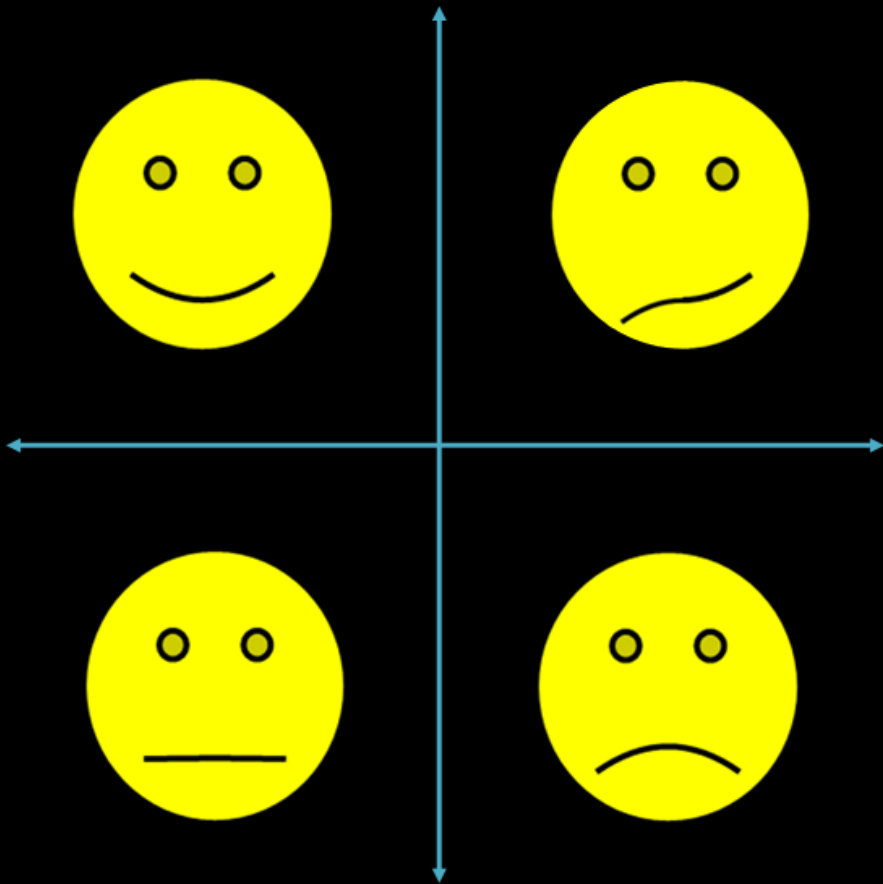


Adolescents' Happiness:

The Role of the Affective Temperament Model on Memory and Apprehension of Events, Subjective Well-Being, and

Psychological Well-Being



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University of Gothenburg, 2011

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“`Harry, I owe you an explanation,' said Dumbledore. `An explanation of an old man's mistakes. For I see now that what I have done, and not done, with regard to you, bears all the hallmarks of the failings of age. Youth cannot know how age thinks and feels. But old men are guilty if they forget what it was to be young ... and I seem to have forgotten, lately ...'”

Harry Potter and the Order of the Phoenix by J. K. Rowling

"It is only with the heart that one can see rightly; what is essential is invisible to the eye."

The Little Prince by Antoine de Saint-Exupéry

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In memory of my big brother René,
who never got to be young,
and my father Ernesto Jovel,
who never got to be old.

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acceptance and autonomy: my mother, thanks to you I know how to be happy. My own temperament has been said to remind of my late father, thank you for that old man. Your strength is now my own and although I sometimes can see life through your eyes, without it I would never be able to be persistent. You and my mother are always an inspiration in how much parents can be able to endure to achieve a better and happier society for future generations. At last but not least, Göran thank you for being there, you are not only a wonderful grandfather to my children but also a clear example that happiness is, more than just temperament, about creating and choosing the circumstances in one's life.

Danilo Garcia
November, 2010

Abstract

Positive Psychology research suggests personality as a major determinant in adults and adolescents' happiness and well-being. Personality is probable a key element due to its relationship to individual differences in automatic emotional reactions and habits (i.e., factors concerning temperament). Personality in this framework, however, excludes characteristics of personality related to affective emotional traits. Moreover, positive attitudes toward the self (i.e., Psychological Well-Being; PWB) might help the individual to feel happy with life regardless of how her own temperament makes her feel and react to events. The aim of the present dissertation was to investigate differences among adolescents' happiness and well-being with respect to temperamental dispositions. The predictive nature of distinctive measures of well-being is also examined. In contrast to current conceptualizations, in the present dissertation temperament is suggested as an interaction of individuals positive (PA) and negative affect (NA). The interaction of the two temperamental dispositions was predicted to facilitate the individual to approach happiness and avoid unhappiness. The Affective Temperament model by Norlander, Bood & Archer (2002; originally called Affective Personalities) was used as a backdrop in four studies. The model yields four different temperaments: self-actualizing (high PA and low NA), high affective (high PA and high NA), low affective (low PA and low NA) and self-destructive (high PA and low NA). In contrast to adolescents with a self-destructive temperament, self-actualizing, high affective and low affective were expected to report higher life satisfaction (LS), higher PWB, to apprehend more positive than negative events (i.e., positivity bias), and to remember events congruent to their temperament, thus showing different tendencies of approach and prevention. **Study I** examined differences in LS, memory for events and life events relationship to LS. As predicted high affectives and low affectives reported higher LS than self-destructives, despite high levels of NA respectively low levels of PA. Consequentially, only self-destructive adolescents did not show positivity bias. Moreover, life events predicted only LS for adolescents with low PA. **Study II** examined differences in PWB and the relationship between life events and PWB, and PWB to LS. In concordance to Study I, all temperaments reported higher PWB than the self-destructive temperament and life events predicted PWB only for adolescents with low PA. Moreover, PWB's subscale of self-acceptance predicted LS for all temperaments. **Study III** aimed to investigate if temperaments' reaction to negative words was related to memory of

words presented in a short story. Consistent with the predictions, high PA adolescents' reaction to negative words predicted the number of positive words they had in memory (i.e., promotion focus). In contrast, low affectives' reaction predicted the number of negative words in memory (i.e., prevention focus). Self-destructive lacked the ability to self-regulate their reaction to negative words. **Study IV** replicated the results from Study I and II: all temperaments reported higher LS and PWB than the self-destructive temperament. As in Study I, self-acceptance was related to LS for all temperaments. In conclusion, the interaction of the two affective temperamental dispositions probably does part of the work when adolescents create a more pleasant world for themselves. Hence, although at individual level an adolescent may not be blessed with the "right temperament": most adolescents are able and actually do achieve happy lives. Nevertheless, in regard to adolescents, the promotion of positive emotions should be in focus. It is plausible to suggest that a first step in this direction might be through self-acceptance. Implications and limitations of the present dissertation are discussed.

LIST OF STUDIES

This doctoral dissertation is based on the following four studies which will be referred to in the text by their Roman numerals:

Study I

Garcia, D., & Siddiqui, A. (2009a). Adolescents' affective temperaments: Life satisfaction, interpretation, and memory of events. *The Journal of Positive Psychology, 4*, 155–167. DOI:10.1080/17439760802399349.¹

Study II

Garcia, D., & Siddiqui, A. (2009b). Adolescents' psychological well-being and memory for life events: Influences on life satisfaction with respect to temperamental dispositions. *Journal of Happiness Studies, 10*, 387–503. DOI:10.1007/s10902-008-9096-3.²

Study III

Garcia, D., Rosenberg, P., Erlandsson, A., & Siddiqui, A. (2010). On lions and adolescents: Affective temperaments and the influence of negative stimuli on memory. *Journal of Happiness Studies, 11*, 477–495. DOI: 10.1007/s10902-009-9153-6.³

Study IV

Garcia, D., & Siddiqui, A. (Under Editorial Evaluation). The affective temperaments and self-acceptance: Adolescents' life satisfaction and psychological well-being.

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Introduction

Most parents and teachers want their children and pupils to be happy through life. Whether it is by showing them unconditional love or making them interested in history, mathematics, sports, or art, the purpose is always the same. Happiness by itself appears to be an attractive goal; nonetheless adolescents that experience high levels of happiness show less emotional and behavioural problems (Suldo & Huebner, 2006). Hence, happiness is probably more like a journey than a destination. However, personality is assumed to be a baseline for people's happiness. In other words, although people react to good and bad events, individuals usually return back to their happiness baseline or set point, a phenomenon commonly known as hedonic adaptation (Diener, Lucas, & Scollon, 2006). Personality appears to be a key element because it is related to reactivity to emotional stimuli, individual differences in intensity to responses to emotional events, and to the duration of emotional reactions (Kim-Prieto, Diener, Tamir, Scollon, & Diener, 2005). Thus, any attempt to influence adolescents' happiness appears to be limited. Indeed, certain types of genetically predisposed qualities measured at a young age, such as temperament, seem to determine whether a child grows up to be a happy or a depressed adult (Caspi, 2000).

The findings mentioned above may discourage the parents and teachers who strive for helping adolescents to become happier, as well as the pursuing adolescents themselves. Nonetheless, personality as described above involves traits that are enduring individual differences in procedural learning or temperamental dispositions (i.e., habit learning of emotional responses; Cloninger, 2004). This observation is important—empirical research has shown that temperament does not account for personality development since measuring temperament involves differences in automatic emotional reactions and habits (for a review see Cloninger, 2004). In this framework, the concept of personality may be limited to traits that “are global, stable, linear and comparative dimensions of human individuality” (McAdams, 2001, p. 111) and exclude characteristics of personality that are related to social and affective emotional traits (Tellegen, 1993). In other words, temperament is a disposition that does not account for environmental learning

experiences. As a result temperament alone may not be adequate in the prediction of affective disorders (for a review see Gunderson, Triebwasser, Phillips, & Sullivan, 1999). If it is so, temperament alone is probably not adequate in the prediction of happiness. Moreover, temperament together with learning experiences from different life events may be responsible for individual differences in propositional learning of personal goals, values, and even defense mechanisms (Cloninger, 2004). The memory of our life experiences and explanations of our own behavior during those experiences are unique for each individual. Those memories may play an important role in how we understand ourselves in a personal and social context at different times in life (McAdams, 2001). Hence, in order to promote happiness among youth, it is important to identify characteristics that promote effective adaptation to life events and emotional health. In this context, happiness is probably a result of full engagement and optimal performance in the existential challenges of life (i.e., Psychological Well-Being; Ryan & Deci, 2001; Ryff, 1989).

Furthermore, research on adolescents' happiness and well-being is so far inadequate and mostly comprises studies on life satisfaction (Fogle, Huebner, & Laughlin, 2002; Funk III, Huebner & Valois, 2006). The study of adolescents' happiness and well-being is important, because in this period of life different events and transitions may influence children and adolescents' development and well-being (Erikson, 1968; González, Casas, & Coenders 2007). During middle childhood and adolescence, daily problems (e.g., coping with a minor social conflict) seem to be equally stressful experiences as major life events (e.g., parent being remarried; McCullough, Huebner, & Laughlin, 2000). Nevertheless, it is not just the transitions that adolescents have to go through that may influence happiness; it is probably a gene-age-environment interaction (for a review see Maccoby, 2000). In accordance with these findings, the occurrence of various forms of psychopathology, including affective and behavioral disorders, increases dramatically during adolescence (Silk, Steinberg, & Morris, 2003). In this context, studies among adolescents show that active and attention-based strategies such as self-distraction and attention shifting are linked with decreases in anguish, whereas passive focus on the distressing stimulus is associated with increases in anguish

and the development of externalizing behaviors (Silk et al., 2003). In addition, temperament is described as relatively stable in adults; however adolescents' temperament might be less stable due the fact of their neurological development (Windle & Windle, 2006). In contrast, happiness and well-being may increase with age (Diener et al., 2006).

The general aim of the present dissertation is to examine the role of temperament and intrapersonal cognitive characteristics in adolescents' happiness. In contrast to most research so far, temperament is presented as an interactive affective construct that helps the individual to approach happiness and avoid unhappiness. Although, temperament is suggested to be responsible for likes and dislikes, thus being responsible for how happy adolescents judge themselves to be, the memory of a happy life is probably not dictated by temperament alone. Hence, the general proposition of this dissertation is that temperament is a major determinant of adolescents' happiness and that positive attitudes toward the self help the individual to feel happy with life regardless of the influence of temperamental dispositions. Before attempting to disentangle the interesting question of the predictive nature of distinctive measures of well-being, each measure is briefly defined and presented as how they map onto and are distinct from each other. Thereafter, affect is presented and clarified as temperamental dispositions in order to show how it provides a backdrop to exploring the predictive effects of apprehension of events to happiness and well-being.

Subjective Well-Being or Happiness

Recently, well-being studies have provided a clearer picture of who the happy adults are and what makes them happy (e.g., Ryan & Deci, 2001; Diener & Seligman, 2002; Lucas, 2008; Lykken & Tellegen, 1996; Myers & Diener, 1995). Researchers have focused on people's experiences of pleasure and displeasure—that is, hedonic well-being (Kahneman, Diener & Schwarz, 1999). The assessment of this hedonic experience involves individuals' own judgements about life satisfaction (LS), the frequency of positive affect (PA) and the infrequency of negative affect (NA; Pavot, 2008). The three constructs are summarized as Subjective Well-Being or happiness (SWB; Diener, 1984). According to Martin and Huebner

(2007), the multidimensional model of SWB (LS, PA, and NA) is valid for adolescents as well. Thus, a happy adolescent can be assumed to be satisfied with life and to experience more positive than negative affect.

LS refers to a comparison process, in which individuals assess the quality of their lives on the basis of their own self-imposed standard (Pavot & Diener, 1993). The affective part of SWB is computed by subtracting the number of positive emotions from the number of negative emotions that an individual experiences—that is, the affect balance (Schimmack & Diener, 1997). The constructs are related to a certain extent and share many predictors (see Schimmack, 2008). However, the constructs are also related to different predictors as well and therefore clearly distinguishable, thus, it is often stressed that they need to be studied separately in order to fully understand SWB (e.g., Diener & Lucas, 1999). According to Fujita and Diener (2005), the influence of environmental factors (e.g., positive and negative life events) on LS seems to be limited only to individuals with a low level of LS or with a high reactive temperament; for example, Neuroticism has been related to low LS (Diener, Oishi, & Lucas, 2003) and to unstable moods (Hepburn & Eysenck, 1989). In contrast, the affective part of SWB (i.e., PA and NA) is more stable and genetically predisposed in the individual (Fujita & Diener, 2005; Lykken & Tellegen, 1996).

Related to findings in adults, the contribution of demographic variables to explaining levels of SWB among youth is weak compared to the contribution of intrapersonal variables. For example, Huebner (1991) found that variables such as age, year in school, and gender did not significantly influence children's LS. In contrast, children who reported high levels of LS had high self-esteem, displayed extravert characteristics and had stronger internal locus of control (Huebner, 1991). Accordingly, gender is not related to either PA or NA (Reschly, Huebner, Appleton, & Antaramian, 2008). Nevertheless, some studies among adolescent psychiatric inpatients suggest that NA, rather than PA, may play an important role in understanding gender differences in depression. Joiner and colleagues (1999), for example, found that depressive and anxious symptoms were more highly correlated in girls than boys. In concordance, using a high school sample, Jaques and Mash (2004) found that girls

reported higher levels of NA than boys. Naturally, a wide range of information is probably used when individuals are asked to assess the subjective quality of their life (for a review see Schwarz & Strack, 1999). The way individuals apprehend and recall the world are the most prominent in the literature.

Memory and Subjective Well-Being

Recent research shows that less input is needed to detect negative stimuli than to detect positive stimuli (Dijksterhuis & Aarts, 2003). In the real world, the findings mean that we unconsciously find and react faster to threats, violations, and setbacks. Thus, human beings seem to be wired as all other organic beings: prepared to detect negative stimuli faster (Dijksterhuis & Aarts, 2003). The predisposition for negative stimuli may operate even at an unconscious level. In one of the most fascinating studies, researchers symbolically compared humans to wildebeest and gazelles in the African savannah (Dijksterhuis & Aarts, 2003). The predators are fast and therefore the wildebeest's perceptual and affective systems should be shaped in relation to the traits of the lions and cheetahs hunting them down. The researchers stated that "this should be true for all animals: At times, all animals are confronted with threatening stimuli, and it is of utmost importance to detect these stimuli as fast as possible" (Dijksterhuis & Aarts 2003, p. 14). This allegorical hypothesis was supported by findings in their study. Negative words subliminally presented were detected more accurately than positive words. Nevertheless, SWB research shows that with the exception of depressed individuals, the same may be true for adults as well as for adolescents: adults and adolescents tend to recall more positive than negative life events (i.e., positivity bias; for a review see Walker, Skowronski, & Thompson, 2003).

Seidlitz and Diener (1993), for example, found that happy adults remembered more positive than negative events in their lives than unhappy adults. In the same study, when individuals were presented with a checklist, the happy adults recognized more positive than negative events as being part of their lives. The happy adults also recalled more positive than negative non-personal events—that is, events outside of

their autobiographical memory. Slight support was found for theories arguing that happy adults' tendency to remember more positive events is due to the differences in their current mood. On the other hand, no support was found for theories that attribute these differences to the rehearsal of positive versus negative life events (Seidlitz & Diener, 1993). Seidlitz and Diener (1993) explained their findings by referring to individual differences in emotional reactions to valenced events at the time of encoding—reactions that probably affect later accessibility.

The phenomenon of positivity bias is not exclusive for life events: adults judge themselves to be more improved over time in different areas (Wilson & Ross, 2001). Research among children point in the same direction, children are likely to believe that negative traits may change in a positive direction with the past of time (Lockhart, Chang & Story, 2002). With respect to life events, however, Diener and colleagues (2006) have suggested that one additional positive event is probably not going to influence LS in a person who usually experiences many positive events. Thus, life events may influence LS relative to what is typical for the person's life (Diener et al., 2006). Nevertheless, an increase in the frequency of positive life events in conjunction with a decrease of negative ones may lead to a decrease in depressive symptoms among adults (Needles & Abramson, 1990). However, in a 2-year longitudinal study, only life events within the last 3 months influenced young adults' SWB significantly (Suh, Diener, & Fujita, 1996).

Furthermore, when asked to describe the most important and defining moments of their lives, adults recall disproportionately large number of events from adolescence, a phenomenon commonly known as the memory bump (McAdams, 2001). Those memories are "rich in emotional and motivational content" (MacAdams, 2001, p. 110). Moreover, as stated in the introduction, although major life events (e.g., parent getting remarried) influence adolescents' LS, daily problems (e.g., coping with a minor social conflict) seem to be equally stressful experiences (McCullough et al., 2000). In this context, it is important to bear in mind that emotional reaction, and not valence (i.e., evaluating an event as being positive or negative), is the major factor influencing how well stimuli are encoded into memory (Adolphs & Damasio, 2001). Even more important,

as explained in the introduction, adults and adolescents' SWB is largely dependent on their temperament—that is, how much and for how long an event influences LS is due to an individual's personality (Diener et al., 2006; Lyubomirsky, Sheldon, & Schkade, 2005; Huebner, 1991; Fogle et al., 2002).

Personality and Subjective Well-Being

The five-factor model or 'Big Five' is a valid and reliable descriptive model of personality consisting of five factors including Extraversion, Neuroticism, Agreeableness, Conscientiousness and Openness (for review, see John, Nauman, & Soto 2008). The five traits are considered to be 40-60 % heritable; particularly the heritability is greatest for Extraversion and Neuroticism (Bouchard & Loehlin, 2001; McCrae & John, 1992). The Big Five model of personality is often used when analyzing the relationship between personality and well-being. The traits of Neuroticism and Extraversion are most important in the prediction of adults and adolescents' SWB, therefore the only ones discussed here. Further reading is recommended to be found elsewhere (e.g. Fogle et al., 2002; Lucas, 2008).

Extraversion seems to influence happiness because it is related to positive emotions and being more reactive to PA, while Neuroticism is strongly related to negative emotions and being more reactive to NA (Larsen & Eid, 2008). However, while the influence of Neuroticism on LS is about the same for adolescents as for adults (e.g., Fogle et al., 2002), recent research among adolescents has showed mixed results for the trait of Extraversion. For instance, while Huebner and colleagues (2004) confirmed a significant positive relation, Rigby and Huebner (2005) did not find a relation between Extraversion and LS. Rigby and Huebner (2005) suggested that specific avoidant behavior (e.g., avoiding standing out) in some adolescents might reduce the advantages of Extraversion we see among adults. Furthermore, despite the major role of personality traits on SWB, cognitive variables such as locus of control (Ash & Huebner, 2001), and self-efficacy (Fogle et al., 2002) are also good predictors of adolescents' well-being. Personality is, however, a broad concept and consists of heritable traits, environment and learning

characteristics (Lucas, 2008). Thus, other models may be necessary to fully understand the role of personality in the context of well-being. Well-being, in turn, can also be defined as intrapersonal characteristics that promote happiness.

Psychological Well-Being

In the field of Positive Psychology, well-being research complements measures of physical (e.g. health) and material (e.g. income) well-being with assessments of optimal psychological functioning and experience (Ryan & Deci, 2001). While the hedonic point of view focuses in people's own judgements and experiences of pleasure versus displeasure (Kahneman et al., 1999), the eudaimonic point of view (Waterman, 1993) sees well-being as a product of "the striving for perfection that represents the realization of one's true potential" (Ryff, 1995, p. 100), hence SWB is suggested as a result of full engagement and optimal performance in existential challenges of life (Ryff, Keyes, & Schmotkin, 2002). The difference between hedonic and eudaimonic well-being is of theoretical nature; hedonic well-being is subjectively assessed while eudaimonic well-being may be a more objective description of well-being.

Ryff (1989) offered a multidimensional model of eudaimonic well-being that includes six constructs based on some of the theories used by Jahoda (1958) among others. Jahoda's (1958) earlier studies tried to describe what it meant to be psychologically healthy basing the concept of positive mental health on developmental psychology theories such as Erikson's psychosocial stages (1959), Maslow's conception of self-actualization (1968), Allport's formulation of maturity (1961), Rogers' depiction of the fully functioning person (1961), and Jung's account individuation (1933). According to Ryff (1989), Jahoda's (1958) attempts had a modest impact on well-being research because of the lack of valid and reliable assessment measures. After reviewing well-being as described in these formulations, Ryff (1989) found that many theorists have written about similar features of positive psychological functioning. Ryff (1989) suggested that these perspectives can be integrated into one: Psychological Well-Being (PWB). The six constructs are: (1) self-acceptance, (2) positive relations with others, (3) autonomy, (4)

environmental mastery, (5) purpose in life, and (6) personal growth. The six constructs are described next.

According to Ryff (1989) the most common criterion of well-being is the individual's sense of self-acceptance, not only defined as a central attribute of mental health but as a characteristic of self-actualization, optimal functioning, and maturity. Furthermore, lifespan theories also stress the importance of accepting the self and of one's past life (1). Ryff (1989) found that the ability to love is also central for mental health. For example, self-actualizers (Maslow, 1968) are described as having strong feelings of empathy and affection and as being able of greater love and deeper friendship. Adult developmental stage theories also emphasize the ability of being successful forming close unions with others. Ryff (1989) concluded that positive relations with others (2) were an important construct of PWB. According to the theories reviewed by Ryff (1989), the fully functioning person is described as having an internal locus of evaluation, thus she evaluates the self by personal standards and does not need to look to others for approval. In other words, the fully functioning individual shows autonomous functioning and are resistant to peer pressure (3). Environmental mastery (4) is the individual's ability to choose or create environments that are fitting to his or her conditions (Ryff, 1989). Lifespan development, for example, is described as requiring the ability to influence and control complex environments. Furthermore, according to Ryff (1989), the definition of maturity also emphasizes that a person that functions positively has goals, intentions, and a sense of direction, all of which contribute to the feeling that life is meaningful (5). Finally, lifespan theories stress the importance of continuous growth at different periods of life when new challenges or tasks are confronted. Thus, optimal psychological functioning requires pursuing to develop one's potential, to grow and develop as a person (6; Ryff, 1989).

Ryff's (1989) tested the constructs of PWB along with six major well-being measures from earlier studies (i.e., affect balance, life satisfaction, self-esteem, morale, locus of control and depression). The results revealed that the PWB constructs were not strongly related to the well-being measures mentioned above, thus showing that PWB is a distinctive

measure of well-being. Moreover, Ryff compared PWB between young (18-29 years old), midlife (30-64 years old) and old aged (65 years old or more) adults and found different aspects of PWB increasing or decreasing, while other not changing at all. Environmental mastery and autonomy increased with age (especially from young to midlife adults), purpose in life and personal growth decreased (especially from midlife to old aged adults) and no differences were found for self-acceptance and positive relations with others.

In sum, the six constructs define PWB both theoretically and operationally, and they probably identify what promotes effective adaptation to life events and emotional and physical health (Ryff & Singer, 1998). The PWB constructs not only promote SWB but also are a measure of well-being. For example, analogous to hunger, autonomy is considered as a need in human nature that has to be satisfied in order to preserve or increase well-being and adaptive behavior (Deci & Flaste, 1996). Recent research, however, has linked PA as a predictor of Psychological Well-Being. Urry and colleagues (2004), for example, investigated whether eudaimonic behavior (engaging with goal-directed stimuli) contributed to well-being by exploring correlations between individual differences in baseline prefrontal activation and PWB. The results validated the hypothesis and affect, especially approach-related PA (e.g., “interested,” “strong”), emerged as an important factor in the prediction of PWB. In this context, it is important to bear in mind that positive emotions may also broaden people’s mindsets and build enduring personal psychological resources (Fredrickson, 2006). For instance, participants in a positive-emotion condition listed significantly more things they would like to do than participants in a negative-emotion condition (Fredrickson & Branigan, 2005). The effect of broadened thinking may increase the odds of discovering positive meaning in life events (Fredrickson, 2006). In addition, Tugade and Fredrickson (2004) found that a person who reports high positive emotions before doing a time-pressured speech preparation experiences, alongside high anxiety feelings, higher levels of happiness and interest. Nevertheless, both positive and negative emotions may be adaptive, depending on the social context. From an evolutionary perspective, it is reasonable to assume that

negative emotions have grown part of the toolbox of most organic beings. After all, negative emotions probably increase the chances of survival in life-threatening situations because they bring attention to threatening stimuli and facilitate rapid action (Dijksterhuis & Aarts, 2003). Thus, affectivity may play a role, not only as a measure of well-being, but also as contributor in the promotion of Psychological Well-Being.

The Rationale behind Two Separate Systems

Although most would agree to see positive and negative experiences as opposite ends of a continuum, there is large evidence that they are best thought as two separate systems (for a review see MacLeod & Moore, 2000). Ito and Cacciopo (1998), for example, tested different models of the relationship between ill- and well-being. According to Ito and Cacciopo (1998), a unidimensional model, with ill-being at one pole and well-being at the other, present qualitative differences between individuals that are high compared to low in both dimensions. Indeed, as stated in the SWB section, most research on SWB measures the affective part of SWB by simply subtracting the number of positive emotions from the number of negative emotions that an individual experiences (Schimmack & Diener, 1997). Thus, the current assessment of the affective component fails to take account of positive and negative aspects of experience independently: an individual experiencing high positive and negative affectivity may end up with the same score as a person who experiences low positive and low negative affectivity (Schimmack & Diener, 1997).

Furthermore, besides being indicators or markers of well-being (Diener, 1984), PA and NA are suggested as two distinctive factors that also reflect stable emotional-temperamental dispositions or signal sensitivity systems (e.g., Watson & Clark, 1994; Watson, Clark, & Tellegen; 1988; Tellegen, 1993). According to Watson and colleagues (1994; 1988), PA is a dimension that moves from pleasant engagement (e.g., enthusiastic and active), to unpleasant disengagement (e.g., sad and bored). The NA-dimension moves from unpleasant engagement (e.g., anger and fear) to pleasant disengagement (e.g. calm and serene). Thus, PA and NA are best thought of as orthogonal dimensions rather than two

ends of one dimension (For another point of view regarding two-system theories see Keren & Schul, 2009). In the context of personality, the dimensions are almost synonymous with Extraversion and Neuroticism. For instance, Larsen and Ketelaar (1991) found that individuals who experience high levels of PA (i.e., extroverts) attend and react more intensely to positive stimuli than individuals with low levels of PA (i.e., introverts). In contrast, individuals with high levels of NA (neurotics) attend and react more intensely to negative stimuli than individuals with low levels of NA (i.e., emotional stable individuals). Yet most of the studies use PA and NA to define an emotional state rather than a ‘trait-like’ temperament (see Lyubomirsky, King, & Diener, 2005 for an overview of relevant studies). In the context of well-being, this is important because the two dimensions also are measures of anxiety and depression—anxiety is a state of high NA whereas depression is a mixed state of high NA and low PA (Clark & Watson, 1991). Moreover, PA and NA are suggested to involve more mood and social traits than Extraversion and Neuroticism (for a review see Gunderson et al., 1999). Thus, PA and NA are perhaps not only temperamental dispositions but also complementary to Extraversion and Neuroticism (Tellegen, 1993).

It is plausible to suggest that the research mentioned above maps onto the promotion-prevention principle (Higgins, 1997). Higgins (1997) has proposed that humans strive for promotion focus and prevention focus. Promotion focus refers to the striving after promoting pleasure; whereas prevention focus refers to the striving after prevent displeasure. Some individuals’ seek pleasant situations (e.g., a date with an attractive partner), while others avoid unpleasant ones (e.g., being rejected by an attractive partner by not asking him/her out). However, the promotion and prevention principles go beyond just the hedonic view and help to understand what motivates individuals to different actions as well (Higgins, 1997; 2001). In other words, a person may be motivated to promote pleasure or prevent displeasure because the behavior gives the individual a positive experience and/or a relief of a painful one. For example, the same adolescent engaging in asking a person she finds attractive out on a date does not engage in this action only because its positive outcome; but also because the thought of being without the date

is painful. In contrast, the adolescent that does not engage in asking someone out avoids this action not only because she tries to escape the unpleasant rejection but also because the absence of the rejection is pleasant. Therefore, whether an individual chooses to promote or prevent, she should have more positive events in memory to refer to, when recollecting her life (Walker et al., 2003). The promotion-prevention principle might explain why humans, despite the unconscious preference for negative stimuli (i.e., negativity bias; Dijksterhuis & Aarts, 2003) remember the world as more positive. Indeed, the positivity effect has been depicted as composed by two constructs: (1) the proactive attention to positive stimuli and the strengthening of positive information in memory and (2) the shifting of attention away from negative stimuli and the diminishing of negative information in memory (Xing & Isaacowits, 2006). Some researchers have also found a relation between appraisals and the individual's own focus tendencies. For example, Shah and Higgins (2001) found that participants with a promotion focus were faster to rate how cheerful or dejected words made them feel. In contrast, participants with prevention tendencies were faster to rate how quiescent or agitated words made them feel. In addition, words are also better recognized if they fit the focus of the individual (Touryan et al., 2007). For example, positive words are recalled better than negative words by individuals with a promotion focus. Hence, the focus of the individual seems to influence both interpretation and memory for congruent stimuli.

In conclusion, PA and NA are two distinctive temperamental dispositions that might be complementary to Extraversion and Neuroticism. Firstly, because they involve more mood and social traits than both Extraversion and Neuroticism do. Secondly, because there might be two ways of maintaining well-being that are related to the interacting influence of the two signal-sensitivity systems (Larsen & Ketelaar, 1991): while PA may predict approach behavior, NA predicts avoidant behavior. Thus, recollecting and evaluating life as satisfying may be due to people's tendency to seek or/and avoid pleasant and unpleasant life experiences, respectively (Walker et al., 2003). For example, the interactive affective temperamental system; probably facilitates self-regulation to negative emotional reactions by influencing

the individual to shift attention to more temperament congruent stimuli, thus maintaining positivity. Furthermore, since measuring temperament involves differences in automatic emotional reactions and habits, the mechanisms behind the apprehension of events and self-regulation probably works unconsciously.

The Affective Temperaments Model

The affective temperaments (AFTs) model developed by Norlander, Bood and Archer (2002) takes into account all characteristics of PA and NA stated earlier. The AFTs model goes beyond the view of affect as a two separate systems and takes into account the interaction of both dispositions (for a point of view on two-system theories see Keren & Schul, 2009). In their model PA and NA is measured by the Positive Affect Negative Affect Scales (PANAS by Watson et al., 1988). Participants' PA scores are divided in two parts; consequently, participants are classified into one group with high PA and another group with low PA. The same is done for participants' NA scores, thus participants are also classified into one group with high NA and another group with low NA. The combination of these two variables generate four different temperaments: self-actualizing¹ (high PA, low NA); high affective (high PA, high NA); low affective (low PA, low NA); and self-destructive (low PA, high NA). Although the AFTs model has been used in other studies (e.g., Norlander et al., 2002; Norlander, Johansson, & Bood, 2005) none of them included adolescents. The few studies that have used the model in adolescent samples have not take into account that adolescents experience emotion in different ways than children and adults (Silk et al. 2003). In the present dissertation, participants' PA and NA scores were divided into high and low, using reference data from a group of 84 adolescents (mean age = 16.51) who were followed three times with the PANAS self-reports over a 1.5 year time span. (These reference data are not used in the present dissertation and are part of a future longitudinal project). PA and NA mean scores from this group yielded the

¹ Self-actualizing in Norlander's model is not to be understood as Maslow's Self-actualization. Instead it describes self-fulfillment (see among others: Archer, Adriansson, Plancak & Karlsson, 2007; Palomo, Kostrzewa, Beninger & Archer, 2007).

following cut-off points used in the present dissertation: low PA = 34 or less; high PA = 35 or above; low NA = 22 or less; and high NA = 23 or above.

Although Norlander and colleagues called their classification for affective personalities, in light of the above mentioned research, it is more appropriate to refer to it as affective temperaments. Nevertheless, as explained earlier, most of the studies have used PA and NA to define an emotional state rather than a “trait-like” temperament. This difference, however, may be addressed by referring to the lack of coherence in the literature—namely; the different measures used in the assessment of the affective construct (see Lyubomirsky et al., 2005 for a large compilation of studies). Moreover, as one of the most used instruments to measure affect, the PANAS, was developed on the idea that PA and NA represent two separate dimensions rather than two ends of one dimension (Watson et al., 1988). Consequentially, while some PANAS items (e.g., ‘interested’) may not be common in other scales, other items (e.g., ‘happy’) are not included in the PANAS. Additionally, other findings suggest that PANAS items reflect engagement with a stimulus (for a review see Schimmack, 2007).

Findings among adults show that the AFTs react differently to stress and have different exercise habits and blood pressure. Self-actualizing and high affective adults show the best performance during stress, have a more active life and lower blood pressure than adults with low affective and self-destructive temperaments (Norlander et al., 2002, 2005). Nevertheless, while adults with low affectivity have responded bad to induced stress, compared to high affectives and self-actualizers (Norlander et al., 2002), they also have reported less stress in their life than the self-destructive adults (Norlander et al., 2005). The self-actualizing adolescents and adults, however, report feeling more energy and optimism than the rest of the AFTs (Archer et al., 2007).

Aims of the Present Dissertation

The aim of the present dissertation was to investigate differences among adolescents' happiness and well-being with respect to AFTs. The predictive nature of distinctive measures of well-being among AFTs was also examined. Specifically:

Study I investigated if there were any differences between adolescents' life satisfaction, apprehension of personal and non-personal events, and if there was any relationship between recalled life events and satisfaction with life.

Study II explored if there were any differences between adolescents' Psychological Well-Being, how the number of recalled life events is related to Psychological Well-Being and how Psychological Well-Being relates to satisfaction with life.

Study III investigated if reaction to negative stimuli was related to the memory for valenced stimuli among AFTs.

Study IV replicated Study I and II in regard to the question of differences in life satisfaction and Psychological Well-Being. Moreover, this last study investigated if the PWB sub-scale of self-acceptance predicted LS among AFTs.

Some of the predictions and results in the present dissertation would emerge using the common approach to PA and NA, that is, from subtracting PA from NA. However, the AFTs model offers something unique over and above the single dimensional framework—specifically, with respect to the high and low affective temperaments. The present dissertation extends earlier research on temperament's relationship to happiness and well-being by proposing that temperament, measured as affective interactive dispositions or AFTs, helps the individual to self-regulate and maintain a positive outlook in life and to even promote Psychological Well-Being. Specifically, high PA is assumed to motivate the individual to focus on or seek aspects of life that promote well-being, while low NA motivates the individual to avoid or prevent aspects of life that lead to ill-being. Thus, temperamental dispositions may be an important determinant on how individuals experience and recall events. The events that individuals pay attention to, hold in mind, and remember seem in turn to influence their happiness and well-being. From this point

of view, whether the adolescent have a tendency to approach happiness or avoid unhappiness the results should be the same: positivity bias. Moreover, since measuring temperament involves differences in automatic emotional reactions and habits, the mechanisms behind the apprehension of events probably works unconsciously. Thus, temperament probably helps the individual to self-regulate negative emotional reactions by helping the individual to automatically shift attention to more temperament congruent stimuli.

In order to better understand differences in mental health and adjustment among adolescents the question of how adolescents' affective system self-regulates their own reaction to negative stimuli is important. Studying well-being and memory for events using the AFTs model may help to understand how adolescents with different temperament see, react, and recall the world.

SUMMARY OF THE STUDIES

Study I

Aims and Predictions

The aim of the first study of this dissertation was to examine differences in adolescents' satisfaction with life and how they recall, recognize, and interpret events. Furthermore, the study examined to what extent memories of life events predicted adolescents' satisfaction with life. The AFTs model was used as a backdrop in the investigation of these questions.

Self-actualizing adolescents were expected to be more satisfied with life than the self-destructive adolescents. High affective adolescents' experience of PA, however, was expected to balance the effects of their experience of NA. In contrast, low affective adolescents may avoid stressful situations in order to prevent displeasure. Thus, high and low affective adolescents were also expected to report higher life satisfaction than self-destructive adolescents.

In general, people are positively biased. However, self-destructive people may not show those biases, perhaps due to their inability to self-regulate. Whether the adolescent have a tendency to approach happiness or avoid unhappiness, in order to self-regulate, the results should be the same: positivity bias. Thus, it was expected that self-actualizers, high affectives, and low affectives may interpret and remember more positive than negative events. Nevertheless, if individuals are presented with positive and negative stimuli, interpretations of the value of the stimuli may vary accordingly to their temperament. Emotional reactions to the stimuli may also vary according to individuals' temperament and may explain differences in memory of the events. High affective and self-actualizing adolescents were expected to interpret more positive events as being positive than as being neutral. However, high affective adolescents' intensive NA was expected to influence the interpretation of the negative events in the same manner. The low affective adolescents were instead expected to interpret more negative events as being neutral than as being negative.

With respect to life events, research among adults suggests that high affective individuals experience intense positive and intense negative life events. Additional events (positive or negative) are probably not going to influence LS in a person who usually experiences many positive and negative events. The same might be true for self-actualizing individuals, because their recurrent experience of more positive life events either makes them adapt to positive events or use them as a buffer when experiencing negative events. On the other hand, low affective individuals seem to avoid stressful situations; therefore, their satisfaction with life is expected to be predicted only by positive life events. Self-destructives' satisfaction with life was expected to be predicted by both positive and negative life events. However, low affective individuals experience low PA and perform badly in stressful situations and high affective individuals experience high NA and high levels of stress in life. Considering that, in the long term, only self-actualizing individuals are expected to be more satisfied with life than the self-destructive individuals.

Method

A total of 135 high schools pupils participated in Study I. However, 30 participants were randomly assigned to another experiment (not part of the present dissertation). Thus, only 105 pupils were assigned for the two different memory tasks. The first task was to recollect life events experiences from the previous year. The second task was for recognition and interpretation of words in a short story.

Instruments

Satisfaction With Life Scale (SWLS; Pavot & Diener, 1993). The instrument consists of five statements (e.g., "In most of my ways my life is close to my ideal") and asks to indicate extent of agreement using a 7-point Likert scale (1 = *strongly disagree*, 7 = *strongly agree*). The SWLS score was established by adding the five ratings for each participant.

Positive Affect and Negative Affect Scales (PANAS; Watson et al., 1988). The PANAS asks participants to rate to what extent they generally experience 20 different feelings or emotions (10 PA and 10 NA) during the last few weeks, using a 5-point Likert scale (1 = *very slightly*, 5 =

extremely). The 10-item PA scale includes adjectives such as strong, proud, and interested. The 10-item NA scale includes adjectives such as afraid, ashamed, and nervous.

Life events recollection measure. This instrument is used to measure memory for events from participants' personal histories. This task was adapted from Seidlitz and Diener's study (1993). Participants were asked to recall and list as many positive and negative life events as possible from the last year, separately and with a time limit of 3 minutes for each type of event. A life event recall balance score was calculated by simply subtracting the number of recalled negative life events from the number of recalled positive life events.

Interpretation and recognition for words in a short story (IRWSS; Garcia, in press). This instrument was constructed to monitor differences between AFTs regarding interpretation of events and differences in recognition for those events. The instrument consists of a short story (a synopsis of *The Alchemist*; Coelho, 2002; Swedish translation), a rating list of 48 words (highlighted in bold type in the story; real words) and a recognition list that included the 48 real words and 21 words not presented in the short story (false words).

Procedure

In the first part of the study, all participants were presented with the rating list and the satisfaction with life measure. For the participants in the recognition task, the short story was presented first and then the rating list. Two days later, participants were given the recognition list or/and life events recall tests. After completing the tasks, participants were administered the PANAS. About 6 months later, 50 randomly selected pupils were asked to complete the SWLS and the PANAS self-reports for a second time.

Results and Discussion

Differences in LS between Affective Temperaments

It was expected that self-actualizing, high affective, and low affective adolescents would have higher LS than self-destructive adolescents. The results supported this hypothesis: high affective adolescents' more intense positive emotions may balance their intense negative emotions, thus

explaining why they are not significantly less satisfied with life than self-actualizing adolescents. Furthermore, low affective adolescents' tendency toward a prevention focus (i.e., engaging in the avoidance of stressful situations) might be suggested to make them more satisfied with life than the self-destructive adolescents.

Memory of Life Events

Only self-destructive adolescents did not show the tendency to be positively biased. These results are in accordance with earlier studies among adults; people are generally positively biased, unhappy people excluded (for a review, see Walker et al., 2003). However one question arises: Why are adolescents with different temperamental dispositions (self-actualizers, high affective, and low affective) positively biased? An explanation might be that temperament not only determines the individual's emotional reaction but also the tendency to either seek pleasant life experiences or to avoid unpleasant life experiences (Walker et al., 2003). That is, self-actualizing adolescents may recall more positive events because they actually seek more positive events, in turn; those events are more recurrent in their life. High affective adolescents may seek positive experiences at the risk of becoming disappointed if the outcome is negative. However, they are as good in stressful situations as the self-actualizing adolescents (Norlander et al., 2005) and may interpret the event not as negatively as the self-destructive adolescents, hence recalling it as a positive, challenging and meaningful experience. Low affective adolescents may recall more positive than negative life events because they avoid unpleasant circumstances or situations. This assumed prevention focus probably let them recall the avoided events as pleasant.

Memory of Words in the Short Story

With respect to words that actually were highlighted in bold type in the short story, the following findings are worth mentioning. All AFTs showed a tendency to recognize more of the positive words as being bold typed in the story. However, high PA adolescents were more prone to forget negative words than to forget positive words. Unsurprisingly, in the present study self-actualizing adolescents recognized positive but "forgot" negative words. Self-actualizers perhaps pay less attention to the negative words. However, the present study showed that adolescents who

experience different levels of PA and NA are also prone to recognize positive stimuli as the happy adolescents.

Interpretation of Words in the Short Story

If adolescents were presented with positive and negative words, rating the words was expected to vary according to their AFTs. Only high affective and self-actualizing adolescents were expected to interpret more of the positive words as being positive than as being neutral. However, all AFTs, with the exception of the self-destructive adolescents, showed this inclination. On the other hand, as expected, high affective and self-destructive adolescents interpreted more of the negative words as being negative than as being neutral. In contrast to expectations, the low affectives did not interpret more of the words (positive or negative) as being neutral than as positive or as negative. Nevertheless, self-destructive adolescents interpreted just as many of the positive words as being positive than as being neutral. In contrast low affective adolescents interpreted just as many of the negative words as being negative than as being neutral. This distinction for stimuli interpretation may be what differentiates low affective from self-destructive adolescents with respect to their self-reported satisfaction with life. In other words, while self-destructives neutralize positive stimuli, low affectives neutralize negative stimuli. At the same time, positive stimuli are not neutralized by low affectives, but by self-destructives. This may also explain why low affective adolescents were positively biased.

Positive Priming

Concerning the false words (i.e., words not included in the short story but presented in the recognition list), both self-actualizing and high affective adolescents recognized more positive than negative false words as being in the short story. However, based on research with adults, only self-actualizers were expected to show this tendency. High affectives high NA should allow them to be ready for negative stimuli as well, thus neutralizing the positive priming. It is probable that, as in Tugade and Fredrickson's study (2004), high PA overrules the influence that high NA may have on how words are experienced.

Number of Recalled Life Events as Predictors of LS

For self-destructive adolescents, LS was found to be a function of a combination of more positive life events and fewer negative life events. For low affective, LS was a function of relatively more positive life events.

AFTs and LS Six Months Later

The results discussed above show that high and low affectives interpretation and memory of events are in some ways similar to both self-actualizers and self-destructives. However, adolescents with a self-actualizing temperament emerged as the only ones to remain more satisfied with life when measures of the variables (LS, PA and NA) reported at two different times (6 months apart) were used. Nevertheless, it is important to mention that high and low affective adolescents were still not significantly less satisfied with life than self-actualizers. This may be due to their tendency to interpret, emotionally react, and remember events according to their temperamental dispositions. In other words, low affectives neutralize their world and high affectives enhance theirs.

Conclusions

Self-actualizing, high affectives, and low affectives reported higher LS than the self-destructives. Consequently, self-destructives were the only adolescents that failed to show positivity bias. Thus, perhaps satisfaction with life can be achieved by either approaching pleasant situations or avoiding unpleasant ones, which in turn, leaves more positive than negative events in memory. Moreover, the memory of life events was related to LS only for low PA adolescents (i.e., low affectives and self-destructives). Perhaps this indicates that environmental factors only influence LS among individuals with lower levels of LS.

Study II

Aims and Predictions

The general aim of the second study was to examine adolescents' psychological well-being. More specifically, this study investigated how the four AFTs differ in their PWB, to what extent the number of recalled life events predicts their PWB, and in what way their PWB predicts LS.

Adolescents with high PA, that is, self-actualizing and high affective, were expected to show higher PWB. High affective adolescents' experience of high NA was not expected to influence this prediction because high PA has the effect of broadening thinking (Fredrickson, 2006). Moreover, environmental factors influencing well-being may be limited to only individuals with a low level of LS or with a high reactive temperament. Hence, only PWB for temperaments with lower LS, or low affective and self-destructive, was expected to be predicted by recalled life events. Finally, if PWB is considered to promote LS, the effects on LS should be limited to adolescents with lower LS, or low affective and self-destructive temperaments. However, there may be two ways of maintaining well-being that are related to the interacting influence of the two signal-sensitivity systems (PA and NA). Hence, it was expected that PWB may predict LS for each affective temperament.

Method

Participants were 135 pupils at two different high schools in the south of Sweden. All completed the following self-reports: Satisfaction with life scale (SWLS), Ryff's measurement of PWB, and PANAS. As in Study I, participants were also asked to recollect life events experiences for the previous year.

Instruments

The only instrument that was new in Study II is the following:

Ryff's Measurement of Psychological Well-Being (Clarke, Marshall, Ryff & Wheaton, 2001). PWB was operationalized with Clarke and colleagues' short version (18 items, 3 for each construct) of Ryff's longer (120 items, 20 for each construct) "Measure of Psychological Well-Being."

Procedure

At the first part of the study, all participants were presented with the LS and the PWB measure. Two days after, participants in the life events task were asked to recall as many positive and negative life events as possible that happened to them in the last year, separately and with a time limit of 3 minutes for each type of event. The order of the positive and negative recall tests was randomly assigned across participants. After completing the task, all participants were asked to rate to what extent they have experienced certain positive and negative affects for the previous weeks (PANAS).

Results and Discussion

Differences in PWB between Temperaments

Adolescents with high PA were expected to show higher PWB. The results showed that self-destructive adolescents had lower scores in at least two constructs, environmental mastery and self-acceptance, compared to the other three temperaments. No differences were found for the autonomy construct between the four AFTs. Self-actualizing showed higher environmental mastery scores than all temperaments and higher self-acceptance scores than adolescents with both low affective and self-destructive temperament.

High affective adolescents showed higher personal growth scores than the low affective. This difference may be an expression of the different approaches to seek pleasure or avoid displeasure those two temperaments may use. High affective adolescents may seek challenging situations whereas low affective adolescents avoid them in order to become happier. Environmental mastery and self-acceptance seem to be the most differentiating factors among the AFTs. Thus, being able to have positive relations with others, purpose in life and personal growth may be necessary in order to be psychologically functional, but these are not as important as environmental mastery and self-acceptance.

Furthermore, low affective adolescents and adolescents with high PA (i.e., self-actualizing and high affective) showed higher total PWB than self-destructive. However, the difference between low affective and self-destructive temperaments was moderate, and self-actualizing adolescents

showed higher PWB than the low affective adolescents, although this difference was also moderate.

Recalled Life Events as Predictors of PWB

Recalled life events predicted only self-destructive and low affective adolescents' PWB. This is in concordance with findings in Study I that indicate the same influence of life events on LS. That is, at least for adolescents with low PWB, environmental factors may influence their level of PWB. In order to predict changes in PWB, one can tentatively assume that as for LS, having stable life circumstances or a less reactive temperament increases the possibility of experiencing long-term PWB.

PWB as Predictor of LS

While in Study I life events only predicted higher LS for adolescents with low PA, in Study II study high levels of PWB predicted higher LS for all AFTs. No difference emerged in the positive relations with other dimensions between high affective and self-destructive temperaments. It is reasonable to assume that the ability to create and keep positive relations with others should result in higher LS. However, Diener & Seligman (2002) found that some of the “very unhappy” people (those in the upper 10% of consistently very unhappy people, defined by SWB in a sample of 222 undergraduates) reported, as the “happy” people (those in the upper 10% of consistently very happy people), satisfactory family, interpersonal, and romantic relationships as well as frequent socializing. The results show, however, that self-acceptance was the only PWB construct that predicted LS for all AFTs.

Conclusions

Parallel to Study I, self-actualizing, high affectives, and low affectives reported higher PWB than the self-destructives. Thus, demonstrating that the differences among temperaments found in Study I are consistent across two different measures of well-being. Consequentially, also as in Study I, recalled life events were only related to PWB among low affectives and self-destructives. In contrast, PWB was related to adolescents' LS in general. Thus, showing that in contrast to environmental factors, intrapersonal cognitive characteristics might promote LS regardless of temperamental dispositions.

Study III

Aims and Predictions

The third study was based on the idea of negativity vs. positivity bias. In other words while people may detect and react to negative stimuli faster, the biases for negative stimuli were expected to motivate the individual to seek for clues in the environment that may help to maintain positivity. Furthermore, in order to better understand differences in mental health and adjustment among adolescents the third study addressed the question of how adolescents' affective system automatically self-regulates their own reaction to negative stimuli. In this line of thinking, the reaction to negative stimuli probably elicits automatic responses of promotion and prevention focus. Both strategies might be adaptive in nature, and were expected to influence the adolescent to remember more pleasant stimuli presented in the same context. In this framework, pleasantness was expected to be related to the adolescent's own affective system (i.e., AFTs). Study I and II only assumed that tendencies of prevention and promotion were dependent of adolescents' AFTs. Thus, the aim of the third study was to investigate if the relation between reaction to negative stimuli and memory for stimuli differs with respect to individuals' AFTs.

In Study III self-actualizing and high affective individuals (high PA) were expected to engage in promotion focus, thus their reaction for negative stimuli to predict the number of positive stimuli in memory. Low affective adolescents (low PA and low NA) were expected to engage in prevention focus, thus their reaction to negative stimuli to predict the number of neutral words in memory. In contrast, self-destructive adolescents were not expected to engage in either promotion or prevention focus. In other words, their reaction to negative stimuli should not predict either positive or negative stimuli in memory.

Method

A total of 86 high school pupils participated in Study III. The same instrument from Study I to measure apprehension and memory for stimuli (i.e., words in a short story instrument) and the PANAS were used in Study III. In the first part of the study, all participants completed a battery

of self-reports, including the PANAS. Afterwards, participants were presented with the short story and then the rating list. Two days later, Part 2, participants received the recognition list. Due the fact that adolescents experience events with more intensive emotions; reaction to stimuli was operationalized by computing three reaction scores for each participant: the number of negative words rated as 1 (*totally negative*), the number of positive words rated as 7 (*totally positive*), and the number of neutral words rated as a 4 (*totally neutral*). In order to test memory of words, one recognition score was computed for each type of word (negative, positive and neutral) recognized as: “bold type”. Thus, each participant had three recognition scores.

Results and Discussion

As expected, self-actualizers and high affectives engage in promotion focus only. Their reaction to negative stimuli predicted only the number of positive words recognized. It is reasonable to question why the high affectives’ memory of negative stimuli is not predicted by their reaction to negative stimuli. Nevertheless, as stated in the previous studies their experience of high PA can be assumed to neutralize the effects of their reactivity for negative stimuli.

In contrast, low affectives’ reaction to negative stimuli resulted in memory for the same type of stimuli. Negative events are probably unusual in their lives, therefore they react more to negative stimuli and remember them better (sort of a flashbulb memory). The same reaction elicits a promotion focus (i.e., recognizing more positive words in order to achieve more PA). Furthermore, reaction to both positive and negative stimuli facilitated memory for neutral stimuli. The findings are in concordance with research that suggests that low PA lead to less emotionally extreme encoding (e.g., Pury, 2004). Logically, a neutral world might be the kind of world low affectives find most pleasant.

Finally, as expected, self-destructive adolescents’ negative reaction did not predict the number of negative, positive or neutral words they remembered. Being unable to automatically promote or prevent displeasure is probably what keeps self-destructive adolescents in their affective state. On the other hand, earlier research shows that high NA

levels are related to the attention and reaction to negative stimuli (Larsen & Ketelaar, 1991) and that depressed people have a tendency to remember stimuli that is congruent to their mood (e.g., negative words) better than stimuli that is not in accordance with their mood (e.g., positive words, for a review see Watkins, Martin & Stern, 2000). At a first glance, self-destructives' reaction to negative stimuli should be expected to be related to their memory for negative words in the short story. However, in contrast to free recall, recognition tasks as the one used in the present study do not show the mood-congruent effect mentioned above (Fielder, 2001; Jermann, Van der Linden, Laurençon & Schmitt, 2009). Nevertheless, perhaps self-destructives reaction to negative stimuli is not related to their memory for negative stimuli because they also see neutral words as negative.

Conclusions

Study III added some support to the suggestions raised in Study I and II. The affective system seems to automatically help the adolescent to regulate emotional reactions by directing focus to different types of stimuli. The type of stimuli in memory varies accordingly to the regulatory focus used by the different temperaments. It is plausible to suggest that in order to keep their experience of high PA, self-actualizing and high affective adolescents proactively attend to positive stimuli and strengthen positive information in memory (i.e., remembering more positive words). In contrast, low affective adolescents seem to shift attention away from negative and positive stimuli and then diminishing positive and negative information in memory (e.g., remembering more neutral words). The self-destructive adolescents, however, are not successful at either the promotion of pleasure or the prevention of displeasure.

Study IV

Aims and Predictions

The fourth and last study aimed to replicate the results from Study I and II by investigating if the AFTs differ in their levels of LS and PWB. The role of PWB in the prediction of AFTs' satisfaction with life was also explored. As in Study I and II, self-actualizing, high affective and low affective adolescents were once again expected to show higher levels of LS and PWB than self-destructive adolescents. Moreover, self-acceptance was expected to predict LS for all four temperaments.

Method

A total of 141 high school pupils participated in the fourth study. All participants were presented with a battery of instruments including the PANAS, LS, and PWB measures.

Results and Discussion

Differences between AFTs and PWB as a Predictor of LS

The results supported the hypothesis: self-actualizers, high and low affectives did report higher LS and PWB than self-destructive adolescents. Hence, the interaction of PA and NA seems to be an important predictor in well-being. PWB was a predictor of adolescents LS for all temperaments.

Self-acceptance as a Predictor of LS

Self-acceptance was significant in the prediction of LS for all temperaments. According to Cloninger (2004), a stable condition of coherence of personality is what leads to a “full range of positive emotions and no negative emotions regardless of external circumstances” (p. 8). Coherence is to be achieved through self-awareness and self-acceptance is an important step in becoming self-aware (Cloninger, 2004). Indeed, in concordance to Study II, self-acceptance seems to be a predictor of adolescents' LS. That is, if adolescents are going to be able to successfully adapt, feel good, and resolve problems in life, they have to accept all different parts of their being.

Conclusions

Study IV replicated the findings from Study I and II: Self-actualizing, high affectives, and low affectives reported higher LS and PWB than the self-destructives. More importantly, PWB was related to adolescents' LS in general. The sub-scale of self-acceptance emerged as the most important intrapersonal cognitive characteristics that promote LS among adolescents.

GENERAL DISCUSSION AND CONCLUSIONS

The general aim of the present dissertation was to examine the role of the affective temperamental system (i.e., PA and NA) and intrapersonal cognitive characteristics (PWB) in adolescents' happiness. The interaction of PA and NA (measured by the AFTs model) was expected to help the adolescent to approach or promote happiness and avoid or prevent unhappiness. The promotion- and prevention focus, in turn, allowed the adolescents to show higher levels of LS, PWB, and positivity bias. The results from Study I, II, and IV revealed that individuals with different temperaments, with the exception of self-destructive, reported being satisfied with life, reported high PWB, and recalled more positive than negative events. For example, although they experience high levels of NA or low levels of PA, adolescents show positivity bias as long as they experience high levels of PA (i.e. high affectives) or low levels of NA (low affectives). Naturally, self-destructive adolescents did not show this ability of recollecting the world as positive. In other words, the positivity effect seems not to be an ability characteristic of high PA adolescents (i.e., self-actualizers and high affectives), instead an ability that only self-destructive adolescents lack. Being positively biased, however, seems not to be equal to being primed for positive stimuli; this might be only true for individuals with high PA. Moreover, as expected all temperaments showed higher life satisfaction and PWB than the self-destructive temperament. However, in contrast to high PA adolescents who probably strive after the promotion of happiness, low affective adolescents probably feel more satisfied with their life and report higher PWB because they prevent unhappiness. Self-actualizing adolescents showed higher environmental mastery scores than all temperaments and higher self-acceptance scores than adolescents with both low affective and self-destructive temperament (Study II). In this regard, Study II and IV, show that self-acceptance is probably a key element if adolescents are going to judge their life as good.

Furthermore, high affective adolescents showed higher personal growth scores than the low affective (Study II). This difference may be an expression of the different approaches to seek pleasure or avoid displeasure those two temperaments may use. High affective adolescents

may seek challenging situations whereas low affective adolescents avoid them in order to become happier. Nevertheless, it can also be the result of high affective adolescents experiencing high levels of PA. Fredrickson and Branigan (2005) found that participants in a positive-emotion condition listed significantly more things they would like to do than participants in a negative-emotion condition. This effect on broadened thinking may increase the odds of discovering positive meaning in life events (Fredrickson, 2006). Thus, high affective adolescents naturally should experience more personal growth, especially if they experience and seek more pleasant situations, whereas low affective adolescents try to avoid displeasure.

Nevertheless, Study I, II and IV only assumed that the AFTs used different types of focus (i.e., prevention and promotion) in order to feel satisfied with life. Thus, the present dissertation also aimed to support the assumed differences in prevention- promotion focus between AFTs. Specifically, Study III explored if adolescents' reaction to negative stimuli automatically motivated them to seek for clues in the environment that might help them to maintain positivity. As suggested, in Study III, the self-actualizing and high affective adolescents' reaction to negative stimuli was related to the number of positive words they recognized from the short story. In contrast, low affective adolescents seemed to engage in prevention focus: their reaction to negative stimuli predicted the number of neutral words in memory.

In sum, the most important findings are that adolescents can feel satisfied with life even when they experience high levels of NA as long they experience high levels of PA. They can also feel satisfied with life despite experiencing few positive emotions as long as they experience few negative emotions. Thus, as long as they are able to promote happiness or avoid unhappiness they are also able to see and recall the world as more positive. Moreover, although the memory of life events might be related to the feeling of being satisfied with life for adolescents who experience few positive emotions, Psychological Well-Being and specially the acceptance of all parts of the self are related to LS regardless of temperamental disposition (see Figure 1 for an overview of the results).

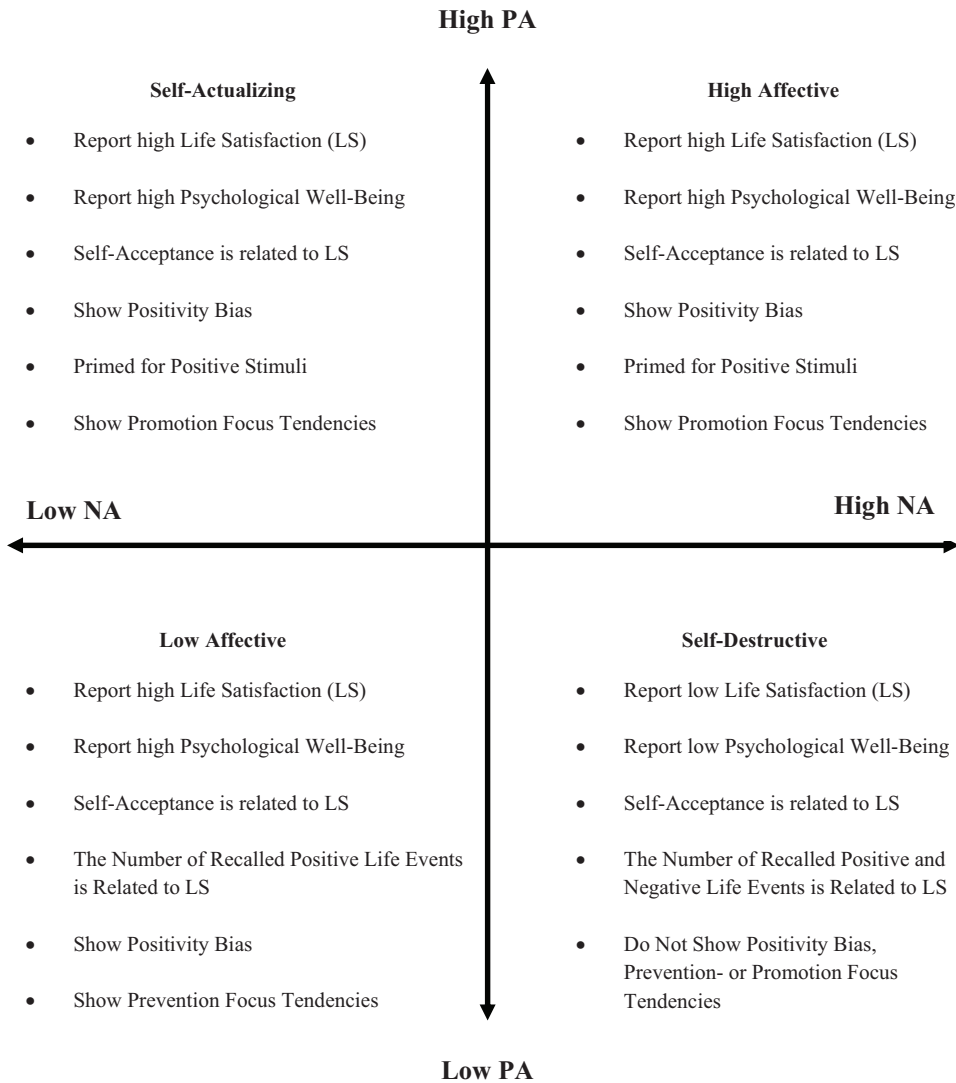


Figure 1. Positive Affect (PA) and Negative Affect (NA) scales as two bisected crossed-over axes, showing the results from the dependent variables in the studies (Adapted from Norlander et al., 2002).

Implications

In this context, it is important to bear in mind that the absence of PA is a better predictor of mortality and morbidity than the presence of NA (Cloninger, 2006). This should indicate that it might be better to be a high affective than a low affective adolescent, yet low affective adolescents had

higher levels of LS and PWB than self-destructive adolescents and not significantly less than the other two temperaments (Study I, II and IV). The adolescents with a low affective temperament may be avoiding or decreasing attentional focus on stimuli to attenuate PA and NA (Study III). This strategy of cognitive dampening (Diener, Colvin, Pavot, & Allman, 1991) may be used by regarding events as objectively as possible—thus avoiding happiness about positive events but not becoming sad about negative events. Perhaps the ability to use this strategy is what keeps low affective adolescents to report being more satisfied with life and higher Psychological Well-Being than the self-destructive ones. Logically, a neutral world might be the kind of world low affectives find most pleasant (if we assume they strive after the prevention of displeasure). The strategies that the different temperaments use to become more satisfied with life may be important to assess in order to understand how we can promote well-being in adolescents. For instance, the number of recalled positive life events by low affective adolescents actually had a positive impact on their life satisfaction. Nevertheless, low affective adolescents might have a tendency to avoid stressful situations (Norlander et al., 2005). If this is so, when positive life events occur in low affectives' lives, the events might be more due to circumstances than to intentional efforts. Positive events that are circumstantial have been suggested to be easier to adapt to than events intentionally elicited (Sheldon & Lyubomirsky, 2006). Thus, the nature of the positive event might be important to assess in order to promote happiness among low affective adolescents. In this context, it is important to acknowledge that the closer the event is to the person's values and goals, the more should its interpretation be related to the person's well-being (Kim-Prieto et al., 2005). Consequently, what makes a high affective adolescent happy may make a low affective adolescent miserable. Indeed, as demonstrated in Study III the low affectives seem to shift attention away from both negative and positive stimuli and try to diminish negative and positive information in memory by remembering neutral stimuli. In contrast, high PA adolescents shift attention to positive stimuli and then remember positive stimuli.

Nevertheless, if low affectives tendency to neutralize the words is also a tendency they use when interpreting and recollecting real life events, it might influence their happiness. In other words, if the reaction to positive life events elicits neutral memories it might appear to them as only few good things are happening in their lives. In this regard, high affectives and low affectives seem opposite to each other. On the other hand, low affectives might be the opposite of self-destructive while high affectives the opposite of self-actualizing. More specifically, low affectives might be better than self-destructive at using the strategy of prevention focus, while self-actualizers are better than high affectives at using the strategy of promotion focus. Moreover, the results suggest that reaction to negative stimuli is not only detected faster, as suggested by Dijksterhuis and Aarts (2003), but also may influence the type of stimuli to which participants attended to in the same context. In other words, after detecting negative words adolescents seem to search for types of words that may promote self-regulation. As stated in the introduction, adolescents that are successful shifting attention from negative stimuli are successful in decreasing anguish (Silk et al., 2003). The shift in attention to other words probably explains why reaction to negative words is related, not only to the recognition of negative words, but to the memory of positive and neutral words as well.

Adolescents in the present study, with the exception of self-destructive adolescents, probably used unconscious temperament-congruent strategies to process their reaction to negative stimuli. The strategy of choice seems to be adaptive in nature because the result is more of a pleasant memory. These findings are important if positive psychology wants to empower parents and teachers (and adolescents themselves for that matter) to give help and guidance to adolescents in the pursuit of a happier life. From a parent's perspective, the knowledge of the benefits of temperament-congruent strategies may be easier to relate to—most parents not only recognize themselves in their sons and daughters but are also together with the teachers, the adolescent's closest adults. This is also in line with the theory that happiness comes from acting in accordance with the norms in one's culture (Kitayama, Markus, & Kurokawa, 2000). Moreover, the findings add some shades of grey to the belief that the pursuit of a happy

life has to be equal to high levels of intensive pleasure. The results can be seen in relation to other researchers (e.g., Diener et al., 1991) who point out that coping strategies to maximize intense positive emotions, may be counterproductive. Mainly because individuals' ability to experience intensive positive emotions; is related to their ability to experience intensive negative emotions as well (Diener et al., 1991). It is tempting to argue that the same logic may apply to adolescents' temperament. If it is so, one of the best advices a parent or a teacher can give to the adolescent might be that the best shot at the memory of a happy life is to stay true to her own nature. For instance, research has showed that adolescents have a tendency to act in ways that are not congruent to their own self-conceptions (Harter, Marold, Whitesell, & Cobbs, 1996). False self behavior leads to negative emotional outcomes, if the adolescents engage in such action because they devalue their "true self". However, if they engage in false self behavior to please others or just for experimentation, such actions do not lead to negative emotions (Harter et al., 1996).

Nevertheless, individuals in a promotion focus experience emotions along a cheerfulness-dejection dimension; while individuals in prevention focus experience emotions along a quiescence-agitation dimension (Higgins, Shah, & Friedman, 1997). In other words, an adolescent in a promotion focus may feel cheerfulness when she asks someone out on a date (and the person says "yes"), while the one who does not engage in such action in order to avoid rejection (i.e., prevention focus) might feel at ease. In addition, the focus of an individual can also be determined by the focus of a group, especially when the individual strongly identifies with the group (Faddegon, Scheepers & Ellemers, 2008). This is important because, adolescence is a period in which groups (e.g., peer groups) are highly important (for a review see Steinberg & Morris, 2001). According to Larson (2000, p. 170) "a central question of youth development is how to get adolescents' fires lit, how to have them develop the complex of dispositions and skills needed to take charge of their lives". Thus, if the goal is to teach adolescents to promote focus (i.e., to direct attention and effort toward a challenging goal), this might be facilitated in group interventions.

Finally, if the focus of the individual partially occurs at an unconscious level, it is probably important to be aware of the process in order to understand the self and different actions. Interventions that help the adolescent to bring putative unconscious processing into consciousness should be encouraged. For example, Dattilio (2002) suggested that homework assignments (e.g., bibliotherapy, audiotapes/videotapes, activity scheduling, self-monitoring, behavioral task assignments, and cognitive restructuring) increase patients' awareness. When adolescents and adults strive to function positively they seem to attempt to feel good about themselves (Wilson & Ross, 2001). Being aware of their own limitations should help them to shape their environment so as to meet personal needs and desires. According to Cloninger (2004), a stable condition of coherence of personality is what leads to a "full range of positive emotions and no negative emotions regardless of external circumstances" (Cloninger 2004, p. 8). This coherence is to be achieved through self-awareness and self-acceptance is an important step in becoming self-aware (Cloninger 2004). Indeed, self-acceptance seems to be a predictor of adolescents' happiness (Study II and IV).

Caveats

The results presented here were partially based on self-reports and correlations. In other words, some of the dependent variables (e.g., regulatory focus) might as well be independent variables. Despite statistically significant, the relations among variables especially in Study III were generally small. Thus, the results should be interpreted with caution. It is plausible to suggest that there may be limitations with respect to the recollection task used in Study I and II. In both studies, participants were asked to recall as many positive and negative life events as they could for the past year; however, McCullough and colleagues (2000) observed that daily events contribute to more variance than major life events in terms of adolescents' LS. Moreover, Suh and colleagues (1996) found that only life events within the last three months influenced young adults' SWB significantly. Therefore, the results must be interpreted cautiously. Furthermore, Seidlitz and Diener (1993) proposed that happy adults recall more positive than negative non-personal events

may be due to the fact that the instrument used in their study was a list of common events of “American life.” Those events were suggested to be more important and closely related to the self of the American sample that participated in their study (Seidlitz & Diener, 1993). With this suggestion in mind, it is essential to point out that the words in the short story (Study I and III) were not events and were not related to the self; they were likely more closely related to semantic memory. In other words, it is possible for a person to know the words (semantic) and to recollect the context (episodic) in which they were encoded (Cloninger, 2004). However, the two forms of memory do not go together. This is important, because semantic memory may not be related to self-awareness (Cloninger, 2004). Thus, differences in semantic memory (e.g., differences in the recognition for words) may not be a part of what makes people happy. Furthermore, daily events do not happen in even pairs as the words presented in the short story and the connection between words in a story and the adolescents’ world view is an open question.

In the present dissertation gender differences were not largely investigated (gender was a variable only in Study VI and did not seem to play a role in differences in LS or PWB). Other researchers have found gender differences in adolescents’ LS as measured by the SWLS (e.g., Neto, 1993) and on the positive relations with others scale of the PWB measure (Ryff, 1995). It will be interesting to investigate gender differences using the AFTs; some of the data presented here indicate that such differences might be found. In Study II, for example, 68% of the adolescents in the self-actualization group were males.

The four studies presented in this dissertation were conducted among adolescents and its generalization value among other populations may therefore be limited. Firstly, adolescents experience emotion in different ways than children and adults (Silk et al., 2003). For instance, this may explain the unequal distribution of affect scores, many more adolescents were low-affective or self-destructive compared with self-actualizing or high-affective. Secondly, studies among older adults show that positivity bias seem not only to be spared but probably also enhanced. For example, memory for positive pictures is relatively better than for negative ones

among older adults (age 65-85) compared to younger samples (age 18-29; Charles, Mather & Carstensen, 2003).

The results from Study III may also be caused by response bias or conscious prevention focus. According to Higgins (2001) participants of recognition memory tasks that engage in promotion focus want to ensure recognizing a true target and ensure against omitting a true target. Thus, it is probable that participants in Study III had an inclination to consciously respond by recognizing the word as being in bold type, despite how they have rated it earlier. Nevertheless, the strategy of choice was probably elicited unconsciously by adolescents' reaction to negative stimuli. Firstly, because the main predictor of words recognized as being in bold type was the number of negative words rated as extremely negative. Secondly, in contrast to other studies (for a review see Higgins, 2001), in Study III participants were not externally motivated to engage in promotion or prevention focus (e.g., by inducing promotion: if you do well in this task, then you will get 6 dollars). Instead, participants' own temperamental dispositions were the backdrop to test reaction versus recognition. However, strategies are perhaps used unconsciously as a result of early learning history and not by inborn temperament alone. For example, children may learn that neutral, rather than extremely positive, affective responses yield parental approval (Schimmack & Diener, 1997). It is probable that this may be true even for earlier patterns of interaction between parents and children. For example, studies suggest that what infants bring within themselves (e.g., the temperament disposition of attention to stimuli) predict their ability to learn (Dunst & Lingerfelt, 1985). However not all temperamental dispositions are involved in that prediction, thus environmental variables may be at work (Dunst & Lingerfelt, 1985).

Furthermore, no study has investigated if the AFTs actually have different personalities and if the model is stable over time. This is important, firstly since personality appears to be the major determinant of well-being (e.g., Lyubomirsky et al., 2005); if the interacting influence of the two signal-sensitivity systems helps maintain well-being and are related to personality traits in different ways, then the AFTs should show differences and perhaps even similarities in personality. Secondly,

although STUDY I tested the test-retest reliability of PA and NA in a 6-month retest interval, the sample was rather small. As stated in the introduction, temperament is described as relatively stable in adults, while adolescents' temperament might be less stable (Windle & Windle, 2006). Thus, in order to use the AFTs model as trait measures or measures of long-term, individual differences in affectivity, the test-retest reliability is particularly important in regard to adolescents.

Moreover, although appealing to the senses, dichotomizing (e.g., dividing affect in high and low) has been recently criticized by researchers (see Keren & Schul, 2009). Thus, the AFTs model should be critically investigated in order to fully assess its usefulness in empirical studies. It is plausible to suggest that the data could be analyzed using a 2 X 2 design (high-low affectivity X positive-negative affectivity). This type of analysis might investigate more directly the interaction of the two signal-sensitivity systems. Finally, although beyond the scope of the present dissertation, it is important to address the theoretical question of referring to the AFTs as a model. After all, to the best of my knowledge, the AFTs have not been defined as a model in any study (see for example Norlander et al., 2002, 2005; Archer, Adolfsson, & Karlsson, 2008; Archer, Adrianson, Plancak, & Karlsson, 2007; Palomo et al., 2008). However, in the present dissertation the AFTs are used as a model or representation of the affective system defined as two separate interactive temperamental dispositions. In this line of thinking, individuals can experience affect as described by Norlander and colleagues (2002); especially when affect is measured by the PANAS. In other words, individuals probably experience affect in different ways: some are high in both PA and NA while others are low in both; yet, others experience a combination of high and low in the two dimensions. According to Apostel (1960) and others (e.g., Atkinson, 1960; Chakravarty, 2010; Toon, 2010), a scientific model represents phenomena (in this case the affective temperamental system) in a logical but simplified way. Based on the nature and rationale behind the affective temperamental system presented in the introduction, it is reasonable to suggest Norlander's original work as a model of the temperamental affective system.

Conclusions

It is important to assess how individuals differ and try to regulate their perception of the world. Positive youth development (e.g. the sense of being motivated and engaged from within) should emerge from adolescents' own perception of the daily events they experience as novel and stressful. In this context, Higgins (1997) has suggested that it is important to distinguish between strategies used in order to move forward desired end-states (happy) or away from undesired end-states (unhappy). The strategy used by adolescents probably mirrors what is important in their lives, what grabs their attention and what they find pleasant; which in turn helps them to regulate the emotional reactions to different types of events.

Despite the fact that negative events are discovered faster, humans as all organic beings create a most pleasant world for themselves. Our intuitive affective system probably does part of the work when creating a more pleasant experience. Hence, although at a general level we may show unconscious preference for negative stimuli and at individual level we may not be blessed with the "right temperament": most of us are able and actually do achieve happy lives (Diener, 2008; Diener & Diener, 1996). The memory of our life experiences and explanations of our own behavior during those experiences are unique for each individual. Those memories may play an important role in how we understand ourselves in a personal and social context at different times in life (McAdams, 2001). In regard to adolescents, the promotion of positive emotions should be in focus. It is plausible to suggest that a first step in this direction might be through self-acceptance.

The findings presented here add to the research on adolescents' happiness and well-being (for more research among adolescents see: Fogle et al., 2002; Funk III et al., 2006; Gilman, Huebner & Furlong, 2009; Martin & Huebner, 2007; McCullough et al., 2000; Rothbart & Jones, 1998). More important, the studies reveal tendencies with respect to individuals' temperamental dispositions. The interacting influence of the two signal-sensitivity systems may help to maintain well-being. For instance, low affective adolescents seem to be able to achieve satisfaction with their lives despite low levels of PA. The results presented here also

provide a reason and a more positive approach in the pursuit of happiness, suggesting that self-acceptance may foster life satisfaction regardless of individuals' temperamental dispositions. Thus, such factors may be more essential for well-being than life events per se. Indeed, Cloninger (2004) suggests that genetic and environmental influences do not influence behavior in the same way. Hence, in order to increase well-being, we need to look at the part of personality that mediates or modifies the significance or meaning of what is experienced as well as change emotional reactions and habits.

As in *Harry Potter and the Prisoner of Azkaban* (by J. K. Rowling, 1999), when the young Harry Potter is preyed on by the soulless creatures called Dementors that force human beings to relive their worst memories, adolescents probably need to cultivate and reach for their innermost positive feelings, happiness, and good memories in themselves. Nevertheless, stronger data is needed in order to assess if the different temperaments are actually related to promotion or prevention strategies.

SUMMARY IN SWEDISH

SVENSK SAMMANFATTNING

UNGDOMARS LYCKA: Den affektiva temperamentmodellens roll på minne och uppfattning av händelser, Subjektivt Välbefinnande och Psykologiskt Välbefinnande

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Positiv psykologiforskning pekar ut personlighet som en viktig faktor hos vuxnas och ungdomars lycka och välbefinnande. Syftet med avhandlingen var att undersöka skillnader mellan ungdomars lycka och välbefinnande med hänsyn till deras temperament. Relationen mellan olika mått på välbefinnande har också undersökts. Personlighet är en nyckelfaktor p.g.a. dess relation till skillnader i automatiska känslomässiga reaktioner och vanor (dvs. faktorer som avser temperament). Såsom personlighet beskrivs ovan utesluter den dock egenskaper som är relaterade till affektiva, känslomässiga drag. Därutöver, en positiv attityd till sig själv (dvs. Psykologiskt välbefinnande; PWB) hjälper individen att känna sig nöjd med livet oavsett hur hennes eget temperament får henne att känna och reagera på händelser. I motsats till dagens begreppsbildningar, föreslås, i denna avhandling, temperament som ett samspel mellan individers positiva (PA) och negativa affekt (NA). Samspelet mellan PA och NA förutspåddes att underlätta för individen att närma sig lycka och undvika olycka. Den affektiva temperamentmodellen av Norlander, Bood och Archer (2002, ursprungligen kallad Affektiva Personligheter) användes som bakgrund i fyra studier. Modellen ger fyra olika temperament: självförverkligande (hög PA och låg NA), högaffektiv (hög PA och hög NA), lågaffektiv (låg PA och låg NA) och självdestruktiv (hög PA och låg NA). I motsats till ungdomar med ett självdestruktivt temperament, förväntades självförverkligande, högaffektiva och lågaffektiva rapportera högre livstillfredsställelse (LS), högre PWB, att minnas och tolka fler händelser som positiva än negativa (dvs. positivity bias) och att komma ihåg händelser som överensstämmer med sitt temperament, vilket visar olika tendenser för att närma sig lycka eller undvika olycka. **Studie I** undersökte skillnader i LS, minne för händelser (ord och livshändelser) och dess relation till LS. Som förväntat

rapporterade högaffektiva och lågaffektiva högre LS än självdestruktiva ungdomar, trots höga nivåer av NA respektive låga nivåer av PA. Följaktligen var det endast självdestruktiva ungdomar som inte visade positivity bias. Livshändelser förutspådde endast LS för ungdomar med låg PA. **Studie II** undersökte skillnader i PWB och förhållandet mellan livshändelser och PWB, och PWB till LS. I likhet med Studie I, rapporterade alla temperament högre PWB än det självdestruktiva temperamentet och livshändelser förutspådde PWB endast för ungdomar med låg PA. Å andra sidan förutspådde självacceptans, en subskala av PWB, LS för alla temperament. **Studie III** undersökte om ungdomars reaktion på negativa ord var relaterad till vilka ord de mindes från en kort berättelse de fick läsa. Relationen förväntades variera mellan temperamenten. I enlighet med förväntningarna förutspådde hög PA-ungdomars reaktion på negativa ord antalet positiva ord de hade i minnet (dvs. promotion focus). Lågaffektiva ungdomars reaktion förutspådde antalet negativa ord i minnet (dvs. prevention focus). Självdestruktiva saknade förmåga att själva reglera sin reaktion på negativa ord. **Studie IV** upprepade resultaten från studie I och II: alla temperament rapporterade högre LS och PWB än självdestruktiva temperament. Precis som i Studie I, var självacceptans relaterat till LS för alla temperament. Sammanfattningsvis, samspelet mellan de två affektiva temperamentdispositioner gör förmodligen en del av processen när ungdomar skapar en lyckligare värld för sig själva. Därför, även om på individnivå en tonåring inte välsignats med "rätt temperament", kan och faktiskt uppnår de flesta ungdomar ett lyckligt liv. När det gäller ungdomar bör emellertid främjandet av positiva känslor vara i fokus. Det är rimligt att föreslå att ett första steg i denna riktning kan vara genom självacceptans. Konsekvenser och begränsningar i denna avhandling diskuteras.

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**ADOLESCENTS' AFFECTIVE EMPERAMENTS:
Life Satisfaction, Interpretation, and Memory of Events**

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Adolescents' affective temperaments: life satisfaction, interpretation, and memory of events

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This study investigated differences in adolescents' life satisfaction (LS), apprehension of personal and non-personal events, and the influence of recalled life events on LS. The affective temperament (AFT) classification was the framework for the research. Seventy male and 65 female adolescents participated. AFTs were developed through self-reported affect, generating four temperaments: self-actualizing, high affective, low affective, and self-destructive. LS was also self-reported. Apprehension for events was assessed through two tasks: (1) life event recollection and (2) interpretation and recognition of words in a short story. High and low affectives interpreted and remembered events as both self-actualizers and self-destructives. All AFTs, with the exception of self-destructives, showed positive biases. Only individuals with high positive affect were positively primed for non-personal events. Life events predicted self-destructives' and low affectives' LS. Self-actualizers showed higher LS, measured for a second time in a sub-sample, than self-destructives. The importance of the AFTs is discussed.

Keywords: adolescence; affective temperament; interpretation and memory of events; life satisfaction

Introduction

Almost any parent and teacher would do anything to give their children and pupils the opportunity of becoming satisfied with their lives. Whether it is by showing them unconditional love or making them interested in history, mathematics, and art, the goal is always the same. In order to accomplish this task, the parent and teacher may ask which factors influence youth's life satisfaction and well-being. However, certain types of genetically predisposed qualities measured at a young age, such as temperament, seem to determine whether a child grows up to be a happy or a depressed adult (Caspi, 2000). Thus, any attempt to influence children's well-being positively appears to be limited. Nevertheless, while well-being research among adults has moved forward; research among adolescents' has fallen behind (for a review, see Suldo & Huebner, 2006). Having a sample of adolescents may be important, because temperament is assumed to be relatively stable across the life span, whereas life satisfaction may increase with age (Diener, Lucas, & Scollon, 2006).

Recently, well-being studies have provided a clearer picture of who the happy adults are and what makes them happy (e.g., Ryan & Deci, 2001; Diener & Seligman, 2002; Lykken & Tellegen, 1996; Myers & Diener, 1995). Researchers have focused on people's

experiences of pleasure and displeasure; that is, hedonic well-being (Kahneman, Diener, & Schwarz, 1999). The assessment of this hedonic experience involves individuals' own judgements about life satisfaction (LS), the frequency of positive affect, (PA) and the infrequency of negative affect (NA) (Diener, Oishi, & Lucas, 2003). The three constructs are summarized as Subjective Well-Being (SWB; Ryan & Deci, 2001; Diener, 1984). According to Martin and Huebner (2007), the multidimensional model of SWB (LS, PA, and NA) is valid for adolescents as well. Thus, a happy adolescent can be assumed to be satisfied with life and to experience more positive than negative affect.

The constructs of SWB

LS refers to a comparison process, in which individuals assess the quality of their lives on the basis of their own self-imposed standard. Thus, 'LS is a conscious cognitive judgment of one's life in which the criteria or judgment are up to the individual' (Pavot & Diener, 1993, p. 164). LS is moderately correlated with the affective part of SWB (PA and NA). However, the components behave differently over time and have different relationships with other variables (Pavot & Diener, 1993). The affective part of SWB is computed by subtracting the number of positive emotions from

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the number of negative emotions that an individual experiences, i.e., the affect balance (Schimmack & Diener, 1997). Thus, an individual experiencing high positive and negative affectivity may end up with the same score as a person who experiences low positive and low negative affectivity (Schimmack & Diener, 1997).

Furthermore, besides being a part of SWB, PA and NA are two distinct factors that reflect temperamental dispositions: what grabs our attention and how intensely we react (Tellegen, 1993; Watson & Clark, 1994). These suggestions are important, because a person is assumed to base judgments of her life satisfaction on the evaluative reactions to an event and the memory of these reactions (Kim-Prieto, Diener, Tamir, Scollon, & Diener, 2005).

Memory and SWB

Seidlitz and Diener (1993) found that happy adults remembered more positive than negative events in their lives than unhappy adults. In the same study, when individuals were presented with a checklist, the happy adults recognized more positive than negative events as being part of their lives. The happy adults also recalled more positive than negative non-personal events; that is, events outside of their autobiographical memory. Slight support was found for theories arguing that happy adults' tendency to remember more positive events is due to the differences in their current mood. On the other hand, no support was found for theories that attribute these differences to the rehearsal of positive versus negative life events (Seidlitz & Diener, 1993).

Seidlitz and Diener (1993) explained their findings by referring to individual differences in emotional reactions to valenced events at the time of encoding, reactions that probably affect later accessibility. Diener and colleagues (2006) have suggested that one additional positive event is probably not going to influence LS in a person who usually experiences many positive events. Thus, life events may influence LS relative to what is typical for the person's life (Diener et al., 2006). Nevertheless, an increase in the frequency of positive life events in conjunction with a decrease of negative ones may lead to a decrease in depressive symptoms among adults (Needles & Abramson, 1990). However, in a 2-year longitudinal study, only life events within the last 3 months influenced young adults' SWB significantly (Suh, Diener, & Fujita, 1996).

In contrast, when asked to describe the most important and defining moments of their lives, adults recall disproportionately large number of events from adolescence, a phenomenon commonly known as the memory bump (McAdams, 2001). Those memories are 'rich in emotional and motivational content' (McAdams, 2001, p. 110). During adolescence, different events and transitions may influence adolescents'

development and LS (Erikson, 1968). Although major life events (e.g., parent being remarried) influence adolescents' LS, daily problems (e.g., coping with a minor social conflict) seem to be equally stressful experiences (McCullough, Huebner, & Laughlin, 2000). In this context, it is important to bear in mind that emotional reaction, and not valence (evaluating an event as being positive or negative), is the major factor influencing how well stimuli are encoded into memory (Adolphs & Damasio, 2001). Even more important, adults' SWB is largely dependent on their temperament, that is, how much and for how long an event influences LS is due to an individual's personality (Diener et al., 2006; Lyubomirsky, Sheldon, & Schkade, 2005). Temperament as a determinant of LS has also found similarly support in studies of adolescents, extraversion and neuroticism being the major predictors (e.g., Fogle, Huebner, & Laughlin, 2002; Huebner, 1991).

The Affective Temperaments (AFTs)

The affective part of SWB is more stable and genetically predisposed than the cognitive part (Fujita & Diener, 2005; Lykken & Tellegen, 1996). Yet, most of the studies have used PA and NA to define an emotional state rather than a 'trait-like' temperament (see Lyubomirsky, King, & Diener, 2005, for a large compilation of studies). We find appropriate to address this difference by referring to the lack of coherence in the literature, namely, the different measures used in the assessment of the affective construct. In the present study, we used the Positive Affect and Negative Affect Scales (PANAS) developed by Watson, Clark, and Tellegen (1988). The PANAS scales were developed on the idea that PA and NA represent two opposite poles. Thus, while some PANAS items (e.g., 'interested') may not be common in other scales, other items (e.g., 'happy') are not included in the PANAS. In addition, findings suggest that PANAS items reflect engagement with a stimulus (see Schimmack, 2007). That is why, in contrast to other studies, we assume that the two scales refer to individuals' temperament.

In the present study, we refer to PA and NA not only as temperamental dispositions but also as complementary to extraversion and neuroticism. We base our assumption first on research that shows that PA and NA (as measured by the PANAS) involve more mood and social traits than extraversion and neuroticism (for a review, see Gunderson, Triebwasser, Phillips, & Sullivan, 1999). Second, according to Larsen and Ketelaar (1989, 1991), there may be two ways of maintaining well-being that are related to the interacting influence of the two signal-sensitivity systems. Thus, recollecting and evaluating life as satisfying may be due to individuals' tendency to seek pleasant life experiences or/and avoid unpleasant ones (Walker, Skowronski, & Thompson, 2003).

The AFTs are developed by using a person's self-reported PA and NA (measured by the PANAS). The procedure generates four different temperaments: self-actualizing (high PA, low NA); high affective (high PA, high NA); low affective (low PA, low NA); and self-destructive (low PA, high NA) (Norlander, Bood, & Archer, 2002). Norlander et al. (2002) called their classification 'affective personalities.' However, we find more appropriate to refer to it as AFT, based on the research mentioned above. The AFTs react differently to stress and have different exercise habits and blood pressure. Self-actualizing and high affective adults show the best performance during stress, and have a more active life and lower blood pressure than adults with low affective and self-destructive temperaments (Norlander, Johansson, & Bood, 2005; Norlander et al., 2002). Moreover, research on SWB with adults has found that a high affective person's positive emotions balance their higher negative emotions (Fredrickson, 2006; Fujita, Diener, & Sandvik, 1991; Myers & Diener, 1995).

In sum, people's memory for events is often positively biased. The cause of this bias may be people's perceptions of the events and their tendency to seek pleasure or to avoid displeasure. However, these biases are not present in unhappy adults (Seidlitz & Diener, 1993; Walker et al., 2003). Furthermore, the two different affective constructs of SWB (PA and NA) reflect built-in reactions to signals of emotion and temperamental dispositions. In turn, temperament is assumed to influence four major interrelated determinants of SWB: life circumstances and events, affective reactions to those events, recall of the reactions, and judgments about life satisfaction (Kim-Prieto et al., 2005). Hence, differences in affectivity may explain differences in interpretation and memory of events. As stated before, temperament measured at a young age seems to not only determine the individual's current LS, but also whether a child grows up to be a happy or an unhappy adult. Therefore, similar results should be expected among adolescents. Nevertheless, adolescents' LS may be influenced by both major and minor events. Thus, how adolescents differ in their memory for events and how the recollected events may influence their LS is still an open question.

The present study

Some of the predictions and results in the present study would emerge using the common approach to PA and NA, i.e., from subtracting PA from NA. However, the AFT framework offers something unique over and above the single dimensional framework, specifically with respect to the high and low affective individuals. High affective individuals are probably as satisfied with life as the self-actualizing individuals. Does this

mean that low affective individuals are as unsatisfied with life as the self-destructive individuals? How do AFTs differ when judging their satisfaction with life and when interpreting and remembering events inside and outside their personal history? Does the presence of positive bias mean the triggering of positive memories, or positive priming? To what extent may the memory of life events predict the AFTs' satisfaction with life? To the best of our knowledge, no studies have directly investigated differences in LS interpretation and memory for events with respect to AFTs, either among adolescents or adults. Studying LS and memory for events using the AFT classification may help to understand how adolescents with different temperament combinations see, react, and recall the world. We consider the present study important because the interacting influence of the two signal-sensitivity systems may help to maintain LS and well-being.

Regarding the rationale for the research questions above, we assume that high affective individuals' experience of PA will balance the effects of their experience of NA, making them satisfied with life. In contrast, low affective individuals may avoid stressful situations in order to prevent displeasure. Thus, high and low affective people may be assumed to be more satisfied with their lives than self-destructive individuals but not less satisfied than self-actualizing individuals.

In general, people are positively biased. However, self-destructive people may not show those biases. Thus, it might be expected that self-actualizers, high affectives, and low affectives may interpret and remember more positive than negative events. Nevertheless, if individuals are presented with positive and negative stimuli, interpretations of the value of the stimuli may vary accordingly to their temperament. Emotional reactions to the stimuli may also vary according to individuals' temperament and may explain differences in memory of the events. High affective and self-actualizing individuals may interpret more positive events as being positive than as being neutral. However, high affective individuals' intensive NA may influence the interpretation of the negative events in the same manner. The low affective individuals are instead expected to interpret more negative events as being neutral than as being negative. In this context, the self-actualizing individuals may be the only AFT to have a tendency to be positively primed.

With respect to life events, research among adults suggests that high affective individuals experience intense positive and intense negative life events. Additional events (positive or negative) are probably not going to influence LS in a person who usually experiences many positive and negative events. The same might be true for self-actualizing individuals, because their recurrent experience of more positive life

events either makes them adapt to positive events or use them as a buffer when experiencing negative events. On the other hand, low affective individuals may avoid stressful situations; therefore, their satisfaction with life may be predicted only by positive life events. Self-destructive individuals' satisfaction with life may be predicted by both positive and negative life events. However, low affective individuals experience low PA and perform badly in stressful situations and high affective individuals experience high NA and high levels of stress in life. Considering that, in the long term only self-actualizing individuals are expected to be more satisfied with life than the self-destructive individuals.

If the above assumptions are correct, the results will offer a more explicit picture of how temperamental dispositions influence interpretation and memory of both positive and negative events. Then it might be suggested that adolescents' temperamental dispositions allow them to automatically seek pleasure or/and avoid displeasure, which in turn make them positively biased and more satisfied with their lives. The aim of the present study is to investigate LS in a group of adolescents with respect to AFTs. More specifically, the study examines differences in LS, memory, and interpretation of personal and non-personal events between AFTs. We also investigate to what extent memories of personal life events are related to AFTs' satisfaction with life.

Method

Participants

Participants were pupils at two high schools in the county of Blekinge, Sweden. The schools were relatively small and contained 66 and 89 pupils, respectively. All pupils were contacted, only one chose not to complete Part 2 of the study. Nineteen pupils were not present, either at Part 1 or Part 2, due to sickness. The total number of participants was 135 (70 males and 65 females), with an age mean of 17.00 years ($SD=0.88$). All completed the Satisfaction with Life Scale (SWLS) and the PANAS. However, 30 participants were randomly assigned to another experiment. Thus, only 105 pupils were assigned for the two different memory tasks. The first task was to recollect life events experiences from the previous year. The second task was for recognition and interpretation of words in a short story. Two of the participants in the recollection task could not be present at either Part 1 or Part 2 of the experiment. This sub-sample consisted of 53 males and 50 females ($n=103$), with a mean age of 16.98 years ($SD=0.92$). In the recognition task, nine failed to participate in either Part 1 or Part 2 due to sickness, one student chose not to participate during Part 2, and 10 left too many questions unanswered.

This left a sub-sample of 49 males and 36 females ($n=85$), with a mean age of 16.73 years ($SD=0.89$).

Instruments

Satisfaction With Life Scale

The Satisfaction With Life Scale (SWLS; Pavot & Diener, 1993) was translated from English to Swedish by two bilingual teachers. No discrepancies were found. The instrument consists of five statements (e.g., 'In most of my ways my life is close to my ideal,' 'The conditions of my life are excellent'). Participants are asked to indicate extent of agreement using a 7-point Likert scale (1 = *strongly disagree*, 7 = *strongly agree*). The SWLS score was established by summing the five ratings for each participant. SWLS showed high reliability in the whole sample (Cronbach's $\alpha=0.80$).

Positive Affect and Negative Affect Scales

The Positive Affect and Negative Affect Scales (PANAS; Watson et al., 1988) asks participants to rate to what extent they generally experience 20 different feelings or emotions (10 PA and 10 NA) for the last weeks, using a 5-point Likert scale (1 = *very slightly*, 5 = *extremely*). The 10-item PA scale includes adjectives such as strong, proud, and interested. The 10-item NA scale includes adjectives such as afraid, ashamed, and nervous. The Swedish version used in the present study is the same version used in other studies among Swedish adults (e.g., Norlander et al., 2002, 2005). In the present study, the PANAS showed high reliability in the whole sample (Cronbach's $\alpha=0.84$ for PA and Cronbach's $\alpha=0.82$ for NA).

Life events recollection measure

This instrument is used to measure memory for events from participants' personal histories. This task was adapted from Seidlitz and Diener's study (1993). Participants were asked to recall and list as many positive and negative life events as possible from the last year, separately, and with a time limit of 3 minutes for each type of event. A life event recall balance score was calculated by simply subtracting the number of recalled negative life events from the number of recalled positive life events. The life event recall balance was used instead of each score by itself in an attempt to control for external variables affecting the number of events recalled (e.g., writing speed; Seidlitz & Diener, 1993).

Interpretation and recognition for words in a short story

This instrument was constructed to monitor differences between AFTs regarding interpretation of events and

differences in recognition for those events. The instrument consists of a short story (a synopsis of *The Alchemist*; Coelho 2002, Swedish translation), a rating list of 48 words (highlighted in bold type in the story; real words) and a recognition list that included the 48 real words and 21 words not presented in the short story (false words). The rationale of using a short story, instead of only a list of words, was that words are recollected and recognized better when encoded in a semantic way (e.g., building sentences of the word; Schacter & Buckner, 1998). The 48 real words were 24 nouns and 24 adjectives equally distributed among three types: positive (e.g., friends, interesting), neutral (e.g., hands, large), and negative (e.g., thief, anxious). The rating list explicitly asked participants to rate all 48 words that 'had been in the story in bold type,' using a 7-point Likert scale (1 = *totally negative*, 7 = *totally positive*). In the present study, the rating list showed good reliability for positive words (Cronbach's $\alpha=0.86$) and negative words (Cronbach's $\alpha=0.88$). The reliability for the neutral words was lower (Cronbach's $\alpha=0.62$). Three scores were computed by summarizing the number of words participants rated as 7, 4, and 1. We assumed that rating a word as a 7 was equivalent to a positive emotional reaction. Accordingly, words rated as 4 were assumed to elicit a neutral reaction, whereas those rated as 1 elicited a negative reaction.

In contrast to free recall, recognition tasks minimize the possibility that memory for words is influenced by momentary moods (Fielder, 2001). Thus, a recognition list was found appropriate for the present study. The 21 false words were added randomly to the recognition list to monitor priming differences between AFTs. Both positive and negative false words were taken from PANAS-X basic scales (Watson & Clark, 1994); therefore, they were reliable. Consequently, neutral words were adjectives that participants in the pilot study had rated as being neutral. The false words were 7 of each type: positive (e.g., confident, proud), neutral (e.g., brown, several), and negative (e.g., sad, ashamed). The recognition task asked participants if they recognized the words as being in the short story in bold type, not being in the short story at all, or if they didn't know. In order to test memory for non-personal events, two recognition scores were computed for positive and negative real words: real positive words in 'bold type,' real positive words 'not present,' real negative words in 'bold type,' and real negative words 'not present.' Recognition scores for the false words were computed in the same manner.

Procedure

A pilot study, comprising 65 undergraduate students at Växjö University in Sweden (19 males and 46 females),

with an age mean of 19.74 years ($SD=5.81$), was first conducted. This was done in order to develop the memory tasks. The pilot sample was not part of the present study. The adolescents in the present study had consent from their teachers to participate. Adolescents were told that the study was divided into two parts and had to do with how high school pupils think about their lives and in different situations. Confidentiality was assured and participants were told that their involvement was voluntary. Pupils were asked to write the last four digits of their social security number, in order to trace participants' answers from Part 1 and Part 2. The study was conducted in the participants' own classrooms during school hours. Each group comprised between 20 and 30 pupils.

In the first part of the study, all participants were presented with the rating list and the satisfaction with life measure. For the participants in the recognition task, the short story was presented first and then the rating list. Two days later, participants were given the recognition list or/and life events recall tests. After completing the tasks, participants were administered the PANAS. Participants' PA scores were divided in two parts; consequently, participants were classified into one group with high PA and another group with low PA. The same was done for participants' NA scores, thus participants were classified into one group with high NA and another group with low NA. The combination of these two variables generated the four different AFTs: self-actualizing (high PA, low NA); high affective (high PA, high NA); low affective (low PA, low NA); and self-destructive (low PA, high NA). Although the AFT classification has been used in other studies (e.g., Norlander et al., 2002, 2005), none of them included adolescents. In the present study, participants' PA and NA scores were divided into high and low, using reference data from a group of 84 adolescents (mean age = 16.51) who were followed three times with the PANAS self-reports over a 1.5 year time span. (These reference data are not used in the present study and are part of a future longitudinal project.) PA and NA mean scores from this group yielded the following cut-off points used in the present study: low PA = 34 or less; high PA = 35 or above; low NA = 22 or less; and high NA = 23 or above. This classification resulted in a total of 28 self-actualizing adolescents (19 males and 9 females), 34 high affective adolescents (17 males and 25 females), 34 low affective adolescents (16 males and 18 females), and 32 self-destructive adolescents (15 males and 17 females). A short debriefing was conducted before all tests were collected; all participants chose to submit the test. About 6 months later, 50 randomly selected pupils were asked to complete the SWLS and the PANAS self-reports for a second time. Six pupils did not participate due to sickness.

Results

See Table 1 for AFTs' mean scores in LS and recalled life events. To investigate differences in LS between AFTs, a one-way analysis of variance (ANOVA) was used. A significant effect emerged with respect to participant's AFTs ($F(3,122)=9.85, p < 0.001$). A Bonferroni correction to the alpha level was performed. The results showed that self-destructive adolescents had lower LS scores than self-actualizing, high affective, and low affective adolescents. No other significant differences in LS were found. Significant details are shown in Table 2.

In order to test differences among AFTs in interpretation of events outside participants' personal histories, a mixed ANOVA was used. The first factor was the within-subjects factor of interpretation of real words, with two levels: number of words rated as 7 (most positive on a 7-point Likert scale) and number of words rated as 1 (most negative on a 7-point Likert scale). The second factor was the between-subjects factor of AFT. The main effect of word interpretation (positive vs. negative) was significant ($F(1,75)=20.65, p < 0.001$). A significant interaction between AFT and word interpretation (positive vs. negative) was also found ($F(3,75)=2.91, p < 0.05$). Four dependent *t*-tests were therefore conducted in order to investigate differences between AFTs with respect to positive vs.

negative words. All AFTs, except the self-destructive individuals, showed a significant difference between the number of words rated as positive and the number of words rated as negative. See Table 3 for details.

To determine AFTs' differences in recollection of positive and negative life events, a one-way ANOVA was conducted. A Bonferroni test showed that self-destructive individuals had a significant lower life event recall balance than the other three temperaments. No differences between the other temperaments were found. See Table 4.

Furthermore, we investigated whether differences also applied to the number of real words recognized as being in 'bold type' or 'not present.' Dependent *t*-tests were conducted between positive and negative words for each AFT's recognition score (positive words in bold type vs. negative words in bold type; positive words not present vs. negative words not present). All temperaments recognized more positive than negative words as being in bold type in the short story. Moreover, self-actualizing and high affective adolescents recognized more negative than positive words as not being present in the short story. See Table 5 for details.

For testing individual variation in the interpretation of presented positive and negative stimuli

Table 1. AFTs' mean scores of life satisfaction and recalled life events.

AFT	Life satisfaction	Positive life events	Negative life events
Self-actualizing	27.71 <i>n</i> = 28	5.85 <i>n</i> = 20	3.55 <i>n</i> = 20
High affective	26.12 <i>n</i> = 33	6.21 <i>n</i> = 24	4.08 <i>n</i> = 24
Low affective	25.76 <i>n</i> = 34	5.43 <i>n</i> = 30	3.50 <i>n</i> = 30
Self-destructive	21.26 <i>n</i> = 31	6.43 <i>n</i> = 28	5.21 <i>n</i> = 28

Table 3. AFTs' within mean difference of words rated as 7 (most positive on a 7-point Likert scale) and as a 1 (most negative on a 7-point Likert scale).

AFT	Positive words	Negative words	
Self-actualizing <i>n</i> = 13	5.23	3.69	$t = 2.25, df = 12^*$
High affective <i>n</i> = 21	8.19	4.90	$t = 3.98, df = 20^{***}$
Low affective <i>n</i> = 24	5.88	3.29	$t = 3.22, df = 23^{**}$
Self-destructive <i>n</i> = 21	4.76	4.57	$t = 0.24, df = 20\ ns$

Note: *ns* = nonsignificant; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Table 2. Mean differences in life satisfaction between AFTs.

AFT	Self-actualizing	High affective	Low affective	Self-destructive
Self-actualizing <i>n</i> = 28		1.95 <i>ns</i>	1.59 <i>ns</i>	6.46***
High affective <i>n</i> = 33	-1.59 <i>ns</i>		0.36 <i>ns</i>	4.86**
Low affective <i>n</i> = 34	-1.95 <i>ns</i>	-0.36 <i>ns</i>		4.51*
Self-destructive <i>n</i> = 31	-6.46***	-4.86**	-4.51*	

Note: *ns* = nonsignificant. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Table 4. Mean differences in life event recall balance between AFTs.

AFT	Self-actualizing	High affective	Low affective	Self-destructive
Self-actualizing <i>n</i> = 19		0.01 <i>ns</i>	0.02 <i>ns</i>	0.80*
High affective <i>n</i> = 22	-0.01 <i>ns</i>		0.01 <i>ns</i>	0.80*
Low affective <i>n</i> = 27	-0.02 <i>ns</i>	-0.01 <i>ns</i>		0.79*
Self-destructive <i>n</i> = 24	-0.80*	-0.80*	-0.79*	

Note: *ns* = nonsignificant; **p* < 0.05.

Table 5. AFTs within mean difference of positive and negative words recognized as 'bold type' or 'not present.'

AFT	Difference between positive and negative words recognized as being in 'bold type'	Difference between positive and negative words recognized as 'not present'
Self-actualizing <i>n</i> = 13	2.69 <i>t</i> = 3.01, <i>df</i> = 12**	-1.69 <i>t</i> = -2.71, <i>df</i> = 12**
High affective <i>n</i> = 21	2.86 <i>t</i> = 4.56, <i>df</i> = 20***	-1.05 <i>t</i> = -2.51, <i>df</i> = 20***
Low affective <i>n</i> = 24	1.36 <i>t</i> = 2.35, <i>df</i> = 24*	-0.83 <i>t</i> = -1.84, <i>df</i> = 23 <i>ns</i>
Self-destructive <i>n</i> = 21	1.38 <i>t</i> = 2.15, <i>df</i> = 20*	-0.63 <i>t</i> = -1.21, <i>df</i> = 18 <i>ns</i>

Note: *ns* = nonsignificant; **p* < 0.05; ***p* < 0.01; ****p* < 0.001.

with respect to participants' AFTs, a series of dependent *t*-tests were conducted. Low affective, high affective, and self-actualizing individuals rated more of the positive words as a 7 (positive emotional reaction) than as a 4 (neutral emotional reaction) (low affective: *t* = 3.19, *df* = 24, *p* = 0.001; high affective: *t* = 6.53, *df* = 20, *p* < 0.001; and self-actualizing: *t* = 2.70, *df* = 12, *p* = 0.01). However, this was not the case for self-destructive individuals. On the other hand, self-destructive and high affective individuals rated more of the negative words as 1 (negative emotional reaction) than as 4 (neutral emotional reaction) (*t* = 2.37, *df* = 20, *p* = 0.01, respectively, *t* = 2.03, *df* = 20, *p* = 0.05). Such differences did not emerge in self-actualizing and low affective individuals.

With respect to the false words, dependent *t*-tests for each temperament were conducted in order to determine whether the self-actualizing individuals were the only ones to recognize more positive than negative false words being in the short story, that is, to be primed for positive stimuli. However, both self-actualizing and high affective individuals were found to recognize more positive than negative false words as being in the story in bold type (*t* = 2.53, *df* = 19, *p* = 0.01, respectively, *t* = 2.71, *df* = 12, *p* = 0.01).

In order to examine how recalled life events may predict different AFTs' satisfaction with life, four

multiple regression analyses (MRA) were conducted. Using the stepwise method, a significant model emerged for self-destructive and low affective temperaments. Self-destructives' LS was predicted by the recollection of more positive and less negative life events. Moreover, low affectives' LS was predicted by the recollection of more positive life events. As expected, life events recollection did not predict self-actualizing or high affective adolescents' LS. See Table 6 for details.

Participants' second assessment of LS, PA, and NA (in a random sample of 44 pupils) was used to test whether the differences in life satisfaction between AFTs also applied in the long term. Affect and LS measured at Time 1 (T1) were significantly correlated to measures of the same variables at time 2 (T2), see Table 7. Participants' T2L, T2PA, and T2NA were used to test long-term differences in LS between AFTs. An average score for LS (using T1LS and T2LS), PA (T1PA and T2PA), and NA (T1NA and T2NA) was calculated. As described before, PA and NA average scores were used to generate the AFTs. The average satisfaction with life was used as the dependent variable. A one-way ANOVA showed a significant effect ($F(3, 41) = 5.63, p = 0.001$). A Bonferroni correction to the alpha level was performed. Only self-actualizing individuals were significantly more satisfied

Table 6. The number of recalled positive and negative life events as predictors of AFTs' satisfaction with life (only significant models shown).

AFT	Predictor variables	Beta	Adjusted R^2	F
Low affective	Positive events	0.55***	0.28	$F(1, 25) = 10.86***$
Self-destructive	Positive events	0.54*	0.35	$F(2, 21) = 7.22***$
	Negative events	-0.79***		

Note: *ns* = nonsignificant; * $p < 0.05$; *** $p < 0.001$.

Table 7. Pearson correlations for measures of LS, PA, and NA at Time 1 (T1) and Time 2 (T2; 6 months later).

	T1LS	T1PA	T1NA	T2LS	T2PA	T2NA
T1 Life satisfaction		0.38**	-0.42**	0.69**	0.35*	-0.34*
<i>n</i>		126	126	49	49	48
T1 Positive affect	0.38**		-0.05 <i>ns</i>	0.36*	0.68**	-0.06 <i>ns</i>
<i>n</i>	126		128	48	48	47
T1 Negative affect	-0.42**	-0.05 <i>ns</i>		-0.11 <i>ns</i>	-0.11 <i>ns</i>	0.48**
<i>n</i>	126	128		48	48	47
T2 Life satisfaction	0.69**	0.36*	-0.11 <i>ns</i>		0.38**	-0.31*
<i>n</i>	49	48	48		50	49
T2 Positive affect	0.35*	0.68**	-0.11 <i>ns</i>	0.38**		0.01 <i>ns</i>
<i>n</i>	49	48	48	50		49
T2 Negative affect	-0.34*	-0.06 <i>ns</i>	0.48**	-0.31*	0.01 <i>ns</i>	
<i>n</i>	48	47	47	49	49	

Note: *ns* = nonsignificant; * $p < 0.05$; ** $p < 0.01$.

with life than self-destructive individuals (mean difference = 7.02, $p = 0.001$). Furthermore, four MRAs were conducted, using the average SWLS score and the number of recalled life events at T1, one MRA for each average AFT. No significant models emerged.

Discussion

The general aim of this study was to examine in what way adolescents experience well-being. More specifically, adolescents' temperamental dispositions described in terms of AFTs were used as the backdrop for the investigation of differences in adolescents' satisfaction with life and in how they recall, recognize, and interpret events. Furthermore, the study examined to what extent memories of life events predict the AFTs' satisfaction with life. Some similarities were expected between the presented research and that done with adults due to the large influence of temperament on SWB. However, some differences were expected with respect to memory for life events.

Differences in LS between affective temperaments

It was expected that self-actualizing, high affective, and low affective adolescents would have higher LS than self-destructive individuals. However, due to the buffer

effect of high PA (Fujita et al., 1991) and low affective individuals' tendency to avoid stressful situations in order to prevent displeasure (Norlander et al., 2005), high and low affective adolescents were expected to not be less satisfied with life than self-actualizing adolescents. The results supported this hypothesis and are consistent with earlier studies with adults, which have found that that intense positive affects correlate with intense negative affects (Diener, Colvin, Pavot, & Allman, 1991; Diener & Lucas, 2000). In a relatively young sample (mean age = 19.26, $SD = 2.96$), Tugade and Fredrickson (2004) found that individuals who report high positive emotions before doing a time-pressured speech preparation experience higher levels of happiness and interest along with high anxiety feelings. Even more important, Tugade and Fredrickson found that individuals with high affectivity returned faster to their normal cardiovascular activation following the task. A time-pressured speech preparation is likely to be part of the lives of the adolescents in the present study as well. Following Tugade and Fredrickson, we suggest that high affective adolescents' more intense positive emotions may balance their intense negative emotions, thus explaining why they are not significantly less satisfied with life than self-actualizing adolescents. Furthermore, low affective individuals' tendency toward a prevention focus (i.e., engaging in the avoidance of stressful

situations) might be suggested to make them more satisfied with life than the self-destructive individuals.

Memory of life events

It was expected that self-actualizers, high affective, and low affective adolescents would remember more positive than negative life events. In the present study, only self-destructive adolescents did not show the tendency to be positively biased. These results are in accordance with earlier studies among adults; people are generally positively biased, unhappy people excluded (for a review, see Walker et al., 2003). However one question arises: why are adolescents with different temperamental dispositions (self-actualizers, high affective, and low affective) positively biased? An explanation might be that temperament not only determines the individual's emotional reaction but also the tendency to either seek pleasant life experiences or to avoid unpleasant life experiences (Walker et al., 2003). That is, self-actualizing adolescents may recall more positive events for the reason that they seek more positive events and those events are more recurrent in their life. High affective individuals may seek positive experiences at the risk of becoming disappointed if the outcome is negative. However, they are as good in stressful situations as the self-actualizing adolescents (Norlander et al., 2005), and may interpret the event not as negatively as the self-destructive adolescents, hence recalling it as a positive, challenging, and meaningful experience. Low affective individuals may recall more positive than negative life events because they avoid unpleasant circumstances or situations, which in turn make them react and recall positive events when they do happen. Consequently, low affective adolescents should also react intensely to negative life events.

Another point of discussion is the fact that self-destructive adolescents recalled more positive and negative life events than the other temperaments, although not significantly more. That is, for an individual who experiences many positive events, one additional positive event is probably not going to matter (Diener et al., 2006), whether it is a very happy adolescent or an unhappy adolescent with as many memories of negative events.

Memory of words in the short story

With respect to words that actually were highlighted in bold type in the short story, the following findings are worth mentioning. All AFTs showed a tendency to recognize more of the positive words as being bold typed in the story. However, only self-actualizing and high affective adolescents recognized more of the negative words as not being present in the story at all.

Putting it another way, high PA adolescents were more prone to forget negative words than to forget positive words. High PA adolescents' lack of accuracy to recognize the words could be explained by previous findings with undergraduate college students. For example, Larsen and Ketelaar (1989, 1991) found that individuals who experience high levels of PA attend and react more intensely to positive stimuli than those individuals with low levels of PA. Furthermore, individuals with high levels of NA attend and react more intensely to negative stimuli than individuals with low levels of NA. Unsurprisingly, self-actualizing adolescents in the present study should recognize positive but 'forget' negative words because less attention is focused on the negative ones. However, the present study showed that adolescents who experience different levels of PA and NA are also prone to recognize positive stimuli as the happy adolescents. It is compelling to suggest that although only self-actualizing adolescents are probably blessed with the 'right' temperament, all adolescents see, pay attention to, and remember positive stimuli.

Interpretation of words in the short story

We assumed that if individuals were presented with positive and negative words, rating the words would vary according to their AFT. Only high affective and self-actualizing individuals were expected to interpret more of the positive words as being positive than as being neutral. However, all AFTs, with the exception of the self-destructive adolescents, showed this inclination. On the other hand, as expected, high affective and self-destructive individuals interpreted more of the negative words as being negative than as being neutral. In contrast to expectations, the low affectives did not interpret more of the words (positive or negative) as being neutral than as positive or as negative. In contrast, other studies (e.g., Pury, 2004) have shown that undergraduate college students with low PA are prone to neutral interpretation and recollection. However, in this study, participants' temperamental dispositions (PA and NA) were used in order to determine the AFT classification. Thus, a low PA individual in other studies may correspond either to a low affective adolescent or to a self-destructive adolescent in the present study. Certainly, self-destructive adolescents interpreted just as many of the positive words as being positive than as being neutral. In contrast, low affective individuals interpreted just as many of the negative words as being negative than as being neutral. This distinction for stimuli interpretation may be what differentiates low affective from self-destructive adolescents with respect to their self-reported satisfaction with life. In other words, while self-destructives neutralize positive stimuli, low

affectives neutralize negative stimuli. At the same time, positive stimuli are not neutralized by low affectives, but by self-destructives. This may also explain why low affective adolescents were positively biased. From this perspective, the study of well-being and its cognitive determinants should benefit from using PA and NA as the two distinct factors they are proposed to be (e.g., Ito & Cacioppo, 2001; Watson et al., 1988).

Positive priming

Concerning the false words (i.e., words not included in the short story but presented in the recognition list), both self-actualizing and high affective individuals recognized more positive than negative false words as being in the short story. However, based on research with adults, we expected only self-actualizers to show this tendency. High affectives high NA should allow them to be ready for negative stimuli as well, thus neutralizing the positive priming. It is probable that, as in Tugade and Fredrickson's study (2004), high PA overrules the influence that high NA may have on stimuli experience.

Number of recalled life events as predictors of LS

For self-destructive adolescents, LS was found to be a function of a combination of more positive life events and fewer negative life events. For low affective, LS was a function of relatively more positive life events. In the present study, participants were asked to recollect life events for the past year. However, Suh and colleagues (1996) found that only life events within the last 3 months influenced young adults' SWB significantly. Therefore, the results must be interpreted cautiously. Nevertheless, the 'memory bump' phenomenon, found in research among adults who are asked to describe their life stories (McAdams, 2001), lends some support to the importance of the results found here. Adolescence may not only be a time of many transitions but also a highly emotional time; a time when daily events elicit as high emotional reaction as do major events (McCullough et al., 2000). It is possible, in turn, that this conclusion may also explain the result that a large number of positive and negative life events were recalled by self-destructive adolescents. If it is so, following McCullough et al. (2000), we suggest that coping with major and minor events should be part of interventions with self-destructive adolescents. However, low affective adolescents probably need help to enhance their positive experiences. Furthermore, SWB is assumed to be partially dependent on a person's temperament, that is, how much and for how long an event influences happiness is due to an individual's personality (Diener et al., 2006). Logically, the number of recollected life events should

not predict satisfaction with life for self-actualizing or high affective adolescents.

AFTs and LS 6 months later

The results discussed above show that high and low affectives interpretation and memory of events are in some ways similar to both self-actualizers and self-destructives. However, adolescents with a self-actualizing temperament emerged as the only ones to remain more satisfied with life when measures of the variables (LS, PA, and NA) reported at two different times (6 months apart) were used. Nevertheless, it is important to mention that high and low affective individuals were still not significantly less satisfied with life than self-actualizers. This may be due to their tendency to interpret, emotionally react, and remember events according to their temperamental dispositions. In other words, low affectives neutralize their world and high affectives enhance theirs.

Finally, the recollected life events were not related to adolescents' self-reported LS at time 2. In contrast, other findings suggest that major and minor events are directly related to adolescents' LS (McCullough et al., 2000). It is tempting to assume that the results presented here are due to the 3-month influence discussed earlier (Suh et al., 1996). However, McCullough and colleagues (2000) used a recognition list instead of recollection tasks. Hence, the recollected events in this study may have been influenced by momentary moods (Fielder, 2001), and therefore not related to adolescents' LS in the long term.

Limitations and suggestions for further investigation

Some of the limitations and suggestions had already been discussed earlier. However, we want to draw attention to several important issues. The present study was mostly based on self-reports. Although the instruments used to measure LS, PA, and NA (SWLS and PANAS) showed high reliability, appropriate measures for those constructs have been developed and validated for use with adolescents (e.g., the Students' Life Satisfaction Scale by Huebner, 1991, and the PANAS-C by Laurent et al., 1999). Thus, it is reasonable to question why we selected to administer measures developed for use with adults (SWLS and PANAS). Nevertheless, evidence of the reliability and validity of the SWLS and the PANAS in adolescents can be found elsewhere (SWLS: Neto, 1993, 2001; PANAS: Huebner & Dew, 1995; McCullough et al., 2000).

Furthermore, Seidlitz and Diener (1993) proposed that the finding that happy adults recall more positive than negative non-personal events may be because the instrument used in their study was a list of common

events of 'American life.' Those events were suggested to be more important and closely related to the self of the American sample that participated in their study (Seidlitz & Diener, 1993). With this suggestion in mind, it is essential to point out that the words in the current study's short story were not events and were not related to the self; they were likely more closely related to semantic memory. In other words, it is possible for a person to know the words (semantic) and to recollect the context (episodic) in which they were encoded. However, the two forms of memory do not go together. This is important, because semantic memory may not be related to self-awareness (Cloninger, 2004). According to Cloninger, self-awareness through self-acceptance is an important step in becoming happy. Thus, differences in semantic memory (e.g., differences in the recognition for words) may not be a part of what makes people happy.

Nevertheless, we believe that this study's findings add to the research on adolescents' LS (for more research on adolescents' LS see, among others, Fogle et al., 2002; Funk III, Huebner, & Valois 2006; Martin & Huebner, 2007; McCullough et al., 2000; Rothbart & Jones, 1998). More important, the study reveals tendencies with respect to individuals' temperamental dispositions. With the exception of self-destructive adolescents, all temperaments interpreted and remembered more positive than negative life events. Being positively biased seems not to be equal to being primed for positive stimuli; this might be only true for individuals with high PA. The strategies that the different temperaments use to become more satisfied with life may be important to assess in order to understand how we can promote well-being in adolescents. For instance, the number of recalled positive life events by low affective adolescents actually had an impact on their life satisfaction. Low affective adolescents may have a tendency to avoid stressful situations (Norlander et al., 2005). If this is so, when positive life events occur in low affectives' lives, the events might be more due to circumstances than to intentional efforts. Positive events that are circumstantial have been suggested to be easier to adapt to than events intentionally elicited (Sheldon & Lyubomirsky, 2006). In this context, it is important to acknowledge individual differences in temperamental dispositions and that the closer the event is to the person's values and goals, the more should its interpretation be related to the person's well-being (Kim-Prieto et al., 2005). Consequently, what makes a high affective person happy may make a low affective person miserable.

Although the recollected life events failed to predict LS 6 months later, we want to stress the importance of research with respect to the recollection of life events among adolescents. Affective reactions to events and recall of the reactions serve as a base or standard when individuals evaluate their life (Kim-Prieto et al., 2005).

We suggest that future research should investigate how adolescents react and interpret recollected life events and AFTs' psychological well-being in order to capture the whole picture of adolescents' LS and the complex role of the temperamental dispositions:

To an artist who looks at a cloud or the skies or a tree, these have a different meaning; he looks at them from the point of view of how he will paint them, of how he can reproduce them as a symbol to the world—not necessarily by copying them, but by sharing with others what he has perceived in them. That is exactly what you have to do

Jeddu Krishnamurti (Krishnamurti, 2003)

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**ADOLESCENTS' PSYCHOLOGICAL
WELL-BEING AND MEMORY
FOR LIFE EVENTS:**

**Influences on Life Satisfaction with Respect to
Temperamental Dispositions**

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Adolescents' Psychological Well-Being and Memory for Life Events: Influences on Life Satisfaction with Respect to Temperamental Dispositions

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Abstract The aim of the present study was to explore how the number of recalled life events (positive and negative) predicts psychological well-being (PWB) and how PWB predicts life satisfaction (LS). In addition, participants were categorized into one of four different affective temperaments (self-actualizing, high affective, low affective, and self-destructive). One hundred and thirty-five high school students participated in completing the SWLS (LS), PWB (short-version), PANAS (to create affective temperaments), and the life events recollection task. Results indicated that adolescents with high positive affect also had high PWB; adolescents with low affective profiles also had high PWB. Positive and negative life events predicted PWB for self-destructive temperaments, whereas positive life events predicted PWB for low affective temperaments. PWB predicted LS for all temperaments except the self-actualizing group. In conclusion, the temperament combinations may allow the individual to achieve PWB and LS. Even more importantly, selfacceptance may foster LS regardless of temperament and may have more impact on LS than life events.

Keywords Adolescence · Life events · Psychological well-being · Satisfaction with life · Temperament

1 Introduction

A person's temperament is assumed to be a baseline for people's subjective well-being (SWB). SWB may move over or under this baseline when the person lives through

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different experiences (Sheldon and Lyubomirsky 2006). However, although people react to good and bad events, they usually return back to their SWB baseline, a phenomenon commonly known as hedonic adaptation (Diener and Diener 1996; Diener et al. 2006). In this context, a person is assumed to base judgements of his or her life satisfaction (LS), the cognitive part of SWB, on the evaluative reactions to an event and the memory of these reactions (Kim-Prieto et al. 2005). Nevertheless, while LS is influenced by temperamental dispositions, it might not be as stable as temperament (Fujita and Diener 2005). Thus, this baseline seems to be a “soft baseline”; that is, there may be short-, intermediate-, and long-term influences on LS for some individuals (Fujita and Diener 2005).

According to Fujita and Diener (2005), the influence of environmental factors on LS seems to be limited only to individuals with a low level of LS or with a high reactive temperament; for example, neuroticism has been related to low LS (Diener et al. 2003) and to unstable moods (Hepburn and Eysenck 1989). In addition, life events may influence well-being in relation to what is typical for the person’s life (Diener et al. 2006). Diener et al. (2006) have suggested that one additional positive event is probably not going to influence LS in a person who usually experiences many positive events. In contrast, an increase in the frequency of positive life events in coincidence with a decrease of negative ones may lead to a decrease in depression symptoms (Abramson and Needles 1990). However, the affective part of SWB, positive affect (PA) and negative affect (NA), is more stable and genetically predisposed in the individual (Fujita and Diener 2005; Lykken and Tellegen 1996). Furthermore, well-being has been proposed to be not only emotional (SWB) but also psychological (PWB; Ryff 1989). If this is so, the role of temperament as a determinant of LS and well-being may need more investigation. Before we attempt to begin to disentangle the interesting question of the predictive nature of distinctive measures of well-being, we briefly define each measure (LS and PWB) and how they map onto and are distinct from each other. Thereafter, we present and clarify PA and NA as temperamental dispositions in order to show how the affective temperaments (AFT) provide a backdrop to exploring the predictive effects of life events to PWB and PWB to LS.

1.1 Life Satisfaction (LS) and Psychological Well-Being (PWB)

LS refers to a comparison process in which individuals assess the quality of their lives on the basis of their own self-imposed standard. Thus, “LS is a conscious cognitive judgment of one’s life in which the criteria or judgment are up to the individual” (Pavot and Diener 1993, p. 164). LS is moderately correlated to the affective part of SWB (PA and NA). However, the components act differently over time and have different relationships with other variables (Pavot and Diener 1993). In contrast, the difference between LS and PWB is of theoretical nature; LS is subjectively assessed while PWB may be a more objective description of well-being.

PWB is defined as full engagement and optimal performance in the existential challenges of life (Ryan and Deci 2001), that is, eudaimonism (Waterman 1993). Ryff and Keyes (1995) have presented a multidimensional approach to the measurement of PWB that includes six distinct constructs: autonomy, personal growth, self-acceptance, life purpose, mastery, and the ability to have positive relations with others. These six constructs define PWB both theoretically and operationally, and they identify what promotes effective adaptation to life events and emotional and physical health (Ryff and Singer 1998). The PWB constructs not only promote LS but also are a measure of well-being. For example, analogous to hunger, autonomy is considered as a need in human nature that has to be

satisfied in order to preserve or increase well-being and adaptive behavior (Deci and Flaste 1996). In contrast, recent research has linked PA as a predictor of PWB: Urry et al. (2004) tested to see whether eudaimonic behavior (engaging with goal-directed stimuli) contributed to well-being by investigating correlations between individual differences in baseline prefrontal activation and PWB. The results validated the hypothesis and affect, especially approach-related PA (e.g., “interested,” “strong”), emerged as an important factor in the prediction of PWB.

1.2 Positive Affect (PA) and Negative Affect (NA)

The stability of the affective part of SWB earlier stated in the paper may be logical. PA and NA are two distinctive factors that reflect emotional-temperamental dispositions or signal-sensitivity systems (Watson and Clark 1994; Tellegen 1993). However, most studies have used PA and NA to define an emotional state rather than a “trait-like” temperament (e.g., Lyubomirsky et al. 2005). We find it appropriate to address this difference by referring to the lack of coherence in the literature, namely, the different measures used in the assessment of the affective construct. In the present study we use the Positive Affect and Negative Affect Scales (PANAS) developed by Watson et al. (1988). The PANAS scales were developed on the idea of affect as two orthogonal dimensions. Thus, while some PANAS items (e.g., “interested”) may not be common in other scales, other items (e.g., happy) are not included in the PANAS. In addition, there are findings that suggest that items in these scales reflect engagement with a stimulus (Schimmack 2007). Thus, in contrast to other studies, we assume that the two scales refer to what grabs our attention and how intensely we react—in other words, our temperament.

In the present study we refer to PA and NA not only as temperamental dispositions but also as complementary to extraversion and neuroticism. First, we base our assumption on research that shows that PA and NA (as measured by PANAS) involve more mood and social traits than extraversion and neuroticism (for a review see Gunderson et al. 1999). Secondly, according to Larsen and Ketelaar (1991), there may be two ways of maintaining well-being that are related to the interacting influence of the two signal-sensitivity systems. Thus, recollecting and evaluating life as satisfying may be due to people's tendency to seek or/and avoid pleasant and unpleasant life experiences, respectively (Walker et al. 2003).

1.3 The Affective Temperament (AFT)

The affective temperament classification is developed in an orthogonal manner through a persons' PA and NA (measured by PANAS), generating four different temperaments: self-actualizing (high PA, low NA); high affective (high PA, high NA); low affective (low PA, low NA); and self-destructive (low PA, high NA) (Norlander et al. 2002). Although Norlander et al. (2002) called their classification for affective personalities, we find more appropriate to refer to it as AFT, particularly in the light of the above-mentioned research.

In a sample of adolescents, temperamental dispositions described in terms of AFT differ in interpretation and memory of events and LS (Garcia and Siddiqui 2008). In Garcia and Siddiqui's study, the self-actualizing, low and high affective temperaments showed positive biases—such as remembering more positive than negative life events—and higher LS than the self-destructive temperament. However, to our knowledge, no other study has used the AFT to investigate the predictability of memory of life events on PWB and PWB on LS. In this context, it is important to bear in mind that positive emotions may also broaden

people's mindsets and build enduring personal psychological resources (Fredrickson 2006). For instance, participants in a positive-emotion condition listed significantly more things they would like to do than participants in a negative-emotion condition (Fredrickson and Branigan 2005). The effect of broadened thinking may increase the odds of discovering positive meaning in life events (Fredrickson 2006). In addition, Tugade and Fredrickson (2004) found that a person who reports high positive emotions before doing a time-pressured speech preparation experiences, alongside high anxiety feelings, higher levels of happiness and interest.

In sum, temperament might be accountable for people's positive biases, emotional reactions, and way of life (see for a review Diener and Lucas 1999). With respect to AFT, individuals with high PA, that is, self-actualizing and high affective, may be expected to show higher PWB. Although the high affective individuals experience high NA, that is not expected to influence this prediction because high PA has the effect of broadening thinking (Fredrickson 2006). Environmental factors influencing well-being may be limited to only individuals with a low level of LS or with a high reactive temperament. Hence, only PWB for temperaments with lower LS, or low affective and self-destructive, may be expected to be predicted by recalled life events. Finally, if PWB is considered to promote LS, the effects on LS should be limited to individuals with lower LS, or low affective and self-destructive temperaments. However, there may be two ways of maintaining well-being that are related to the interacting influence of the two signal-sensitivity systems (PA and NA). If that is true, then it might be expected that PWB may predict LS for each affective temperament, with the exception of the self-actualizing, due to their high PA and low NA.

The aim of the present study is to investigate well-being with respect to adolescents' temperamental dispositions. Research on adolescents' LS is so far inadequate (Fogle et al. 2002; Funk III et al. 2006). Having a sample of adolescents may be important, because in this period of life different events and transitions may influence well-being (González et al. 2007). In addition, temperament is described as relatively stable in adults, however adolescents' temperament might be less stable due the fact of their neurological development (Windle and Windle 2006). Thus, the study examines differences in PWB, to what extent the number of recalled life events predicts PWB, and to what extent PWB predicts LS in adolescents.

2 Method

2.1 Participants

Participants were pupils at two high schools in the county of Blekinge, Sweden. The schools were relatively small and contained 66 and 89 pupils. All pupils were contacted; only one chose not to complete part 2 of the study. Nineteen pupils were not present, either at part 1 or 2, due to sickness. The total of the participants was 135 (70 men and 65 women) with an age mean of 17.00 years ($SD = .88$). All completed the following self-reports: Satisfaction with life scale (SWLS), Ryff's measurement of PWB, and PANAS. However, 30 participants were randomly assigned to another experiment. Thus, only 105 pupils were asked to recollect life events experiences for the previous year. Two of the participants in the recollection task could no be present at either first or second time of the experiment. This subsample consisted of 53 men and 50 women ($n = 103$) with an age mean of 16.98 years ($SD = .92$).

2.2 Instruments

2.2.1 Satisfaction with Life Scale (SWLS) (Pavot and Diener 1993)

This scale was translated from English to Swedish by a teacher in Swedish and back-translated by a teacher in English. No discrepancies were found. The instrument consists of 5 statements for which participants are asked to indicate degree of agreement in a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree). The 5 statements are: (1) In most of my ways my life is close to my ideal, (2) The conditions of my life are excellent, (3) I am satisfied with my life, (4) So far I have gotten the important things I want in life and (5) If I could live my life over, I would change almost nothing. The SWLS score was established by summarizing the 5 statements for each participant. SWLS showed high reliability in the whole sample (Cronbach's $\alpha = .80$).

2.2.2 Ryff's Measurement of Psychological Well-Being (Clarke et al. 2001)

PWB was operationalized with a short version (18 items, 3 for each construct) of Ryff's longer (120 items, 20 for each construct) "Measure of Psychological Well-Being." This instrument was translated from English to Swedish by a teacher in Swedish and back-translated by a teacher in English. No discrepancies were found. Items were numbered backwards; some items were reversed and all items were randomly distributed in an attempt to keep participants from seeing a pattern and to keep them interested (Christensen 2004). The instrument showed varied internal consistency reliability for the 6 subscales: (1) autonomy (Cronbach's $\alpha = .47$), (2) environmental mastery (Cronbach's $\alpha = .62$), (3) self-acceptance (Cronbach's $\alpha = .77$), (4) purpose in life (Cronbach's $\alpha = .42$), (5) personal growth (Cronbach's $\alpha = .57$) and (6) positive relations with others (Cronbach's $\alpha = .32$). As in Sheldon and Lyubomirsky's (2006) study, a total PWB score was also calculated by adding all six constructs (Cronbach's $\alpha = .78$).

2.2.3 Positive Affect and Negative Affect Scales (PANAS) (Watson et al. 1988)

PANAS is a 5-point Likert scale that asks participants to what extent (1 = very slightly, 5 = extremely) they generally experienced 20 different feelings or emotions (10 PA and 10 NA) within the last few weeks. The 10-PA scale includes adjectives as: strong, proud, and interested. The 10-NA scale includes adjectives as: afraid, ashamed, and nervous. PANAS showed high reliability in the whole sample (Cronbach's $\alpha = .84$ for PA and Cronbach's $\alpha = .82$ for NA).

2.2.4 Life Events Recollection Measure

This instrument is used to measure memory for events inside participants' personal history. This task was adapted from Seidlitz and Diener's study (1993). Participants were asked to recall and list as many positive and negative life events as possible that happened to them in the last year, separately and with a time limit of 3 min for each type of event. An event recall score for positive or negative events was calculated by adding the number of events recalled in each condition.

3 Procedure

A pilot study, comprised of 65 undergraduate students at Växjö University in Sweden (19 men and 46 women) with an age mean of 19.74 ($SD = 5.81$), was conducted first in order to develop the memory tasks. In the current study, participants were told that the study was divided in two parts and had to do with how high school pupils think about their lives and in different situations. In order to trace participants' answers from parts one and two, pupils were asked to write the four last digits of their social security number. Confidentiality was promised and participants were told that their involvement was voluntary. The study was conducted in the participants' own classrooms. Each group contained between 20 and 30 pupils.

At the first part of the study, all participants were presented with the LS and the PWB measure. Two days after, participants in the life events task were asked to recall as many positive and negative life events as possible that happened to them in the last year, separately and with a time limit of 3 min for each type of event. The order of the positive and negative recall tests was randomly assigned across participants. After completing the task, all participants were asked to rate to what extent they have experienced certain positive and negative affects for the previous weeks (PANAS). Participants' PA score was divided in two parts; consequently, participants were distributed into one group with high PA and another group with low PA. The same is done for participants' NA-score; thus, participants were distributed into one group with high NA and another group with low NA. The combination of these two variables generates the 4 AFT: self-actualizing (high PA, low NA), high affective (high PA, high NA), low affective (low PA, low NA) and self-destructive (low PA, high NA). Although the AFT classification has been used in other studies (e.g. Norlander et al. 2002; Norlander et al. 2005), none of these studies included adolescents. In the present study, participants' PA and NA scores were divided in high and low, using as reference data from a group of 84 adolescents (mean age = 16.51) who were followed three times with PANAS self-reports over a 1.5 year time span. The reference data is obtained from a longitudinal study and is going to be the part of a future project. The means of the PA and NA scores of this group yielded the following cut-off points used in the present study: for low PA, 34 or less; for high PA, 35 or above; for low NA, 22 or less; and for high NA, 23 or above. This classification left a total of 28 self-actualizing adolescents (19 men and 9 women), 34 high affective adolescents (17 men and 25 women), 34 low affective adolescents (16 men and 18 women) and 32 self-destructive adolescents (15 men and 17 women). A short debriefing was done before all tests were collected; all participants chose to submit the test.

4 Results

The mean scores of the SWLS, the six different constructs of PWB, total PWB and number of recalled life events of all four AFT are presented in Table 1.

To investigate differences in PWB between AFT, a one-way ANOVA was used. A significant effect emerged with respect to participants' temperaments and 5 different constructs of PWB: environmental mastery ($F(3,123) = 13.60, p < .001$); self-acceptance ($F(3,123) = 11.84, p < .001$); purpose in life ($F(3,123) = 3.45, p = .01$); personal growth ($F(3,124) = 7.44, p < .001$); positive relations with others ($F(3,123) = 3.51, p = .01$). While the autonomy construct did not show a significant effect ($F(3,124) = 1.90, p = .13$), participants' total PWB score did ($F(3,123) = 16.43, p < .001$). A Bonferroni test was

Table 1 Affective temperaments' mean scores in LS, the 6 different constructs of PWB, total PWB score and number of recalled life events

	Self-actualizing <i>N</i> = 28	High affective <i>N</i> = 33	Low affective <i>N</i> = 34	Self destructive <i>N</i> = 31
Life Satisfaction (LS)	27.71 ± 3.43	26.76 ± 4.57	25.76 ± 5.13	21.26 ± 5.85
Autonomy	14.39 ± 1.93	13.15 ± 2.70	13.38 ± 3.00	12.88 ± 2.55
Environmental mastery	14.89 ± 2.04	12.48 ± 2.68	12.85 ± 2.73	10.50 ± 3.05
Self-acceptance	15.93 ± 1.90	14.27 ± 3.32	13.76 ± 2.81	11.31 ± 3.76
Purpose in life	14.29 ± 2.31	14.70 ± 3.26	13.71 ± 2.88	12.38 ± 3.63
Personal growth	15.14 ± 2.14	15.44 ± 1.94	13.59 ± 2.66	13.06 ± 2.79
Positive relations	15.00 ± 2.05	14.09 ± 3.16	13.94 ± 2.58	12.88 ± 2.18
Total PWB score	89.64 ± 7.01	84.18 ± 9.64	81.24 ± 9.69	73.00 ± 10.75
Recalled positive life events	5.85 ± 2.78	6.21 ± 2.71	5.43 ± 2.90	6.43 ± 3.73
Recalled negative life events	3.55 ± 1.88	4.08 ± 1.98	3.50 ± 2.01	5.21 ± 3.25

Values represent mean scores ± SD

conducted to compare the mean differences in PWB between AFT. The results showed that self-destructive adolescents had lower scores in at least two constructs compared to the other three temperaments, environmental mastery and self-acceptance being the common denominator. Self-actualizing showed higher environmental mastery scores than all temperaments and higher self-acceptance scores than both low affective and self-destructive adolescents. For further details, see Table 2.

Furthermore, self-destructive adolescents showed lower total PWB scores than all temperaments. However, while no differences in total PWB scores were found between high affective and low affective or high affective and self-actualizing adolescents, self-actualizing adolescents showed higher total PWB scores than low affective adolescents. See Table 3 for details.

In order to examine how recalled life events may predict different AFT's PWB, four Multiple Regression Analyses (MRAs) were conducted using the stepwise method, and a significant model emerged for self-destructive and low affective temperaments. Self-destructive adolescents' total PWB score was predicted by the recollection of more positive ($p = .05$) and less negative life events ($p = .05$). Low affective adolescents' total PWB was predicted by the recollection of more positive life events ($p < .001$). As expected, life events recollection did not predict self-actualizing or high affective adolescents' total PWB score. See Table 4 for details.

PWB was expected to predict LS differently for each AFT, the effect being stronger for adolescents with low LS. Four MRAs were conducted using the six constructs of PWB as the predictor variables, one for each temperament. Using the stepwise method, a significant model emerged for high affective ($p < .001$), low affective ($p < .001$), and self-destructive temperaments ($p < .001$). Self-acceptance was the only construct to be important in the prediction of LS for the above mentioned AFT. See Table 5 for details.

However, the reliability in the PWB instrument varied among the six scales; therefore four MRAs were conducted using the total PWB score as the predictor variable. The total PWB score showed to be significant in the prediction of LS for all four AFT, except for the

Table 2 Mean differences, in the 5 different constructs of PWB that showed a significant effect, between affective temperaments

Affective personality	Self-actualizing <i>N</i> = 28	High affective <i>N</i> = 33	Low affective <i>N</i> = 34	Self destructive <i>N</i> = 31
<i>Self-actualizing</i>				
Environmental mastery		2.41**	2.04**	4.39***
Self-acceptance		1.66, n.s	2.16*	4.62***
Purpose in life		-0.41, n.s	0.57, n.s	1.91, n.s
Personal growth		-0.30, n.s	1.55, n.s	2.08**
Positive relations		0.91, n.s	1.05, n.s	2.12**
<i>High affective</i>				
Environmental mastery	-2.41**		-0.37, n.s	1.98**
Self-acceptance	-1.66, n.s		0.50, n.s	2.96***
Purpose in life	0.41, n.s		0.99, n.s	2.32**
Personal growth	0.30, n.s		1.85**	2.38***
Positive relations	-0.91, n.s		0.14, n.s	1.21, n.s
<i>Low affective</i>				
Environmental mastery	-2.04**	0.37, n.s		2.35***
Self-acceptance	-2.16*	-0.50, n.s		2.45**
Purpose in life	-0.57, n.s	-0.99, n.s		1.33, n.s
Personal growth	-1.55, n.s	-1.85**		0.52, n.s
Positive relations	-1.05, n.s	-0.14, n.s		1.07, n.s
<i>Self-destructive</i>				
Environmental mastery	-4.39***	-1.98**	-2.35***	
Self-acceptance	-4.62***	-2.96***	-2.45**	
Purpose in life	-1.91, n.s	-2.32**	-1.33, n.s	
Personal growth	-2.08**	-2.38***	-0.52, n.s	
Positive relations	-2.12**	-1.21, n.s	-1.07, n.s	

n.s = non significant, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 3 Mean differences in total PWB score between affective temperaments

Affective personality	Self-actualizing <i>N</i> = 28	High affective <i>N</i> = 33	Low affective <i>N</i> = 34	Self-destructive <i>N</i> = 31
Self-actualizing		5.46, n.s	8.41**	16.64***
High affective	-5.46, n.s		2.94, n.s	11.18***
Low affective	-8.41**	-2.94, n.s		8.23**
Self-destructive	-16.64***	-11.18***	-8.23**	

n.s. = non significant, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

self-actualizing temperament. High affective (Beta = .59, $p < .001$; $F(1,30) = 16.34$, $p < .001$), low affective (Beta = .59, $p < .001$; $F(1,32) = 17.01$, $p < .001$) and self-destructive (Beta = .63, $p < .001$; $F(1,32) = 18.81$, $p < .001$).

Table 4 Recalled life events as predictors of affective temperaments' total PWB score. Only statistically significant models are shown

Predictor variables		Beta	Adjusted R ²	F
Self-destructive	Mean number of positive events recalled	.47*	.14	F (2,25) = 3.13*
	Mean number of negative events recalled	-.53*		
Low affective	Mean number of positive events recalled	.54***	.20	F (2,27) = 4.69**

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 5 PWB constructs as predictors of LS

Predictor variables		Beta	Adjusted R ²	F
High affective	Self-acceptance	.66***	.43	F (1,30) = 23.97***
Low affective	Self-acceptance	.72***	.50	F (1,32) = 33.61***
Self-destructive	Self-acceptance	.69***	.45	F (1,29) = 25.74***

Self-acceptance was the only, of the six PWB constructs, to be important in the prediction of all affective temperaments' LS, except for the self-actualizing

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

5 Discussion

The general aim of this study was to examine adolescents' well-being. More specifically, this study investigated adolescents' temperamental dispositions described in terms of AFT: how the four AFT (self-actualizing, high affective, low affective and self-destructive) differ in their PWB, to what extent the number of recalled life events predicts their PWB, and in what way their PWB predicts LS.

5.1 Differences in PWB between Temperaments

Adolescents with high PA were expected to show higher PWB. The results showed that self-destructive adolescents had lower scores in at least two constructs, environmental mastery and self-acceptance, compared to the other three temperaments. No differences were found for the autonomy construct between the four AFT. Autonomy may increase with age, especially between young adulthood to midlife (Ryff 1989); thus, autonomy can be assumed to be not necessary for adolescents to adapt psychologically to the environment. In this context, conformity may be a better adaptation strategy. Self-actualizing showed higher environmental mastery scores than all temperaments and higher self-acceptance scores than adolescents with both low affective and self-destructive temperament.

High affective adolescents showed higher personal growth scores than the low affective. This difference may be an expression of the different approaches to seek pleasure or avoid displeasure those two temperaments may use respectively. High affective adolescents may seek challenging situations whereas low affective adolescents avoid them in order to become happier. Nevertheless, it can also be the result of high affective adolescents experiencing high levels of PA. Fredrickson and Branigan (2005) found that participants in a positive-emotion condition listed significantly more things they would like to do than participants in a negative-emotion condition. This effect on broadened thinking may

increase the odds of discovering positive meaning in life events (Fredrickson 2006). Thus, high affective adolescents naturally should experience more personal growth, especially if they experience and seek more pleasant situations, whereas low affective adolescents try to avoid displeasure.

Environmental mastery and self-acceptance seem to be the most differentiating factors among the AFT. Thus, being able to have positive relations with others, purpose in life, and personal growth may be necessary in order to be psychologically functional, but these are not as important as environmental mastery and self-acceptance. According to Cloninger (2004), self-awareness through self-acceptance is an important step toward becoming happy. That is, if an individual is going to be able to successfully adapt, feel good, and resolve problems in life, the person has to accept all different parts of his or her being. Furthermore, low affective adolescents and adolescents with high PA (self-actualizing and high affective) showed higher total PWB than self-destructive. However, the difference between low affective and self-destructive temperaments was moderate, and self-actualizing adolescents showed higher PWB than the low affective adolescents, although this difference was also moderate. In this context, it is important to bear in mind that the absence of PA is a better predictor of mortality and morbidity than the presence of NA (Cloninger 2006). This should indicate that it might be better to be a high affective than a low affective, yet low affective had higher levels of PWB than self-destructive and not significantly less than high affective adolescents. The adolescents with a low affective temperament may be avoiding or decreasing attentional focus on stimuli to attenuate PA and NA. This strategy of cognitive dampening (Diener et al. 1991) may be used by regarding events as objectively as possible—thus avoiding happiness about positive events but not becoming sad about negative events. Perhaps the ability to use this strategy is what keeps low affective adolescents more satisfied and with higher levels of PWB than the self-destructive ones.

5.2 Recalled Life Events as Predictors of PWB

Recalled life events predicted only self-destructive and low affective adolescents' PWB. This is in concordance with findings that indicate the same influence of life events on LS (Garcia and Siddiqui 2008). That is, at least for persons with low PWB, environmental factors may influence their level of PWB. In order to predict changes in PWB, one can tentatively assume that as for LS (Fujita and Diener 2005), having stable life circumstances or a less reactive temperament increases the possibility of experiencing long-term PWB. It is important to point out that adolescents with a self-destructive temperament reported having recalled the most positive events. This may be logical; one additional positive event is probably not going to influence LS in a person who experiences many positive events (Diener et al. 2006). Another explanation may be the higher variance in recalling both positive and negative life events for both low affective and self-destructive adolescents.

5.3 PWB as Predictor of LS

While in Garcia and Siddiqui's study (2008) life events only predicted higher LS for adolescents with low PA, in the present study high levels of PWB predicted higher LS for all AFT, except self-actualizing. No difference emerged in the positive relations with other dimensions between high affective and self-destructive temperaments. It is reasonable to assume that the ability to create and keep positive relations with others should result in

higher LS. However, some of the “very unhappy” people (those in the upper 10% of consistently very unhappy people, defined by SWB in sample of 222 undergraduates) reported, as the “happy” people (those in the upper 10% of consistently very happy people), satisfactory family, interpersonal, and romantic relationships as well as frequent socializing (Diener and Seligman 2002). Thus, high LS may only be possible when all parts of the equation are solved or present. Nevertheless, perhaps our results can be explained in light of research that shows that temperament may not suffice to predict personality disorders (Cloninger 2004).

Thus, in order to predict long-term LS, researchers may need to include factors that mediate the relationship between temperament and well-being. For example, our results show that self-acceptance and environmental mastery were the better predictors of LS for all AFT, self-actualizing excluded. That is, a person who accepts all parts of the self and feels control over his or her life may experience higher LS regardless of temperament. With these results in mind, temperament may be a determinant in the prediction of LS only if the person is a high PA and low NA individual (self-actualizing).

5.4 Limitations and Suggestions for Further Investigation

The data presented here is based on self-reports and our conclusions should be taken with care. However, the LS and PANAS instruments are reliable as measurements of the cognitive and affective part of well-being (Pavot and Diener 1993; Watson and Clark 1994). It is plausible that other PWB constructs failed to predict LS due to the low reliability some of those scales showed. Nevertheless, the internal reliability of the PWB instrument in the present study is almost the same as those obtained by Clarke et al. (2001). According to Clarke et al. (2001), descriptive data generated with this measure are consistent with those found with the larger, more reliable 120-item version. Furthermore, there may be limitations with respect to the recollection task. In the current study, participants were asked to recall as many positive and negative life events as they could for the past year; however, McCullough et al. (2000) observed that daily events contribute to more variance than major life events in terms of adolescents' LS.

The present study did not investigate gender differences. Other researchers have found gender differences in adolescents' LS as measured by the SWLS (Neto 1993) and on the positive relations with others scales of the PWB measure (Ryff 1995). It will be interesting to investigate gender differences using the AFT; some of the data presented here indicate that such differences might be found. For example, 68% of the adolescents in the self-actualization group were men. In the present study temperament was conceptualized as affective temperaments, that is, combining participants PA and NA. We consider this to be of importance, because the interacting influence of the two signal-sensitivity systems may help to maintain well-being (Larsen and Ketelaar 1991). For instance, low affective adolescents seem to be able to achieve LS in spite of low levels of PA. This also provides a reason and a more positive approach in the pursuit of LS that suggest other factors such as self-acceptance may foster LS regardless of individuals' temperament. Thus such factors may be more essential for well-being than life events per se. In this context, we agree with Cloninger (2004) when he states that genetic and environmental influences do not influence behavior in the same way. Hence, in order to increase well-being, we need to look at the part of personality that mediates or modifies the significance or meaning of what is experienced as well as changes emotional reactions and habits.

“I’ve looked at life from both sides now
 From win and lose and still somehow
 Its life’s illusions I recall”
 Joni Mitchell

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**ON LIONS AND ADOLESCENTS:
Affective Temperaments and the Influence of
Negative Stimuli on Memory**

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On Lions and Adolescents: Affective Temperaments and the Influence of Negative Stimuli on Memory

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Abstract The present study investigated the relation between reaction to negative stimuli and memory for stimuli. The relation was further investigated using as a framework individuals' affective temperaments (AFTs). Eighty adolescents participated in the study. The AFTs are based on self-reported affect and categorizes individuals in four temperaments: self-actualizing, high affective, low affective and self-destructive. Reaction to negative stimuli was measured by interpretation of specific words in a short story. Two days later, participants were presented with a list of words and asked which of them were present in the short story. Individuals' AFTs were expected to predict the promotion of pleasure or the prevention of displeasure. On a general level, reaction to negative stimuli predicted memory for negative, positive and neutral words. At an individual level, self-actualizers and high affectives' negative reaction predicted the memory of positive words (i.e., promotion). In contrast, low affectives' negative and positive reaction predicted the memory of neutral words (i.e., prevention).

Keywords Affective temperament · Attention memory · Negativity bias · Positivity bias · Prevention focus · Promotion focus

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1 Introduction

Human beings seem to be wired as all other organic beings: prepared to detect negative stimuli faster (Corneille et al. 2003; Dijksterhuis and Aarts 2003; Dijksterhuis et al. 2004). The predisposition for negative stimuli may operate even at an unconscious level. In one of the most fascinating studies, researchers symbolically compared humans to wildebeest and gazelles in the African savannah (Dijksterhuis and Aarts 2003). The predators are fast and therefore the wildebeest's perceptual and affective systems should be shaped in relation to the traits of the lions and cheetahs hunting them down. The researchers stated that "this should be true for all animals: At times, all animals are confronted with threatening stimuli, and it is of utmost importance to detect these stimuli as fast as possible" (Dijksterhuis and Aarts 2003, p. 14). This allegorical hypothesis was supported by findings in their study. Negative words subliminally presented were detected more accurately than positive words. Thus, less input is needed to detect negative stimuli than to detect positive stimuli. In the real world, the findings mean that we unconsciously find and react faster to threats, violations, and setbacks. From an evolutionary perspective, it is reasonable to assume that bias for negative stimuli has grown part of the toolbox of most organic beings. After all, the bias for negative stimuli increases the chances of survival. In addition, many studies have shown that people process negative stimuli more elaborately than other stimuli (e.g., Wentura et al. 2000; Williams et al. 1996). Certainly, for humans it is probably difficult to see at the bright side of life by willpower alone. With this in mind, it is important to point out that the emotional reaction to stimuli is probably responsible for what is encoded into memory and also for facilitating retrieval of the same stimuli (Seidlitz and Diener 1993). For example, children and adults show a tendency to remember faces of threatening individuals better than faces of non-threatening individuals (Kinzler and Shutts 2008; Williams and Mattingley 2006).

However, with the exception of depressed individuals, the same may be true for adults as well as for adolescents: adults and adolescents tend to recall more positive than negative life events (i.e., positivity bias; for a review see Walker et al. 2003; Garcia and Siddiqui 2009a, b). The phenomenon of positivity bias is not exclusive for life events: children are likely to believe that negative traits may change in a positive direction with the past of time (Lockhart et al. 2002). Research among adults point in the same direction, adults judge themselves to be more improved over time in different areas (Wilson and Ross 2001). Just as for negativity bias, the positivity biases are probably adaptive in nature allowing the individual to self-regulate her emotions (Carstensen and Mikels 2005; Xing and Isaacowitz 2006). In other words, the events that individuals pay attention to, hold in mind, and remember seem to influence their emotional well-being or happiness. Thus, if humans as wildebeest and gazelles are more prone to detect negative stimuli, why are most people prone to remember positive events? Before we attempt to illustrate one possible answer to this question, we want to briefly explain the term happiness that will be used in the present paper and happiness in the context of adolescence.

In the field of positive psychology, well-being research complements measures of physical (e.g., health) and material (e.g., income) well-being with assessments of optimal experience by focusing in people's own judgements and experiences of pleasure versus displeasure (Ryan and Deci 2001). The most common approach to study this human experience is through the assessment of individuals' own judgements about life satisfaction (LS), the frequency of positive affects (PA) and the infrequency of negative affects (NA). The three constructs are summarized as Subjective Well-Being (SWB; Diener 1984) or in a more popular term as happiness. According to Martin and Huebner (2007) the multidimensional

model of SWB (i.e., LS, PA and NA) is valid for adolescents as well (see also Huebner and Diener 2008). Thus, a happy adolescent can be assumed to be satisfied with life and to experience more positive than negative affects. Individual differences, such as an emotional stable temperament, seem to have the most influence in children and adolescents reported happiness (Fogle et al. 2002; Rigby and Huebner 2004). Furthermore, as for adults, findings suggest that environmental experiences also influence happiness (e.g., McCullough et al. 2000; Ash and Huebner 2001).

During middle childhood and adolescence, daily problems (e.g., coping with a minor social conflict) seem to be equally stressful experiences as major life events (e.g., parent being remarried; McCullough et al. 2000). These finding might be important because different events and transitions may influence children and adolescents' development and SWB (Erikson 1968). In addition, it is not just the transitions that adolescents have to go through that may influence happiness, it is probably a gene-age-environment interaction (for a review see Maccoby 2000). In accordance with these findings, the occurrence of various forms of psychopathology, including affective and behavioral disorders, increases dramatically during adolescence (Silk et al. 2003). In this context, studies among adolescents show that active and attention-based strategies such as self-distraction and attention shifting are linked with decreases in anguish, whereas passive focus on the distressing stimulus is associated with increases in anguish and the development of externalizing behaviors (Silk et al. 2003). Moreover, positivity bias for positive life events seem to mediate the relation between temperament and happiness measures (Rigby and Huebner 2004). Based on the findings mentioned above, we find it important to investigate how adolescents process negative stimuli.

1.1 The Promotion-Prevention Principle

The promotion-prevention principle (Higgins 1997) might explain why humans, despite the unconscious preference for negative stimuli (i.e., negativity bias) remember the world as more positive. Higgins (1997) has proposed that humans strive for promotion focus and prevention focus. Promotion focus refers to the striving after promoting pleasure; whereas prevention focus refers to the striving after prevent displeasure. Some individuals' seek pleasant situations (e.g., a date with an attractive partner), while others avoid unpleasant ones (e.g., being rejected by an attractive partner by not asking him/her out). However, the promotion and prevention principles go beyond just the hedonic view and help to understand what motivates individuals to different actions as well (Higgins 1997, 2001). In other words, a person may be motivated to promote pleasure or prevent displeasure because the behavior gives the individual a positive experience and/or a relief of a painful one. For example, the same adolescent engaging in asking a person she finds attractive out on a date does not engages in this action only because its positive outcome; but also because the thought of being without the date is painful. In contrast, the adolescent that does not engages in asking someone out avoids this action not only because she tries to escape the unpleasant rejection but also because the absence of the rejection is pleasant. Therefore, whether an individual chooses to promote or prevent, she should have more positive events in memory to refer to, when recollecting her life (Walker et al. 2003). Indeed, a positivity effect has been depicted as composed by two constructs: (1) the proactive attention to positive stimuli and the strengthening of positive information in memory and (2) the shifting of attention away from negative stimuli and the diminishing of negative information in memory (Xing and Isaacowitz 2006).

Generally, individuals can be lead to use either promotion or prevention when performing different tasks by the way outcomes are framed. For example, by inducing promotion: if you *do well* in this task, then you will get 6 dollars; or by inducing prevention: if you *don't do well* in this task, then you will loose 6 dollars you received in the last task (for a review see Higgins 2001). Nevertheless, for either promotion or prevention to be adaptive, the strategy has to be congruent with the person's tendencies (for a review see Higgins et al. 1997). In other words, an adolescent whose temperament is more reactive to positive outcomes should be happier when using the strategy of promotion focus, whilst an adolescent whose temperament is more reactive to avoid negative outcomes should be happier when using the strategy of prevention focus. However, it is important to point out that previous research has shown that people in a promotion focus tend to experience outcomes in terms of emotions along a cheerfulness-dejection dimension whereas people in a prevention focus respond to these same outcomes with emotions that can be situated on a quiescence-agitation dimension (Higgins et al. 1997; Idson et al. 2000). In other words, an adolescent in a promotion focus may feel cheerfulness when she asks someone out on a date (and the person says "yes"), while the one who does not engage in such action in order to avoid rejection (i.e., prevention focus) might feel at ease.

Some researchers have also found a relation between appraisals and the individual's own focus tendencies. For example, Shah and Higgins (2001) found that participants with a promotion focus were faster to rate how cheerful or dejected words made them feel. In contrast, participants with prevention tendencies were faster to rate how quiescent or agitated words made them feel. In addition, words are also recognized better if they fit the focus of the individual (Touryan et al. 2007). Hence, the focus of the individual seems to influence both interpretation and memory for congruent stimuli. In the present study we want to draw attention to some evidence that suggests both principles to be triggered by the same perceptual and affective system that helps us to detect the negative stimuli in the first place. The affective system is composed of positive and negative affect.

1.2 The Affective System

PA and NA are suggested to represent two different signal-sensitivity systems or dispositions that correspond to our inborn temperament: what grabs our attention and how intensely we react (Tellegen 1993; Watson and Clark 1994). As stated before, most of the studies have used PA and NA to define an emotional state rather than a "trait-like" temperament (see Lyubomirsky et al. 2005 for a large compilation of studies). We find it appropriate to address this difference by referring to the lack of coherence in the literature—namely, the different measures used in the assessment of the affective construct. The distinction between state and trait level is important to remember when discussing affects but is unfortunately sometimes neglected in the literature of SWB (Schimmack et al. 2002). Nevertheless, studies on mood show that depressed people remember stimuli that are congruent to their mood (e.g., negative words) better than stimuli that are not in accordance with their mood (e.g., positive words, for a review see Watkins et al. 2000). It is important to point out that in contrast to free recall, recognition tasks do not show the mood-congruent effect mentioned above (Fielder 2001; Jermann et al. 2009). In addition, studies that measure PA and NA at a trait level show interesting findings that may help to understand how people in general regulate their perception of the world, which is tuned to detect negative stimuli faster. For example, Larsen and Ketelaar (1989, 1991) found that individuals who experience high levels of PA attend and react more intensely to positive stimuli than individuals with low levels of PA. In contrast, individuals with high levels of

NA attend and react more intensely to negative stimuli than individuals with low levels of NA. Furthermore, recent research (e.g., Pury 2004) shows that low PA individuals are prone to remember more neutral sentences. On the other hand, high PA individuals show a tendency to remember more negative sentences (Pury, 2004). Thus, it seems to be a contradiction in some findings: while some studies show that high PA individuals attend and react to positive stimuli better, other studies show that high PA individuals are also prone to remember negative stimuli better. In this context, the interacting influence of PA and NA may be what lies behind the most adaptive strategy (promotion or prevention). Next we will highlight some research that has used individuals' PA and NA as a backdrop for well-being research.

The affective temperaments (AFTs) are developed by using a person's self-reported PA and NA measured by the Positive Affect and Negative Affect Scales (PANAS, developed by Watson et al. 1988). The procedure generates four different temperaments: self-actualizing (high PA, low NA); high affective (high PA, high NA); low affective (low PA, low NA); and self-destructive (low PA, high NA) (Norlander et al. 2002). Norlander et al. (2002) called their classification 'affective personalities'. However, the PANAS scales were developed on the idea that PA and NA represent two opposite poles. Thus, while some PANAS items (e.g., "interested") may not be common in other scales, other items (e.g., "happy") are not included in the PANAS. In addition, there are findings that suggest that the PANAS items reflect engagement with a stimulus and involve more mood and social traits than extraversion and neuroticism (For a review see Schimmack 2007; Gunderson et al. 1999). That is why, in contrast to other studies, we assume that the two scales refer to individuals' temperamental dispositions and find more appropriate to refer to it as AFT. The AFTs react differently to stress and have different exercise habits and blood pressure. Self-actualizing and high affective adults show the best performance during stress, and have a more active life and lower blood pressure than adults with low affective and self-destructive temperaments (Norlander et al. 2002, 2005). In Garcia and Siddiqui's studies (2009a, b) low and high affective adolescents showed higher levels of LS than self-destructive adolescents, but they did not show lower level of LS than self-actualizers. In addition, with the exception of self-destructives, all AFTs remembered more positive than negative life events (when asked to recollect positive and negative life events for the past year).

1.3 The Present Study

In sum, human beings as other organic beings, are probably wired for survival but also for maintaining their own level of SWB (Damasio 2003, Swedish translation). To use a metaphor related to Dijksterhuis and Aarts' (2003) findings: the lions and cheetahs hunting down their prey do not let a setback knock them out of their game. Instead, reaction to negative stimuli motivates them to approach (promote) or avoid (prevent) the problem in a way that allows them to survive, feel good and come back stronger another day. In order to understand and be able to predict which strategy is used by adolescents when they process negative stimuli we may need to take into account both parts of the perceptual and affective systems (i.e., PA and NA). More important, the affective system probably regulates our perceptions automatically enabling retrieval of emotional events that are congruent to the individuals' temperament.

The present study is based on the idea of negativity vs. positivity bias. We suggest that while people may detect and react to negative stimuli faster, the negativity bias probably motivates the individual to seek for clues in the environment that may help to maintain

positivity. If it is so, reaction to negative stimuli should be related to the memory of positive, negative and neutral stimuli. Furthermore, in order to better understand differences in mental health and adjustment among adolescents the present study addresses the question of how adolescents' affective system self-regulates their own reaction to negative stimuli. We propose that individuals' reaction to negative stimuli initiates different strategies controlled by the perceptual affective system. More specifically, the reaction to negative stimuli elicits automatic responses of promotion and prevention focus. Both strategies might be adaptive in nature, and probably let the individual to remember more pleasant stimuli presented in the same context. In this framework, pleasantness is expected to be related to the person's own affective system (i.e., AFTs). In the present study we present participants with words (negative, positive and neutral) in a short story. The relation between participants' reaction to the negative words and words in memory is expected to vary among the AFT. To our knowledge no other study have investigated in what way reaction to negative stimuli influences memory for stimuli with respect to participants temperamental dispositions (i.e., AFTs). Nevertheless, while high levels of PA seem to be related to approach behavior or focus on promotion, low levels of PA are suggested to be related to memory of neutral stimuli. In contrast low levels of NA seem to be related to the tendency to avoid attention to negative stimuli or prevention focus. In the present study self-actualizing and high affective individuals (high PA) are expected to engage in promotion focus, thus their reaction for negative stimuli should predict the number of positive stimuli in memory. Low affective individuals (low PA and low NA) are expected to engage in prevention focus, thus their reaction to negative stimuli should predict the number of neutral words in memory. As stated earlier, positivity bias are not found among individuals with low levels of PA and high levels of NA. Hence, self-destructive individuals are not expected to engage in either promotion or prevention focus. In other words, their reaction to negative stimuli should not predict either positive or negative stimuli in memory.

The aim of the present study is to investigate how reaction to negative stimuli is related to memory of stimuli presented in the same context. In addition, we investigate if the relation between reaction to negative stimuli and memory for stimuli differs with respect to individuals' temperamental dispositions or AFT. Although some of the predictions or results might be expected using PA and NA by it selves; the AFT framework offers something unique over and above the single dimensional framework, specifically with respect to the high and low affective individuals.

2 Method

2.1 Participants

Participants were pupils at a high school in the county of Blekinge, Sweden. The school was relatively small and contained 86 pupils (49 males and 37 females) with an age mean of 16.73 years ($SD = .89$). All pupils were contacted; only one chose not to complete Part 2 of the study. Two pupils were not present, either at Part 1 or 2, due to sickness. In the recognition task, two days later, 4 left too many questions unanswered. This left a final sample of 44 males and 36 females ($n = 80$) with a mean age of 16.68 years ($SD = .88$).

2.2 Instruments

2.2.1 *The Positive Affect and Negative Affect Scales (PANAS) (Watson et al. 1988)*

The PANAS asks participants to rate to what extent they have experienced 10 positive affects (e.g., strong, proud) and 10 negative affects (e.g., afraid, ashamed) for the last weeks, using a 5-point Likert scale (1 = *very slightly*, 5 = *extremely*). The Swedish version used in the present study is the same version used in other studies among Swedish adults (e.g., Norlander et al. 2002, 2005). In the present study, the PANAS showed high reliability in the whole sample (Cronbach's $\alpha = .84$ for PA and Cronbach's $\alpha = .82$ for NA).

2.2.2 *Interpretation and Recognition Measure (Garcia and Siddiqui 2009a)*

The instrument monitors differences regarding interpretation of events and differences in recognition for those events. The instrument consists of a short story (a synopsis of *The Alchemist*; Coelho 2002), a rating list of 48 words (highlighted in bold type in the story) and a recognition list that included the 48 bold typed words and 21 words not presented in the short story (false words). However, the false words were not used in the present study as variables. The short story was found appropriate, instead of only a list of words, because words are recollected and recognized better when encoded in a semantic and organized way (e.g., building sentences of the word). The story combined with a recognition list, in contrast to free recall with no cues helping retrieval, minimizes the possibility that remembering the words is influenced by momentary moods (Fielder 2001; Leight and Ellis 1981).

The real words are: 16 positive (e.g., friends, interesting), 16 neutral (e.g., hands, large) and 16 negative (e.g., thief, anxious). The rating list explicitly asks participants to rate all 48 words that “had been in the story in bold type”, along a 7-point Likert scale (1 = *totally negative*, 7 = *totally positive*). In the present study, the rating list showed good reliability for positive words (Cronbach's $\alpha = .86$) and negative words (Cronbach's $\alpha = .88$). The reliability for the neutral words was lower (Cronbach's $\alpha = .62$). The recognition list asks participants if they recognized the word as: “bold typed in the story”, “not present at all” or if they “don't know”. As stated in the introduction, adolescents experience events with more intensive emotions; therefore reaction to stimuli was operationalized by computing three reaction scores for each participant: the number of negative words rated as 1, the number of positive words rated as 7, and the number of neutral words rated as a 4. In order to test memory of words, one recognition score was computed for each type of word (negative, positive and neutral) recognized as: “bold type”. Thus, each participant had three recognition scores.

3 Procedure

The adolescents in the present study had consent from their teachers to participate. At a parent meeting, all parents were informed of the present and other studies being conducted among adolescents at the school. The nature of the studies was explained (e.g., instruments, confidentiality) and questions were addressed at the same meeting. At the first part of the study adolescents were told that the study was divided into two parts and had to do with how adolescents think about their lives and in different situations. Confidentiality was assured and participants were told that their involvement was voluntary. The study was conducted in the participants' own classrooms during school hours. Each group contained

between 20 – 30 pupils. In order to trace participants' answers from Part 1 and 2, pupils were asked to write the last four digits of their social security number. In the first part of the study, all participants completed a battery of self-reports, including the PANAS. Afterwards, participants were presented with the short story and then the rating list. Two days later, Part 2, participants received the recognition list. A short debriefing was done before all tests were collected; all participants chose to submit the test.

Participants' PA scores were divided in two parts; consequently, participants were classified into one group with high PA and another group with low PA. The same was done for participants' NA scores, thus participants were classified into one group with high NA and another group with low NA. The combination of these two variables generated the four different AFTs: self-actualizing (high PA, low NA); high affective (high PA, high NA); low affective (low PA, low NA); and self-destructive (low PA, high NA). Although the AFT classification has been used in other studies (e.g., Norlander et al. 2002, 2005), none of them included adolescents. In the present study, participants' PA and NA scores were divided (in high and low) using the following cut-off points recommended by Garcia and Siddiqui (2009a, b): low PA = 34 or less; high PA = 35 or above; low NA = 22 or less; and high NA = 23 or above. Garcia and Siddiqui based their recommendation on reference data from a group of 84 Swedish adolescents (mean age = 16.51) who were followed three times with the PANAS self-reports over a 1.5 year time span.

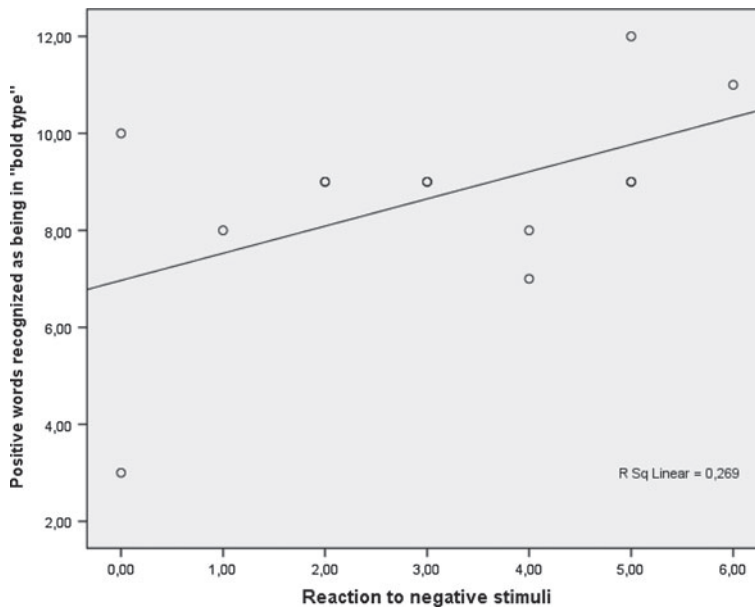
4 Results

A total of three Multiple Regression Analysis (MRA) were conducted in order to test to what degree participants' memory of the words in the short story was predicted by their reaction to stimuli. The stepwise forward model was found appropriate, because we assumed that negative stimuli is detected first and then positive followed by neutral stimuli. Reaction to negative stimuli was, as expected, significant in the prediction of negative words recognized as being in bold type ($F(1,75) = 4.58, p < .05$), adjusted $R^2 = .05$ ($\beta = .24, p < .05$); significant in the prediction of positive words recognized as being in bold type ($F(1,75) = 9.23, p < .01$), adjusted $R^2 = .10$ ($\beta = .33, p < .01$); and significant in the prediction of neutral words recognized as being in bold type ($F(1,75) = 18.29, p < .001$), adjusted $R^2 = .17$ ($\beta = .42, p < .001$).

In order to investigate how the reaction to the negative words was related to the number of words recognized by each of the AFTs, a series of MRAs were conducted. The stepwise forward model was found appropriate, because we assumed that negative stimuli is detected first and then positive followed by neutral stimuli. Mean scores and standard deviations for AFTs' reactions and recognitions variables can be found in Table 1. Reaction to stimuli (negative, positive, neutral) was used as the independent variables in order to predict the number of words (negative, positive, neutral) adolescents remembered from the short story. With respect to self-actualizers and high affectives, as expected, the number of positive words in bold type was predicted by their reaction to negative stimuli (Graphs 1, 2). Furthermore, the low affectives' memory for neutral (Graph 3), positive (Graph 4) and negative (Graph 5) words in bold type was predicted by their reaction to negative stimuli. However, the number of neutral words in bold type low affectives remembered was also predicted by their reaction to positive stimuli (Graph 6). The self-destructive individuals' memory for words was not predicted by their reaction for negative, positive or neutral stimuli.

Table 1 Mean scores and standard deviations for AFTs’ recognitions and reactions variables

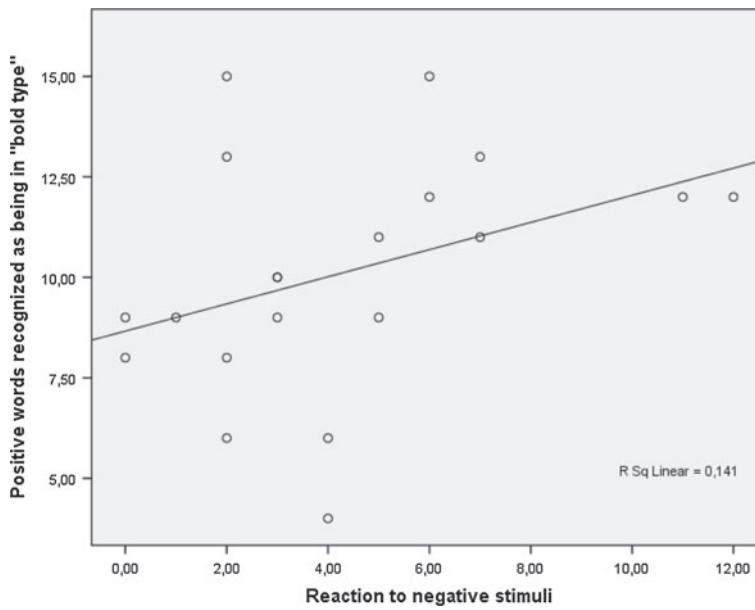
	Self-destructive (N = 20)		Low affective (N = 24)		High affective (N = 21)		Self-actualizing (N = 13)	
	M	SD	M	SD	M	SD	M	SD
Words in “bold type”	24.40	9.97	25.13	7.46	26.75	7.45	23.15	3.69
Words “not present”	7.50	5.00	9.83	6.42	9.15	6.57	13.00	8.31
Negative words in “bold type”	7.31	3.65	7.71	3.11	7.10	2.24	6.00	1.87
Negative words “not present”	3.26	2.18	3.83	2.74	3.75	2.73	5.23	3.44
Positive words in “bold type”	8.84	2.89	9.12	2.63	10.10	2.92	8.69	2.14
Positive words “not present”	2.63	2.06	3.00	2.38	2.65	2.25	3.54	2.30
Neutral words in “bold type”	8.62	4.47	7.96	3.79	9.10	4.25	8.46	2.93
Neutral words “not present”	1.81	1.54	2.88	2.60	2.62	2.48	4.23	3.47
Reaction to negative stimuli	4.24	3.40	2.96	3.01	4.05	3.29	3.08	1.98
Reaction to positive stimuli	4.48	3.89	4.72	4.22	6.05	3.04	4.54	3.13
Reaction to neutral stimuli	7.05	2.58	6.84	3.60	6.48	3.19	7.69	4.15



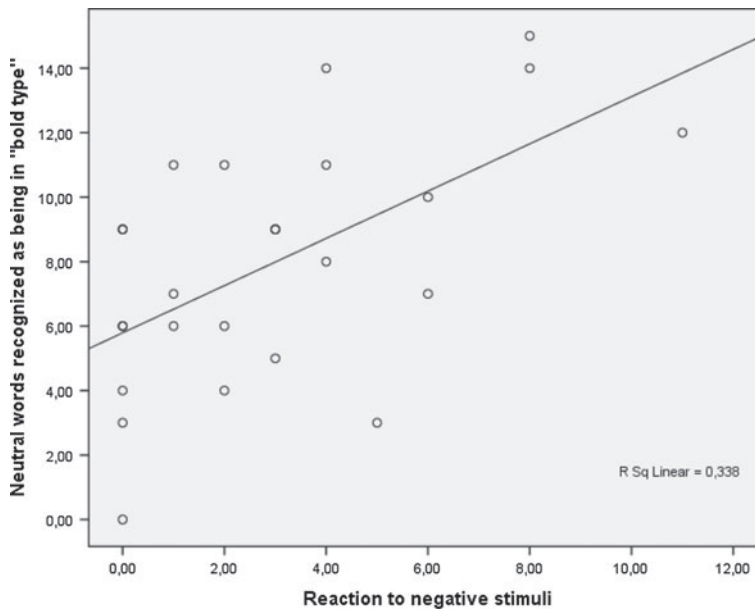
Graph 1 The relation between self-actualizers’ reaction to negative stimuli and the number of positive words in memory

5 Discussion

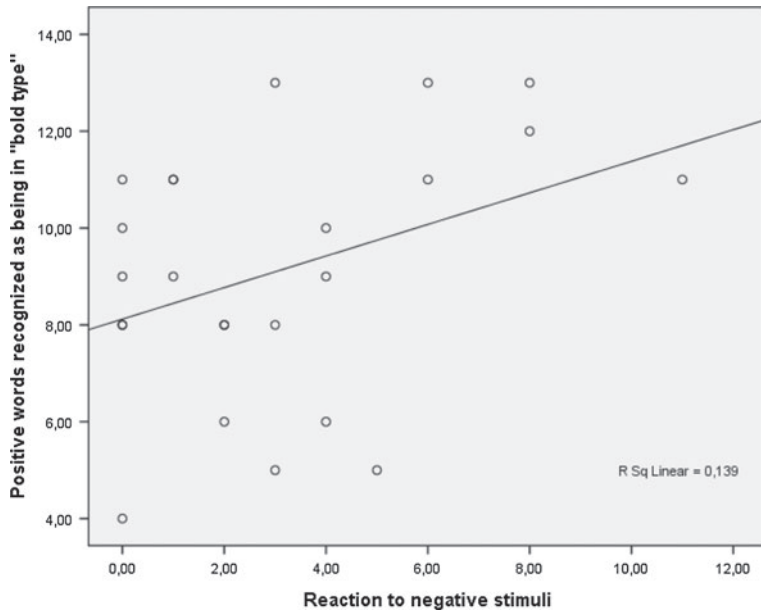
The aim of the present study was to investigate how reaction to negative stimuli is related to the memory of stimuli presented in the same context. In addition, we investigated if the relation between reaction to stimuli and memory for stimuli differed with respect to individuals’ AFTs.



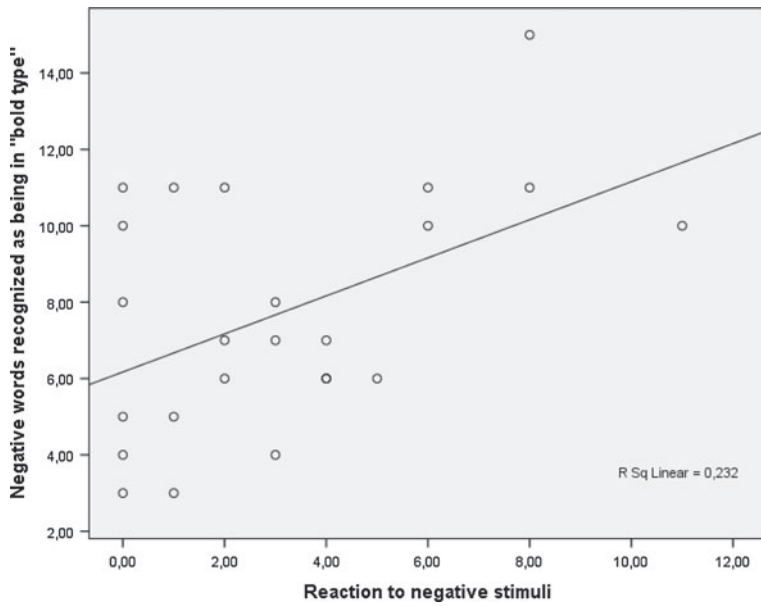
Graph 2 The relation between high affectives' reaction to negative stimuli and the number of positive words in memory



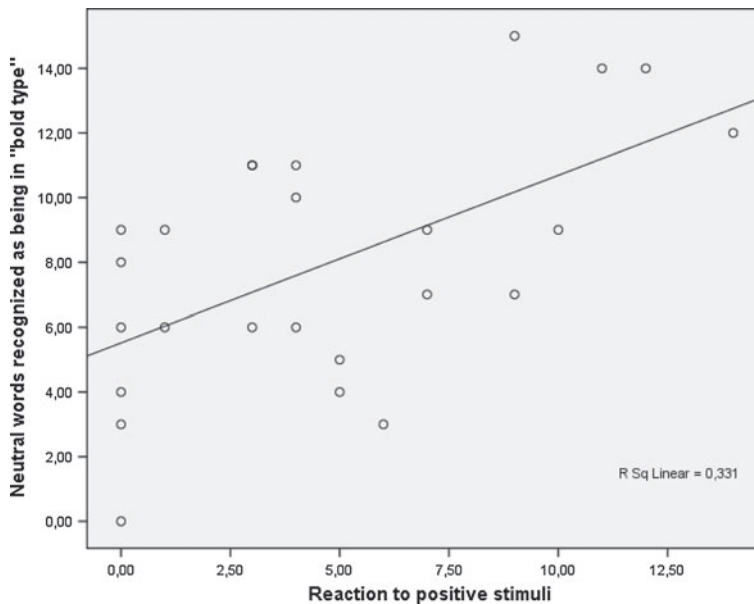
Graph 3 The relation between low affectives' reaction to negative stimuli and the number of neutral words in memory



Graph 4 The relation between low affectives' reaction to negative stimuli and the number of positive words in memory



Graph 5 The relation between low affectives' reaction to negative stimuli and the number of negative words in memory



Graph 6 The relation between low affectives' reaction to positive stimuli and the number of neutral words in memory

5.1 Reaction to Negative Stimuli and Memory of Stimuli

In the present study, reaction to negative stimuli predicted participants' memory for negative, positive and neutral words recognized as being in the short story in "bold type". Thus, as expected, while reaction to negative stimuli facilitated encoding of negative stimuli, it also facilitated encoding of positive and neutral stimuli. The results suggest that reaction to negative stimuli is not only detected faster, as suggested by Dijksterhuis and Aarts (2003), but also may influence the type of stimuli to which participants attended to in the same context. In other words, after detecting negative words adolescents seem to search for types of words that may promote self-regulation. As stated in the introduction, adolescents that are successful shifting attention from negative stimuli are successful in decreasing anguish (Silk et al. 2003). The shift in attention to other words probably explains why reaction to negative words is related, not only to the recognition of negative words, but to the memory of positive and neutral words as well. However, the results might be caused by response bias (e.g., individuals choosing at random or as many of the words as present). We discuss this possibility further in the limitation section.

5.2 Differences with Respect to AFTs

Our main assumption was that the strategy (promotion or prevention) individuals use when they modify their memory would depend on the interacting influence of temperamental dispositions (i.e., AFTs). The only exception to this assumption was predicted to be the self-destructives. As expected, self-actualizers and high affectives engage in promotion focus only. Their reaction to negative stimuli predicted only the number of positive words recognized. It is reasonable to question why the high affectives' memory of negative

stimuli is not predicted by their reaction to negative stimuli. A possible answer might be derived from findings among young adults. After performing a stressful task, individuals who report high affectivity (high PA and high NA) return faster to their normal cardiovascular activation (Tugade and Fredrickson 2004). Thus, at least for high affectives, high PA probably neutralizes the effects of their reactivity for negative stimuli (Fig. 1).

In contrast, low affectives' reaction to negative stimuli resulted in memory for the same type of stimuli. Negative events are probably unusual in their lives, therefore they react more to negative stimuli and remember them better (sort of a flashbulb memory). The same reaction elicits a promotion focus (i.e., recognizing more positive words in order to achieve more PA). Furthermore, reaction to both positive and negative stimuli facilitated memory for neutral stimuli (Fig. 2). The findings are in concordance with research that suggest that low PA lead to less emotionally extreme encoding (Pury 2004). Logically, a neutral world might be the kind of world low affectives find most pleasant (if we assume they strive after

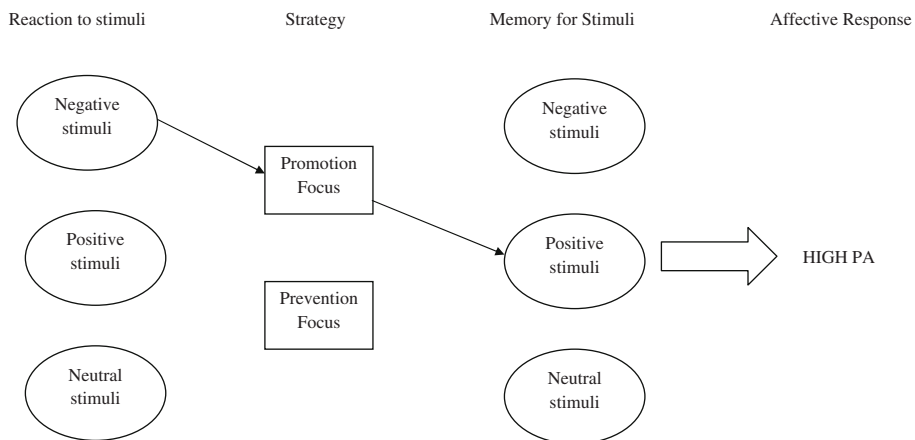


Fig. 1 The high affective and self-actualizing adolescents' automatic strategy as a response to negative stimuli

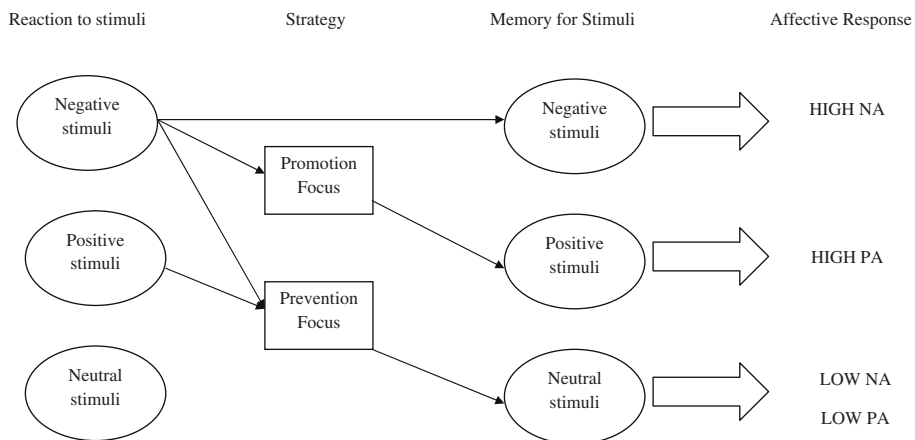


Fig. 2 The low affective individuals' automatic strategies as a response to negative and positive stimuli

the prevention of displeasure). However, if the tendency of low affectives to neutrality showed in the present study is also a tendency they use when interpreting and recollecting real life events, it might influence their happiness. In other words, if the reaction to positive life events elicits neutral memories it might appear to them as only few good things are happening in their lives. Finally, as expected, self-destructive individuals' negative reaction did not predict the number of negative, positive or neutral words they remembered. Self-destructives being unable to automatically promote or prevent displeasure is probably what keeps them in their affective state. On the other hand, earlier research shows that high NA levels are related to the attention and reaction to negative stimuli (Larsen and Ketelaar 1989, 1991) and that depressed people have a tendency to remember stimuli that is congruent to their mood (e.g., negative words) better than stimuli that is not in accordance with their mood (e.g., positive words, for a review see Watkins et al. 2000). At a first glance, self-destructives' reaction to negative stimuli should be expected to be related to their memory for negative words in the short story. However, in contrast to free recall, recognition tasks as the one used in the present study do not show the mood-congruent effect mentioned above (Fielder 2001; Jermann et al. 2009). Nevertheless, perhaps self-destructives reaction to negative stimuli is not related to their memory for negative stimuli because they also see neutral words as negative.

5.3 Implications

Adolescents in the present study, with the exception of self-destructive adolescents, used unconscious temperament-congruent strategies to process their reaction to negative stimuli. The strategy of choice seems to be adaptive in nature because the result is more of a pleasant memory. We believe these findings are important if positive psychology wants to empower parents and teachers (and adolescents themselves for that matter) to give help and guidance to adolescents in the pursuit of a happier life. From a parent's perspective, the knowledge of the benefits of temperament-congruent strategies may be easier to relate to. Most parents not only recognize themselves in their sons and daughters but are also, together with the teachers, the children's closest adults. This is also in line with the theory that happiness comes from acting in accordance with the norms in one's culture (Kitayama et al. 2000). Moreover, the findings add some shades of grey to the belief that the pursuit of a happy life has to be equal to high levels of intensive pleasure. The results can be seen in relation to other researchers (e.g., Diener et al. 1991a, b) who point out that coping strategies to maximize intense positive emotions, may be counterproductive. Mainly because individuals' ability to experience intensive positive emotions; is related to their ability to experience intensive negative emotions as well (Diener et al. 1991a, b). It is tempting to argue that the same logic may apply to adolescents' temperament. If it is so, one of the best advices a parent or a teacher can give to the adolescent might be that the best shot at the memory of a happy life is to stay true to her own nature. For instance, research has showed that adolescents have a tendency to act in ways that are not congruent to their own self-conceptions (Harter et al. 1996). False self behaviour leads to negative emotional outcomes, if the adolescents engage in such action because they devalue their "true self". However, if they engage in false self behaviour to please others or just for experimentation, such actions do not lead to negative emotions (Harter et al. 1996).

Nevertheless, as mentioned before individuals in a promotion focus experience emotions along a cheerfulness-dejection dimension; while individuals in prevention focus experience emotions along a quiescence-agitation dimension (Higgins et al. 1997). In addition, the focus of an individual can also be determined by the focus of a group,

especially when the individual strongly identifies with the group (Faddegon et al. 2008). This is important because, adolescence is a period in which groups (e.g., peer groups) are highly important (for a review see Steinberg and Morris 2001). According to Larson (2000, p. 170) “a central question of youth development is how to get adolescents’ fires lit, how to have them develop the complex of dispositions and skills needed to take charge of their lives”. Thus, if the goal is to learn adolescents to promote focus (i.e., to direct attention and effort toward a challenging goal), this might be facilitated in group interventions.

Finally, if the focus of the individual partially occurs at a unconscious level, it is probably important to be aware of the process in order to understand the self and different actions. Interventions that help the adolescent to bring putative unconscious processing into consciousness should be encouraged. For example, Dattilio (2002) suggested that homework assignments (e.g., bibliotherapy, audiotapes/videotapes, activity scheduling, self-monitoring, behavioral task assignments, and cognitive restructuring) increase patients’ awareness. When adolescents and adults strive to function positively they seem to attempt to feel good about themselves (Wilson and Ross 2001). To be aware of their own limitations should help them to shape their environment so as to meet personal needs and desires. According to Cloninger (2004), a stable condition of coherence of personality is what leads to a “full range of positive emotions and no negative emotions regardless of external circumstances” (Cloninger 2004, p. 8). This coherence is to be achieved through self-awareness and self-acceptance is an important step in becoming self-aware (Cloninger 2004). Indeed, self-acceptance seems to be a predictor of adolescents’ happiness regardless of their temperamental dispositions (Garcia and Siddiqui 2009b).

5.4 Limitations and Suggestions for Further Studies

The present study was conducted among adolescents and its generalization value among other populations may therefore be limited. Despite statistically significant, the relations among variables were generally small. Furthermore, daily events do not happen in even pairs as the words in the short story did and the connection between words in a story and the adolescents’ world view is an open question. Although temperament is relatively stable through the life span and a strong predictor of future well-being (Caspi 2000), we encourage studies using adults as participants. Firstly, adolescents experience emotion in different ways than children and adults (Silk et al. 2003). For instance, this may explain the unequal distribution of affect scores in the present study, many more adolescents were low-affective or self-destructive compared with self-actualizing or high-affective. In addition, studies among older adults show that positivity bias seem not only to be spared but probably also enhanced. For example, memory for positive pictures is relatively better than for negative ones among older adults (age 65-85) compared to younger samples (age 18–29; Charles et al. 2003).

The results may also be caused by response bias or conscious prevention focus. According to Higgins (2001) participants of recognition memory tasks that engage in promotion focus want to ensure recognizing a true target and ensure against omitting a true target. Thus, it is probable that participants in the present study had an inclination to consciously respond recognizing the word as being in bold type, despite how they have rated it earlier. Nevertheless, we suggest that the strategy of choice was elicited unconsciously by the reaction to stimuli. Firstly, because the main predictor of words recognized as being in bold type was the number of negative words rated as extremely negative. Secondly, in contrast to other studies (for a review see Higgins 2001), the present study did not try to motivate participants to engage in promotion or prevention focus (e.g., by inducing promotion: if you do well in this task, then you will get 6 dollars). Instead,

participants own temperamental dispositions were the backdrop to test reaction versus recognition. However, strategies are perhaps used unconsciously as a result of early learning history and not by inborn temperament alone. For example, children may learn that neutral, rather than extremely positive, affective responses yield parental approval (Schimmack and Diener 1997). It is probable that this may be true even for earlier patterns of interaction between parents and children. For example, studies suggest that what an infant brings within herself (e.g., the temperament disposition of attention to stimuli) predicts her ability to learn (Dunst and Lingerfelt 1985). However not all temperamental dispositions are involved in that prediction, thus environmental variables may be at work (Dunst and Lingerfelt 1985).

5.5 Concluding Remarks

It is important to assess how individuals differ and try to regulate their perception of the world. Positive youth development (e.g. the sense of being motivated and engaged from within) should emerge from their own perception of the daily events they experience as novel and stressful. In this context, Higgins (1997) has suggested that it is important to distinguish between strategies used in order to move forward desired end-states (happy) or away from undesired end states (unhappy). The strategy used by the adolescent probably mirrors what is important in her life, what grabs her attention and what she finds pleasant; which in turn helps her to regulate the emotional reactions to different types of stimuli. It is reasonable to strive to high levels of positive affect. For instance, the absence of PA is a better predictor of mortality and morbidity than the presence of NA (Cloninger 2006). From this point of view, it should be better to be a high affective than a low affective. The two temperaments might be opposite to each other. On the other hand, low affectives might be the opposite of self-destructive while high affective the opposite of self-actualizing. More specifically, low affectives might be better than self-destructive at using the strategy of prevention focus, while self-actualizers better than high affectives at using the strategy of promotion focus. Nevertheless, stronger data is needed in order to assess if the different temperaments are actually related to promotion or prevention strategies.

Despite bias for negative stimuli, humans as all organic beings create a most pleasant world for themselves. Our intuitive affective system probably does part of the work when creating a more pleasant experience. Hence, although at a general level we may show unconscious preference for negative stimuli and at individual level we may not be blessed with the “right temperament”: most of us are able and actually do achieve happier lives (Diener 2008; Diener and Diener 1996). We agree with Haidt (2006) when he states that is important to get to know your temperament or elephant as Haidt calls it. Let the elephant approach or prevent while the raider, the more conscious part of us, gives it the right treats. In other words, we may respond faster to negative stimuli, but we probably do not need to engage in a conscious fight. What may be crucial for our happiness might be the kind of treats we consciously reward our elephant with. The memory of our life experiences and explanations of our own behavior during those experiences are unique for each individual. Those memories may play an important roll in how we understand ourselves in a personal and social context at different times in life (McAdams 2001).

*“They say two wrongs don’t make a right,
so if I’m wrong, I ain’t tryin’ to fight.
I’m tryin’ to have some dinner with some candlelight,
lay up in the bed and make love all night”–Wyclef*

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STUDY IV

THE AFFECTIVE TEMPERAMENTS AND
SELF-ACCEPTANCE:
Adolescents' Life Satisfaction and
Psychological Well-Being

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Abstract

The aim of the present study was to investigate differences in life satisfaction (LS) and psychological well-being (PWB) among adolescents (N = 141). The relationship between PWB' self-acceptance sub-scale and LS was also investigated. The affective temperaments (AFTs) model was the framework for the research. The AFTs were developed through self-reported affect, generating four temperaments: self-actualizing, high affective, low affective, and self-destructive. Self-destructives reported lower LS and PWB than the other three temperaments. Moreover, PWB and self acceptance were related to LS for all temperaments. The role of positive emotions and self-acceptance among youth is discussed. The AFTs model is suggested to offer something unique by taking into account the interaction of positive and negative affect.

Keywords: Affective Temperaments, Life Satisfaction, Negative Affect, Positive Affect, Psychological Well-Being, Self-Acceptance, Temperament.

The Affective Temperaments and Self-Acceptance:

Adolescents' Life Satisfaction and Psychological Well-Being

Positive (PA) and negative affect (NA) are indicators or markers of well-being (Diener, 1984). However, according to some researchers PA and NA are two distinctive factors that also reflect stable emotional-temperamental dispositions or signal sensitivity systems (e.g., Watson & Clark, 1994; Tellegen, 1993). For instance, Larsen and Ketelaar (1991) found that individuals who experience high levels of PA attend and react more intensely to positive stimuli than individuals with low levels of PA. In contrast, individuals with high levels of NA attend and react more intensely to negative stimuli than individuals with low levels of NA. Yet most of the studies use PA and NA to define an emotional state rather than a ‘trait-like’ temperament. This difference, however, may be addressed by referring to the lack of coherence in the literature—namely; the different measures used in the assessment of affects (see Lyubomirsky, King, & Diener, 2005 for a large compilation of studies). Moreover, as one of the most used instruments to measure affect, the Positive Affect and Negative Affect Schedule (PANAS by Watson, Clark, & Tellegen, 1988), was developed on the idea that PA and NA represent two orthogonal dimensions rather than two ends of one dimension. Consequentially, while some PANAS items (e.g., ‘interested’) may not be common in other scales, other items (e.g., ‘happy’) are not included in the PANAS. Additionally, other findings suggest that PANAS items reflect engagement with a stimulus (for a review see Schimmack, 2007). Indeed, PA and NA, as measured by the PANAS show strong stability over time and are probably genetically predisposed in the individual (Fujita & Diener, 2005; Lykken & Tellegen, 1996). In the present study, PA and NA are referred to not only as temperamental dispositions but also as complementary to extraversion and neuroticism. These assumptions are based on the suggestions mentioned above and on research that shows that PA and NA (as measured by the PANAS) involve more mood and social traits than extraversion and neuroticism (for a review, see Gunderson, Triebwasser, Phillips, & Sullivan, 1999).

In this line of thinking, Garcia and colleagues (Garcia & Siddiqui, 2009a, b; Garcia, Rosenberg, Erlandsson, & Siddiqui, 2010) have

examined adolescents' judgements of life satisfaction (LS), Psychological Well-Being (PWB) and apprehension for events. As a backdrop for their research, Garcia and his colleagues used the Affective Temperaments model (AFTs; originally developed by Norlander, Bood, & Archer, 2002). The model takes into account all characteristics of PA and NA earlier stated and is based on self-reported affects measured by the PANAS. The four temperaments are: self-actualizing (high PA, low NA); high affective (high PA, high NA); low affective (low PA, low NA); and self-destructive (low PA, high NA). Compared to self-destructive, all temperaments report higher levels of LS, PWB and recall more positive than negative life events (Garcia & Siddiqui, 2009a, b). Moreover, while LS is predicted by life events among low PA temperaments (Garcia & Siddiqui, 2009a), PWB predicts LS regardless of temperament (Garcia & Siddiqui, 2009b). More important, although the temperaments differed in several PWB constructs; when Garcia and Siddiqui (2009b) tested each of the PWB constructs in the prediction of LS among temperaments, self-acceptance emerged as the most important construct for all four temperaments. In a related study, Garcia and colleagues (2010) presented adolescents with a short story with different valenced words highlighted in bold type (negative, positive, and neutral). While high affectives and self-actualizers' reaction to negative words predicted the number of positive words in memory, low affectives' reaction to negative words predicted the memory of neutral words. In contrast, self-destructive were unable to self-regulate their reaction of negative words. Hence, all temperaments, with the exception of self-destructives, seem to have the ability to self-regulate their reaction to negative words by better remembering words that were congruent to their own temperament.

Garcia and colleagues (2009a, b; 2010) concluded that there may be two ways of maintaining well-being that are related to the interacting influence of the two signal-sensitivity systems (i.e., PA and NA) and that accepting the self seems important if the adolescent is going to feel satisfied with life. In this context, the researchers related their findings to Fredrickson's (2006) suggestions about how positive emotions may also broaden people's mindsets and build enduring personal psychological resources. The effect of broadened thinking may increase the odds of

discovering positive meaning in life events (Fredrickson, 2006; Fredrickson & Branigan, 2005), in turn, enhancing PWB. Fredrickson (2006) goes even further suggesting that high PA balance high negative emotions, thus explaining why high affective adolescents experience high LS and report high PWB despite their experience of high NA. Nevertheless, in Garcia and Siddiqui's studies (2009a, b) also low affective adolescents (low PA and low NA) reported higher LS and PWB than self-destructive adolescents. In this regard, the researchers noted that Higgins (1997) has suggested that it is important to distinguish between strategies used in order to move forward desired end-states (happy) or away from undesired end states (unhappy). Indeed, their findings suggest that self-actualizing and high affective adolescents regulated their reaction to negative words in a story by remembering more of the positive words in the same story. In contrast, low affective adolescents regulated their reaction to negative words by remembering more neutral words (Garcia et al., 2010). In other words, self-actualizing and high affective adolescents approached happiness, while low affective adolescents avoided unhappiness. Hence, the AFT model might offer something unique over and above the single dimensional framework--specifically, with respect to the high and low affective individuals.

The present study aims to replicate Garcia and Siddiqui's studies (2009a, b) by investigating if the AFTs differ in their levels of LS and PWB. The role of PWB and self-acceptance in the prediction of satisfaction with life is also examined. Having a sample of adolescents may be important, because in this period of life different events and transitions may influence well-being (González, Casas, & Coenders, 2007). In addition, temperament is described as relatively stable in adults, however adolescents' temperament might be less stable due to the fact of their neurological development (Windle & Windle, 2006). Before trying to disentangle the interesting question of the predictive nature of distinctive measures of well-being, each measure and how they map onto and are distinct from each other is briefly defined.

Subjective Well-Being and Psychological Well-being

In the field of Positive Psychology, well-being research complements measures of physical (e.g. health) and material (e.g. income) well-being

with assessments of optimal psychological functioning and experience (Ryan & Deci, 2001). Two points of views have been distinctive across studies. One is the hedonic point of view (Kahneman, Diener, & Schwarz 1999) which focuses in people's own judgements and experiences of pleasure versus displeasure. The assessment of this hedonic experience involves individuals' own judgements about life satisfaction, the frequency of positive affect and the infrequency of negative affect (Pavot, 2008). The three constructs are summarized as Subjective Well-Being or happiness (SWB; Diener, 1984). According to Martin and Huebner (2007), the multidimensional model of SWB (LS, PA, and NA) is valid for adolescents as well. Thus, a happy adolescent can be assumed to be satisfied with life and to experience more positive than negative affect. LS refers to a comparison process, in which individuals assess the quality of their lives on the basis of their own self-imposed standard (Pavot & Diener, 1993; for a review of the literature on youth and LS see Proctor, Linley, & Maltby, 2009a). The affective part of SWB is computed by subtracting the number of positive emotions from the number of negative emotions that an individual experiences—that is, the affect balance (Schimmack & Diener, 1997). The current assessment of the affective component can be criticized because it fails to take account of positive and negative aspects of experience independently: an individual experiencing high positive and negative affectivity may end up with the same score as a person who experiences low positive and low negative affectivity (Schimmack & Diener, 1997).

The other point of view is the eudaimonic (Waterman, 1993), which sees well-being as a product of “the striving for perfection that represents the realization of one's true potential” (Ryff, 1995, p. 100), hence SWB is a result of full engagement and optimal performance in existential challenges of life (Ryff, Keyes, & Schmotkin, 2002). In this framework, Ryff (1989) proposed six constructs as defining positive psychological functioning: (1) self-acceptance, (2) positive relations with others, (3) autonomy, (4) environmental mastery, (5) purpose in life and (6) personal growth. Ryff (1989) compared PWB between young (18-29 years old), midlife (30-64 years old) and old aged (65 years old or more) adults and found different aspects of PWB increasing or decreasing, while other not

changing at all. Environmental mastery and autonomy increased with age (especially from young to midlife adults), purpose in life and personal growth decreased (especially from midlife to old aged adults) and no differences were found for self-acceptance and positive relations with others. Although the PWB constructs are not only suggested to promote SWB but also as a measure of well-being, recent research has linked PA as a predictor of PWB. Urry and colleagues (2004), for example, tested if eudaimonic behavior (engaging with goal-directed stimuli) contributed to well-being by investigating correlations between individual differences in baseline prefrontal activation and PWB. The results validated the hypothesis and affect, especially approach-related PA (e.g., “interested,” “strong”), emerged as an important factor in the prediction of PWB.

The Present Study

The aim of the present study is to replicate Garcia and Colleagues' findings by exploring differences between AFTs with respect to LS and PWB. Furthermore, the present study also investigates the relationship between PWB (specifically the self-acceptance sub-scale) and LS among temperaments. Self-actualizing adolescents might obviously be considered as the happy ones. On the other hand high affective adolescents' experience of high PA is suggested to not only attenuate their experience of high NA, but also to broaden their thought repertoire, in turn, increasing their PWB. Nonetheless, low affective adolescents' ability to neutralize their reaction to negative stimuli promotes self-regulation and the avoidance of unhappiness. Hence, as in Garcia and Siddiqui's studies (2009a, b) self-actualizing, high affective and low affective adolescents are expected to show higher LS and PWB than the self-destructive ones. Moreover, PWB and self-acceptance are expected to predict LS for all temperaments.

Method

Participants and Procedure

Pupils at a high school in the county of Blekinge, Sweden, participated in the study. The whole population ($N = 150$) was contacted. A total of 141 pupils (80 girls) with an age mean of 16.89 ($SD = .97$) agreed to participate. The adolescents had consent from their teachers to participate. All parents were informed of the present and other studies being

conducted among adolescents at the school. The nature of the studies was explained (e.g., instruments, confidentiality) and questions addressed at the same meeting. Pupils were told that their involvement was voluntary, confidential and that the studies were about how high school pupils think about their lives. All participants were presented with a battery of instruments including the affect, LS and PWB measure. Participants' PA and NA scores were divided (in high and low) using the following cut-off points recommended in Garcia and colleagues' studies: low PA = 34 or less; high PA = 35 or above; low NA = 22 or less; and high NA = 23 or above.

Instruments

Positive Affect and Negative Affect Schedule (PANAS; Watson et al., 1988). The PANAS asks participants to rate to what extent they generally have experienced 20 different feelings or emotions (10 PA and 10 NA) for the last weeks, using a 5-point Likert scale (1 = *very slightly*, 5 = *extremely*). The 10-item PA scale includes adjectives such as strong, proud, and interested (Cronbach's $\alpha = .84$). The 10-item NA scale includes adjectives such as afraid, ashamed, and nervous (Cronbach's $\alpha = .81$).

Satisfaction With Life Scale (SWLS; Pavot & Diener, 1993). The SWLS asks participants to indicate grade of agreement to 5 items (e.g., "I am satisfied with my life") using a 7-point Likert scale (1 = *strongly disagree*, 7 = *strongly agree*). The LS score was established by summarizing the 5 statements for each participant (Cronbach's $\alpha = .83$).

Ryff's Short Measurement of Psychological Well-Being (Clarke, Marshall, Ryff, & Wheaton, 2001). The instrument consists of 18 items, three for each construct of PWB. The participants are asked to indicate grade of agreement to three statements for each of the six scales in a 6-point Likert scale (1 = *strongly disagree*, 6 = *strongly agree*). The three items of the self-acceptance subscale (e.g., "I like most aspects of my personality" Cronbach's $\alpha = .76$) were summarized to form a separate variable. The total PWB score was computed by simply summarizing all the 18 items (Cronbach's $\alpha = .75$).

Results

Differences between AFTs

A temperaments x gender between-subjects ANOVA was conducted in order to test differences in LS and PWB. The main effect of gender was not significant for either LS ($F(1,133) = 1.42, p = .24$) or PWB ($F(1,133) = 2.39, p = .12$). The main effect of AFTs was significant for both dependent variables: LS ($F(3,133) = 11.12, p < .001$) and PWB ($F(3,133) = 10.07, p < .001$). A Bonferroni correction to the alpha level showed that, as predicted, self-actualizing ($p < .001$ for LS; $p < .001$ for PWB), high affective ($p < .001$ for LS; $p = .001$ for PWB) and low affective adolescents ($p < .001$ for LS; $p = .01$ for PWB) reported higher LS and PWB than self-destructive adolescents. The interaction of AFT and gender was not significant for either LS ($F(3,133) = .38, p = .77$) or PWB ($F(3,133) = .70, p = .55$), hence the effect of AFTs on LS and PWB was consistent across gender. See Table 1 for mean scores in LS and PWB.

Table 1. Mean Scores in LS, PWB and Self-Acceptance among AFTs

	Self-actualizing <i>n</i> = 40	High affective <i>n</i> = 29	Low affective <i>n</i> = 32	Self-destructive <i>n</i> = 40
Life Satisfaction (LS)	26.82±5.30	25.19±5.34	25.05±4.90	19.92±6.40
Psychological Well-Being (PWB)	82.87±9.08	80.77±9.47	78.82±6.74	71.45±7.33
Self-acceptance	14.24±2.60	14.24±2.83	13.29±2.72	10.93±3.47

Note: Values represent mean scores ± SD

PWB and Self-Acceptance as a Predictor of LS

Four multiple regression analyses (MRAs) were conducted using the whole PWB scale as the independent variable and LS as the dependent variable, one for each temperament. PWB emerged as a significant predictor of LS for each temperament (see Table 2). Nevertheless, self-acceptance was expected to be the main variable related to LS among

AFTs (see Table 1 for mean scores). Four MRAs were conducted using self-acceptance as the independent variable and LS as the dependent variable, one for each temperament. Self-acceptance was significantly related to LS for all temperaments. See Table 3 for details.

Table 2. PWB as Predictor of LS among AFTs

	Beta	Adjusted R ²	F
Self-actualizing	.66 ***	.42	F (1,38) = 29.58 ***
High affective	.63 **	.38	F (1,27) = 18.13 ***
Low affective	.52 **	.25	F (1,30) = 11.26 **
Self-destructive	.61 ***	.36	F (1,38) = 22.70 ***

Note: *ns* = nonsignificant, ***p* = 0.01, ****p* < 0.001

Table 3. Self-Acceptance as Predictor of LS among AFTs

	Beta	Adjusted R ²	F
Self-actualizing	.70 ***	.48	F (1,38) = 37.00 ***
High affective	.46 **	.18	F (1,27) = 7.05 **
Low affective	.42 **	.15	F (1,30) = 6.25 **
Self-destructive	.75 ***	.55	F (1,38) = 49.51 ***

Note: *ns* = nonsignificant, ***p* = 0.01, ****p* < 0.001

Discussion

The aim of the present study was to explore differences between AFTs with respect to LS and PWB. The present study also investigated the relationship between PWB and LS among temperaments. Specifically, the PWB sub-scale of self acceptance was expected to be important in the prediction of LS among temperaments. As in Garcia and Siddiqui's studies (2009a, b) self-actualizing, high affective, and low affective adolescents showed higher LS and PWB compared to the self-destructive ones. Moreover, PWB and self-acceptance predicted LS for all temperaments.

Although high and low affectives did report higher LS and PWB than self-destructive adolescents, it is important to point out the role of positive emotions in the process of human adaptation. The broaden and build theory (Fredrickson, 2006) posits that the experience of positive emotions is suggested to broaden thoughts and behaviors and facilitates more adaptive responses to environments, enhancing well-being (Fredrickson, 2006). Tugade and Fredrickson (2004), for example, found that individuals with high affectivity (high PA and high NA) returned faster to their normal cardiovascular activation following a stressful task. Moreover, the absence of PA is a better predictor of mortality and morbidity than the presence of NA (Cloninger, 2006). Thus, as suggested high affective adolescents' high PA probably neutralizes the effects of their experience of high NA. From this point of view it might be better to be a high affective than a low affective adolescent. For instance, positive emotions, in contrast to negative emotions, are related to adaptive coping, which in turn is related with student engagement among young adolescents (Reschly, Huebner, Appleton, & Antaramian, 2008). In agreement with Larson (2000, p. 170) "a central question of youth development is how to get adolescents' fires lit, how to have them develop the complex of dispositions and skills needed to take charge of their lives." Thus, the promotion of positive emotions should be in focus. It is plausible to suggest that a first step in this direction might be through self-acceptance. Indeed, in concordance to Garcia and Siddiqui's (2009b) findings, self-acceptance seems to be a predictor of adolescents' LS. That is, if an adolescent is going to be able to successfully adapt, feel good,

and resolve problems in life, the adolescent has to accept all different parts of her personality. In Garcia and Siddiqui's study (2009b) low affectives did not show lower self-acceptance than the high affective adolescents, while showing higher self-acceptance than the self-destructive ones. Perhaps is their ability to accept the self without judgment what makes them to see their life as satisfying.

If it is so, fostering self-acceptance among youth might be crucial for their well-being. According to Magen (1998), social skill interventions in the school should include commitment beyond the self. Magen (1998) suggest that peer counseling influences adolescents to give and receive help. This mutual interpersonal experience strengthens self-acceptance and fosters their capacity to experience moments of happiness and identity formation (Magen, 1998). The benefits from such interventions are greater "self-esteem, sense of purpose and worth, feeling of accomplishment and mastery, and satisfying interaction with other humans beings" (Magen, 1998, p 192).

Limitations

The present study was based on self-reports, the sample was relatively small and cross-sectional. Thus, the generalization value is limited. Although the instruments used to measure LS, PA, and NA (SWLS and PANAS) showed high reliability, appropriate measures for those constructs have been developed and validated for use with adolescents (e.g., Students' Life Satisfaction Scale by Huebner, 1991, and the PANAS-C by Laurent et al., 1999). Nevertheless, evidence of the reliability and validity of the SWLS and the PANAS in adolescents can be found elsewhere (SWLS: Proctor, Linley, & Maltby, 2009b. PANAS: Huebner & Dew, 1995; McCullough, Huebner, & Laughlin, 2000).

Suggestions for Further Investigation

The present study was an important replication of Garcia and colleagues' studies. The AFTs are probably useful in the study and prediction of positive health and indicators of well-being. Nevertheless, to the best of my knowledge no study has investigated if the AFTs actually have different personalities. This is important, since personality appears to be the major determinant of well-being (e.g., Lyubomirsky et al., 2005) since it is related to reactivity to emotional stimuli, individual differences in

intensity to responses to emotional events, and to the duration of emotional reactions (Kim-Prieto, Diener, Tamir, Scollon, & Diener, 2005). If the interacting influence of the two signal-sensitivity systems (i.e., PA and NA) helps maintain well-being, then the AFTs should differ in personality in addition to well-being. In this regard, adolescents that experience high PA could be addressed as extroverts, while high NA adolescents as neurotics. Nevertheless, the AFTs are based in the notion of PA and NA as interacting dispositions, thus high affective adolescents are probably high in both traits. In contrast, low affective might report being low in both Neuroticism and Extraversion. In other words, low affectives might report high LS despite not being extroverts, while high affectives might report high LS despite high neuroticism. If these difference are consistent across samples, the AFT framework can then be suggested as reliable when predicting well-being and useful when interventions seek to increase adolescents satisfaction with their life and PWB. Furthermore, as stated in the introduction temperament is relatively stable in adults, while it might be less stable during adolescence due to neurological development (Windle & Windle, 2006). Thus, in order to use PA and NA as trait measures among adolescents, future studies should address the test-retest reliability of the AFT model.

Concluding Remarks

The present study's findings add to the research on adolescents' LS (for more research on adolescents' LS see, among others: Rothbart & Jones, 1998; McCullough et al., 2000; Fogle, Huebner, & Laughlin, 2002; Funk III, Huebner, & Valois 2006; Martin & Huebner, 2007). More important, the findings add some shades of grey to the belief that the pursuit of a happy life has to be equal to high levels of intensive pleasure. For instance, among adults, individuals who report high levels of SWB seldom experience intense PA (only 2.6% of the time); instead they feel contented or mildly happy very frequently (Diener & Diener, 1996; Diener & Seligman, 2002). Furthermore, adolescents have a tendency to act in ways that are not congruent to their own self-conceptions (Harter, Marold, Whitesell, & Cobbs, 1996). False self behavior leads to negative emotional outcomes, if the adolescents engage in such action because they devalue their "true self" (i.e., low self-acceptance). However, if they

engage in false self behavior to please others or just for experimentation, such actions do not lead to negative emotions (Harter et al., 1996). Internalizing external influence from peers leads to self-alienation, in turn, leading to depression, lower levels of hope and SWB (for a review see Wood, Linley, Maltby, Baliousis, & Joseph, 2008). Hence, one of the best advices a parent or a teacher can give to adolescents might be that the best shot to a happy life is to stay true to their own nature and to accept all parts of themselves.

“A man cannot be comfortable without his own approval”

Mark Twain

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**Adolescents' Happiness:
The Role of the Affective Temperament Model on Memory and
Apprehension of Events, Subjective Well-Being, and Psychological
Well-Being**

As in *Harry Potter and the Prisoner of Azkaban* by J. K. Rowling, when the young Harry Potter is preyed on by the soulless creatures called Dementors that force human beings to relive their worst memories, adolescents probably need to cultivate and reach for their innermost positive feelings, happiness and good memories in themselves.

The general aim of the dissertation was to examine the role of temperament and intrapersonal characteristics in adolescents' happiness. In contrast to most research so far, temperament is presented as an interactive affective construct that helps the individual to approach happiness or to avoid unhappiness. Both strategies, in turn, were expected to lead to a positive world view and the sense of being satisfied with life. Nevertheless, the memory of a happy life is probably not dictated by temperament alone. Instead, positive attitudes toward the self (i.e., Psychological Well-being) might influence the adolescent to feel happy with life regardless of how temperament leads her to feel and react to life events. Psychological Well-Being, for instance, identifies characteristics that promote effective adaptation to life events and emotional health such as self-acceptance, being able to create and keep positive relations to others, having a sense of autonomy, the ability to see life events as opportunities to personal growth, a purpose in life, and the ability to choose or create environments that are fitting to own conditions. In this context, happiness is probably a result of full engagement and optimal performance in the existential challenges of life.

The findings presented here are important if psychology wants to empower parents and teachers (and adolescents themselves for that matter) to give help and guidance to adolescents in the pursuit of a happier life. In regard to adolescents, the promotion of positive emotions should be in focus. It is plausible to suggest that a first step in this direction might be through self-acceptance. When adolescents strive to function positively they seem to attempt to feel good about themselves. To be aware of their own limitations should help them to shape their environment so as to meet personal needs and desires. Thus, positive memories and accepting all parts of the self might actually help the adolescent to cast the right spell to chase away the Dementors.



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