering that it is due that day

*Not offering any explanation to the teacher in defence of your behaviour, nor apologising for forgetting.

Scenario #3
You are running late to meet a friend to see a movie. Your Mum had to go out to the supermarket and lost track of the time when she had to take you to the cinemas. When you arrive at the cinemas with only 5minutes to go until the movie begins your friend is really angry as she/he had been having a bad day and was really looking forward to seeing you but you were late.

*What are three key things in this situation you could change about your own behaviour or attitude?*

*How you react to your friend being mad

*Reminding your Mum that you have to go out

*Not being angry with your Mum for being late in the first place

*What are three key things you would tell yourself to remember if you were to come across a similarly stressful situation?*

(Possible suggestions: stay calm, try and counterbalance negative thoughts, remember that things aren’t always in your control and we have to be resilient, remember there are other positive aspects of our lives we can focus on)

1. _____________________________________________________________________

2. _____________________________________________________________________

3. _____________________________________________________________________
**Session 2: Developing coping skills**

Students learn how to communicate more effectively, how to problem solve, and relaxation techniques to overcome negative feelings.

“This session focuses on problem solving, which is a critical skill we need to be able to negotiate negative experiences and improve our overall wellbeing. We will discuss steps of problem solving and build a definition about what exactly problem solving is and how we can actively use it in our own lives. We will also focus on relaxation techniques as a method of easing unhelpful thoughts and feelings.”

**PROBLEM SOLVING.**

- Discuss as a group the idea of problem solving, brainstorm what the steps of problem solving may be. Have the students discuss this in small groups and then open it to a wider discussion about what the steps may be.
- Reach a general class agreement that problem solving is the process of evaluating a challenging situation or a negative experience to reach a better result and be happy with the overall outcome.
- Lead into the 6 steps below.

Have the students volunteer to read a step each, or read them yourself, asking the students to highlight what they think the key points of each step are.

**Six Steps to Problem Solving**

1. Identify the problem
2. Identify why it is a problem to you?
3. Brainstorm possible solutions
4. Evaluate all of the possible solutions
5. Put the solution into action
6. Evaluate the outcome

1. **Identify the problem**
   Take a step back and don’t react emotionally to the problem. Take a moment to work out exactly what the problem is. Rephrase the problem so you know exactly what part of it you need to solve.

2. **Why is it a problem?**
   While you may recognise that the problem is in fact a problem, you need to consider why it is problematic to you in particular. Consider the following questions;
- Why is this so important to you?
- Why do you need this?
- What do you think might happen?
- What’s the worst thing that could happen?
- What’s upsetting you?
- Be as honest as possible about the reasons for your concerns.

3. **Brainstorm possible solutions**
   Make a list of all the possible ways the problem could be solved. You’re looking for a range of possibilities, both sensible and not so sensible. Write down all the possibilities.

4. **Evaluate the solutions**
   Consider each of the possible solutions you have brainstormed. Rate each of the solutions on a scale from 0 (not good) to 10 (very good) – this will help you sort out the most promising solutions. The solution you choose should be one that can be put into practice and will solve the problem.

5. **Put the solution into action**
   Once you’ve agreed on a solution, plan out how you will put it into action. It can help to do this in writing, and to include the following points:
   
   - Who will do what?
   - When will they do it?
   - What’s needed to put the solution into action?

6. **Evaluate the outcome**
   Once you have put the plan into action, you need to check how it went. While your solution may have been successful, your solution may have not worked out as well as planned. Remember that you may need to put several solutions into practice to reach your desired resolution.
Break into small groups and give different scenarios that present the students with common problems to discuss. The scenarios are as follows;

a) You have had a fight with your close friends over one person consistently being mean to another of your friends. You do not want to lose either of the friends and decide you have to try and fix their problems somehow, as it is making everyone frustrated, sad and angry.

b) You have been invited to attend a classmate’s birthday party, but your parents do not know who he/she is and are concerned that you have not mentioned him/her before. They do not want you to go as they do not know his/her parents and do not know what kind of party it will be. All of your other friends are going and you are worried about what they will think if you say you are not allowed to go.

c) At school one day you see a younger student being bullied by another student from your year level. They are teasing them for being alone at lunch time and for their appearance.

Circulate the room offering feedback/guidance for the students discussions. If it seems like the students are responding well, bring it back to a whole class discussion of what they each thought about the individual problems and whether they thought putting the steps into place would be beneficial.
Six Steps to Problem Solving

Set the task below as a homework task for the students to complete individually.

Think of a problem you have encountered recently. You may have successfully resolved the problem, or may have been dissatisfied with the outcome. Apply the 6 steps of problem solving and see if this makes thinking about the problem, analysing the problem and solving the problem any easier.

1. Identify the problem

2. Identify why it is a problem to you?

3. Brainstorm possible solutions

4. Evaluate all of the possible solutions

5. Put the solution into action

6. Evaluate the outcome
RELAXATION TECHNIQUES.

- As a whole class discuss the importance of having good relaxation techniques—helps relieve stress, gives us a better outlook/perspective for our problems, prevents us feeling negative or sad about a challenging situation that affected us, protects our positive wellbeing by being an active way of dealing with our problems.

- Split into the same small groups and discuss methods of relaxation (Brainstorm: reading, watching a movie, sleeping, going for a walk, talking to someone, music, doing something with friends and family)

- In the small groups discuss idea of meditation and muscle relaxation to have as an additional relaxation technique, one that contributes to a positive wellbeing. (Brainstorm: offers an easy method of relaxation that you can do by yourself, gives a feeling of peace and calmness, acts on the physical aspects of stress as well as the emotional/mental/spiritual, don’t need anything to be able to do it—just yourself)

- Have the students read through the muscle relaxation exercise by themselves.

- Discuss the benefits of such a technique and discuss how you think you may feel after doing this exercise (e.g.- calm, relaxed, content, stupid, agitated, happy).

Muscle relaxation.

1. Find a quiet place where you can have time for yourself without interruption. Lie down on your back, feet comfortable distance apart, arms by your side. If it feels comfortable to you, turn your palms facing upwards and gently close your eyes.

2. Turn your attention to your breathing. Consciously slow your breath down, making it smooth and deep.

3. Start with the top of your head, telling your mind to release all the tension you feel in your scalp.

4. Move slowly down your body to your face. Using the same method focus on each of your facial features, asking your body to gently release the tension from your forehead, then your eyes and eyelids ending with your mouth and jaw.

5. Now, turn your attention to your neck. Ask your muscles to release all the tension from your neck. Breathe slowly and deeply and concentrate on releasing tension from your neck.

6. Let the tension drain from your neck and feel the flow on effect to your shoulders. Continue breathing slowly and deeply as you feel the tension gradually drain from your shoulders, down your arms and eventually through your fingertips. Exhale deeply to release the tension out through your fingers and inhale to feel your fingers connect to your arms and up through your shoulders.

7. Now, bring your attention to your chest. Breathe deeply as your concentrate on your chest. Feel the tension leaving your body.

8. Next, turn your attention to your hips. Take a few deep breaths and with each exhale, ask your body to release tension from your body and hips.

9. Continue with this through your pelvis, thighs, calves, ankles, feet, and toes. Feel the tension leaving your body, replacing it with a sense of peace and calm.
10. When you have completed the cycle of releasing tension from all the parts of your body, continue breathing slowly and appreciate the feeling of all the tension leaving your body.

11. When you are ready, bring yourself to the present moment. Wiggle your toes, your fingers, open your eyes, and stretch out gently.

12. Enjoy the sense of quietness and relaxation in your body. Return to this muscle relaxation technique often. With each practice, your relaxation will deepen.
**Session 3: Building self-esteem, part 1 (general)**

Students are taught to identify and appreciate differences in abilities, likes/dislikes, and personality in self and others. They are taught to identify strengths in self and others, in order to build healthy self-concept.

“The final session for today focuses on building a healthy self-concept. Our self-concept allows us to recognise the different strengths, likes and dislikes and personality traits we have and focus on the different abilities we have as individuals. By developing an understanding about our self-concept we can rely on this snapshot we have of ourselves to contribute positively to our wellbeing and protect us when we face challenging situations.”

- Discuss the concept of self-esteem
  a) What is self-esteem?
     Idea of an individual snapshot of what we are as a person. What strengths we have, what abilities we possess, what our key personality traits are etc. Our overall knowledge of what we come across as a person.
  b) How can self-esteem be considered as a positive?
     Gives a higher understanding of what we are as an individual person. Allows us to reflect on what we like about ourselves and what strengths we recognise in our personality, abilities and likes and dislikes. We can rely on this idea when we face situations that may challenge our ideas of ourselves.
  c) How do we build our self-esteem?
     Do tasks that we know we are good at to build our self-efficacy, completing things we like to do, reflect on compliments we may have received, brainstorming about our strengths, asking others what strengths they think we have.

- In a whole group discussion have the students brainstorm about the strengths, abilities, likes, and personality traits they have that are individual.
- ***Perhaps have this as a task where each student is given 4 post-it notes to write one word on each that represents a strength, ability, like or dislike and personality trait of theirs. These can then be arranged on the board under the four headings and read out by the assistant (may take away some of the embarrassment for the students)***
**MIND MAPS**

1. Have the students draw/write their own strengths, abilities, likes/dislikes, and personality traits on their mind maps.

2. When they have completed their own mind map have them compare their map to a partner/friends (or in three’s). Working on each mind map one at a time have the partners suggest other strengths/abilities/likes and dislikes for their friends (constructively) before swapping to the other students.

3. Add these extra qualities on to the mind map in a different colour pen/pencil.

4. When this is complete have the students discuss the differences between their and their friends mind maps, and recognise that everyone has difference strengths.

5. Discuss the importance of recognising that sometimes we cannot see our own strengths and positive characteristics, which is why it is important to see that our friends/families/peers all see us differently, and we can rely on these people to recognise our strengths and reflect positively on our self-concept.

- **Homework task** - Have the students ask their parents/siblings about their strengths/abilities/likes/dislikes/personality traits to add to their mind maps.
Session 4: Building self-esteem, part 2 (body image)

Because body image is such an important determinant of self-worth for adolescents, a separate session is devoted to building positive body image.

“This session will focus solely on building a positive body image. Because body image is such an important part of our self-concept, and can have such a big effect on how we behave and what we value it is very important that we take the time to improve and strengthen our own individual body image. We will talk about how we can build our body image and how we can evaluate situations that may affect our body image in a positive way to maintain a strong individual body image and protect our overall wellbeing.”

BODY IMAGE

- Have the students compose definitions of body image in small groups.
  “Body image- how you view/perceive your own physical appearance. The ideas you have about how you come across to others in terms of your looks and attractiveness”
- What is a positive body image? (Concept map)
  This could be done as a whole class activity. Write positive body image in the middle of a whiteboard etc and have the students yell out phrases/words/ideas about what it is.
  Brainstorm:
  - being comfortable in your own skin
  - recognising everyone has different shapes
  - recognising everyone is different sizes
  - liking one particular feature (or more) about yourself
  - accepting compliments as being true
  - being confident about how you look
  - resisting societal pressures to be a certain look
  - resisting media pressure to be a certain look
  - having the knowledge to challenge the messages the media presents about the ideal body size/shape
  - recognising those body parts/features you’re not so comfortable with but still embracing them as you know you have other parts you are proud of
Have the students break into small groups (separate by gender too, boys with boys and girls with girls) and discuss the following questions:

1. What is it that we perceive as the ideal body? What features does it possess?

   Possible suggestions that may come out of their discussions:
   a) **Boys** - muscular, tall, not flabby, not skinny, strong, athletic, developed, attractive face, no acne
   b) **Girls** - skinny, small thighs and stomach, larger chest, small waist, pretty face, long hair, curvy hips, good smile, no acne, not flabby

2. Where do we gain information about what this ideal body is meant to look like?
   a) **Boys** - sports, athletes that we admire/see succeeding, peers, magazines, the opposite sex and what they perceive as attractive, movies/TV shows
   b) **Girls** - peers, friends, magazines, movies/TV shows, celebrities we see succeeding, athletes we see succeeding, the opposite sex and what they perceive as attractive

Have the students break into smaller groups (separate by gender too, boys with boys and girls with girls) and respond to the different situations on the next page how the individual would be thinking if they had a positive body image. Discuss how you can turn the negative comments/experiences into positive thoughts which will encourage/improve your body image and general self-esteem.

"The scenarios on your next pages represent situations that may challenge your positive body image. In small groups, read through each scenario and discuss how the situation makes you feel about your own body image, and how you can evaluate the comments to counteract the negative message and protect your positive body image"
Body Image Scenarios

SCENARIOS FOR GIRLS

Scenario #1.

You and your friend are sitting around one weekend flicking through magazines. Your friend mentions that she wants to look like a celebrity in the magazine because they are thinner than they are. Your friend goes on to criticise their own body in comparison to this celebrities and says that they think they need to lose weight on their thighs and stomach.

**How do you respond to your friend?**

- Give them a compliment about another body part you think is a real positive about their appearance
- Point out that the pictures can be distorted in magazines to show the celebrities in a certain way
- Point out the importance of different body shapes, that celebrity may be built that way and has a completely different body shape, but this is not to be interpreted negatively- people are just made differently

**How could you respond to your friend to encourage positive body image?**

- Discuss the media representation of the ideal body shape and how this is not realistic, not to be desired.
- Point out that people are meant to be different shapes, and back this up with a compliment of them.
- Have them think of individual aspects to her appearance they are happy with, and tell them to think of this list of happy points when they are challenged like this

Scenario #2.

At recess you are sitting around with your friends and are about to eat your snack of an apple and a choc chip muffin. You notice that one of your close friends isn’t eating anything and is staring at you. When you look up they comment that you really shouldn’t be eating something as unhealthy as a muffin as it will make you fat.

**How do their comments make you feel?**

- Hurt
- Embarrassed
- Angry that she has the wrong knowledge/understanding
- Concerned for them
- Worried about their own body image if they are making comments like that
Proud that you have the confidence to know that you can eat a muffin and not be concerned about the consequences for your body and your body image.

*How can you evaluate this situation in your mind to turn their negative comments around to reflect positively on your body image and self-esteem?*

- Think about the knowledge you have about healthy nutrition and exercise, reflecting that the muffin isn’t going to make you fat
- Reflect that the muffin isn’t going to make you fat, and feel confidently about how you know your body and shape to know that you still feel proud of how you look
- Remember compliments that other friends have given you in the past that have bolstered your body image and self-esteem. Use these to balance out the negative comment.

**SCENARIOS FOR BOYS**

**Scenario #1.**

You and your friend are sitting around one weekend watching a movie. Your friend mentions that she wants to look like the actor in the film because they are much more muscular than they are. Your friend goes on to criticise their own body in comparison to this celebrities and says that they think they need to bulk up in order to look better.

*How do you respond to your friend?*

- Give them a compliment about another body part you think is a real positive about their appearance
- Point out that the pictures can be distorted in magazines to show the celebrities in a certain way
- Point out the importance of different body shapes, that celebrity may be built that way and has a completely different body shape, but this is not to be interpreted negatively- people are just made differently

*How could you respond to your friend to encourage positive body image?*

- Discuss the media representation of the ideal body shape and how this is not realistic, not to be desired.
- Point out that people are meant to be different shapes, and back this up with a compliment of them.
- Have them think of individual aspects to her appearance they are happy with, and tell them to think of this list of happy points when they are challenged like this
Scenario #2.

At recess you are sitting around with your friends and are about to eat your snack of an apple and a choc chip muffin. You notice that one of your close friends isn’t eating anything and is staring at you. When you look up they jokingly comment that you really shouldn’t be eating a muffin as it will make you fat.

How do their comments make you feel?

- Hurt
- Embarrassed
- Angry that he has the wrong knowledge/understanding
- Concerned for them
- Worried about their own body image if they are making comments like that
- Proud that you have the confidence to know that you can eat a muffin and not be concerned about the consequences for your body and your body image.

How can you evaluate this situation in your mind to turn their negative comments around to reflect positively on your body image and self-esteem?

- Think about the knowledge you have about healthy nutrition and exercise, reflecting that the muffin isn’t going to make you fat
- Reflect that the muffin isn’t going to make you fat, and feel confidently about how you know your body and shape to know that you still feel proud of how you look
- Remember compliments that other friends have given you in the past that have bolstered your body image and self-esteem. Use these to balance out the negative comment.
Activities to do to improve your Body Image.

- Through class discussion compose a list of methods of improving body image. (Brainstorm examples: exercise, give yourself a manicure or pedicure, talk to a friend, go for a walk outside, take a nap, play your favourite sport, pamper yourself, distract yourself with your favourite game/TV show/movie, only choose to read some media/avoid negative media about body image).

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Session 5: Developing assertiveness

Students develop skills to effectively communicate their needs.

“This session focuses on building our skills in assertiveness to help us deal with challenging situations. We’ll look at the difference between having an assertive interaction style and having either a passive or aggressive interaction style, and how these can contribute to different outcomes. We’ll also brainstorm important things to remember when aiming for an assertive interaction style.”

ASSERTIVENESS

- In small groups, discuss three different interaction styles; 1) aggressive, 2) passive and 3) assertive (create definitions of each)
  1. Aggressive- Saying what you want, feel, or believe in a way that denies other people’s right to be treated with respect.
  2. Passive- Avoiding saying what you think, feel, or believe because you are afraid of the possible consequences, do not believe in your own rights, or think the rights of others are more important. Passive communicators avoid conflict, have trouble saying no, and do not stand up for their rights.
  3. Assertive- Saying what you think, feel, or believe in a straightforward, nonthreatening way. Assertive communicators make eye contact, speak in a confident voice, and express their needs effectively.
- Have one member of each small group read out their definitions for each of the styles to build whole class definitions.
- Brainstorm in small groups about the consequences/possible benefits of each of the styles (See next page for suggestions)
<table>
<thead>
<tr>
<th>Interaction Style</th>
<th>Benefits</th>
<th>Consequences</th>
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<tbody>
<tr>
<td><strong>Aggressive</strong></td>
<td>May get your own way</td>
<td>Offend others</td>
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<tr>
<td></td>
<td>Be seen as strong</td>
<td>Intimidate people</td>
</tr>
<tr>
<td></td>
<td>Be seen as a leader</td>
<td>Scare others</td>
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<tr>
<td></td>
<td></td>
<td>Bully people</td>
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<tr>
<td><strong>Passive</strong></td>
<td>Can avoid conflict</td>
<td>Become resentful</td>
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<tr>
<td></td>
<td>Be viewed as reliable</td>
<td>Be judged as weak</td>
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<tr>
<td></td>
<td>Be seen as someone always willing to help</td>
<td>Commit to tasks you may not want to do</td>
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<tr>
<td></td>
<td></td>
<td>Never learn to deal with conflict</td>
</tr>
<tr>
<td><strong>Assertive</strong></td>
<td>Communicate effectively</td>
<td>Offend aggressive or passive people with your straightforward manner</td>
</tr>
<tr>
<td></td>
<td>Can achieve goals in a straightforward manner</td>
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<tr>
<td></td>
<td>Be viewed as strong and honest by others</td>
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<td>Effectively deal with conflict</td>
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## Assertiveness Benefits and Consequences.

<table>
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<tr>
<th>Interaction Style</th>
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<tr>
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<td>Assertive</td>
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Practising Assertiveness Scenarios.

**Whole Group Discussion.**

- Apply this in a whole group to a situation where each of the styles can be easily observed/linked to the behaviours and consequences

Sitting in class, you find that you are really struggling with what your teacher is trying to explain to you. Rather than interrupt the whole class, and risk looking silly, you ask your friend sitting next to you to explain the concept to you again. Sensing that you and your friend are talking the teacher snaps at you to be quiet and get back to the work.

**What would be an aggressive response to this scenario?**

- Snapping at your friend that it is their fault you got told off
- Being grumpy and short with the teacher for telling you off
- Yelling/snapping back at the teacher

**What would be an assertive response?**

- Asking your friend to explain it to you again after the teacher has finished explaining and apologising for getting them snapped at by the teacher
- Explaining to the teacher that you had not understood the concept and that you were asking for help individually rather than interrupting the whole class

**What is a passive response to the scenario?**

- Not saying anything at all to anyone about the situation
- Not getting any extra help about the concept, just letting it slide by

**Which response style is most likely to be the most beneficial or successful?**

- The ASSERTIVE response
Small Group Activities.

- Break into smaller groups to repeat the same activity with a variety of different situations
- Break into pairs/three’s where each individual takes turns at acting out the assertive response in reaction to a situation, another demonstrates an aggressive reaction whilst the third person attempts the passive response.

Scenario #1.

Your Mum comes home from work and it is clear she has had a bad day. You are in your bedroom doing homework and can hear her yelling at your siblings. She comes in to your bedroom and yells at you to tidy your room before dinner. Your homework is really important and is due tomorrow so you are concerned about not having enough time to do both (but your room is really messy).

What would be an aggressive response to this scenario?

- Yelling back at her that you didn’t have time
- Yelling at your siblings that they should help as well

What would be an assertive response?

- Talk calmly to your Mum that you had received important homework and you have to get it done
- Negotiate that you can help her and get your siblings to help with the chores
- Recognise with your Mum that she has had a long day and may be feeling upset and angry and that you are sorry for this

What is a passive response to the scenario?

- Letting your Mum continue yelling at you
- Cleaning your room and neglecting your homework

Which response style is most likely to be the most beneficial or successful?

- The ASSERTIVE response
Scenario #2.

Your friend has invited you to go to the movies on the weekend, but the situation is a little awkward because another friend had already invited you to go to lunch. You commit to the movies because you forget about your plans for lunch and only realise your mistake later on. The situation is made even more difficult in that your friend who wanted to go to the movies has been struggling at the moment and they are really looking forward to spending time with you to forget about their problems.

**What would be an aggressive response to this scenario?**

- Yelling at your friend that they need to learn to be stronger and not rely on you, making them feel guilty and cancel your plans
- Yelling at your other friend that they made you forget the original plans you had and that it is their fault you are now a bad friend to your struggling friend.

**What would be an assertive response?**

- Explaining to your friend that you forgot you already had plans, recognising that your friend has been struggling lately and adjusting your movie plans so you can still see your other friend
- Explaining to your struggling that you accidentally made alternate plans already, inviting them along to the movie with you both and then offering to spend dinner or time afterwards with them.

**What is a passive response to the scenario?**

- Cancelling both plans to avoid both friends
- Lying and saying you were sick or had family plans to avoid the conflict that may come up if you have to cancel on either of the friends

**Which response style is most likely to be the most beneficial or successful?**

- The ASSERTIVE response
Things to Remember When Being Assertive.

- Develop a list of things to remember when being assertive (Small groups)
Brainstorm: remaining calm, considering all possible evidence, asking clarifying questions, actively listening to the other person’s concerns, recognising their concerns in your own words, bringing the conversation back to a positive or a resolution, ensure both parties are happy at the end of the conversation, speaking in a steady voice, maintaining eye contact, maintaining open body language

1. ____________________________________________

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8. ____________________________________________

9. ____________________________________________

10. ____________________________________________
To conclude the intervention we will focus on how we can build our resilience to contribute to an overall healthy and happy mental wellbeing. Now that we have learnt about the importance of focusing on positive aspects of life and developed skills in problem solving and assertiveness it is important to consider different behaviours we can actively undertake to protect ourselves in challenging situations. We’ll discuss the concept of self-talk and evaluate how these methods can help us build our resilience and contribute positively to our overall wellbeing.”

- Have the students think about a time when they felt their most strong, happy, resilient. Encourage the students to share these stories with the class. When the students tell their stories to the class, prompt their reflection on their story with questions such as:
  1. What part of your behaviour did you feel the most positive about?
  2. Why were you so proud of yourself in this story?
  3. Are there any similarities in the situations when we have all felt strong/happy/resilient?

SELF-TALK
- In small groups, discuss what self-talk is? (Come up with a definition for the whole class)
  Something like ‘the talk you deliver to yourself in your head about what is happening, the running commentary of your life’.
  Discuss how self-talk can be unhelpful or helpful (Give examples of each)
  a) **Helpful self-talk**- giving yourself the internal courage and confidence to go through with something, praising yourself when your hard work pays off, coaching yourself to remain calm and positive in the face of something stressful
  **Examples**: telling yourself to breathe slowly and think rationally in a challenging situation, telling yourself to keep calm when you find yourself getting emotional, congratulating yourself when you are proud of your behaviour or achieve a goal, telling yourself to keep going and persevere when you are attempting to reach a goal
  b) **Unhelpful self-talk**- telling yourself you are incompetent, that a negative event that happened was your fault, that you are not worthy
  **Examples**: telling yourself that you failed if you cannot reach a goal, telling yourself good things will never happen for you when something bad happens, only pointing out the negatives that went wrong along the way when you achieve a goal

**Session 6: Building resilience**

Students are taught a range of behavioural strategies to build resilience, such as perspective-taking, positive self-talk, and active coping.
- In small groups, discuss the three steps of reaching positive self-talk
  1. **Recognise that you have self-talk in the first place** - you may be very unaware of your self-talk so need to focus on it to ensure it is constructive
  2. **Assess your self-talk** for whether it is positive or negative- does it make you feel better or worse about yourself? Is this the same advice/talk I’d give to a friend of mine in the same situation? Am I keeping things in perspective?
  3. **Change your self-talk**- if you notice that your self-talk is more negative than positive take the time to actively re-frame the situation and change your self-talk to be encouraging, constructive and positive.
- Have the students separate into small groups and come up with a recent situation they’ve had where their self-talk has interfered. Analyse this situation and the self-talk you may have given yourself before re-evaluating and turning your unhelpful self-talk into helpful self-talk. Discuss this as a whole class group for any similarities in the students situations and innovative ways of flipping their self-talk to be positive.
***Please write the first three letters of your last name and the first three numbers of your birth date (01- January through to 12- December) as your ID number. For example, with the last name Smith and being born on the 07th of December the ID# would be SMI-071. ***

This questionnaire is designed to find out about your self-concept (e.g., how you view your appearance, relationships with friends, school achievements, etc.), as well as measuring your general wellbeing. Your answers are completely anonymous. No-one will know what answers you give.

There are no right or wrong answers. We want to know how you feel and what you do. It is important not to take too long to answer each question. Please circle the answer that best applies to you.

Age (in years) ________  Gender (F/M) ________

Weight _______kg  or _______lbs  Height _______m  or _______ft

Place of birth: __________________

If born outside of Australia, have you had a refugee-like experience prior to arrival:  YES / NO

If YES, how many countries did you live in before arrival in Aus:  __________

Years in Australia: __________

Main language spoken at home:  ____________________________________________

Religion:  ________________________________________________

ID#:
**WELLBEING INDEX**

**Instructions:**

For the following questions, please circle the number that is most appropriate for you. Note that a value of 5 means that you are neither satisfied nor dissatisfied. Values from 4 to 0 are increasingly dissatisfied, whereas values from 6 to 10 indicate that you are increasingly satisfied.

1. How happy are you with your life as a whole?
   - Not at all
   - Completely Happy
   - 0 1 2 3 4 5 6 7 8 9 10

2. How happy are you about the things you have? (e.g., things you own)
   - Not at all
   - Completely Happy
   - 0 1 2 3 4 5 6 7 8 9 10

3. How happy are you with your health?
   - Not at all
   - Completely Happy
   - 0 1 2 3 4 5 6 7 8 9 10

4. How happy are you with things you want to be good at?
   - Not at all
   - Completely Happy
   - 0 1 2 3 4 5 6 7 8 9 10

5. How happy are you about the way you get along with the people you know?
   - Not at all
   - Completely Happy
   - 0 1 2 3 4 5 6 7 8 9 10

6. How happy are you about how safe you feel?
   - Not at all
   - Completely Happy
   - 0 1 2 3 4 5 6 7 8 9 10
7. How happy are you about doing things away from your home?

Not at all Happy Completely

8. How happy are you about what may happen to you later on in your life?

Not at all Happy Completely

---

RESILIENCE SCALE

Please circle a number indicating how much you Disagree or Agree with each statement.

Circle 1 if you Very Strongly Disagree
Circle 2 if you Strongly Disagree
Circle 3 if you Mildly Disagree
Circle 4 if you are Neutral
Circle 5 if you Mildly Agree
Circle 6 if you Strongly Agree
Circle 7 if you Very Strongly Agree

<table>
<thead>
<tr>
<th>Statement</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I usually manage one way or another.</td>
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<td>2. I feel proud that I have accomplished things in my life.</td>
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<td>3. I usually take things in my stride.</td>
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<td>4. I am friends with myself.</td>
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<td>5. I am determined.</td>
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<td>6. I keep interested in things.</td>
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<td>7. My belief in myself gets me through hard times.</td>
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<td>8. My life has meaning.</td>
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<td>9. When I am in a difficult situation, I can usually find my way out of it.</td>
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<td>10. I have enough energy to do what I have to do.</td>
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</table>
Please cross (X) which of the following coping strategies you generally use in response to a stressful situation or interaction. You may select more than one; place a check next to all strategies you have used. Please also rate how often you would use this strategy

<p>| | | | | |</p>
<table>
<thead>
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</tr>
<tr>
<td>1.</td>
<td>Distraction</td>
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<tr>
<td>2.</td>
<td>Direct action</td>
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<td>3.</td>
<td>Acceptance</td>
<td></td>
<td></td>
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<tr>
<td>4.</td>
<td>Seeking of social support</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Relaxation</td>
<td></td>
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<tr>
<td>6.</td>
<td>Self-blame</td>
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<tr>
<td>7.</td>
<td>Wishful thinking</td>
<td></td>
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<tr>
<td>8.</td>
<td>Information seeking</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>9.</td>
<td>Humour</td>
<td></td>
<td></td>
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</tbody>
</table>
Instructions: Using the 11 point scale, please answer the following questions:

1. How happy do you generally feel?

   \[0 \quad 1 \quad 2 \quad 3 \quad 4 \quad 5 \quad 6 \quad 7 \quad 8 \quad 9 \quad 10\]

   Not At All

   Extremely

2. How content do you generally feel?

   \[0 \quad 1 \quad 2 \quad 3 \quad 4 \quad 5 \quad 6 \quad 7 \quad 8 \quad 9 \quad 10\]

   Not At All

   Extremely

3. How satisfied do you generally feel?

   \[0 \quad 1 \quad 2 \quad 3 \quad 4 \quad 5 \quad 6 \quad 7 \quad 8 \quad 9 \quad 10\]

   Not At All

   Extremely

4. How unhappy do you generally feel?

   \[0 \quad 1 \quad 2 \quad 3 \quad 4 \quad 5 \quad 6 \quad 7 \quad 8 \quad 9 \quad 10\]

   Not At All

   Extremely

5. How discontent do you generally feel?

   \[0 \quad 1 \quad 2 \quad 3 \quad 4 \quad 5 \quad 6 \quad 7 \quad 8 \quad 9 \quad 10\]

   Not At All

   Extremely
PART 2: THE QUESTIONS IN THIS SECTION ASK ABOUT HOW YOU NORMALLY BEHAVE

This form is about how you might have been feeling or acting recently.

For each question, please check (X) how you have been feeling or acting in the past two weeks.

If a sentence was not true about you, check NOT TRUE.

If a sentence was only sometimes true, check SOMETIMES.

If a sentence was true about you most of the time, check TRUE.

<table>
<thead>
<tr>
<th></th>
<th>Not True</th>
<th>Sometimes</th>
<th>True</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>I felt miserable or unhappy</td>
<td></td>
<td></td>
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<tr>
<td>2.</td>
<td>I didn’t enjoy anything at all</td>
<td></td>
<td></td>
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<tr>
<td>3.</td>
<td>I felt so tired I just sat around and did nothing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>I was very restless</td>
<td></td>
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<tr>
<td>5.</td>
<td>I felt I was no good anymore</td>
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<tr>
<td>6.</td>
<td>I cried a lot</td>
<td></td>
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<tr>
<td>7.</td>
<td>I found it hard to think properly or concentrate</td>
<td></td>
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<tr>
<td>8.</td>
<td>I hated myself</td>
<td></td>
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<tr>
<td>9.</td>
<td>I was a bad person</td>
<td></td>
<td></td>
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<tr>
<td>10.</td>
<td>I felt lonely</td>
<td></td>
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</tr>
<tr>
<td>11.</td>
<td>I thought nobody really loved me</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>I thought I could never be as good as other kids</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>I did everything wrong</td>
<td></td>
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</tbody>
</table>

ROSENBERG’S SELF-ESTEEM SCALE

Instructions: Please tick the box that most applies to you:

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
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<tr>
<td>2.</td>
<td>At times I think I am no good at all.</td>
<td>( )</td>
<td>( )</td>
<td>( )</td>
</tr>
<tr>
<td>3.</td>
<td>I feel that I have a number of good qualities.</td>
<td>( )</td>
<td>( )</td>
<td>( )</td>
</tr>
<tr>
<td>4.</td>
<td>I am able to do things as well as most other people.</td>
<td>( )</td>
<td>( )</td>
<td>( )</td>
</tr>
<tr>
<td>5.</td>
<td>I feel I do not have much to be proud of.</td>
<td>( )</td>
<td>( )</td>
<td>( )</td>
</tr>
<tr>
<td>6.</td>
<td>I certainly feel useless at times.</td>
<td>( )</td>
<td>( )</td>
<td>( )</td>
</tr>
<tr>
<td>7.</td>
<td>I feel I am a person of worth, at least on an equal plane with others.</td>
<td>( )</td>
<td>( )</td>
<td>( )</td>
</tr>
<tr>
<td>8.</td>
<td>I wish I could have more respect for myself.</td>
<td>( )</td>
<td>( )</td>
<td>( )</td>
</tr>
<tr>
<td>9.</td>
<td>All in all I am inclined to think I am a failure.</td>
<td>( )</td>
<td>( )</td>
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</tr>
<tr>
<td>10.</td>
<td>I take a positive attitude toward myself.</td>
<td>( )</td>
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</tbody>
</table>

**PART 3: THE QUESTIONS IN THIS SECTION ASK ABOUT YOUR APPEARANCE**

### BODY IMAGE SATISFACTION QUESTIONS

**Instructions:**

For the following questions, please circle the number that is most appropriate for you.

Circle 1 if you are **Very Unhappy**

Circle 2 if you are **A Bit Unhappy**

Circle 3 if you are **Neutral**

Circle 4 if you are **A Bit Happy**

Circle 5 if you are **Very Happy**

<p>| | | | | |</p>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>How happy are you with your weight/shape?</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2.</td>
<td>How happy are you with your muscles?</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3.</td>
<td>How happy are you with your lower body (thighs and legs)?</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4.</td>
<td>How happy are you with your middle body (waist and stomach)?</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>5.</td>
<td>How happy are you with your upper body (chest and arms)?</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
PART 4: THE QUESTIONS IN THIS SECTION ASK ABOUT THE SUPPORTS IN YOUR LIFE

Social Support

We are interested in how you feel about the following statements. Read each statement carefully. Indicate how you feel about each statement.

Circle 1 if you Very Strongly Disagree
Circle 2 if you Strongly Disagree
Circle 3 if you Mildly Disagree
Circle 4 if you are Neutral
Circle 5 if you Mildly Agree
Circle 6 if you Strongly Agree
Circle 7 if you Very Strongly Agree

1. There is a special person who is around when I am in need
2. There is a special person with whom I can share my joys and sorrows
3. My family really tries to help me
4. I get the emotional help and support I need from my family
5. I have a special person who is a real source of comfort to me
6. My friends really try to help me
7. I can count on my friends when things go wrong
8. I have friends with whom I can share my joys and sorrows
9. There is a special person in my life who cares about my feelings
10. My family is willing to help me make decisions
11. I can talk about my problems with my friends
12. I can talk about my problems with my family

THANK YOU FOR TAKING THE TIME TO COMPLETE THIS QUESTIONNAIRE.
Appendix C

PLAIN LANGUAGE STATEMENT AND CONSENT FORM

TO: Parents

<table>
<thead>
<tr>
<th>Plain Language Statement</th>
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<tbody>
<tr>
<td><strong>Date:</strong> July 2014</td>
</tr>
<tr>
<td><strong>Full Project Title:</strong> Think Health and Wellbeing: A Subjective Wellbeing Intervention for Adolescents.</td>
</tr>
<tr>
<td><strong>Principal Researcher:</strong> Dr. Matthew Fuller-Tyszkiewicz.</td>
</tr>
<tr>
<td><strong>Student Researcher:</strong> Lucia Colla and Justin Tomyn.</td>
</tr>
<tr>
<td><strong>Associate Researcher(s):</strong> Professor Helen Skouteris.</td>
</tr>
</tbody>
</table>

Your child is invited to participate in the project titled above, which is being carried out in the School of Psychology at Deakin University by Dr Matthew Fuller-Tyszkiewicz and Professor Helen Skouteris. This research aims to improve the body image and overall wellbeing of adolescents through the delivery of a healthy thinking and wellbeing intervention. The intervention aims to educate Year 7-9 students about the importance of having a positive outlook, employing problem solving skills, building a positive self-esteem and body image and strengthening our skills in assertiveness, mindfulness and positive self-talk. Through this intervention it is hoped that the students will become better educated and empowered to actively deal with the body image and mental health issues relevant to them, and as a result experience a better mental health and overall wellbeing. All Year 7-9 students at your child’s school are invited to participate in this research.

The intervention is composed of six sessions which will be run in your child’s school classrooms across six weeks. The sessions will generally last for 45minutes each, or the length of one period, and will be run by research assistants employed by Deakin University. Classes will be kept in their normal class size (20-30 students) and teachers will attend their regular classes to provide classroom management and liaise with students. Questionnaires will be completed before the beginning of the first session and following the last session to look at the effects of the intervention on the students’ wellbeing, with these questionnaires requiring approximately 15-20 minutes to complete. The survey ID# that students will provide on the questionnaire is for research purposes only and any publications arising out
of the study will not include any information that may identify participants. Students will also be invited to be involved in a daily diary component of the study where they will complete a short questionnaire daily looking at their mental wellbeing and experiences across the day that may have affected their wellbeing. These questionnaires will be completed from the beginning of the intervention program through to two weeks after the completion of the program.

By signing the consent form (third page of this document) and returning it in the reply paid envelope included, you are letting the researchers know that you give your child permission to participate. Your child has also been asked to provide individual permission for themselves to take part in the research.

Research participation is voluntary, confidential and anonymous. The only information that will be used to identify your child’s data is a code to label their hardcopy questionnaires collected before the intervention and after the intervention. This code will be removed from the final data set.

Your child’s answers to the surveys will be kept in strict confidence. In reporting the research, neither individual students nor your child’s School will be identified. Hard-copy questionnaire data will be kept in a locked cupboard in the principal investigator’s office. All data collected will be kept for six years, and then destroyed. Other than the investigators on this project, no-one else will see your data. Results of the surveys may be published in academic journals and at conferences, but will be published as group data so that individual data cannot be identified.

In the surveys, your child will be asked questions about how they feel, such as ‘How happy are you?’ or ‘How satisfied are you with your appearance?’. As such, this research is low risk. One aspect of the research is to investigate the benefits of the program specifically to refugee background students. This information is gathered so that the program can be helpful in improving wellbeing for a diverse range of students. Information regarding refugee status will not be used to identify any students individually, but provide a collective group outcome. However, students are not obliged to disclose this information.

If at any time throughout the study you change your mind about your child taking part, you are free to withdraw without having to provide an explanation, and any information you have already given us will be destroyed. We simply ask that you fill out the revocation of consent form (last page of this document).

If you have any questions, please contact the investigators below:

Principal Investigators:

Dr. Matthew Fuller-Tyszkievicz, School of Psychology at Deakin University: T: (03) 92517344; e: matthew.fuller-tyszkievicz@deakin.edu.au

Dr. Helen Skouteris, School of Psychology at Deakin University: T: (03) 92517699; e: helen.skouteris@deakin.edu.au
PLAIN LANGUAGE STATEMENT AND CONSENT FORM

TO: Parents

Third Party Consent Form

Date: July 2014

Full Project Title: Think Health and Wellbeing: A Subjective Wellbeing Intervention for Adolescents.

Reference Number: 2013-256

I have read, and I understand the attached Plain Language Statement.

I give my permission for ...........................................................(name of participant) to participate in this project according to the conditions in the Plain Language Statement.

I have been given a copy of Plain Language Statement and Consent Form to keep.

The researcher has agreed not to reveal my identity and personal details or the identity and personal details of the person for whom I am providing consent, including where information about this project is published, or presented in any public form.

Participant’s Name (printed) .....................................................

Name of Person giving Consent (printed) ...........................................

Relationship to Participant: ..........................................................

Signature ................................................................. Date .........................

Please return to Dr. Matthew Fuller-Tyszkiewicz at Deakin University, 221 Burwood Highway, Burwood, VIC 3125 in the reply paid envelope provided.
PLAIN LANGUAGE STATEMENT AND CONSENT FORM

TO: Parents

<table>
<thead>
<tr>
<th>Withdrawal of Consent Form</th>
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</table>

*(To be used for parents who wish to withdraw their child from the project)*

**Date:** July 2014

**Full Project Title:** Think Health and Wellbeing: A Subjective Wellbeing Intervention for Adolescents.

**Reference Number:** 2013-256

I hereby wish to WITHDRAW my consent for my child to participate in the above research project and understand that such withdrawal WILL NOT jeopardise my relationship with Deakin University.

Parent’s Name (Printed) .................................................................

Child’s Name (Printed) .................................................................

Signature  ................................................................. Date  

Please mail or fax this form to:
Dr Matthew Fuller-Tyszkiewicz
Deakin University
221 Burwood Highway
Burwood, VIC 3125.
E-mail: matthew.fuller-tyszkiewicz@deakin.edu.au
Use of weekly assessment data to enhance evaluation of a subjective wellbeing intervention

Lucia Colla • Matthew Fuller-Tyszkiewicz • Adrian J. Tomyn • Ben Richardson • Justin D. Tomyn

Abstract

Purpose While intervention effects in target outcomes have typically been tested based on change from baseline to post-intervention, such approaches typically ignore individual differences in change, including time taken to see improvement. The present study demonstrates how weekly patient-reported data may be used to augment traditional pre–post intervention evaluations in order to gain greater insights into treatment efficacy.

Methods Two hundred and fifty-two adolescent boys and girls (M_age = 13.6 years, SD = 0.6 years) from four secondary schools in Victoria, Australia, were assigned by school into control (n = 88) or intervention (n = 164) groups. The intervention group participated in a 6-week course designed to improve subjective wellbeing (SWB) by fostering resilience, coping skills, and self-esteem. In addition to baseline, post-intervention, and 3-month follow-up assessments of SWB, intervention group participants also completed weekly summarise of affective experiences for the duration of the intervention phase.

Results While standard pre–post data showed significant improvement in SWB for the intervention group relative to controls, weekly data showed individual differences in the trajectory of change during this intervention phase; low SWB individuals experienced initial worsening of symptoms followed by improvement in the second half of the intervention phase, whereas high SWB individuals experienced initial gains, followed by a plateau from Week 4 onwards.

Conclusions Addition of weekly data provided greater insights into intervention effects by: (1) contradicting the notion that early responsiveness to treatment is predictive of level of improvement by post-intervention, and (2) providing data-based insights into ways to enhance the intervention.

Keywords Subjective wellbeing • School intervention • Trajectories of change • Patient-reported outcomes

Introduction

Historically, intervention efficacy has been evaluated by comparing pre- to post-intervention change in a variable of interest for the intervention group relative to a control condition. Such approaches place emphasis on group-level differences at clearly defined end-points (e.g. immediately following cessation of treatment or at follow-ups beyond post-intervention). More recently, researchers [e.g. 1–3] have begun to utilise alternative approaches, which recognise that individuals differ in their initial severity of symptoms, have variable responses to the same treatment, and may also differ in the time taken to show improvement.

From a design perspective, greater clarity about treatment efficacy may be gained by increasing the number of assessment points [4]. Although post-intervention is an obvious interval at which to evaluate improvements relative to baseline, in some instances the benefits of treatment may take longer to realise, and may be missed if one solely focuses on post-intervention as an endpoint. A variety of intervention studies have shown intervention effects to have onset or increase by follow-up (relative to post-intervention) [e.g. 5–7]. Similarly, many treatment programmes actually contain a series of different techniques/modules, and some
may be more effective than others, such that the benefits of an earlier presented module may extinguish by the time participants are re-tested at the completion of the full suite of modules.

Provision of more assessment intervals during and/or after the intervention phase provides the possibility to explore trajectories of improvement more fully. An extreme form of this is ecological momentary assessment (EMA), where participants self-report a target variable one or more times per day for the duration of the study [e.g. 8, 9]. The intensive sampling characteristic of EMA may be particularly beneficial when the time course for treatment effects is unknown: If changes occur as rapidly as moment-to-moment, EMA will be able to detect this. Conversely, if change occurs at the level of day or week, incorporation of hierarchical data structures allows the researcher to simply collapse multiple assessments into the appropriate time interval for change [10]. However, this intensive sampling approach may also come at a cost, as the added burden of participation in an EMA-enhanced study may produce reactivity effects or increase the risk of dropout [11, 12].

A less extreme form of repeated assessment is to provide weekly assessments of outcome variables during (and potentially beyond) the intervention phase. While this approach lacks several of the advantages of EMA (e.g. fine-grained symptom monitoring, ecological validity, diminished recall bias, etc.), it provides more information than pre–post assessments, and is amenable to person-centred modelling options within a multilevel modelling framework, such as modelling of random effects to test for individual differences in effects of treatment [e.g. 13, 14] and latent growth curve modelling to evaluate the trajectory of improvement [e.g. 15, 16]. These approaches allow for novel questions such as: (1) hat is the typical trajectory of change for a given treatment? (2) Do individuals vary in these trajectories? And, if so, who is likely to exhibit change quicker or more slowly than the average person? And (3) Are early improvements in symptom predictive of level of improvement at traditional endpoints (such as post-intervention or follow-up)? Such information may be useful for identifying milestones by which time evidence of efficacy should emerge and, in cases where little improvement has occurred, patients may be offered an alternative treatment rather than waiting until the end of this initial form.

The present study seeks to demonstrate the benefits of augmenting standard pre–post intervention assessments with weekly data capture during the intervention phase of an adolescent wellbeing intervention. Baseline and post-intervention assessments of subjective wellbeing and trait positive affect were supplemented with weekly affect ratings of intervention group members in order to evaluate whether:

1. changes in weekly affect ratings over time predicts change in symptoms derived from baseline and post-intervention assessment points (i.e. traditional time points for assessment of efficacy);
2. trajectory of improvement in weekly affect ratings is best characterised as linear (stable change) or quadratic (e.g. initial improvement followed by plateau or decline); and
3. trajectory of weekly affect ratings depends on baseline trait-level differences in trait affect and/or subjective wellbeing.

### Methods

#### Design overview

Students were assigned by school to either the intervention or control condition. Control participants completed a survey containing demographics and measures of wellbeing and positive affect at baseline, and again 7 weeks later (corresponding with the post-intervention assessment for the intervention group). After this assessment, they were given the intervention, although these intervention data were not included in the current analyses. Intervention participants completed the same survey as the control group, but did so at baseline, post-intervention, and at a 3-month follow-up.

During the intervention phase, students in the intervention group also completed weekly ratings of their positive affect via pen and paper, at the same time each week for the duration of the intervention. These weekly assessments were reported immediately prior to the commencement of that week’s module, and therefore provided opportunity to assess weekly affect for the previous week. This weekly data collection started immediately prior to delivery of Module 1 (this baseline was labelled Week 0 or ‘W0’ in the “Results” section), and concluded 7 days after delivery of the final module (Week 6 or ‘W6’). Weekly ratings were limited to the intervention group: (1) because the focus of these data were to better understand change occurring during the intervention phase for those exposed to the intervention, and (2) to minimise participation burden for this group prior to their participation in the intervention phase.

Consistent with prior studies [e.g. 17, 18], the control group participants were administered the intervention after completing the second time point (effectively foregoing a 3-month follow-up assessment) due to ethical concerns of extending the waitlist phase beyond that which was necessary to assess initial efficacy of the treatment. In the
presence of an immediate, post-intervention treatment effect, the 3-month follow-up data for the intervention group permits assessment of maintenance of improved wellbeing and trait affect observed post-intervention.

Participants

Four Government schools from regional and metropolitan areas of Victoria participated in the programme. Two schools were allocated to the intervention condition ($n = 164$ students; 102 males, 56 females), while the other two schools acted as the waitlist control group ($n = 88$ students; 44 males, 43 females). The control group subsequently received the programme in the following school term. All students were in Year 8 with an average age of 13.6 years ($SD = 0.60$ years).

Materials

Baseline/follow-up measures

Subjective wellbeing

The 7-item personal wellbeing index-school children (PWI-SC; [19]) assesses level of happiness with standard of living, health, achieving in life, relationships, safety, community-connectedness, and future security. Respondents indicate their level of happiness in general (rather than for a specified timeframe) using an 11-point end-defined scale ($0 = $Very Sad$; 5 = $Not happy or sad$; 10 = $Very Happy$). The PWI-SC has demonstrated adequate psychometric properties in adolescent samples (e.g. [20]). In the present study, Cronbach’s alpha of $\alpha = .85$ (Time 1), $\alpha = .88$ (Time 2) and $\alpha = .87$ (Time 3) was obtained.

Trait positive affect

The Trait Affect Scale (TAS; [21]) was included as a more amenable means of measuring wellbeing both in general (i.e. at a trait level) and for specified timeframes (such as current moment, day, or week). Trait affect items are based on Russell’s Circumplex Model of Affect [22, 23]. The three items measuring Trait positive affect (Trait PA) are happy, content, and alert. The inclusion of these three items as representing the affective component of SWB is supported by Tomyn and Cummins [20]. Participants responded to each item as follows: ‘Please indicate how each of the following describes your feelings when you think about your life as a whole: How… (insert affective adjective)… do you generally feel?’ ($0 = $Not At All$; 10 = $extremely$). Adequate psychometric properties have been demonstrated previously [21, 24]. In the present study, acceptable Cronbach’s alpha values were obtained for Trait PA ($T1 \alpha = .87; T2 \alpha = .93; T3 \alpha = .91$).

Measures during intervention phase

Weekly positive affect ratings

Weekly affect items are an adaptation from the Trait Affect Scale [21] described above. While the descriptors (happy, content, and alert) remained the same, items were reworded so that participants reflect on their affective experience over the past week, as opposed to life in general. For example, participants were asked ‘on average, how happy did you feel this week?’ using the same 11-point, end-defined scale described for the measure of Trait PA. Previous studies have shown this measure to be sensitive to detect changes within and across days [21, 24], and associated with subjective wellbeing [25]. Using Geldhof et al. [26] method for calculating internal consistency of scales used in repeated measures designs, the maximal reliability estimates were .84 for the weekly positive affect ratings.

Intervention content

The intervention comprises six separate modules that target factors associated with mental health and wellbeing: (1) how positive thoughts promote positive mental health, (2) developing problem-solving and coping skills, (3) building self-concept, (4) fostering positive body image, (5) developing assertiveness, and (6) building resilience. Each module contained an information component (to provide context) as well as various small group, whole class, and individual-based tasks and activities. Content was created in consultation with key stakeholders, particularly teachers, principals, and wellbeing staff from schools involved in an earlier pilot phase.

Procedure

Ethics approval was obtained from the University’s Human Research Ethics Committee and the Victorian Department of Education and Early Childhood Development. Government schools in the outer suburbs of Melbourne and in Regional Victoria were identified and located using the Department of Education website. Effort was made to reach those more likely to comprise a student cohort deemed as being ‘at-risk’ of poor wellbeing, by targeting schools from lower socio-economic status regions [27]. Past research suggests that wellbeing is negatively associated with SES [28].

From this recruitment effort, four schools were sampled for the present study. Meetings were conducted with school
wellbeing representatives to outline the programme and commence allocation to either intervention or control condition. Order of confirmation of participation was the basis for assignment into these groups. First allocation was to the intervention group, followed by control condition. Plain language statements and consent forms for principals, teachers, parents, and students were provided.

Overall, 415 students were enrolled in Year 8 across the four participating schools, and all were targeted for involvement in the programme. Of this number, 252 (61 %) gave consent and completed at least the baseline questionnaire. For those who did not return forms, the opportunity for participation in the programme was still provided under the provision of not completing study questionnaires. Alternative out-of-class arrangements were made for students who did not wish to take part.

The intervention was run over a 6-week period (one 45-min module per week) in classrooms. For consistency, students were kept in their class home rooms with the same facilitators running each session, and each session ran the same day/time each week. Sessions were conducted by individuals recruited by the research team who possessed postgraduate psychology training. Classroom teacher(s) were also present during the session for behaviour management purposes.

Data analytic strategy

Evaluation of the immediate effects of intervention was undertaken using multilevel structural equation modelling (ML-SEM) implemented through Mplus Version 7.1 [29]. This approach was used in preference for repeated measures ANOVA because the former permits ML-based estimation for missing data, which is more efficient than casewise deletion [30] and the construction of latent variables separates true score from error variance [31], allowing purer estimates of the main and interaction effects on the dependent variable (DV). This approach also allowed for control of clustering effects due to school. Latent variables reflecting inter-relations between individual-level scores on items of the key QoL measures (PWI and trait PA) were each regressed on wave (0, 1, 2) and Level 2 formulae (Eqs. 2, 3) are not necessary.

ML-SEM was also used to evaluate sustained change in outcome from T2 (post-intervention) to T3 (follow-up). As this only involved one group (intervention), Level 1 formulae are as above (i.e. Eq. 1), but Level 2 formulae (Eqs. 2, 3) are not necessary.

To evaluate correspondence between weekly change and pre–post change in DV, difference scores were obtained. For the weekly data, Week 0 positive affect data were subtracted from each subsequent week of positive affect data so that positive scores on these change variables reflect improvement in symptoms. A similar approach was used for trait-level data, such that baseline scores on positive affect and SWB were subtracted from post-intervention scores. These change scores were then correlated using Pearson’s correlations.

Trajectory of weekly PA data was modelled using MLM with weekly PA rating regressed onto Week (W = 0, 1, …, 6) and Week^2 (W^2 = 0, 1, …, 36) at Level 1 to model linear and quadratic trends in the data:

\[ Y_{ij} = \beta_{0j} + \beta_{1j} \times (\text{week}) + \beta_{2j} \times (\text{week}^2) + e_{ij} \]

The coefficients for \( \beta_{1j} \) and \( \beta_{2j} \) were allowed to vary across individuals and thus could be predicted on the basis of trait differences in PA and SWB, respectively:

\[ \beta_{1j} = \gamma_{00} + \gamma_{01} \times (\text{SWB}) + \gamma_{02} \times (\text{trait PA}) + u_{1j} \]

Results

Attrition

Overall, 23 % of participants dropped out of the study before post-intervention data collection. Participants were more likely to drop-out if they were in the control group (28/88 (31.8 %) for control group versus 30/164 (18.3 %) for intervention); \( \chi^2(df=1) = 5.91, p = .015 \), Cramer’s \( V = .15 \). However, attrition was unrelated to any baseline variables as the interaction between group (control vs intervention) and attrition (drop-out vs completers) was non-significant for SWB [\( F(1, 248) = 3.01, p = .084, \eta^2 = .01 \)] and trait PA [\( F(1, 248) = 2.11, p = .148, \eta^2 = .01 \)], nor was attrition predicted by gender, \( \chi^2(df=1) = 1.86, p = .172 \), Cramer’s \( V = .09 \).

Pre–post differences in trait affect variables

Multilevel SEM showed non-significant main effects for time (\( \beta_{1j} = .01, p = .966 \)) and group (\( \gamma_{01} = .14, p = .282 \)) on SWB. Importantly, however, there was a significant interaction between group and time (\( \gamma_{11} = .19, p = .001 \)) for trait PA, with the group difference being larger at Week 2 (\( \gamma_{21} = .38, p = .001 \)) and Week 3 (\( \gamma_{31} = .46, p = .001 \)).
3-month follow-up (intervention group). Improvement in SWB for the intervention group was maintained from post-intervention to the 3-month follow-up ($b_{ij} = -0.03, p = .452$).

Non-significant effects were observed for trait PA for time ($b_{ij} = .13, p = .504$), group ($\gamma_{01} = .14, p = .541$), and the interaction between time and group ($\gamma_{11} = .31, p = .248$). Trait PA ($b_{ij} = -0.11, p = .361$) did not change significantly from post-intervention to the 3-month follow-up for the intervention group. Collectively, these findings suggest that the intervention was successful in improving SWB, but not trait affect. The remaining sections further explore changes from T1 to T2 within the intervention group, exclusively.

**Correlations between changes in weekly affect ratings and pre–post change scores**

Improvements in trait measures post-intervention were correlated with changes in weekly ratings. As shown in Table 1, early increases in weekly positive affect ratings were not reliably associated with trait-level changes in SWB or PA. In fact, weekly data are only reliably correlated with trait-level change in the second half of the intervention phase. Changes by Week 5 and 6 were most predictive of trait-level change in SWB scores from baseline to post-intervention. Similarly, early changes in weekly positive affect ratings were unrelated to trait changes. Improvements in weekly affect ratings (from Week 4 onwards) were generally predictive of improvements from baseline to post-intervention for the trait variables.

**Trajectory of change in weekly affect ratings**

A final set of multilevel analyses evaluated the shape of change in weekly ratings of state PA. For the intervention group as a whole, neither the linear ($b_{ij} = -0.02, t = 0.17, p = .433$) nor the quadratic ($b_{ij} = .01, t = 0.61, p = .272$) components significantly accounted for trend in weekly positive affect data. However, trait PA—modelled as a continuous predictor—was predictive of both the linear ($\gamma_{02} = .37, t = 5.84, p < .001$) and quadratic ($\gamma_{02} = -0.05, t = -3.88, p < .001$) components of the weekly change in PA ratings. Baseline scores on subjective wellbeing were not predictive of either the linear ($\gamma_{01} = .02, t = 1.08, p = .139$) or quadratic ($\gamma_{01} = .00, t = -0.95, p = .170$) components of the weekly change in PA ratings. Figure 1 shows the average effect (for the sample as a whole) as well as trends for individuals 1 standard deviation above and below the mean for trait PA to illustrate effect of trait-level differences at baseline on the weekly affect ratings. These cut-points (1 SD above and below the mean) are consistent with recommendations by Aiken and West [32] for exploring moderation effects. Individuals with lower trait PA at baseline exhibited declining weekly PA ratings for the first three weeks of intervention, before experiencing improvements in PA. In contrast, individuals with higher baseline trait PA scores experienced most of their gains in weekly affect in the first 3 weeks before experiencing a plateau or slight decline in ratings in the second half of the intervention phase. Clearly, neither group is well described by the trend line for the sample as a whole.

**Discussion**

Traditionally, intervention effectiveness has been evaluated by comparing baseline to post-programme scores on a target outcome and thus fails to evaluate change that occurs during the intervention phase itself. The present study demonstrates advantages of augmenting baseline–post-intervention assessments of QoL measures (trait affect and subjective wellbeing) with weekly affect ratings in order to provide more fine-grained assessments of change that are patient-centred. While several findings were consistent across the data collection methods, additional insights were gained from incorporating these weekly assessments.

While the baseline and follow-up data suggested that the intervention significantly improved SWB but negligibly impacted trait PA, weekly data suggested that change in PA did occur during the intervention phase. Changes in weekly positive affect ratings were slow to commence (not being observed until Week 2 or 3 of the intervention), but showed a steady improvement from Week 3 onwards, with no indication of plateauing of effects. If that growth trajectory continued after the final week of intervention, post-intervention assessments of changes in trait PA may have missed the full extent of change and thus under-estimated

**Table 1** Correlations between weekly affect changes and trait measures

<table>
<thead>
<tr>
<th>Weekly changes</th>
<th>SWB</th>
<th>PA</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAW1–W0</td>
<td>.21</td>
<td>.04</td>
</tr>
<tr>
<td>PAW2–W0</td>
<td>-.1</td>
<td>.04</td>
</tr>
<tr>
<td>PAW3–W0</td>
<td>-.09</td>
<td>-.01</td>
</tr>
<tr>
<td>PAW4–W0</td>
<td>-.05</td>
<td>.32**</td>
</tr>
<tr>
<td>PAW5–W0</td>
<td>.55***</td>
<td>.35**</td>
</tr>
<tr>
<td>PAW6–W0</td>
<td>.51***</td>
<td>.44***</td>
</tr>
</tbody>
</table>

$SWB$ subjective wellbeing, $PA$ positive affect, $W$ week, $W0$ baseline, $W1$ end of first week of intervention, etc

* $p < .05$; ** $p < .01$; *** $p < .001$
the intervention effect. The impact of measurement inter-
vals on observing effect size has been demonstrated in
other contexts (see [4]).

Individual differences were evident for these growth
trajectories. Participants with lower than average trait
positive affect at baseline tended to experience initial
declines in weekly PA ratings, followed by steady
improvements from week 3 onwards. In contrast, individ-
uals with elevated trait positive affect at baseline exhibited
the opposite trajectory, with steady improvements from
baseline until week 3, followed by a plateau or mild decline
of PA ratings (but still above the baseline PA levels).
Collectively, these findings are consistent with arguments
raised that one-size-fits-all interventions are unrealistic [1,
2] and ignore the heterogeneity of intervention effects
across participants. While it is possible to explore differ-
ential effects at the trait level (e.g. by correlating baseline
trait scores against baseline–post intervention change
scores), the additional data points obtained using weekly
reports allow for a more detailed plot of change during
intervention and, thus, is more sensitive to detecting indi-
vidual differences in intervention effects.

Finally, it was found that initial change was unrelated to
magnitude of change at follow-up and that changes in
week-by-week affect ratings were only predictive of trait-
level change in the latter stages of the intervention. These
results are counter to arguments that early change is a
determinant of end-point treatment response (see [33]).
However, initial treatment non-responsiveness may predict
lower level of engagement with the treatment regime or
participant drop-out (as per [8]), and thus signal need to
consider ways to bolster motivation and participation of
those who have early, adverse reactions to treatment.
Clearly, the treatment implications of early response pat-
terns warrant further consideration.

Limitations

Several design-related concessions were made to not
overburden participants. First, ‘state-based’ data were
gathered weekly as opposed to once or multiple daily time
points, as is more common in EMA studies. This allowed
for a more intricate understanding of QoL fluctuations
throughout the treatment phase than standard pre–post
designs without intruding upon participant functioning, but
may have missed differences in change at the daily level.
Likewise, this introduces potential recall biases, as partic-
ipants are asked to reflect on their affective experiences for
the past week.

Second, as the key aim of the study was to explore
changes that occur synchronously with—and due to
exposure to—delivery of the intervention, weekly data
collection was not extended beyond the intervention
phase, nor was it offered to the control group. As a con-
sequence, the natural trajectories of change in affect for
the control group were not examined. Future researchers
are encouraged to consider incorporating weekly data
capture for both groups (intervention and control), and for
periods beyond the intervention phase if practical, to
obtain a fuller account of changes in wellbeing that may
be attributable to intervention. Finally, it is worth
emphasising that there was a high attrition rate (23 % by
post-intervention). Although dropout was unrelated to any
of the baseline measurements, and thus suggests against
sources of bias in present models, dropout likely dimin-
ished power. It is possible, then, that several results may
have become significant had all cases been retained.
Nevertheless, it is encouraging to see that dropout rates
were lower in the intervention group and are comparable
with prior school-based interventions (e.g. [14, 34–36]).
This suggests that the weekly data capture is feasible and

Fig. 1 Baseline trait positive
affect scores (1 SD above the
mean, 1 SD below the mean, or
mean level) and trajectory of
change. Notes PA trait positive
affect, T1 baseline, Y weekly
positive affect ratings
the added burden it places on participation does not necessarily increase risk of attrition.

Implications/concluding remarks

While intervention effects were observed for SWB using the conventional approach (i.e. pre–post comparisons), weekly report-based findings provided understanding of average time course for improvement of symptoms, as well as identifying individual variation in level and trajectory of improvement. Furthermore, the intervention had more immediate impact for those with heightened wellbeing at baseline, whereas individuals with lower wellbeing at baseline experienced initial worsening of affect before eventually improving. The reasons for these differential effects are unclear, but provide avenues for further refinement of the intervention to provide maximum benefit for users. The different trajectories that were observed may indicate reactivity to: (1) type of intervention (i.e. different modules works better for some individuals, and worse for others), (2) amount of intervention (some individuals require limited amount of intervention, whereas others require longer periods of treatment), or (3) the content itself (i.e. some participants may struggle initially because the intervention encourages them to actively focus on—rather than avoid—stimuli that are likely to be upsetting, such as negative thoughts). The first type of reactivity may be tested by modifying order of presentation of content in the current programme to see whether trajectories of change differ, and may also be addressed by seeking qualitative feedback regarding each of the modules. In contrast, the second form of reactivity may be assessed by modifying duration of treatment. These suggested modifications fit with the notion of sequential multiple assignment randomized trials (SMART), which allows freedom to adjust the intervention to alternate components of treatment based on ongoing evaluation of progress [37, 38]. Finally, for the third type of reactivity, the intervention could incorporate more positive interventions such as relaxation, mindfulness, or positive psychology principles early in the intervention to build towards directly tackling potentially upsetting content.

Compliance with ethical standards

Conflict of interest Authors declare that they have no conflict of interest.

Ethical approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national ethical research committee and with the 1964 Helsinki declaration and its amendments or comparable ethical standards.

Informed consent Informed consent was obtained from all participants included in the study.

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