Agency, Optimism, and the Longitudinal Course of Anxiety and Well-Being

Matthew W. Gallagher
M.A. University of Kansas, 2006

Submitted to the Department of Psychology and the
Faculty of the Graduate School of the University of Kansas
In partial fulfillment of the requirements for the degree of
Doctor of Philosophy

Rick E. Ingram, PhD (Co-chair)

Todd D. Little, PhD (Co-chair)

Kristopher J. Preacher, PhD

Sarah D. Pressman, PhD

Michael L. Wehmeyer, PhD

Date defended: October 22nd, 2009

The Dissertation Committee for Matthew Ward Gallagher certifies
that this is the approved version of the following dissertation:

Agency, Optimism, and the Longitudinal Course of Anxiety and Well-Being

Committee:

Rick E. Ingram, PhD (Co-chair)

Todd D. Little, PhD (Co-chair)

Kristopher J. Preacher, PhD

Sarah D. Pressman, PhD

Michael L. Wehmeyer, PhD

Date approved: October 22nd, 2009

Abstract

Positive expectancies for the future provide an important pathway to the development of mental health and resilience against the development of mental illness. Generalized expectancies in the form of optimism beliefs and specific positive expectancies regarding personal agency have both been shown to predict higher levels of mental health and lower levels of mental illness. Previous research, however, has generally been limited by the failure to establish the incremental validity of agency and optimism theories and the reliance on cross-sectional designs. Therefore, the present study attempted to improve our understanding of how positive expectancies relate to mental health by longitudinally examining the unique effects of agency and optimism on anxiety and well-being. Results demonstrated that agency and optimism both have robust effects on mean levels of anxiety and well-being across time, but that agency beliefs are consistently a better predictor of improved psychological functioning than is optimism. These results therefore demonstrate that positive expectancies are important contributors to the development of mental health and the prevention of mental illness, and that positive expectancies regarding a sense of personal agency are the more important predictor of adaptive psychological functioning.

Acknowledgments

There are many people whose support has proved invaluable support throughout the dissertation process. Many thanks to my co-chairs Todd Little and Rick Ingram for their theoretical insights, valuable career advice, and general good-naturedness. Thanks to Kris Preacher for the helpful statistical advice and constant willingness to discuss methods with me. Thanks to Sarah Pressman and Mike Wehmeyer for their enthusiasm and positive attitudes. Thanks to Rick Snyder for helping me to get started with research. Thank you to Shane Lopez for mentoring me throughout graduate school. Finally, thanks to Katie and my family for their unwavering emotional support, I couldn't have done it without you.

Table of Contents

List of Tables

List of Figures

Agency, Optimism, and the Longitudinal Course of Anxiety and Well-Being

The potential for research examining the benefits of positive psychological factors to complement traditional areas of clinical psychology research has become increasingly apparent in recent years (Maddux, 2009). In particular, positive expectations for the future, both generalized outcome expectancies (i.e., optimism) and expectancies regarding personal efficacy (i.e., agency), have increasingly been considered as potentially important contributors to the development of mental health and the prevention of mental illness. Many questions remain, however, about the relevance of these factors, as previous research has not adequately examined unique effects, potential mechanisms, or the longitudinal course of the effects of agency and optimism beliefs. The purpose of the present study was to explore how positive expectancies relate to the development of mental health and mental illness in order to improve our understanding of how these factors relate to clinical psychology.

Positive Expectancies

Positive expectations for the future are ubiquitous. Research shows that American adults generally endorse a future-oriented perspective toward time (Zimbardo & Boyd, 1999). Furthermore, a recent study using data from the Gallup World Poll, which included a representative sample of 95% of the world's population, demonstrated that 88.3% of adults worldwide believe they will be more satisfied with their lives in five years than they are currently, that 84.7% of adults worldwide believe they will be more satisfied with their lives in five years than they were five years ago, and that 83.8% of adults worldwide believe their life satisfaction in five years will be above average (Gallagher, Lopez, & Pressman, 2009). It appears that worldwide, most individuals maintain positive expectations for the future.

Whether or not positive thoughts about the future are adaptive is an issue that has been debated for centuries (Peterson, 2000). From classic characters of fiction such as Voltaire's (1759) Pangloss, to American leaders such as Benjamin Franklin who stated that "he that lives upon hope will die fasting", to psychologists such as Freud (1928) who argued that optimism is widespread but illusory, many have proposed that positive expectations for the future are damaging delusions. Other tales such as the myth of Pandora in which hope was the last ray of light for humanity, and historical figures such as Martin Luther who said that "everything that is done in the world is done by hope", or Norman Vincent Peale (1952) who advocated for "The Power of Positive Thinking", have argued positive expectations and thoughts about the future are, in fact, adaptive.

Recent theories of positive expectancies have generally sided with the latter perspective, that positive thoughts about the future are adaptive. Positive expectancies have even been posited to be a driving force in human evolution, in that the ability to maintain positive expectations was selected during evolution as a balancing force for the fear and anxiety that became possible once humans developed the ability to think about potentially negative future outcomes (Tiger, 1979). A crucial turning point in

modern perspectives on positive expectancies was the seminal review conducted by Taylor and Brown (1988) on the benefits of positive illusions. Taylor and Brown's review demonstrated that positive expectancies, whether they be in the form of generally optimistic beliefs or inflated evaluations of control or agency, were associated with higher levels of happiness or contentment, an improved capacity for productivity, and superior social cohesiveness. They concluded that "… the capacity to develop and maintain positive illusions may be thought of as a valuable human resource to be nurtured and promoted, rather than an error-prone processing system to be corrected" (Taylor & Brown, 1988, p 205). Extending the work of Taylor and Brown, two distinct theoretical approaches have been developed in recent years to articulate how positive expectancies might therefore be important both for the promotion of mental health and the prevention of mental illness[1].

Optimism.

The first theoretical approach to studying positive expectancies focuses on generalized expectations of positive outcomes in the future. This approach to studying individual differences in positive expectancies is exemplified by Scheier and Carver's (1985, 2002) theory of optimism. Scheier and Carver define optimism as a stable individual difference that reflects the general perception that future positive outcomes will be common and future negative outcomes will be rare. Scheier and Carver have developed an individual differences measure, the Life Orientation Test-Revised (Scheier, Carver, & Bridges, 1994), and research has consistently shown that optimism is an important predictor of adaptive coping and improved physical and mental health (Carver & Scheier, 2002a; Carver et al., 2009; Scheier & Carver, 1992).

Agency.

The second theoretical approach to studying positive expectancies focuses on perceptions of agency. Agency is defined as a "sense of personal empowerment, which involves both knowing and having what it takes to achieve one's goals" (Little, Hawley, Henrich, & Marsland, 2002, p. 390). Multiple theories of human agency have been developed (Bandura, 1982; Little, Snyder, & Wehmeyer, 2006; Snyder, 2002; Wehmeyer, Little, & Sergeant, 2009). These theories "share the metatheoretical view that organismic aspirations drive human behavior" (Little et al., 2006, p. 61). The agentic approach to positive expectancies therefore emphasizes the role individuals anticipate taking in pursuing and achieving desired outcomes.

Agentic theories are exemplified by Bandura's (1977, 1997) theory of self-efficacy and Snyder's (1994, 2002) theory of hope. Self-efficacy theory focuses on domain specific perceptions of agency and self-efficacy beliefs have been shown to contribute to positive outcomes in a wide variety of domains (Bandura, 1997). Snyder's theory of hope focuses on dispositional perceptions of agency and decades of

research have shown that higher levels of hope are consistently associated with improved outcomes in academics, athletics, and physical and mental health (Rand & Cheavens, 2009; Snyder, 2002).

One distinction between Snyder's theory and Bandura's theory is that hope theory also emphasizes the presence of pathways thinking, which is defined as the degree to which individuals believe they can identify a reasonable method of achieving their goals (i.e., how to get from point A to point B). Previous research, however, has demonstrated that pathways thinking does not contribute to the prediction of mental health outcomes beyond agency thinking (e.g., Arnau et al., 2007), and it is possible that pathways thinking may be a mechanism or mediator of the effects of agency beliefs rather than a necessary contributor. The present study focuses exclusively on the benefits of agency beliefs rather than the synthesis of agency and pathways thinking as suggested by Snyder (1994, 2002).

Another issue regarding the study of agency beliefs is the utility of studying trait versus domain specific perceptions of agency. Bandura (1997) has consistently argued against the use of trait agency measures. Although Bandura is likely correct that domain specific measures of agency will always be more relevant to domain specific outcomes (Mischel, 1968), the work of Snyder (2002) and others (e.g., Little et al., 2001) has displayed the utility of studying trait theories of agency. The present study focuses on dispositional levels of agency in order to provide additional evidence of the relevance of these theories and constructs to the development of mental health and mental illness.

Distinguishing between agency and optimism.

Current trait theories of agency and optimism share the underlying perspective that human behavior can generally be understood in terms of goal pursuits, and that positive expectancies are critical in understanding and explaining how individuals pursue and achieve goals (Bandura, 1997; Snyder, 2002; Carver & Scheier, 1998; 2002a). The primary area in which the two theories differ is in the role the theories assign to personal locus of control (Carver & Scheier, 2002b; Snyder, 2002). Optimism focuses on more generalized expectancies (e.g., I will achieve my goal) and places less emphasis on how or why the goal is attained (Carver & Scheier, 2002b). Theories of agency place a greater emphasis on the individual as the primary determinant of goal achievement. Agency theories are therefore predicated upon an internal locus of control (Rotter, 1966), whereas optimistic expectancies are more ambiguous and allow for an external locus of control.

To date, empirical investigations of the distinctions between theories of agency and optimism have supported these distinctions. Confirmatory factor analysis studies indicate that agency/hope and optimism are best conceptualized as two related, but distinct, latent constructs rather than two indicators of a single positive expectancy construct (Bryant & Cvengros, 2004; Gallagher & Lopez, 2009; Rand, 2009). Furthermore, structural equation modeling studies indicate that agency and optimism constructs both uniquely contribute to the prediction of positive outcomes (Gallagher & Lopez, 2009; Magaletta &

Oliver, 1999). These results suggest that the agency and optimism theories complement rather than contradict one another, in that they each capture a unique facet of individual differences in positive expectations for the future. Thus, it makes sense to consider the unique effects that individual differences in agency and optimism may have on the development of mental illness and mental health.

Positive Expectancies and Mental Illness

Positive expectancies have long been considered relevant to the development of mental illness. In particular, many theories propose that perceptions of agency (and related constructs of control) function as a cognitive vulnerability to the development of anxiety disorders in both children and adults (Bandura, 1977, 1997; Barlow, 2000, 2004; Chorpita & Barlow, 1998; Weems & Silverman, 2004). In Barlow's triple vulnerabilities model of the etiology of anxiety disorders (Barlow, 2000, 2004) three factors are proposed to interact and cause the development of anxiety disorders: a general biological vulnerability, a general psychological vulnerability, and a specific psychological vulnerability. The general biological vulnerability is proposed to be highly heritable, to be manifested via traits such as neuroticism or negative affectivity, and to generally predispose individuals to experience anxiety (Barlow, 2000). It is the specific and general psychological vulnerability factors of Barlow's model where positive thinking and agency beliefs may play an important role.

Agency and anxiety.

In Barlow's model, the specific psychological vulnerability piece is proposed to stem from learning experiences in which people develop associations between specific objects or situations and feelings of anxiety, and subsequently develop the belief that these situations are dangerous or out of their control. Although Barlow uses the term control when describing vulnerability to anxiety, he has acknowledged the conceptual overlap between his theory of control and Bandura's (1997) theory of self-efficacy (Barlow, 2004). Other theorists have also highlighted the significant conceptual overlap between the concepts of control and self-efficacy (Weems & Silverman, 2004), and the role that domain specific perceptions of agency (i.e., self-efficacy beliefs) may play in the development or treatment of anxiety disorders has been extensively studied.

Bandura's social cognitive theory suggests that self-efficacy beliefs are critical factors in determining how individuals exercise control, appraise threats, manage feelings of anxiety, and whether individuals engage in avoidant behavior (Bandura, 1986, 1997). Specifically, "people who believe they can exercise control over potential threats do not engage in apprehensive thinking and are not perturbed by them" (Bandura, 1988, p. 77). Evidence of the importance of self-efficacy beliefs comes from studies indicating that self-efficacy beliefs are negatively correlated with anxiety in children (Yue, 1993), and adults (Stanley et al., 2002), and studies suggesting that self-efficacy beliefs are a better predictor than

anticipatory anxiety of avoidant behavior in individuals suffering from anxiety disorders (Williams, 1992; Williams et al., 1985; Williams & Watson, 1985; Williams & Zane, 1989)

Self-efficacy beliefs are also proposed to be an important mediator of improvement in psychological treatments for anxiety disorders (Bandura, 1997; Hofmann, 2004). Theory and evidence therefore suggest that whereas perceptions of diminished control in relation to specific objects/situations may provide a specific psychological vulnerability, perceptions of increased control (i.e., self-efficacy/agency) may provide a specific psychological resilience to anxiety. Self-efficacy beliefs might be particularly relevant when examining anxiety in relation to specific contexts or objects, as self-efficacy beliefs are typically measured in relation to specific circumstances (Bandura, 1997).

The generalized psychological vulnerability factor in Barlow's model of the etiology of anxiety disorders is a generalized sense of control. Specifically, Barlow's model suggests that individuals who develop a generalized, diminished sense of control during childhood have an elevated risk for developing anxiety disorders later in life (Barlow, 2000, 2004; Chorpita & Barlow, 1998). What has not been adequately examined to date is whether positive perceptions of control/agency may provide a general psychological resilience to the development of anxiety disorders. Although Bandura (1997) consistently argues that perceptions of agency/self-efficacy beliefs should be measured in relation to specific contexts to have any utility, Snyder's hope theory and research demonstrates that general perceptions of agency are also important predictors of behavior and outcomes. In particular, dispositional agency beliefs should function as a protective factor that could have both direct and indirect effects on anxiety (Michael, 2000). Specifically, as a general coping mechanism, agency may prevent the development of anxiety disorders by buffering or moderating the effects of stress on anxiety. High levels of agency may also prevent anxiety by increasing the use of adaptive emotion regulation strategies (e.g., cognitive reappraisal) and decreasing the use of maladaptive emotion regulation strategies (e.g., avoidance).

Preliminary empirical evidence of the relevance of trait agency to development of anxiety comes from studies in which the agency component of hope significantly predicted anxiety levels at three intervals over a 2 month period (Arnau et al., 2007), and a longitudinal study in which multilevel modeling was used to demonstrate that hope moderates the effect of stress on general negative affect in a sample of older adults (Ong et al., 2007). It therefore appears that, whereas self-efficacy beliefs may provide an important resilience against anxiety in relation to specific contexts or objects, dispositional perceptions of agency may provide a generalized resilience against anxiety. More research is needed, however, to determine the validity of this hypothesis, as well as the potential pathways or mediators by which agency may exert influences on anxiety.

Optimism and anxiety.

Although it has not received as much attention, there is reason to believe that more generalized positive expectancies in the form of optimism beliefs may also be relevant to the development of anxiety. As previously discussed, the primary distinction between theories of agency and optimism relates to the perceived locus of control relevant to particular outcomes. Although levels of anxiety are likely to be more affected by personal perceptions of control and mastery in the form of agency beliefs, it is also likely that positive expectancies regarding external sources of control would confer resilience to anxiety. Some research has demonstrated that optimism does indeed predict lower levels of anxiety (Scheier et al., 1994; Stanley et al., 2002). Unfortunately, the protective effects of optimism and agency on anxiety have not been examined in conjunction, so the extent to which these factors uniquely contribute to the development of anxiety remains unclear.

Mental Health

Historically psychology has been dominated by a perspective that implicitly assumes that mental health is merely the absence of mental illness (Keyes, 2005, 2007). In recent years, however, psychologists have begun to explore whether mental health is more than just the absence of mental illness. The complete-state model of mental health (Keyes, 2005) states that mental health is distinct from mental illness. Specifically, Keyes' model suggests that mental health and mental illness are not opposing ends of a single mental health continuum. Rather, this theory posits that components of mental health (e.g., positive affect) and mental illness (e.g., depression) represent two correlated, but distinct latent continua.

Previous factor analytic examinations using a representative sample of American adults have supported this model (Keyes, 2005). This research suggests that in addition to distinguishing between the presence or absence of mental illness, it is possible to distinguish between flourishing, moderately-mentally-healthy, and languishing levels of mental health. Furthermore, the diagnostic status of flourishing mental health, which is based upon having high levels of the majority of the components of positive mental health, has been shown to independently predict psychological, social, and physical functioning beyond levels of mental illness (Keyes, 2004, 2005, 2007).

As a result, psychologists have become increasingly interested in identifying the factors that comprise well-being or flourishing mental health. Historically, theoretical and empirical investigations of the latent structure of well-being distinguished between the hedonic (pleasant) and eudaimonic (meaningful) aspects of well-being (Keyes, 2007; Ryan & Deci, 2001). Hedonic well-being is defined as the presence of frequent positive affect, infrequent negative affect, and high life-satisfaction (Diener, 1984; Diener et al., 1999). Eudaimonic well-being focuses on factors that promote and reflect the pursuit of meaningful life goals such as autonomy and purpose in life (Ryff, 1989; Ryan, Huta, & Deci, 2006;

Waterman, 1993). Finally, social well-being extends the intrapersonal focus of the eudaimonic model to the interpersonal realm and reflects the degree to which individuals are thriving within their communities (Keyes, 1998).

Although these different models of well-being have often been presented as alternative conceptualizations of the meaning of mental health, psychologists have recently begun to examine how these different theories and models might complement and overlap with one another (Gallagher, Lopez, & Preacher, 2009; Kashdan, Biswas-Diener, & King, 2008; Keyes, 2005, 2007). Empirical investigations of the latent structure of well-being have demonstrated that the components of hedonic, eudaimonic, and social well-being can be integrated into a hierarchical structure of well-being that unifies the three theories and 14 components of well-being, while maintaining the distinctions between the hedonic, eudaimonic, and social dimensions of well-being (Gallagher, et al., 2009).

Questions remain, however, about this integrated model of well-being and the complete state model of mental health as these integrative models have not been examined longitudinally and there have not yet been any attempts to replicate these models in order to confirm their validity. Additional research is also needed to determine the longitudinal stability of the various facets of well-being. The longitudinal stability of the components of hedonic well-being have been extensively studied in previous research (e.g., Gadermann & Zumbo, 2007; Mroczek & Spiro, 2005), but the components of eudaimonic and social well-being have not been examined longitudinally and their stability is not well understood. An understanding of the extent to which these factors vary over time is a necessary precursor to evaluating the extent to which psychological factors such as positive expectancies may promote well-being.

Positive Expectancies and Mental Health

As previously mentioned, the degree to which individuals report the presence of the hedonic, eudaimonic, and social aspects of well-being appears to uniquely predict the presence of physical and mental illness (Keyes, 2005, 2007). Identifying factors that protect or promote the development of flourishing mental health might therefore enhance our ability to develop interventions to both promote and protect well-being and to prevent and treat mental illness. Positive expectancies, in the form of both agency and optimism beliefs, appear to be two important contributors to the development of positive mental health.

Optimism and well-being.

Optimism is proposed to facilitate the development of well-being by increasing the use of adaptive, proactive coping techniques (Carver & Scheier, 2002; Scheier & Carver, 1992). Specifically, numerous studies demonstrate that individuals high in optimism tend to be more likely to use positive reframing, acceptance, and approach coping techniques, and less likely to resort to denial or avoidance (Aspinwall & Taylor, 1992; Carver, Scheier, & Weintraub, 1989; Fontaine, Manstead, & Wagner, 1993;

Scheier, Weintraub, & Carver, 1986). Research also demonstrates that in studies examining the well-being of college students (Aspinwall & Taylor, 1992; Gallagher & Lopez, 2009), the risk of postpartum depression in mothers (Carver & Gaines, 1987), recovery from coronary artery bypass surgery (Fitzgerald et al., 1993; Scheier et al., 1989), and adjustment to the diagnosis and treatment of breast cancer (Carver et al., 1993), individuals higher in optimism report higher levels of hedonic well-being in each of these contexts. These findings provide promising support for the hypothesis that optimism facilitates the development of well-being by promoting the use of adaptive coping strategies.

Agency and well-being.

High dispositional levels of agency are also proposed to facilitate the development of well-being by the use of adaptive coping techniques and the effective pursuit of goals (Snyder, 2002). Specifically, Snyder's hope theory suggests that individuals who are high in agency are better able to generate goals that are specific and challenging (Harris, 1988; Langelle, 1989; Snyder et al., 1991). These individuals are better able to identify initial strategies to achieve their goals and alternative strategies when their initial pathways are blocked (Irving, Snyder, & Crowson, 1995; Snyder, 2002; Snyder et al., 1998; Woodbury, 1999). Agentic individuals are also more likely to have the motivation necessary to use their identified strategies to achieve their goals, which is particularly important when individuals encounter obstacles (Snyder et al., 1998). Finally, individuals with strong perceptions of agency should experience frequent positive emotions in general, but particularly when beginning the goal pursuit process, as their memories are flavored by their recollections of past success (Snyder, 2002).

Research to date has generally supported these hypotheses for how agency promotes well-being. Studies have demonstrated that higher levels of agency/hope are associated with improved hedonic, eudaimonic, and social well-being (Gallagher, 2009; Gallagher & Lopez, 2009; Kwon, 2002; Magaletta & Oliver, 1999; Park, Peterson, & Seligman, 2004; Snyder et al., 1991; Snyder et al., 1996), and that agency/hope uniquely contributes to the prediction of well-being beyond the effects of optimism (Gallagher & Lopez, 2009; Magaletta & Oliver, 1999).

Theoretical Synthesis

To summarize, recent research has indicated that mental health is more than the absence of mental illness (Keyes, 2005), has identified a series of factors that appear to represent mental health (Gallagher et al., 2009; Kashdan et al., 2008; Keyes, 2007), and has demonstrated that the presence of these components of well-being uniquely predicts important life outcomes (Keyes, 2005, 2007). Together, this research implies that psychological factors that promote the positive aspects of mental health may provide resilience against, and potentially mediate the treatment of, symptoms of mental illness. Specifically, current research and theory suggest that positive expectancies, in the form of both agency

and optimism beliefs, may play an important role in promoting flourishing mental health, and provide a general psychological resilience against the development of anxiety disorders.

Unresolved Questions

Many questions remain about the latent structure of mental health and the potential benefits of positive expectancies. Specifically, more research is needed to determine the validity of the integrative models of well-being (Gallagher, et al., 2009; Keyes, 2005, 2007) as well as the complete state model of mental health (Keyes, 2005). The complete state model of mental health has previously been examined only in a single sample (Keyes, 2005), and neither the integrative model of well-being (Gallagher et al., 2009) nor the complete state model of mental health (Keyes, 2005) has been examined longitudinally. The stability of many of the components of well-being therefore remains unclear.

Additionally, despite the promising findings suggesting that agency and optimism both may be relevant to well-being, there are a number of limitations of existing research examining the effects of positive expectancies on well-being. The primary limitation is that few studies have examined agency and optimism at the same time in order to determine unique effects and therefore establish the incremental validity of the two theories and constructs. No studies have examined whether agency and optimism may interact to promote mental health and previous research has generally been limited to examinations of the effects of agency and optimism on the components of hedonic well-being. Previous research on the effects of positive expectancies on well-being also has generally been cross-sectional, which has precluded the adequate identification of how the effects unfold over time.

Furthermore, the extent to which agency or optimism may function as a general psychological resilience against the development of anxiety and anxiety disorders has not been adequately examined. Self-efficacy beliefs have been extensively studied in relation to anxiety and have been shown to be an important predictor of anxiety symptomatology as well as a potential mediator of the treatment of anxiety disorders (Bandura, 1997; Hofmann, 2004; Weems & Silverman, 2004). Domain specific perceptions of agency (self-efficacy beliefs) may therefore function as a specific psychological resilience/vulnerability against anxiety disorders, but there have been few attempts to determine whether general perceptions of agency function as a general psychological resilience/vulnerability to anxiety disorders. Theory would suggest that agency beliefs might directly affect the development of anxiety disorders (Michael, 2000) and might also moderate the effects of stress on anxiety. To date, however, these hypotheses have not been empirically tested. Finally, there has been almost no research that has adequately examined what factors might mediate the effects of perceptions of agency or optimism on the development of anxiety or well-being. Emotion regulation strategies (particularly the use of cognitive reappraisal) may be an important mediator of the effects of perceptions of agency or optimism (Chang & DeSimone, 2001), but

more research is needed to improve our understanding of how positive expectancies and emotion regulation may together promote and protect mental health.

The Present Study

The goal of this project was to improve our understanding of the role positive thinking (i.e., agency/optimism) plays in promoting mental health and preventing mental illness. Mounting empirical evidence indicates that positive cognitions play an important role in promoting and protecting mental health, but existing research is limited by the infrequent attempts to establish the incremental validity of theories of agency and optimism and the overwhelming use of cross-sectional designs. Current theory also suggests that positive expectancies should function as a resilience factor against the development of anxiety, but this hypothesis has not been adequately tested. Finally, few attempts have been made to identify how and why agency and optimism are beneficial; that is, what are the mediators of the effects of agency and optimism on mental health and mental illness and in what situations do agency or optimism beliefs moderate the effects of variables such as stress on mental health and mental illness?

The present study attempted to improve our understanding of the effects of positive cognitions by using a longitudinal panel design in order to explore these unresolved issues. A series of ten research topics were explored within three broad categories. The first three questions focused on the latent structure and longitudinal stability of mental health in order to provide the foundation for exploring the benefits of agency and optimism beliefs. Specifically,

1. The first goal was to determine whether the proposed integrative model of positive mental health (Gallagher, et al., 2009; Keyes, 2005, 2007) could be replicated when examined using longitudinal rather than cross-sectional data. Researchers have only recently begun to explore the potential for integrating the theories of eudaimonic, hedonic, and social well-being, and previous work has been exclusively cross-sectional. My hypothesis was that longitudinal data would provide further support for the proposed integrative model of well-being.
2. The second goal was to examine the longitudinal stability of the facets of well-being. The stability of the components of hedonic well-being (e.g., positive affect) has been extensively studied previously but the stability of the components of eudaimonic and social well-being has not adequately been examined. My hypothesis was that the components of eudaimonic and social well-being would exhibit more stability than the components of hedonic well-being, but that there would still be moderate levels of variability across time.
3. The third goal was to examine whether mental health and mental illness are best conceptualized as distinct latent constructs as suggested by the complete state model of mental health (Keyes, 2005). The complete state model has previously been examined in only a single sample using cross-sectional data so replicating this model using longitudinal data could provide a more

rigorous test of this theory. My hypothesis was that the use of longitudinal data would provide further support for the complete state model of mental health and the proposed distinctions between mental health and mental illness.

Two additional questions focused on the latent structure of positive expectancies. Although previous research has demonstrated that optimism and pessimism, and optimism and agency, might best be conceptualized as distinct latent constructs, some have disputed these claims (Aspinwall & Leaf, 2002; Scheier, Carver, & Bridges, 1994; Tennen et al., 2002). It was therefore necessary to confirm the latent structures of positive expectancies prior to evaluating their predictive utility. Specifically,

4. The fourth goal was to determine whether optimism and pessimism are best conceptualized as distinct latent constructs or whether, as suggested by Scheier and Carver (2002), optimism and pessimism represent opposing ends of a latent continuum. Although early factor analysis research indicated that optimism and pessimism may represent distinct latent constructs, Scheier and Carver have consistently argued that these findings are the result of methodological artifacts (Scheier et al., 1994). A recent sophisticated analysis of this issue using a population of over 40,000 German adults suggested that optimism and pessimism are, in fact, best conceptualized as distinct latent constructs, but that the association between optimism and pessimism is moderated by age (Herzberg, Glaesmer, & Hoyer, 2006). I therefore hypothesized that optimism and pessimism would function as highly correlated, but distinct latent constructs in this study.
5. The fifth goal was to provide further evidence that agency and optimism are best conceptualized as distinct latent constructs as suggested by previous theoretical work (Bandura, 1997; Carver & Scheier, 2002b; Snyder, 2002). Multiple cross-sectional studies have indicated that agency and optimism are distinct latent constructs (Bryant & Cvengros, 2004; Gallagher & Lopez, 2009; Magaletta & Oliver, 1999). My hypothesis was that longitudinal data would provide further evidence that agency and optimism are highly related, but distinct forms of positive cognition.

Five additional research questions focused on exploring how positive cognitions relate to mental health and mental illness. These questions were intended to replicate and extend previous work that has explored how agency and optimism relate to anxiety and well-being. Specifically,

6. The sixth goal was to determine whether agency and optimism consistently demonstrate unique effects on mental health across time. Previous cross-sectional studies have indicated that agency and optimism have unique effects on the various components of flourishing mental health (Gallagher & Lopez, 2009; Magaletta & Oliver, 1999), but there have been no longitudinal investigations of the unique effects of agency and optimism on well-being. My hypothesis was that longitudinal data would provide additional evidence that both agency and optimism uniquely contribute to well-being.

7. The seventh goal was to determine whether higher levels of agency and optimism consistently predict lower levels of anxiety across the one month period. The role of self-efficacy (state agency) in relation to anxiety has been extensively studied as a specific psychological vulnerability/resilience factor (Bandura, 1997). However, the role of dispositional positive expectancies in the form of agency and optimism beliefs as potential general psychological vulnerability/resilience factors has not been adequately examined. My hypothesis was that agency beliefs would function as the general psychological vulnerability/resilience factor proposed by Barlow (2000) and that higher levels of agency would consistently be associated with lower levels of anxiety. I also hypothesized that higher levels of optimism would also contribute to lower levels of anxiety as optimism beliefs should minimize uncertainty or fear due to the confidence in external sources of control.
8. The eighth goal was to examine whether agency and optimism interact to promote anxiety or well-being. The two theories posit different explanations for how positive expectancies can promote positive outcomes, but no previous research has examined whether there is an interactive effect resulting from having both high agency and high optimism. My hypothesis was that there would be a significant interactive effect such that individuals with high levels of both agency and optimism will report higher levels of well-being than individuals who report only high agency or high optimism.
9. The ninth goal was to examine whether agency or optimism might protect against the development of anxiety disorders by moderating the effects of stress on anxiety. Although both agency and optimism have been proposed to be important coping factors (Snyder et al., 1999; Stanley et al., 2002), the potential stress buffering effects of agency and optimism beliefs have not been adequately examined using longitudinal data. My hypothesis was that agency and optimism would consistently buffer or moderate the effects of stress on anxiety across the one month period.
10. Finally, the tenth goal was to examine whether agency or optimism influence anxiety and well-being via emotion regulation strategies, specifically the antecedent focused technique of cognitive reappraisal. Although agency and optimism have not previously been examined in relation to this emotion regulation strategy, other emotion regulation strategies have been studied in relation to both agency (Little, Lopez, & Wanner, 2001; Lopez & Little, 1996) and optimism (Aspinwall & Taylor, 1992), and theory would suggest that cognitive reappraisal as defined by Gross (1998) could be an important mediator of the effects of agency and optimism. My hypothesis was that there would be evidence of cognitive reappraisal partially mediating the effects of agency and optimism on both anxiety and well-being.

Method

Study Design

I used a longitudinal panel design to explore the relationships between positive expectancies (agency and optimism), anxiety and well-being across time. Specifically, participants completed a battery of measures at four time points over the course of four weeks (once per week). This time course was selected based upon previous research that demonstrated that individuals experience significant intraindividual variability in indicators of both mental health and mental illness over periods of two to three weeks (Gadermann & Zumbo, 2007; Yasuda et al., 2004). New participants were recruited weekly for a period of six weeks. For the first two waves of data collection, participants were compensated with experiment credit. Participants received $10 for participating in the third wave and $15 for participating in the fourth wave of data collection.

Participants

Participants were 137 undergraduates (82 female) recruited from the Undergraduate Research Pool of the KU Psychology Department. The majority of participants identified as Caucasian (83.9%), with the remainder identifying as Asian (5.8%), African-American (2.9%), Hispanic (2.9%), Middle Eastern (2.9%), or other (1.4%). The age of participants ranged from 18 to 27, with a median age of 18. 16.8 % and 16.1% of participants reported that they had previously been diagnosed with depression or anxiety, respectively.

In order to ensure adequate variability in levels of anxiety, I used the trait form of the State-Trait Anxiety Inventory (STAI) as a screening tool. All eligible participants completed the STAI as part of the fall prescreen. Results from the screening were then used to identify individuals who may be vulnerable to anxiety. The mean level of trait anxiety for participants was 45.21 (SD=10.85), which corresponds to the 84th percentile based on previous normative samples (Spielberger et al., 1970). Although complete diagnostic information was not collected for participants, these results suggest that many of the participants were experiencing high levels of anxiety.

Measures

Agency. Agency beliefs were measured using the agency subscale of the Revised Snyder Hope Scale (RHS; Shorey, Little, Rand, Snyder, Monsson, & Gallagher, 2009). The RHS is an 18 item measure designed to assess the three facets of Snyder's (1994, 2002) cognitive theory of hope: pathways, agency and goals. The agency subscale contains six items with a balance between positively and negatively worded items. Participants respond using an 8-point Likert Scale with response options ranging from definitely false to definitely true. Representative items include, "I have found that I can overcome challenges" and "I give up easily". Negatively worded items were reverse coded prior to computing three

parcels for the agency subscale. Previous research has supported the reliability and validity of this scale Shorey et al., 2009). Scores ranged from 3 to 8 in the present study.

Optimism. The Life Orientation Test-Revised (LOT-R; Scheier, Carver, & Bridges, 1994) assesses general expectations for future positive (optimism) and negative (pessimism) outcomes. It contains 10 items: three items that assess positive expectations, three items that assess the absence of negative expectations and four filler items. Participants responded to the items by indicating their level of agreement on a 5-point Likert scale with response options ranging from "I agree a lot" to "I disagree a lot"' The negatively worded items were reverse coded prior to computing means for the optimism and pessimism subscales. Previous research has demonstrated that the optimism and pessimism items measure two distinct latent constructs (Herzberg et al., 2006) so the individual items were used as indicators of the latent constructs of optimism and pessimism. Previous research has supported the reliability and validity of this scale (Scheier et al., 1994). Scores ranged from 1 to 5 in the present study.

Hedonic well-being. Three measures were used to assess the three components of hedonic well-being. Positive and negative affect were measured using the positive and negative affect subscales of the Inventory of Felt Emotion and Energy in Life (IFEEL; Little & Dill, 2009). The 24-item short form of the IFEEL contains six items which assess positive affect (e.g., cheerful, happy) and six items which assess negative affect (e.g., down, bored). Life satisfaction was assessed using The Satisfaction with Life Scale (SWSL; Diener et al., 1985). The SWLS is a five item measure of general perceptions of satisfaction. Participants responded to questions on the IFEEL and SWLS scales using a 7-point Likert scale with response options ranging from strongly disagree to strongly agree. Previous research has supported the reliability and validity of the IFEEL (Little & Dill, 2009) and SWLS scales (Diener et al., 1985). The means of the positive affect, negative affect, and life satisfaction scales across the four waves ranged from 4.54 to 4.79, 2.90 to 3.41, and 4.58 to 4.94, respectively.

Eudaimonic well-being. A 42-item version of Ryff's (1989) scales was used to assess the facets of eudaimonic well-being: autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance. Each of the six factors was assessed using seven items in which participants indicate their level of agreement on a 7-point Likert scale with response options ranging from strongly disagree to strongly agree. Representative items include, "I tend to worry about what other people think of me" (autonomy); "I often feel overwhelmed by my responsibilities" (environmental mastery); "I have the sense that I have developed a lot as a person over time" (personal growth); "I enjoy personal and mutual conversations with family members and friends (positive relations); "my daily activities often seem trivial and unimportant to me" (purpose in life); and, "In general, I feel confident and positive about myself" (self-acceptance). Negatively-worded items were

reverse coded prior to all analyses. Previous research has supported the reliability and validity of these scales (Ryff, 1989). Scores on the subscales ranged from 1 to 7 in the present study.

Social well-being. Social well-being was measured using the scales developed by Keyes (1998) to measure the five factors in his model of social well-being: social integration, social acceptance, social contribution, social actualization, and social coherence. Each scale contains six or seven items and participants indicate their level of agreement using a seven point Likert scale with response options ranging from strongly disagree to strongly agree. Representative items include, “I see my community as a source of comfort” (integration); “I feel that people are not trustworthy” (acceptance); “I think I have something valuable to contribute to the world” (contribution); “Society isn’t improving for people like me” (actualization); and, “The world is too complex for me” (coherence). Negatively-worded items were reverse coded prior to all analyses. Previous research has supported the reliability and validity of these scales (Keyes, 1998). Scores on the subscales ranged from 1 to 7 in the present study.

Psychological distress. The 21-item version of the Depression, Anxiety, and Stress Scales (DASS; Lovibund & Lovibund, 1995) was used as a general measure of psychological distress. The DASS contains three seven-item scales that are intended to provide pure measures of anxiety, depression, and general distress. Participants respond to each item on a 4-point scale indicating the degree to which each statement has applied to them over the past week. Response options range from "Did not apply to me at all" to 'Applied to me very much, or most of the time". Example items include, “I couldn’t seem to experience any positive feeling at all” (depression), “I was aware of dryness of my mouth” (anxiety)”, and, “I found it hard to wind down” (stress). Previous research has supported the reliability and validity of these scales (Lovibund & Lovibund, 1995). Scores on the subscales ranged from 1 to 4 in the present study.

Anxiety. The State-Trait Anxiety Inventory (STAI; Spielberger et al., 1970) was used to more specifically measure participants’ experience of anxiety. The state and trait components of the STAI each contain 20 items that assess the degree to which people generally feel symptoms of anxiety and are currently experiencing symptoms of anxiety, respectively. Participants completed the trait form of the STAI as a screening tool for the present study and then completed the state form of the STAI during each wave of data collection. Participants respond to each item using a 4-point scale with response options ranging from "Almost Never" to "Almost Always". Previous research has supported the reliability and validity of both the state and trait forms of the STAI (Spielberger et al., 1970). Scores on the STAI ranged from 1 to 3.9 in the present study.

Stress. A 10-item version of the Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermelstein, 1983) was used to assess the experience of stress across time. Participants use a 5-point scale to indicate how frequently they have experienced particular thoughts or feelings in the past week, with response

options ranging from never to very often. Example items include, “In the last week, how often have you felt that things were going your way” and, “In the last week, how often have you felt difficulties were piling up so high that you could not control them”. Previous research has supported the reliability and validity of the short forms of PSS (Cohen et al., 1983). Scores on the PSS ranged from .2 to 3.8 in the present study.

Cognitive reappraisal. The Emotion Regulation Questionnaire (ERQ; Gross & John, 2003) was used to measure the use of the emotion regulation strategy of cognitive reappraisal. The ERQ contains 10 items, six of which measure cognitive reappraisal and four of which measure suppression. Only the cognitive reappraisal subscale was used for the present study. Participants respond to each item using a 7-point Likert scale, with response options ranging from strongly disagree to strongly agree. Example items include, “When I’m faced with a stressful situation, I make myself think about it in a way that helps me stay calm” and, “I control my emotions by changing the way I think about the situation I’m in.” Previous research has supported the reliability and validity of the cognitive reappraisal subscale of the ERQ (Gross & John, 2003). Scores on the cognitive reappraisal scale ranged from 1 to 7 in the present study.

Results

Preliminary Analyses

Complete descriptive statistics for each of the variables of interest across the four waves of data collection are presented in Appendix A. The internal consistency of each of the measures across the four waves of data collection is presented in Appendix B. With few exceptions, the measures consistently demonstrated alpha internal consistency values of .8 or greater across the four waves. A complete correlation table for each of the variables across the four waves can be found in Appendix C.

Missing Data

As expected, there were moderate levels of attrition over the course of the study. 68.6% of participants completed all four waves of data collection, 5.1% completed three waves, 16.1% completed two waves, and 10.2% completed only one wave. The effects of missing data were limited by imputing missing data as suggested by current missing data guidelines (i.e., Enders, in press). Due to the large number of variables in the data set, blocks of variables with missing data were sequentially imputed using the PROC MI feature within SAS (Little et al., 2008). All analyses were then performed on the imputed data set.

Analytic Strategy

Structural equation modeling (SEM) was used as the primary analytical framework to evaluate the effects of agency and optimism on anxiety and well-being across time. SEM is well-suited for the longitudinal data analysis that is necessary to answer the proposed research questions. Models were specified using LISREL 8.80. A number of common fit indices were used to evaluate each of the

proposed models: the root mean square error of approximation (RMSEA; Steiger & Lind, 1980), the 90% confidence interval of RMSEA (Browne & Cudeck, 1992), the standardized root mean-square residual (SRMR; Jöreskog & Sörbom, 1996), the comparative fit index (CFI; Bentler, 1990), and the non-normed fit index (NNFI; Bentler & Bonett, 1980). Models were fit using the variance-covariance matrix. Parcels were constructed when possible to use as indicators of latent constructs. Parceling is a technique commonly used in CFA and latent variable analysis and consists of aggregating individual items into a smaller number of parcels. Parcels generally demonstrate higher reliability than individual items, and have better distributional properties (Little, Cunningham, Shahar, & Widaman, 2002).

Statistical Power

I performed a series of power analyses in order to determine statistical power when testing the proposed covariance structure models using RMSEA as the index of model fit. The degrees of freedom were calculated for the models presented in Figures 2-17 and power analyses were then performed using alpha=.05, null RMSEA=.05, alternative RMSEA=.10, and sample size = 137 (Preacher & Coffman, 2006). The results of these power analyses indicated that statistical power for the models analyzed ranged from .88 to nearly 1. This suggests that I had adequate power to reject poorly fitting models based on the RMSEA fit statistic.

Factorial Invariance

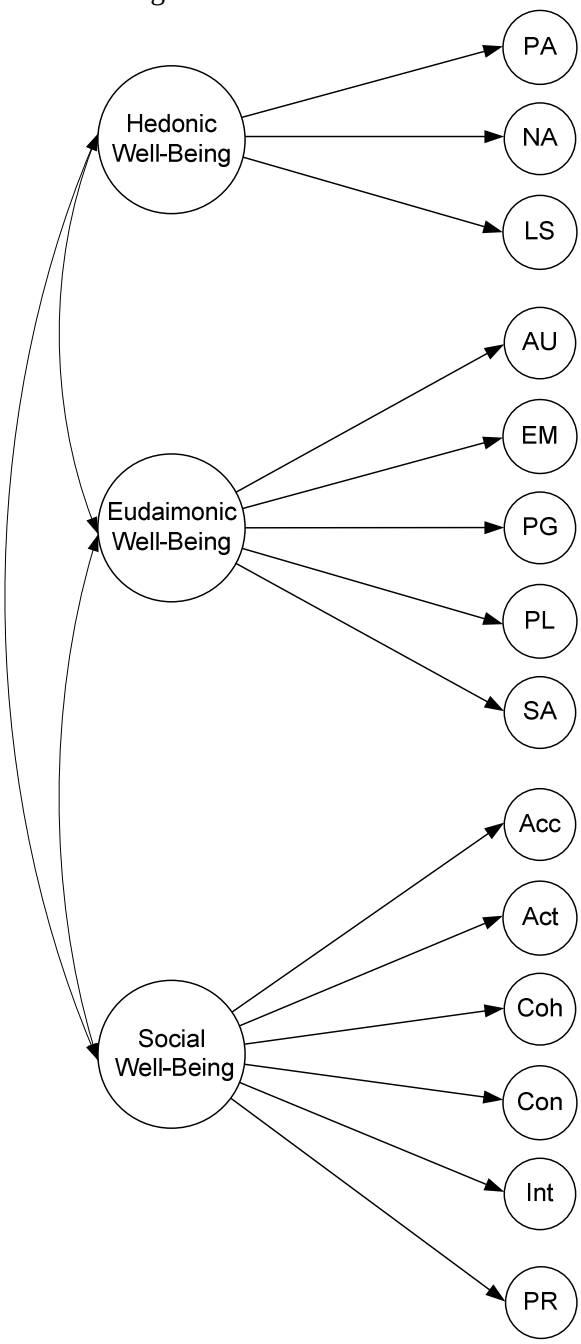
Prior to evaluating the proposed confirmatory and structural equation models, I first evaluated the factorial invariance of the latent constructs to ensure equivalence of measurement across time. For each of the latent constructs of interest I first evaluated the model fit for a model specifying configural invariance (i.e., equivalent model specification). I then evaluated the extent to which the relative factor loadings and relative indicator means were equal across time in order to establish weak (i.e., equivalent relative factor loadings) and strong factorial invariance (i.e., equivalent relative indicator means), respectively. Tables containing the fit statistics for each of the three invariance models as well as the results of the strong factorial invariance model (unstandardized and standardized loadings, residuals, intercepts, and communalities for each indicator) across the four waves can be found in Appendix D. The results of tests of factorial invariance consistently demonstrated an equivalence of measurement of the latent constructs, thereby providing the basis for subsequent analyses.

Latent Structure of Mental Health

I began by specifying a series of models to evaluate the latent structure and longitudinal stability of mental health. I first examined the integrative, hierarchical model of well-being that was previously examined by Gallagher et al. (2009) based on the work of Keyes (2005). This integrative model suggests that the 14 facets of well-being identified by Diener (1985), Keyes (2002), and Ryff (1989) can be integrated into a hierarchical model of well-being where three second order constructs of hedonic,

eudaimonic, and social well-being serve as indicators of the broader construct of mental health. The theoretical model can be seen in Figure 1. I analyzed a series of four models in order to determine the appropriateness of this model for the present sample.

Figure 1. Theoretical Model of Well-Being



The first model was a CFA of the 14 lower order facets of well-being. Each of the fourteen lower order factors was identified by specifying the loadings of the four repeated measures to be 1.0 and freeing the latent variance. In doing so, the lower order latent constructs represented the mean level of a given

facet of well-being over time. The 14 facets were allowed to freely covary with one another. The fit for this model was excellent: (χ^2 (1071, n=137) = 1515.56, *p* <.001; NNFI = .992; CFI = .989; RMSEA = .055; 90% CI .049 - .062; SRMR=.062). The correlation table representing the associations between the mean levels of the facets of well-being can be seen in Table 1. These results provide strong support for the measurement model and provide the basis for evaluating the competing hierarchical models.

The first hierarchical model examined represented the most parsimonious explanation for how the 14 factors of well-being may relate to one another by specifying a single higher order well-being construct. The lower order constructs were specified as in the previous model and the higher order construct was identified by fixing the latent variance to 1.0. This model demonstrated good fit (χ^2 (1148, n=137) = 1964.64, *p* <.001; NNFI = .986; CFI = .981; RMSEA = .072; 90% CI .067 - .078; SRMR=.094; AIC=2860.64; BIC=4168.79) and the completely standardized results of this model can be seen in Figure 2. These results suggest that a model containing a single higher order factor is viable.

The second model examined represented an alternative hierarchical model first proposed by Keyes (2005) in which positive affect, negative affect, and life satisfaction are considered indicators of the higher order construct of hedonia while the remaining eleven facets of well-being are considered indicators of the higher order construct of positive functioning. This model also demonstrated good fit (χ^2 (1147, n=137) = 1936.64, *p* <.001; NNFI = .987; CFI = .982; RMSEA = .071; 90% CI .066 - .077; SRMR=.090; AIC=2834.64; BIC=4145.71) and the completely standardized results of this model can be seen in Figure 3. Although the improvements in model fit between this model and the single 2nd-order factor model are small, a comparison of AIC and BIC statistics, as well as nested model comparisons (χ^2 (1) = 28.00, *p* < .001), indicate that the model with two higher order constructs provides a better representation of the latent structure of well-being.

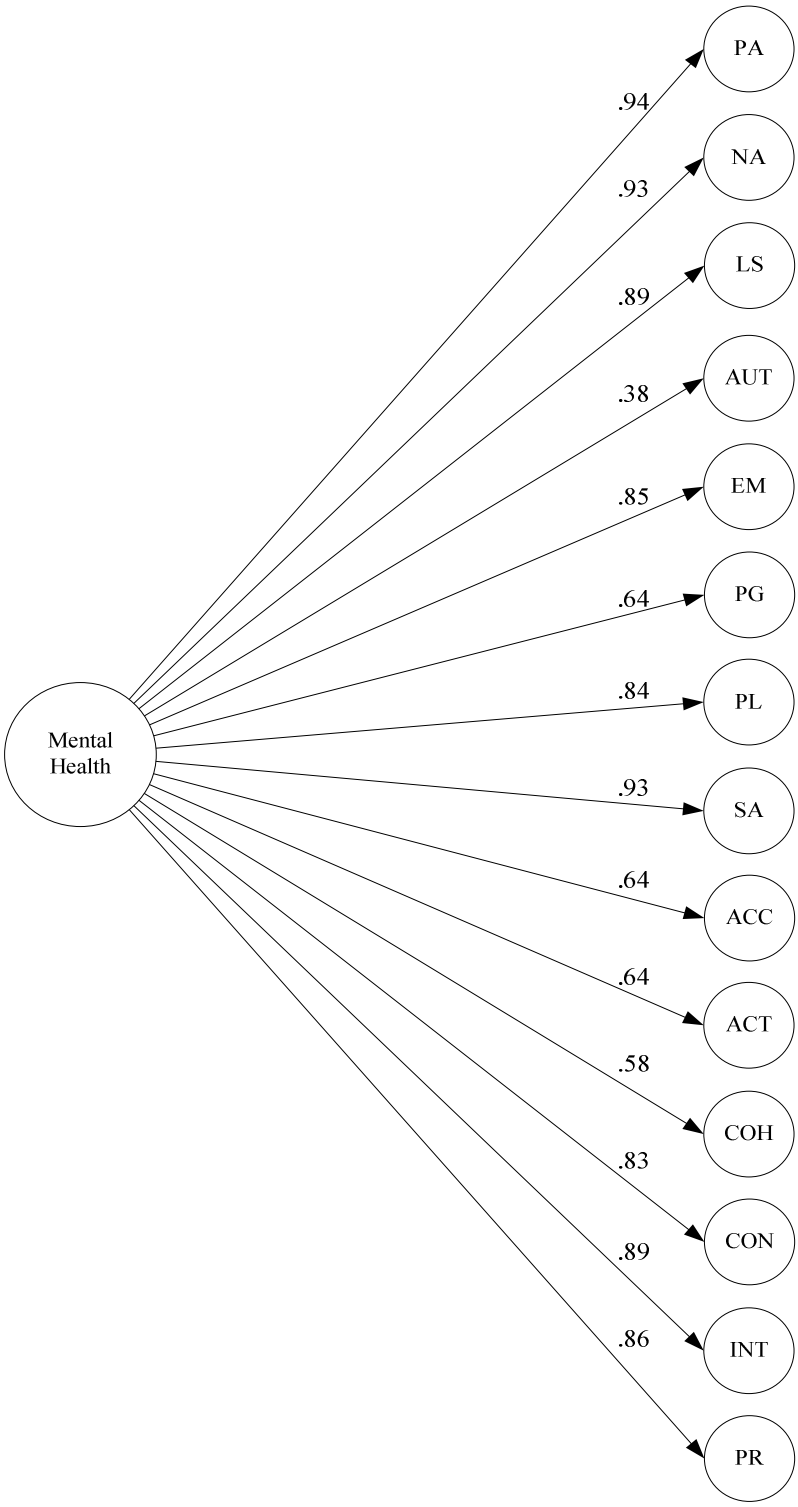
The third model evaluated the hypothesized three 2nd-order factor model of well-being as depicted in Figure 1 and previously supported by Gallagher et al. (2009). Positive affect, negative affect and life satisfaction were specified as three indicators of the higher order construct of hedonic well-being. Autonomy, environmental mastery, personal growth, purpose in life, and self-acceptance were specified as five indicators of the higher order construct of eudaimonic well-being. Social acceptance, social actualization, social coherence, social contribution, social integration, and positive relations with others were specified as six indicators of the higher order construct of social well-being. The three higher order factors were allowed to freely covary with one another.

Table 1

Correlations of the intercept factors of the 14 facets of well-being

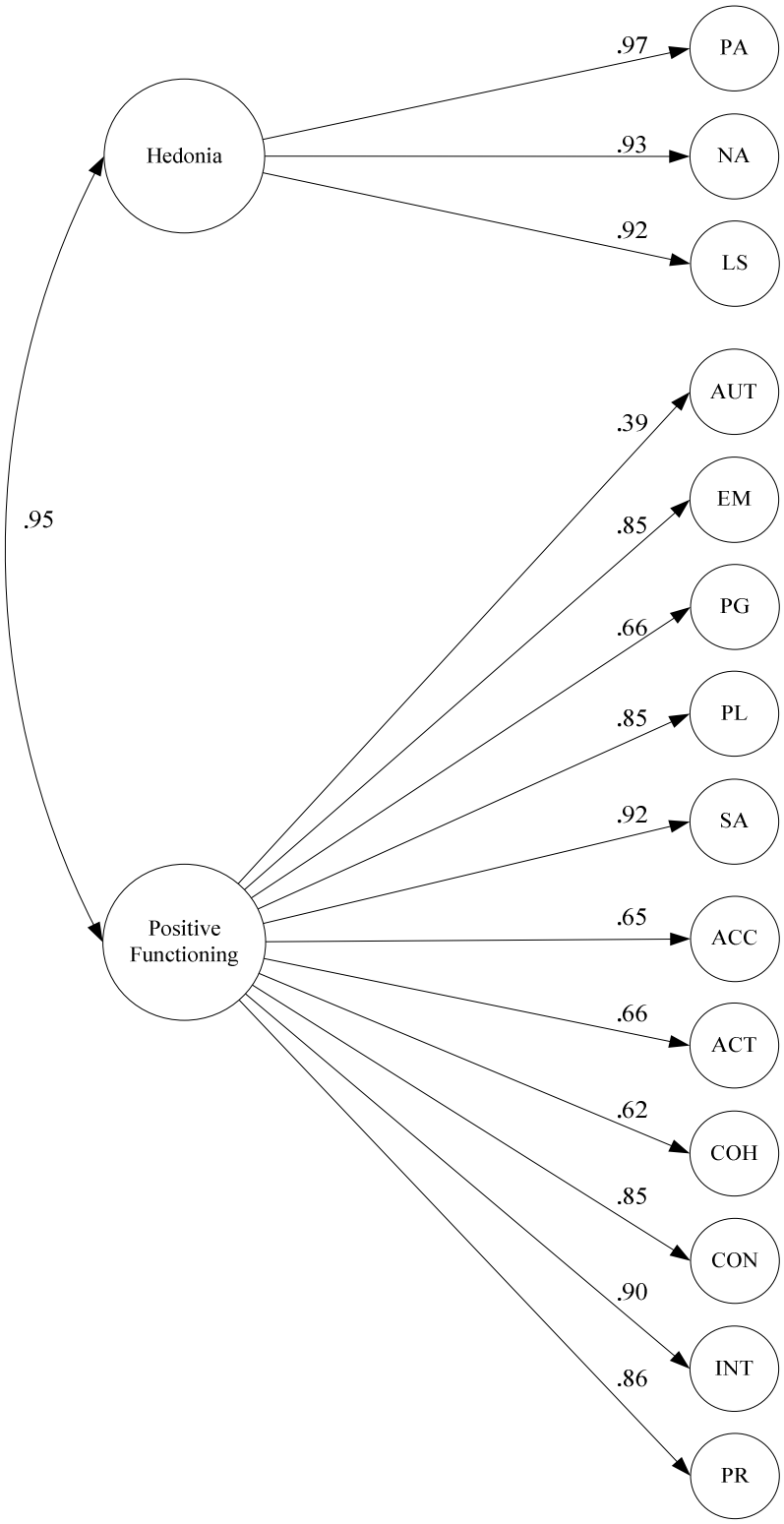
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Autonomy	--													
2. Environmental Mastery	.414	--												
3. Personal Growth	.398	.461	--											
4. Purpose in Life	.376	.742	.616	--										
5. Self Acceptance	.365	.851	.581	.810	--									
6. Social Acceptance	.339	.480	.433	.506	.481	--								
7. Social Actualization	.245	.466	.499	.595	.508	.723	--							
8. Social Coherence	.454	.464	.670	.596	.450	.569	.703	--						
9. Social Contribution	.231	.648	.713	.801	.723	.552	.631	.618	--					
10. Social Integration	.311	.738	.523	.715	.820	.625	.621	.557	.849	--				
11. Positive Relations	.419	.667	.622	.672	.767	.607	.504	.590	.729	.793	--			
12. Positive Affect	.290	.833	.527	.753	.595	.521	.522	.426	.734	.814	.773	--		
13. Negative Affect (r)	.345	.772	.612	.793	.858	.648	.573	.537	.753	.791	.855	.878	--	
14. Life Satisfaction	.223	.732	.444	.667	.855	.498	.474	.380	.605	.761	.783	.926	.846	--

Figure 2. Results of single factor hierarchical model of well-being



Model fit: (χ^2 (1148, n=137) = 1964.64, p <.001; NNFI = .981; CFI = .986; RMSEA = .072; SRMR=.094

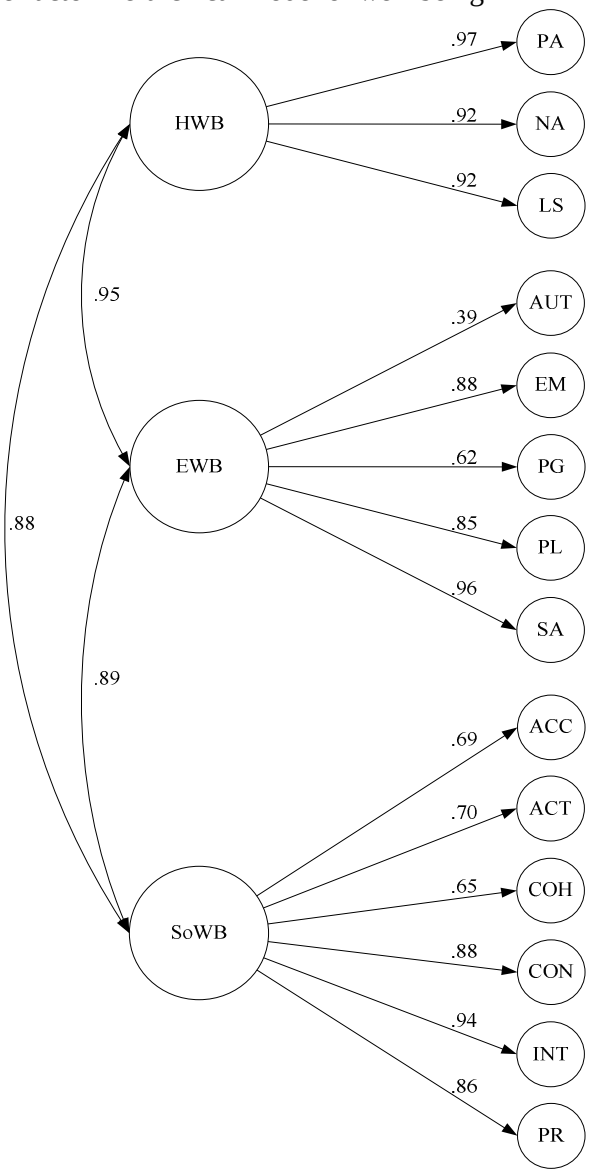
Figure 3. Results of two factor hierarchical model of well-being



Model fit: (χ^2 (1147, n=137) = 1936.64, p <.001; NNFI = .982; CFI = .987; RMSEA = .071; SRMR=.090

The three higher order factor model also demonstrated good fit (χ^2 (1145, n=137) = 1877.25, *p* <.001; NNFI = .988; CFI = .983; RMSEA = .069; 90% CI .063 - .074; SRMR=.090; AIC=2779.25; BIC=4096.16) and the completely standardized results of this model can be seen in Figure 4. Again, the improvement in model fit was modest, but a comparison of the AIC and BIC statistics, as well as nested model comparisons (χ^2 (2) = 59.39, *p* < .001), indicated that the model with three higher order constructs provides the best representation of the hierarchical latent structure of well-being. Together these results provide further support for the hierarchical model first tested by Gallagher et al., (2009) based on the theoretical work of Keyes (2005).

Figure 4. Results of three-factor hierarchical model of well-being

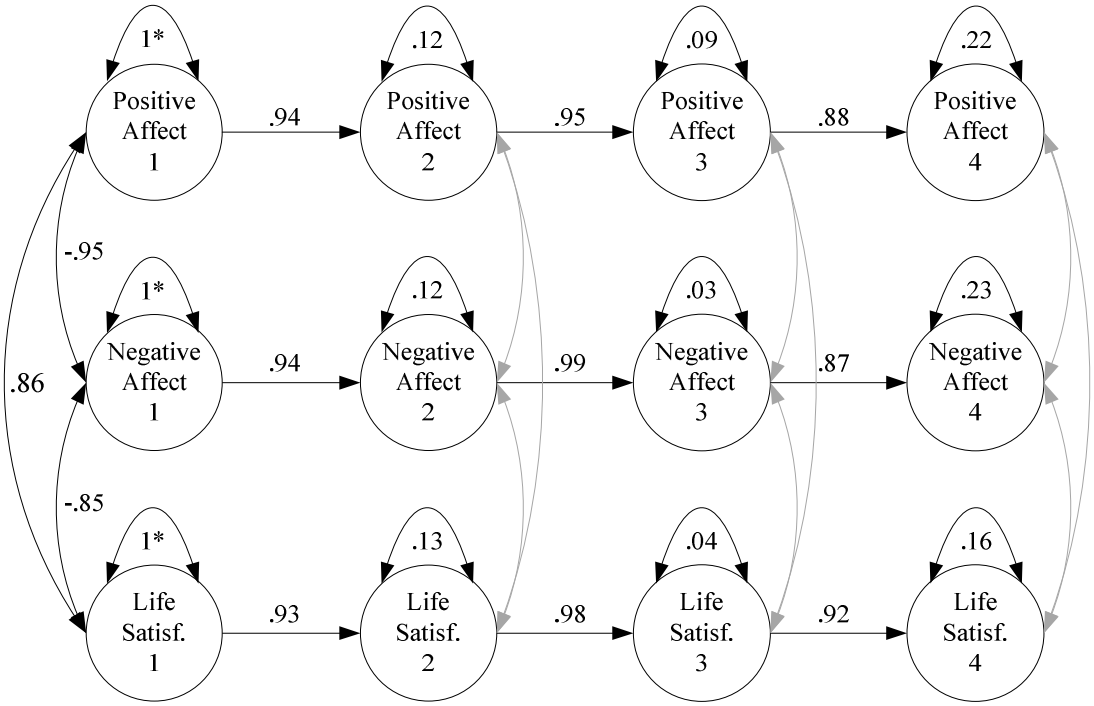


Model fit: (χ^2 (1145, n=137) = 1877.25, *p* <.001; NNFI = .983; CFI = .988; RMSEA = .069; SRMR=.090

Longitudinal Stability

After finding support for the proposed latent structure of well-being across time, I next evaluated a series of models to determine the short-term stability of the higher and lower order facets of well-being. Specifically, five models were examined. The first model evaluated the stability of the three facets of hedonic well-being. Three parcels were constructed from the respective scales and specified as indicators of the latent constructs of positive affect, negative affect, and life satisfaction. For this model and all subsequent longitudinal stability models, autoregressive paths were specified for each of the latent constructs, latent constructs were allowed to freely covary at wave one, and residual covariances were specified between each of the three constructs for waves two to four. This model demonstrated good fit (χ^2 (537, n=137) = 1015.04, p <.001; NNFI = .978; CFI = .981; RMSEA = .081; 90% CI .073 - .089; SRMR=.067) and the completely standardized results of this model can be seen in Figure 5. These results demonstrate that the weekly levels of the facets of hedonic well-being are highly stable over a one month period.

Figure 5. Longitudinal stability of the facets of hedonic well-being*

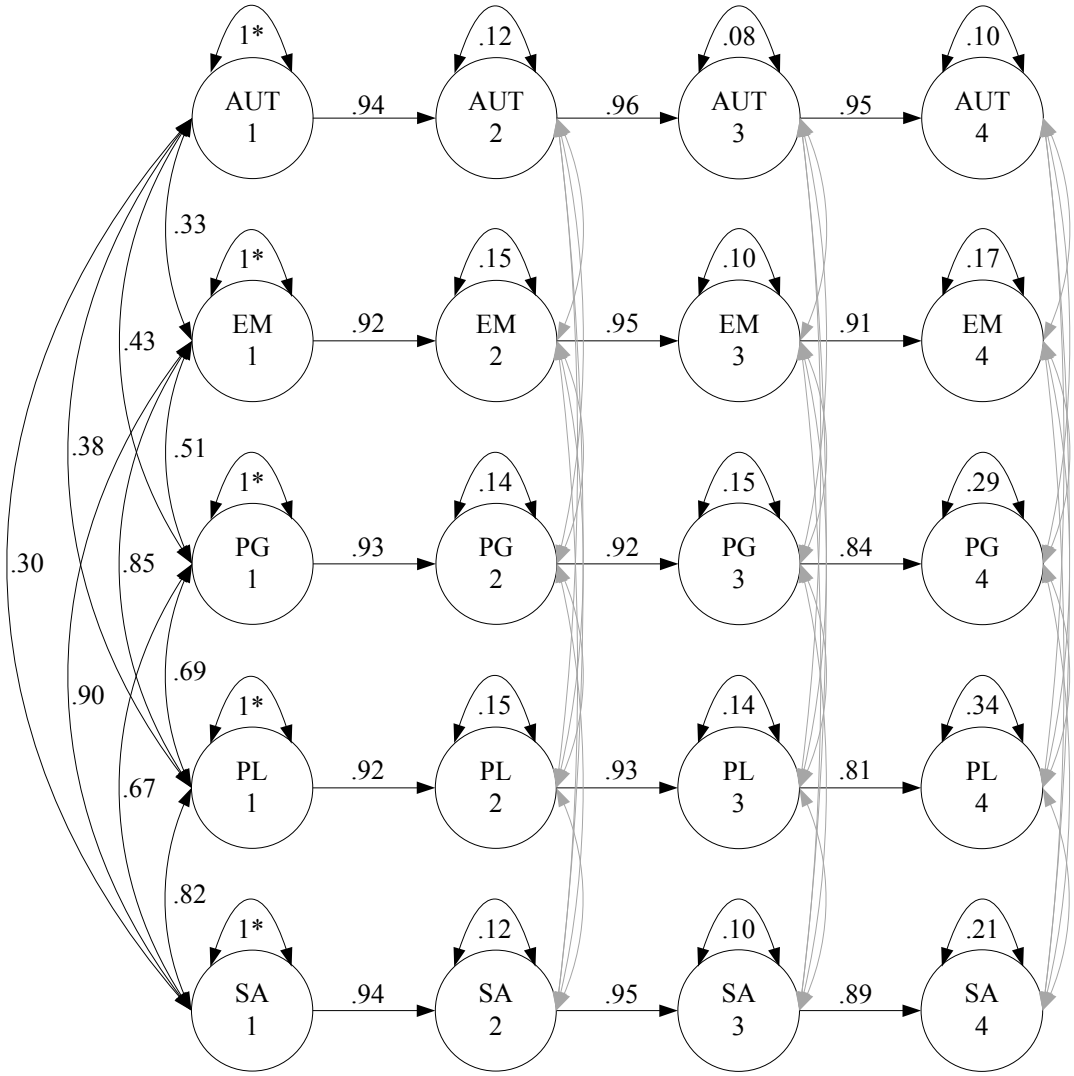


Model fit: (χ^2 (537, n=137) = 1015.04, p <.001; NNFI = .978; CFI = .981; RMSEA = .081; SRMR=.067

*Indicator loadings are equated across time, corresponding residuals are allowed to correlate, and constructs are allowed to correlate with one another within each measurement occasion.

The second model evaluated the stability of the five facets of eudaimonic well-being. Three parcels were constructed from the respective scales and specified as indicators of the latent constructs of autonomy, environmental mastery, personal growth, purpose in life, and self-acceptance. This model demonstrated adequate fit (χ^2 (1596, n=137) = 2976.89, p <.001; NNFI = .956; CFI = .961; RMSEA = .080; 90% CI .075 - .084; SRMR=.105) and the completely standardized results of this model can be seen in Figure 6. These results demonstrate that the weekly levels of the facets of eudaimonic well-being are highly stable over a one month period.

Figure 6. Longitudinal stability of the facets of eudaimonic well-being*

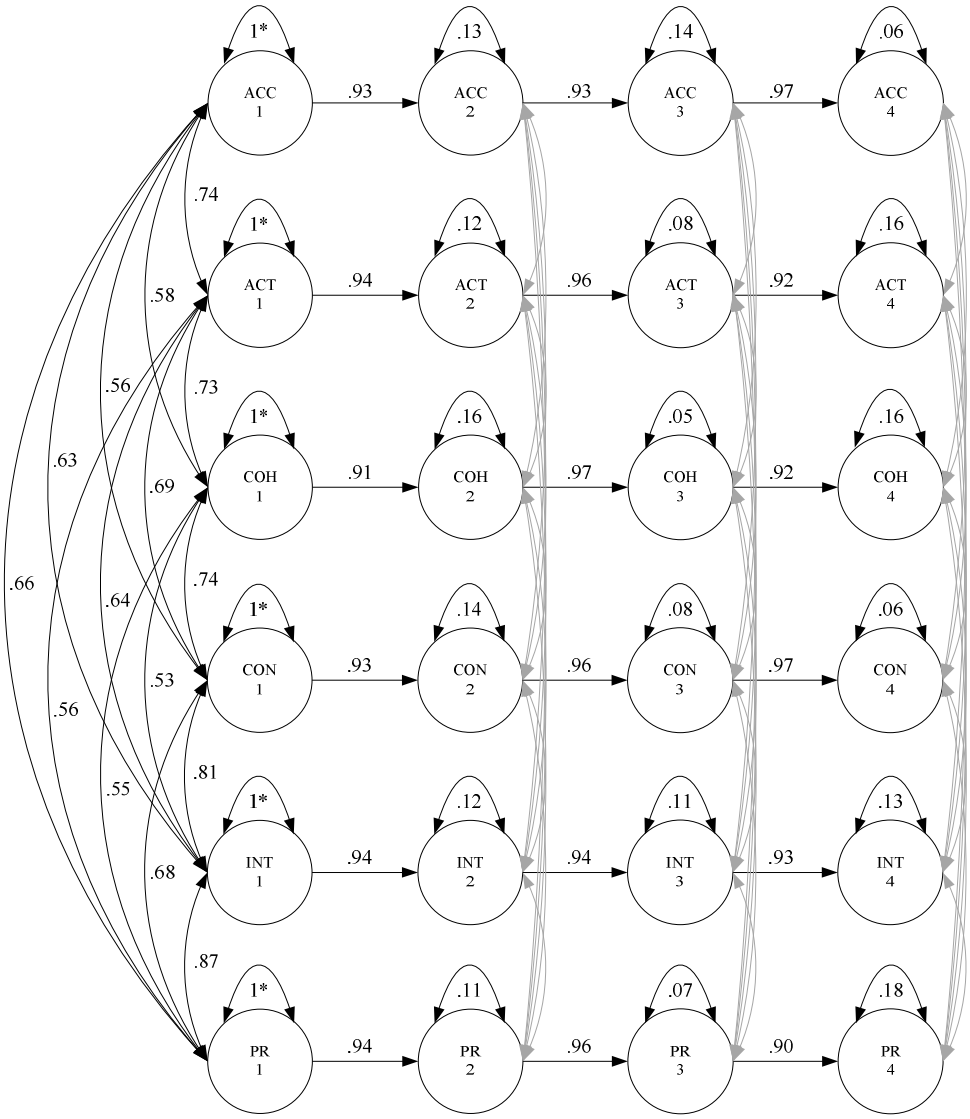


Model fit: (χ^2 (1596, n=137) = 3489.90, p <.001; NNFI = .956; CFI = .961; RMSEA = .080; SRMR=.105

*Indicator loadings are equated across time, corresponding residuals are allowed to correlate, and constructs are allowed to correlate with one another within each measurement occasion.

The third model evaluated the stability of the six facets of social well-being. Three parcels were constructed from the respective scales and specified as indicators of the latent constructs of social acceptance, social actualization, social coherence, social contribution, social integration, and positive relations with others. This model demonstrated good fit (χ^2 (2334, n=137) = 4279.87, p <.001; NNFI = .967; CFI = .970; RMSEA = .078; 90% CI .075 - .082; SRMR=.081) and the completely standardized results of this model can be seen in Figure 7. These results demonstrate that the weekly levels of the facets of social well-being are highly stable over a one month period.

Figure 7. Longitudinal stability of the facets of social well-being*

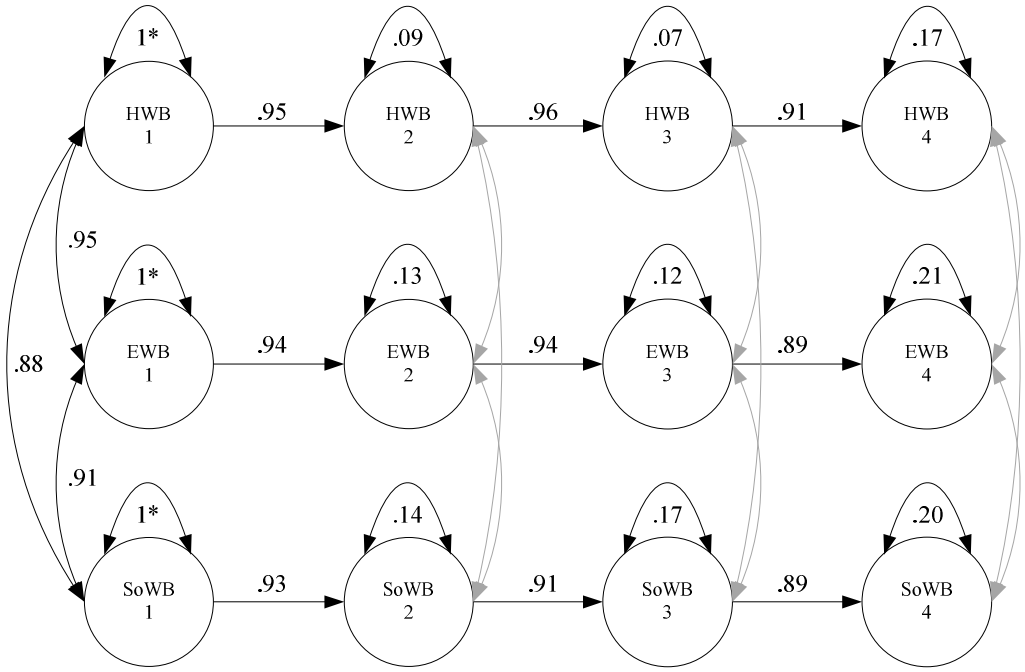


Model fit: (χ^2 (2334, n=137) =4279.87, p <.001; NNFI = .967; CFI = .970; RMSEA = .078; SRMR=.081

*Indicator loadings are equated across time, corresponding residuals are allowed to correlate, and constructs are allowed to correlate with one another within each measurement occasion.

The fourth model evaluated the stability of the second order constructs of hedonic, eudaimonic, and social well-being. For each of the four waves of data, the latent constructs of hedonic, eudaimonic, and social well-being were identified using means of the three, five, and six subscales, respectively. This model demonstrated good fit (χ^2 (1412, n=137) = 2862.33, p <.001; NNFI = .973; CFI = .975; RMSEA = .087; 90% CI .082 - .092; SRMR=.095) and the completely standardized results of this model can be seen in Figure 8. These results suggest that the second order facets of hedonic, eudaimonic, and social well-being are highly stable over one week periods.

Figure 8. Longitudinal stability of the 2nd order constructs of hedonic, eudaimonic, and social well-being*



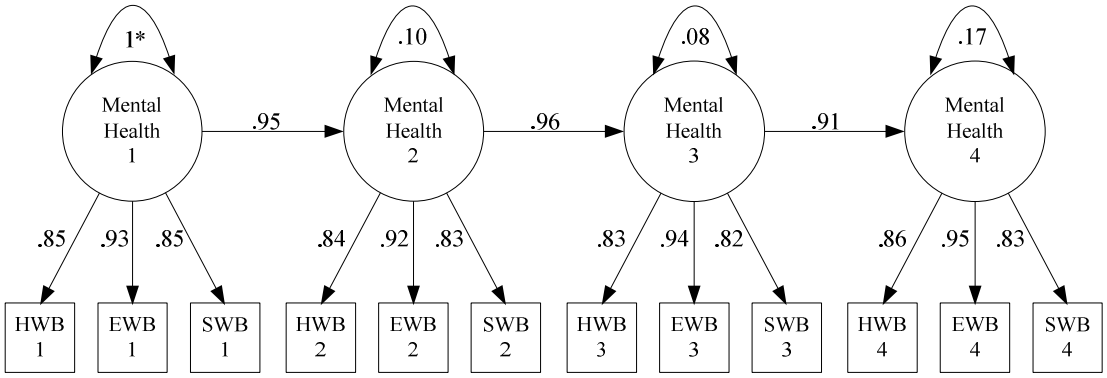
Model fit: (χ^2 (1412, n=137) = 2862.33, p <.001; NNFI = .973; CFI = .975; RMSEA = .087; SRMR=.095

*Indicator loadings are equated across time, corresponding residuals are allowed to correlate, and constructs are allowed to correlate with one another within each measurement occasion.

The fifth model evaluated the stability of the third order construct of mental health. For each of the four waves, the latent construct of mental health was identified using three indicators: the means of the hedonic, eudaimonic, and social well-being subscales. This model demonstrated good fit according to most fit statistics (χ^2 (39, n=137) = 110.39, p <.001; NNFI = .977; CFI = .986; RMSEA = .116; 90% CI .091 - .146; SRMR=.052) and the completely standardized results of this model can be seen in Figure 9.

These results indicate that the higher order construct of mental health was extremely stable over the four waves of data collection.

Figure 9. Longitudinal stability of higher order mental health construct*



Model fit: (χ^2 (39, n=137) = 110.39, *p* <.001; NNFI = .977; CFI = .986; RMSEA = .116; SRMR=.052

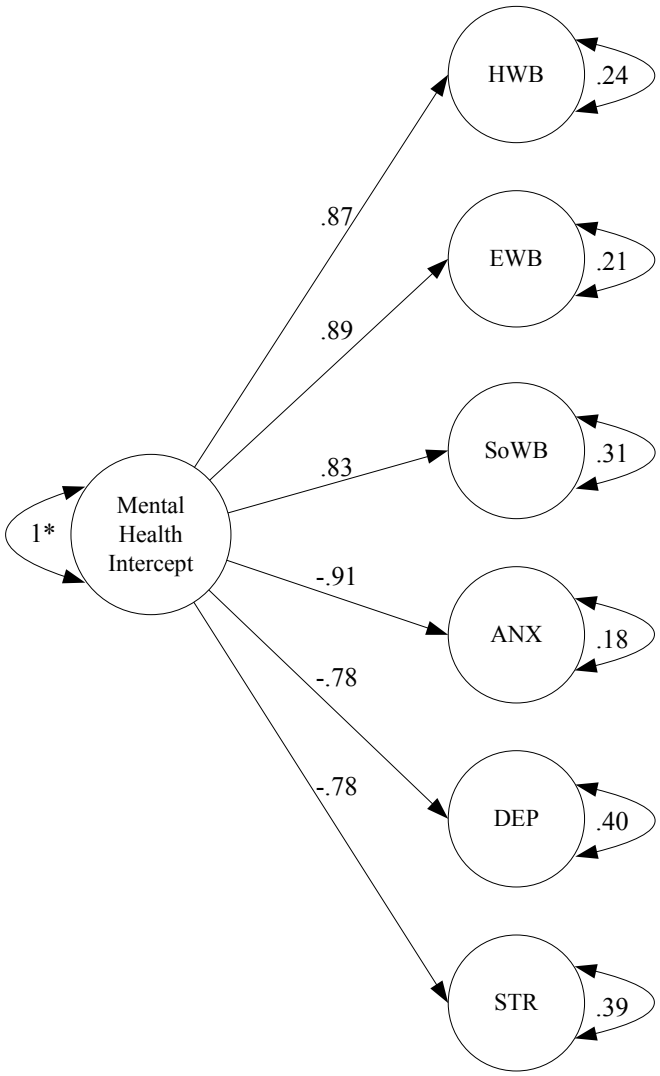
*Indicator loadings are equated across time, and corresponding residuals are allowed to correlate.

Together, the results of these five models examining the various facets and levels of well-being suggest that the components of positive mental health are highly stable when measured at one week intervals over a one month period. These results indicate that for this population either there are minimal changes in levels of well-being across one-month periods or that different intervals of data collection (e.g. daily assessments) are necessary to evaluate intra-individual changes in well-being. Either way, my ability to evaluate potential predictors of individual differences in changes in well-being was limited due to these stability findings.

Complete State Model of Mental Health

I next specified a series of two models to evaluate the latent structure of mental health and mental illness. The first model evaluated the more parsimonious option that is often implicit in discussions of mental health and mental illness, which is that mental health and mental illness are merely the two ends of a single latent continuum. The latent construct of mental health was identified using six indicators: intercept factors of the means of hedonic, eudaimonic, and social well-being as well as intercept factors of the means of anxiety, depression, and general distress subscales of the DASS-21 (Lovibund & Lovibund, 1995). As in previous studies (Keyes, 2005), negative affect was not included as an indicator of hedonic well-being. This model demonstrated mediocre fit (χ^2 (204, n=137) = 476.83, p <.001; NNFI = .972; CFI = .979; RMSEA = .099; 90% CI .088 - .111; SRMR=.084; AIC=668.83, BIC=949.15). The completely standardized results of this model can be seen in Figure 10.

Figure 10. Results of the one factor model of complete mental health

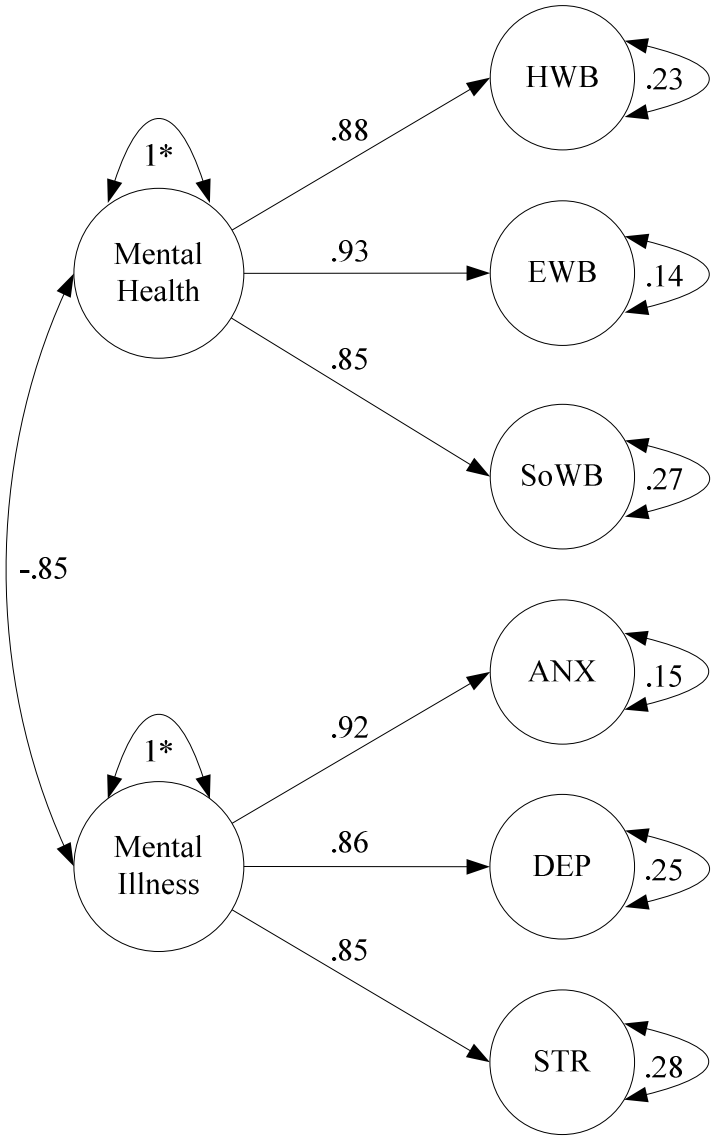


Model fit: (χ^2 (204, n=137) = 476.83, *p* <.001; NNFI = .972; CFI = .979; RMSEA = .099; SRMR=.084

The second model represented the alternative hypothesis, as suggested by the Complete State Model of Mental Health (Keyes, 2005), that mental health and mental illness are in fact distinct latent constructs. For this model, intercept factors for the aggregated subscales of hedonic, eudaimonic, and social well-being were specified as three indicators of mental health. Intercept factors for the three subscales of the DASS-21 (Lovibund & Lovibund, 1995) were specified as three indicators of mental illness or psychological distress. The higher order mental health and mental illness latent constructs were allowed to freely covary with one another. This model demonstrated better fit than the one factor model (χ^2 (203, n=137) = 439.91, p <.001; NNFI = .975; CFI = .982; RMSEA = .093; 90% CI .081 - .104;

SRMR=.072; AIC=633.91, BIC=917.15). The completely standardized results of this model can be seen in Figure 11. Nested model comparisons (χ^2 (1) = 36.91, p < .001) and a comparison of AIC and BIC values suggest that the two factor, Complete State Model of Mental Health Model (Keyes, 2005) provides a better representation of the latent structure of mental health and mental illness. The latent correlation between the higher order mental health and mental illness factors was -.85. These results therefore demonstrate that mental health and mental illness are highly correlated, but distinct aspects of psychological functioning.

Figure 11. Results of the two factor model of complete mental health



Model fit: (χ^2 (203, n=137) = 439.91, *p* <.001; NNFI = .975; CFI = .982; RMSEA = .093; SRMR=.072

Latent Structure of Positive Expectancies

Prior to evaluating the relationships between agency, optimism, anxiety and mental health, I first conducted a series of CFA models to investigate the hypothesized latent structure of positive expectancies. The first two models focused on whether optimism and pessimism are best conceptualized as the ends of a single latent continuum as suggested by Scheier and Carver (1985), or whether optimism and pessimism are highly correlated, but distinct latent constructs as suggested by more recent factor analytic work (Herzberg et al., 2006). A model was specified in which the three optimism items and the three pessimism items from the LOT-R (Scheier et al., 1994) were specified as the six indicators of the latent construct of optimism for each of the four waves of data. This model demonstrated good fit (χ^2 (225, n=137) = 413.39, p <.001; NNFI = .965; CFI = .972; RMSEA = .079; 90% CI .067 - .090; SRMR=.076; AIC=607.95, BIC=826.95).

The alternative model specified optimism and pessimism as distinct latent constructs identified by the respective items from the LOT-R (Scheier et al., 1994). This model also demonstrated good fit (χ^2 (200, n=137) = 357.27, p <.001; NNFI = .968; CFI = .976; RMSEA = .076; 90% CI .063 - .089; SRMR=.069; AIC=597.06, BIC=889.06), and demonstrated superior fit according to every fit index other than BIC. Nested model comparisons (χ^2 (25) = 56.12, p < .001) indicated that the model specifying optimism and pessimism as distinct latent constructs provided a better representation of the data. The average within wave correlation between the latent constructs of optimism and pessimism was r=.87. These results suggest that individual differences in positive expectancies and negative expectancies form highly correlated, but distinct latent constructs.

After determining that optimism is distinct from pessimism, I next conducted a series of two CFA models to determine whether positive expectancies regarding personal mastery (agency) and generalized positive expectancies (optimism) are best conceptualized as indicators of a single latent construct or representative of two correlated, but distinct latent constructs. The first model specified the three optimism items from the LOT-R (Scheier et al., 1994) and three agency parcels from the RHS (Shorey et al., 2009) as the six indicators of the latent construct of positive expectancies within each wave. This model demonstrated acceptable fit (χ^2 (225, n=137) = 499.10, p <.001; NNFI = .949; CFI = .961; RMSEA = .095; 90% CI .084 - .106; SRMR=.083; AIC=686.15, BIC=905.15).

The alternative model specified agency and optimism as distinct latent constructs identified by the parcels and items from the RHS (Shorey et al., 2009) and the LOT-R (Scheier et al., 1994), respectively. This model demonstrated good fit (χ^2 (200, n=137) = 387.97, p <.001; NNFI = .961; CFI = .972; RMSEA = .083; 90% CI .071 - .095; SRMR=.065; AIC=616.65, BIC=908.65), and demonstrated superior fit according to every fit index other than BIC. Nested model comparisons (χ^2 (25) = 111.13, p < .001) indicated that the model specifying agency and optimism as distinct latent constructs provided a

better representation of the data. The average within wave correlation between the latent constructs of agency and optimism was r=.75. These results suggest that positive expectancies regarding personal mastery (agency) and generalized positive expectancies form highly correlated, but distinct latent constructs.

Agency, Optimism and Well-Being Facets

After evaluating the latent structure of positive expectancies and mental health, I next analyzed the extent to which agency and optimism uniquely predict the facets of well-being. Because results of the stability models indicated that the various components of well-being were highly stable over the four week period, I decided to use intercept only growth curve models to determine how agency and optimism predicted mean levels of well-being over the four week period[2]. For each of the fourteen facets of well-being, the four assessments were specified as indicators of the respective facet of well-being. Each of the loadings was fixed to 1.0 and the variances on the intercept factors were freed to identify the model. Agency and optimism at time 1 were identified as in previous models and were both specified as predictors of the intercepts of each of the fourteen facets of well-being.

The fit for this model was excellent (χ^2 (1391, n=137) = 1952.73, p <.001; NNFI = .989; CFI = .992; RMSEA = .055; 90% CI .049 - .601; SRMR=.062). The unstandardized and completely standardized latent regression effects of agency and optimism as well as the proportion of variance explained for each facet of well-being can be seen in Table 2. Agency and optimism both had statistically significant effects on the majority of the components of well-being, as in previous analyses of the unique effects of agency and optimism on well-being (Gallagher & Lopez, 2009). Together, agency and optimism accounted for a large proportion of variance of the majority of the components of well-being (average R^2 =.522), ranging from 14.7% (autonomy) to 77.3% (self-acceptance). These results demonstrate that positive expectancies, both in the form of agency beliefs and optimism, are vital predictors of the various facets of positive mental health.

Agency, Optimism and Mental Health

I next examined the extent to which agency and optimism predicted the higher order construct of mental health. For each of the four waves, the latent construct of mental health was identified using three indicators: the means of the hedonic, eudaimonic, and social well-being subscales. A higher order intercept factor was then identified by fixing the loadings of the four waves to 1.0 and freeing the variance of the intercept factor. Agency and optimism were then specified as predictors of the mental health intercept factor.

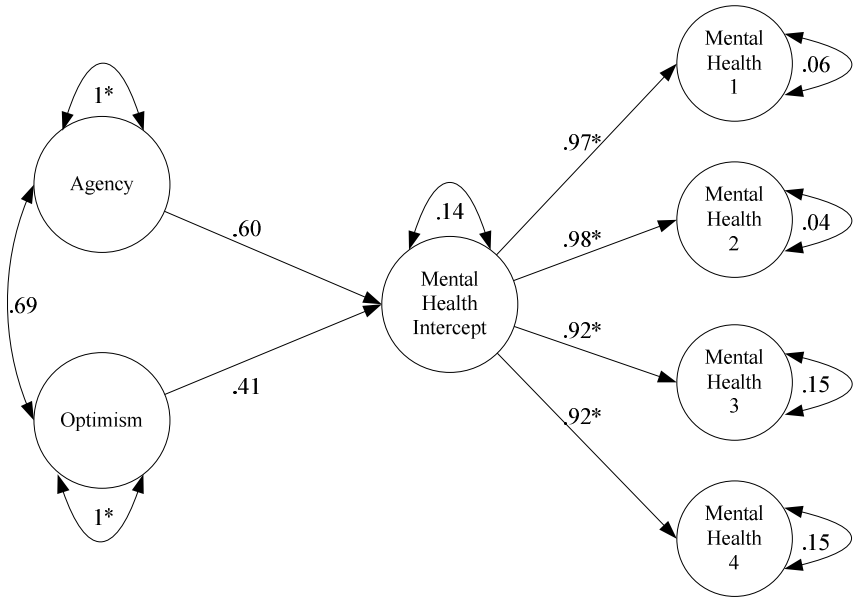
Table 2.

Unstandardized latent regression parameters, standard errors, completely standardized latent regression effects, and combined R^2 of agency and optimism on well-being

	Optimism			Agency			
	B	SE	β	B	SE	β	Combined R^2
Eudaimonic Well-Being							
Autonomy	.211	.172	.195	.240	.167	.221	.147
Environmental Mastery	.144	.223	.074	1.549	.332	.802	.732
Personal Growth	.456	.193	.335	.547	.189	.402	.461
Purpose in Life	.566	.217	.302	1.137	.251	.607	.715
Self-Acceptance	.813	.239	.388	1.184	.258	.564	.773
Social Well-Being							
Social Acceptance	.429	.181	.381	.116	.168	.103	.211
Social Actualization	.257	.175	.221	.381	.172	.328	.258
Social Coherence	-.129	.190	-.104	.817	.212	.659	.349
Social Contribution	.538	.200	.351	.720	.200	.470	.573
Social Integration	.492	.188	.364	.499	.180	.368	.454
Positive Relations	.472	.191	.339	.579	.188	.416	.484
Hedonic Well-Being							
Positive Affect	.913	.247	.487	.808	.220	.431	.715
Negative Affect	-.703	.222	-.378	-.996	.232	-.536	.711
Life Satisfaction	1.025	.259	.615	.397	.200	.238	.640

The completely standardized results of this model can be seen in Figure 12. This model demonstrated excellent fit (χ^2 (119, n=137) = 184.07, p <.001; NNFI = .989; CFI = .992; RMSEA = .063; 90% CI .045 - .081; SRMR=.080). Agency (B = -1.13, SE = .292) and optimism (B = -.767, SE=.271) both had statistically significant effects on mean levels of anxiety. A comparison of the completely standardized latent regression parameters indicates that, as hypothesized, agency (β =.60) has stronger effects on mental health than optimism (β =.41). Together, agency and optimism accounted for a large proportion of variance in mean levels of mental health. These results suggest that positive cognitions, both in the form of agency and optimism beliefs, may be crucial determinants of individual differences in the experience of mental health.

Figure 12. Latent effects of agency and optimism on mental health



Model fit: (χ^2 (119, n=137) = 184.07, p <.001; NNFI = .989; CFI = .992; RMSEA = .063; SRMR=.080

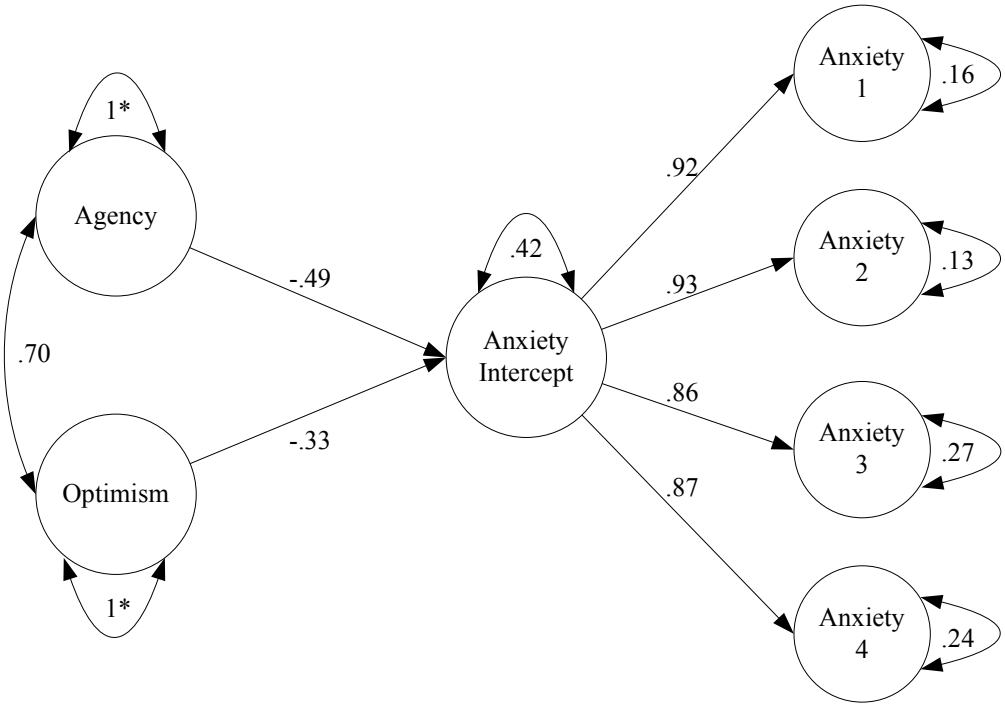
Agency, Optimism and Anxiety

I next examined the extent to which agency and optimism uniquely predicted participants' levels of anxiety over the four week period of data collection. Preliminary analyses indicated that levels of anxiety were highly stable over this one month period. I therefore decided to again use an intercept only growth curve model to explore the effects of agency and optimism on anxiety. Three parcels from the STAI (Spielberger et al., 1977) were specified as indicators of the latent construct of anxiety for each wave of data. An intercept factor was then identified by fixing the loadings of the four latent anxiety constructs to 1.0 and freeing the variance of the intercept factor. Agency and optimism were then specified as predictors of the anxiety intercept factor.

The completely standardized results of this model can be seen in Figure 13. This model demonstrated excellent fit (χ^2 (119, n=137) = 186.91, p <.001; NNFI = .987; CFI = .990; RMSEA = .065; 90% CI .046 - .082; SRMR=.059). Agency (B = -1.13, SE = .292) and optimism (B = -.767, SE=.271) both had statistically significant effects on mean levels of anxiety. A comparison of the completely standardized latent regression parameters indicates that, as hypothesized, agency (β = -.493) had stronger effects on anxiety than optimism (β = -.334). Together, agency and optimism accounted for a very large proportion of variance (R^2=.585) in mean levels of anxiety. These results suggest that positive

expectancies, both in the form of agency and optimism beliefs, may be crucial determinants of individual differences in the experience of anxiety.

Figure 13. Latent effects of agency and optimism on anxiety



Model fit: (χ^2 (119, n=137) = 186.91, p <.001; NNFI = .987; CFI = .990; RMSEA = .065; SRMR=.059

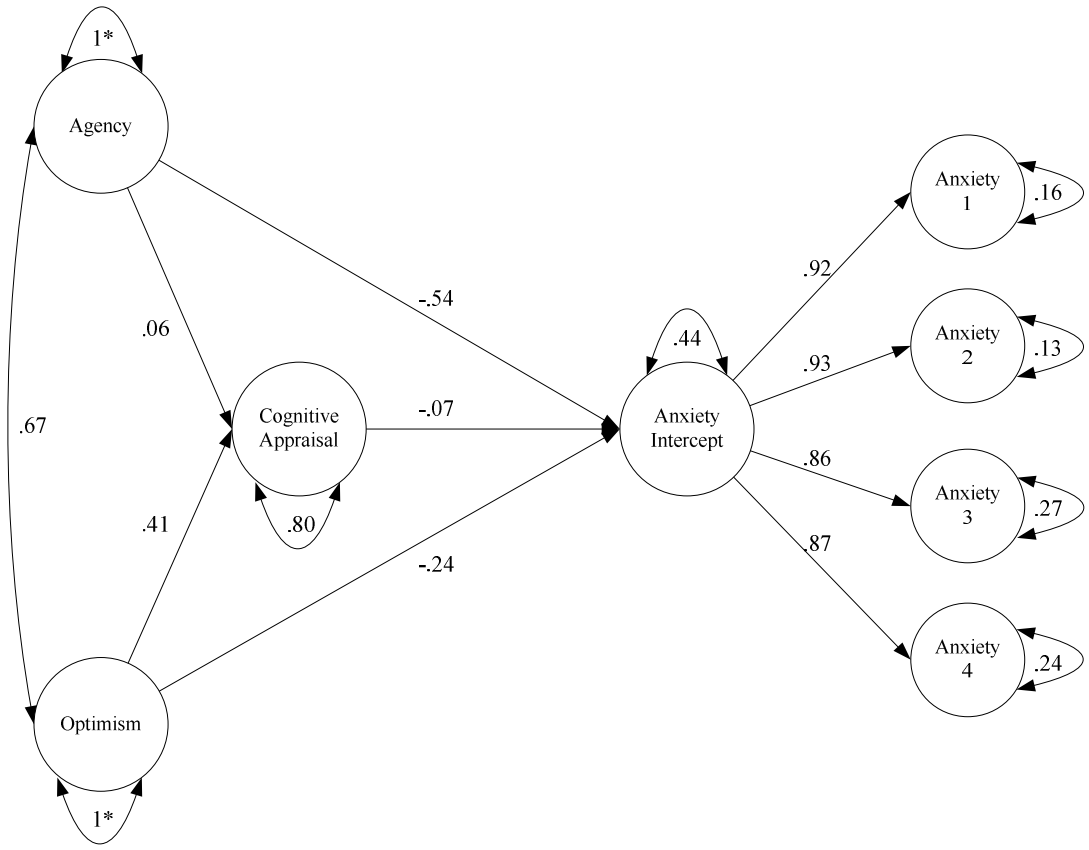
Mechanisms of Agency and Optimism

After finding strong support for the hypothesized effects of agency and optimism on anxiety and well-being, I next examined a series of models to explore the potential mechanisms by which agency and optimism may influence anxiety and well-being. Specifically, I examined whether cognitive reappraisal as conceptualized by Gross (1998) mediates the effects of agency or optimism on anxiety and well-being.

The first mediation model explored whether cognitive reappraisal mediates the effects of agency or optimism on anxiety. An intercept only growth curve factor was specified for anxiety as in previous models, agency and optimism were identified as in previous models, and cognitive reappraisal was identified using three parcels from the ERQ (Gross & John, 2003) as indicators. Agency, optimism, and cognitive reappraisal were specified as predictors of anxiety. Agency and optimism were then specified as predictors of cognitive reappraisal. The indirect effects of agency and optimism were calculated using the Monte Carlo Method of Assessing Mediation (MCMAM; MacKinnon, Lockwood, & Williams, 2004) using a web utility (Selig & Preacher, 2009). The completely standardized results of this model can be seen in Figure 14. Contrary to my predictions, only optimism had a significant effect on cognitive

reappraisal, and neither optimism nor agency had a significant indirect effect on anxiety via cognitive reappraisal. These results suggest that agency and optimism may influence anxiety through other emotion regulation mechanisms.

Figure 14. Mediation of agency and optimism on anxiety via cognitive reappraisal

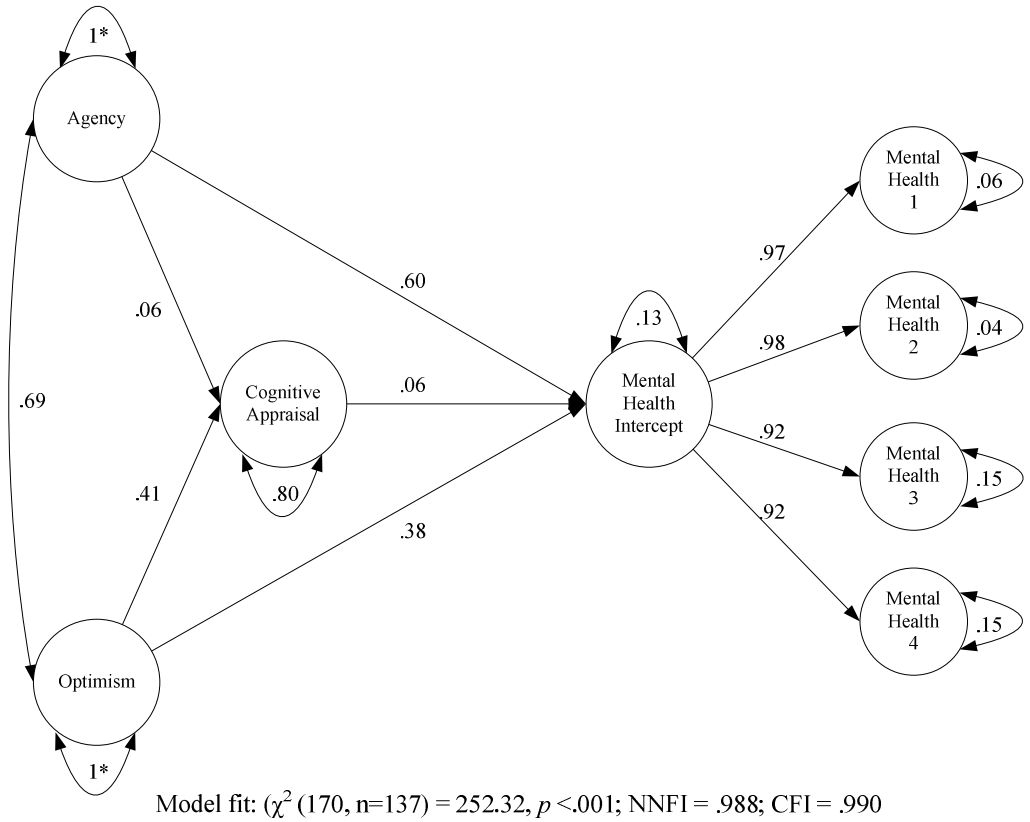


Model fit: (χ^2 (170, n=137) = 255.99, p <.001; NNFI = .985; CFI = .988; RMSEA = .061; SRMR=.070

The second mediation model explored whether cognitive reappraisal mediates the effects of agency or optimism on mental health. Similar methods were used as in the previous mediation model. The latent construct of mental health at times 1 to 4 were identified using the means of the hedonic, eudaimonic, and social well-being facets as three indicators. An intercept only growth curve model of mental health was then identified using the four measurements of the latent construct of mental health as indicators. Indirect effects were again calculated using the web utility to perform MCMAM. The completely standardized results of this model can be seen in Figure 15. Again, contrary to my predictions, only optimism had a significant effect on cognitive reappraisal, and neither optimism nor agency had a

significant indirect effect on mental health via cognitive reappraisal. These results suggest that agency and optimism may influence mental health through other emotion regulation mechanisms.

Figure 15. Mediation of agency and optimism on mental health via cognitive reappraisal



Model fit: (χ^2 (170, n=137) = 252.32, p <.001; NNFI = .988; CFI = .990
RMSEA = .060; SRMR=.082

Stress Buffering Effects of Agency and Optimism

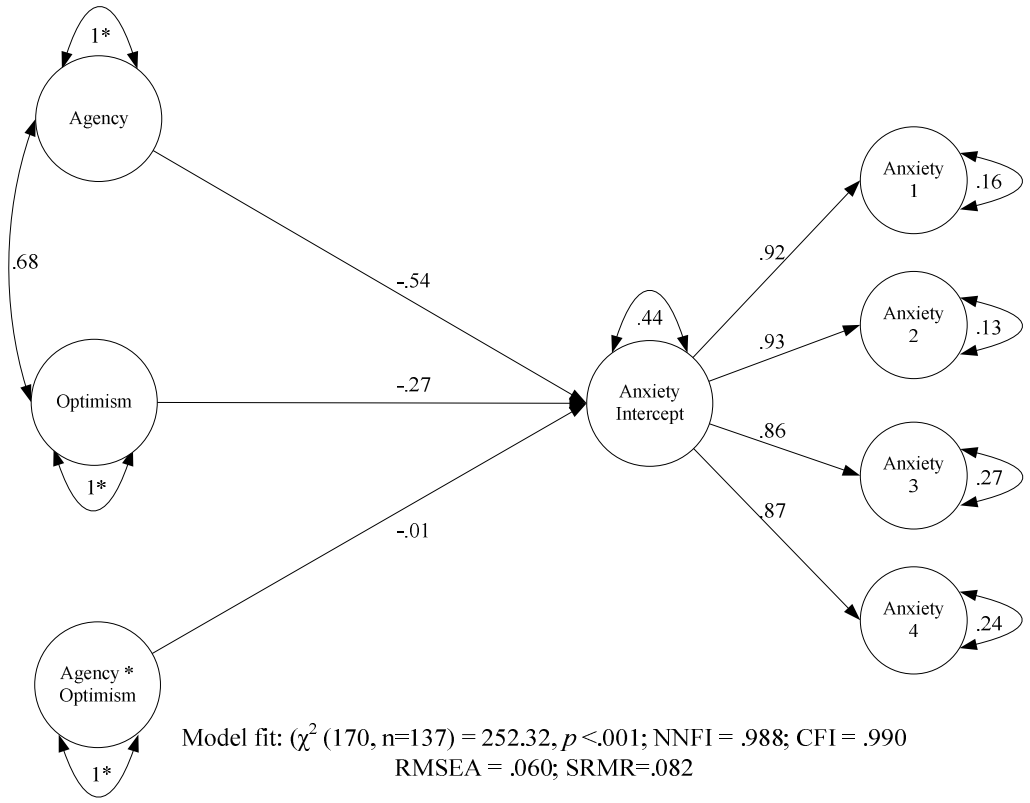
I next examined the hypothesis that agency and optimism may prevent the development of mental illness by buffering the effects of stress on anxiety. My ability to explore this hypothesis was limited by the highly stable levels of anxiety during the data collection period. I decided to use multilevel modeling (Raudenbush & Bryk, 2002) and the PRELIS software to explore the extent to which agency or optimism may function as a resilience factor. Build-up procedures were used to incrementally explore the fixed effects of agency (level 2), optimism (level 2), and perceived stress (level 1) as well as interactive effects of agency*perceived stress and optimism*perceived stress on anxiety. Results of the final model indicated that agency (B=-.240, SE=.037, Z=6.47) and optimism (B=-.162, SE=.045, Z=3.60) predicted lower levels of anxiety, whereas higher levels of perceived stress (B=.035, SE=.016, Z=2.21) predicted higher

levels of anxiety. There was no evidence that the effects of perceived stress on anxiety varied within individuals across time and no evidence that the effect of stress on anxiety was moderated by either agency or optimism. It should be noted, however, that the highly stable levels of anxiety limited my ability to adequately explore the potential stress-buffering effects of agency or optimism beliefs.

Interactive Effects of Agency and Optimism

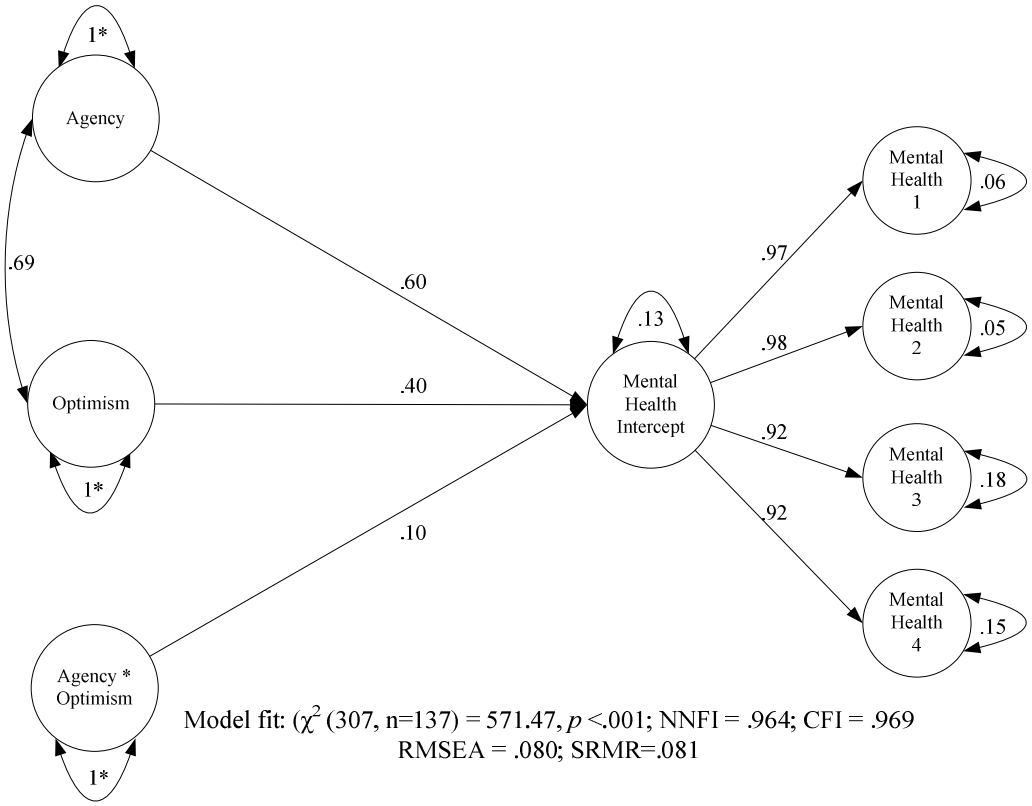
The final analyses focused on whether agency and optimism interact to promote mental health or prevent anxiety. First, a model was specified with an anxiety intercept factor identified as in previous models, with the latent constructs of agency and optimism identified as in previous models, and with an orthogonalized latent product of agency and optimism identified following the procedures described by Little et al. (2006). Agency, optimism and the latent product were specified as predictors of the anxiety intercept factor. The results of this model can be seen in Figure 16. This model demonstrated good fit (χ^2 (307, n=137) = 547.94, p <.001; NNFI = .961; CFI = .966; RMSEA = .076; 90% CI .066 - .086; SRMR=.066), but the latent product term did not have a statistically significant effect on anxiety. These results suggest that agency and optimism additively, but not interactively, predict lower levels of anxiety.

Figure 16. Interactive effects of agency and optimism on anxiety



The second model specified a mental health intercept factor identified as in previous models, with the latent constructs of agency and optimism identified as in previous models, and with an orthogonalized latent product of agency and optimism again identified following the procedures described by Little et al. (2006). Agency, optimism and the latent product were specified as predictors of the mental health intercept factor. The results of this model can be seen in Figure 17. This model demonstrated good fit (χ^2 (307, n=137) = 694.026, p <.001; NNFI = .964; CFI = .969; RMSEA = .080; 90% CI .069 - .090; SRMR=.081), but the latent product term of agency and optimism did not have a statistically significant effect on mental health. These results suggest that agency and optimism additively, but not interactively, predict higher levels of mental health.

Figure 17. Interactive effects of agency and optimism on mental health



Discussion

The primary purpose of the present study was to improve our understanding of how positive expectancies relate to the development of mental health and mental illness. As a precursor for these analyses, certain preliminary issues needed to be explored in order to provide the foundation for exploring the benefits of agency and optimism beliefs. The first of these topics was delineating the latent structure of mental health.

Latent Structure of Mental Health

There has been a dramatic increase in the empirical investigations of the components of positive mental health in recent years. Whereas previously researchers tended to focus on a limited range of factors, more recent studies have attempted to integrate various theories of well-being in order to develop a comprehensive model of well-being. Specifically, researchers have attempted to integrate the models of hedonic (Diener, 1984), eudaimonic (Ryff, 1989), and social (Keyes, 1998) well-being into an integrated model of well-being (Gallagher et al., 2009; Keyes, 2005). Some researchers have questioned the appropriateness of these models, however, and have argued that the proposed distinctions between the facets of hedonic, eudaimonic, and social well-being are unnecessary (Kashdan et al., 2008). The present study therefore provides multiple contributions to our understanding of the latent structure of mental health.

First, by evaluating a series of integrative models, I was able to determine which hierarchical model of well-being provided the most parsimonious and accurate representation of how the various facets of well-being relate to one another. Previous examinations of these models (Gallagher et al., 2009; Keyes, 2005) have supported the proposed integrative model (Figure 4) but have been limited by measurement issues and the use of cross-sectional data. The present study provides an important replication of this previous research by demonstrating that the hypothesized integrative model of well-being remains the best representation of the latent structure of mental health when evaluating mean levels of mental health across time. These results therefore provide additional evidence that the components of hedonic, eudaimonic, and social well-being represent distinct facets of positive mental health.

The second contribution stems from the examination of the stability of the various facets of well-being. The longitudinal stability of the components of hedonic well-being (positive affect, negative affect, and life satisfaction) have been extensively studied, but the components and higher order constructs of eudaimonic and social well-being have not previously been examined. The results of the stability models demonstrated that each of the facets of well-being was highly stable over a period of four weeks. Although it is possible that the assessment schedule chosen missed intraindividual fluctuations that may have occurred between or within days, the results suggest that individual's weekly levels of mental health are highly stable over one month periods of time. These results therefore suggest that researchers studying the longitudinal course of well-being should consider using longer time lags between assessments as individuals' levels of mental health appears to be highly stable over short periods of time.

Closely related to identifying how the various facets of well-being relate to one another is the issue of whether indicators of mental health reflect a distinct latent continuum or whether indicators of mental health and mental illness reflect opposing ends of a single mental health continuum. The complete state model of mental health (Keyes, 2005) suggests that the components of well-being are closely related

to mental illness, but reflect a distinct latent continuum of psychological functioning. Previous research has supported this model, but it was previously examined only in a single sample in which the selected measures suffered from reliability issues. The present study provides an important replication of the complete state model of mental health by examining the validity of this model with reliable measures of individuals' average levels of mental health and mental illness over a four week period. The results demonstrated that the two-factor, complete state model of mental health provides the best representation of the latent structure of mental health and mental illness. These results provide additional evidence for the necessity of studying indicators of mental health as distinct outcomes from mental illness as well as for the potential protective effects of high levels of mental health.

Latent Structure of Positive Expectancies

Prior to evaluating the potential benefits of positive expectancies, it was necessary to evaluate a series of models to investigate the hypothesized models of optimism and agency. Specifically, it was necessary to determine whether optimism and pessimism represent opposing ends of a single latent continuum or represent distinct latent constructs. Although Scheier and Carver have consistently argued for the single factor approach (Scheier, Carver, & Bridges, 1994), more recent factor analytic work has indicated that optimism and pessimism are best conceptualized as distinct latent constructs and that the association between optimism and pessimism is moderated by age (Herzberg et al., 2006). The results of the analyses from the present study support this latter perspective. Nested model comparisons suggested that considering optimism and pessimism as distinct latent constructs provided the best representation of the data, although the association between the two constructs indicated that roughly 75% of the variance in the two constructs was shared variance. These results demonstrate that optimism and pessimism are distinct constructs that each tap a facet of people's expectations for the future, and that the relationship between levels of positive expectancies and levels of negative expectancies is very strong in young adult populations. It therefore appears that, just as mental health is more than the absence of mental illness, optimism is more than the absence of pessimism.

It was also necessary to evaluate whether agency and optimism represent distinct forms of positive expectancies or whether the two theories and corresponding measures reflect the same latent construct. As expected, the results of a series of CFA models demonstrated that agency and optimism are best conceptualized as distinct latent constructs that each represent a particular method in which individuals may maintain positive expectancies for the future. These results are in accord with the theoretical work of Bandura (1997), Carver and Scheier (2002b), and Snyder (2002) and previous empirical studies by Bryant and Cvengros (2004), Rand (2009), and Gallagher and Lopez (2009). Given that these findings have now been replicated multiple times, it appears that the concern that theories and measures of optimism and agency may be redundant (i.e., Aspinwall & Leaf, 2002) are unwarranted, and

research examining the unique effects and mechanisms of agency and optimism beliefs is therefore justified.

Agency, Optimism, and Mental Health

Although historical perspectives viewed positive expectancies as detrimental (Freud, 1924), research has consistently demonstrated that positive expectancies in the form of both agency and optimism are beneficial (Peterson, 2000; Taylor & Brown, 1988). However, this research has generally been limited by the use of cross-sectional methods of data collection, the focus on only a few of the many components of well-being, and the failure to simultaneously examine the effects of agency and optimism in order to identify the unique effects of each. The present study improved upon previous research by longitudinally examining the unique effects of agency and optimism on the full range of facets considered to represent mental health.

The results indicated that agency and optimism each had unique effects on the majority of the 14 facets of well-being. Agency and optimism had statistically significant effects on 13 and 11 of the 14 facets of well-being, respectively. An examination of the average completely standardized latent effects suggests that agency ($\beta = .439$) has stronger effects on the components of positive mental health than optimism ($\beta = .324$). The results of the structural equation models also indicated that agency and optimism together predicted roughly half of the variance in the 14 facets of well-being. These results therefore indicate that positive expectancies are crucial determinants of individual levels of positive mental health.

No evidence was found, however, to indicate that agency and optimism interact to predict higher levels of the higher level construct of mental health, which suggests that agency and optimism contribute additively to positive mental health. The examination of the mental health benefits of agency and optimism was limited by the highly stable levels of well-being, as this precluded an adequate examination of the effects of positive expectancies on intraindividual changes. Nevertheless, the results of this study provide compelling evidence that agency and optimism are both vital determinants of individual levels of positive mental health.

Agency, Optimism, and Anxiety

Positive expectancies in the form of domain specific perceptions of self-efficacy have consistently been demonstrated to be important predictors of anxiety. There has been debate, however, about the utility of studying trait perceptions of agency (Bandura, 1997). Additionally, the extent to which generalized dispositional positive expectancies (i.e., optimism) confer a vulnerability/resilience to anxiety has not been examined adequately. The present study builds upon previous research by longitudinally and simultaneously examining the effects of agency and optimism on levels of anxiety.

As expected, although agency demonstrated stronger effects on anxiety than did optimism, both agency and optimism uniquely contributed to the prediction of mean levels of anxiety across the four week period. These results demonstrate the importance of considering dispositional levels of agency in addition to domain-specific perceptions of self-efficacy and demonstrate the importance of considering generalized positive expectancies as well as expectancies regarding personal agency. The magnitude of the effects of agency and optimism support the hypothesis that these factors may influence vulnerability to anxiety.

Mechanisms of Agency and Optimism

Perhaps the most important issue that the present study attempted to address was the identification of mechanisms or mediators of the effects of agency and optimism beliefs on anxiety and well-being. The benefits of agency and optimism have consistently been demonstrated over the past few decades, but the mechanisms by which agency and optimism promote positive outcomes have not been adequately examined. Based on previous theoretical work, the present study explored cognitive reappraisal as a potential mediator of agency and optimism, but failed to find any evidence that cognitive reappraisal mediated the effects of agency or optimism on either anxiety or well-being. These results suggest that researchers may need to explore alternative emotion regulation strategies when examining potential mechanisms, although the limitations of the methods used to study mediation prevent definitive conclusions regarding the status of cognitive reappraisal as a mediator. It will therefore be critical for future research examining agency and optimism beliefs to focus on potential mediators, as doing so will provide valuable information about how and why positive expectancies are beneficial.

Limitations

Despite finding support for the majority of my hypotheses, certain limitations of the present study should be noted. One of the most important limitations relates to the assessment schedule chosen for the present study. The decision to use four weekly assessments was based on previous research examining intra-individual stability of certain components of well-being (Yasuda et al., 2004), but this assessment schedule may have failed to capture the change processes of interest. The very high levels of stability of anxiety and the components of well-being made it difficult to study the effects of agency and optimism on intraindividual change, and made it difficult to explore the mediation and moderation hypotheses. Although it is useful to discover that individuals' levels of well-being are highly stable when measured weekly over four weeks, alternative interpretations may be valid. Specifically, it is possible that there was significant intraindividual change occurring, but that the time lag of the measurements was not well-suited for identifying change. Recent research suggests that the time lag chosen in longitudinal studies can moderate the effects found (Selig, 2009), and it is possible that this dynamic occurred in the present study. Future research examining the longitudinal course of well-being should therefore consider using more

intensive assessment schedules over shorter periods of time or assessments staggered over longer periods of time.

A related issue was the particular measures used in the present study. Although some of the measures used were specifically designed as state measures designed to study change processes (i.e., STAI; Spielberger et al., 1977), the majority of the outcome measures were trait measures that were modified slightly for the present study. It is therefore possible that certain measures may not have been sensitive enough to detect intra-individual change over the selected time period. The development of state versions of the various well-being measures that would be more sensitive to intraindividual change will therefore be an important precursor to future longitudinal research examining the development of mental health.

A third limitation was the use of an undergraduate population to study the longitudinal course of components of mental illness. Although participants were selected based on screening data in order to ensure variability in levels of anxiety, complete diagnostic information for participants was not obtained. Therefore, while the participants studied displayed high levels of anxiety according to the self-report measures, the extent to which participants met full diagnostic criteria for an anxiety disorder or other forms of mental illness is unclear. It is therefore possible that the results obtained regarding the strong effects of agency and optimism beliefs on anxiety may not generalize to a clinical population.

Conclusions

The present study attempted to improve our understanding of how positive cognitions relate to anxiety and well-being. Although certain limitations precluded the adequate examination of certain hypotheses, the results of the present study provide two important findings.

First, by longitudinally examining the effects of agency and optimism on anxiety and well-being, this study provides additional evidence of the strong effects of positive expectancies on components of mental health and mental illness and of the utility of considering the effects of trait agency. Previous research has questioned the utility of trait perceptions of agency (Bandura, 1997) and has failed to demonstrate the independent effects of agency and optimism on the development of anxiety. The results of the present study therefore provide important evidence that dispositional positive expectancies (both agency and optimism) are strong predictors of anxiety across time. These results demonstrate the relevance of positive psychology constructs to clinical psychology research and indicate that perceptions of agency and optimism may be crucial factors in interventions designed to reduce vulnerability or to treat symptoms of anxiety. Unfortunately, I was unable to find evidence of mediators of positive expectancies. It will therefore be vital that future research focus on the pathways by which agency and optimism promote mental health and prevent mental illness so that we can develop more effective interventions to treat mental illness and promote mental health.

Second, my results provided additional evidence of the viability of integrated models of positive mental health and of the necessity of distinguishing between the absence of mental illness and the presence of mental health. In addition to potentially improving our ability to identify individuals who may be at risk for mental illness, improving our understanding of the nature of positive mental health is a worthy goal for its own sake. The results of this study are important in that they provide further evidence of the validity of the proposed integrative model of well-being (Gallagher et al., 2009). As with all models, the integrated model of well-being is likely wrong to some degree (MacCallum & Austin, 2000), but it appears that this integrative model of well-being at least provides a useful starting point for understanding positive mental health. Additional research is now needed to determine whether focusing on components of mental health can reduce vulnerability to mental illness or improve the treatment of mental illness.

References

Arnau, R. C., Rosen, D. H., Finch, J. F., Rhudy, J. L., & Fortunato, V.J. (2007). Longitudinal effects of hope on anxiety and depression: A latent variable analysis. *Journal of Personality, 75*, 43-64.

Aspinwall, L. G., & Taylor, S. E. (1992). Individual differences, coping, and psychological adjustment: A longitudinal study of college adjustment and performance. *Journal of Personality and Social Psychology, 63*, 989-1003

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84*, 191-215.

Bandura, A. (1982). Self-efficacy mechanism in human agency. *American Psychologist, 37*, 122-147.

Bandura, A. (1986). *Social foundations of thought and action*. Englewood Cliffs, NJ: Prentice Hall.

Bandura, A. (1988). Self-efficacy conception of anxiety. *Anxiety, Stress, & Coping, 1*, 77-98.

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.

Barlow, D. H. (2000). Unraveling the mysteries of anxiety and its disorders from the perspective of emotion theory. *American Psychologist, 55*, 1247-1263.

Barlow, D. H. (2002). *Anxiety and its disorders: The nature and treatment of anxiety and panic* (2nd ed.). New York: The Guilford Press.

Bentler, P. M. (1990). Comparative fit indices in structural equation models. *Psychological Bulletin, 28*, 97-104.

Bentler, P. M., & Bonett, D. G. (1980). Significance tests and goodness of fit in the analysis of covariance structures. *Psychological Bulletin, 88*, 588-606.

Browne, M. W., & Cudeck, R. (1992). Alternative ways of assessing model fit. *Sociological Methods & Research, 21*, 230-258.

Bryant, F. B., & Cvengros, J. A. (2004). Distinguishing hope and optimism: Two sides of a coin, or two separate coins? *Journal of Social and Clinical Psychology, 23*, 273-302.

Carver, C. S., & Gaines, J. G. (1987). Optimism, pessimism, and postpartum depression. *Cognitive Therapy and Research, 11*, 449-462.

Carver, C. S., Pozo, C, Harris, S. D., Noriega, V, Scheier, M. R, Robinson, D. S., Ketcham, A. S., Moffat, F. L., Jr., & Clark, K. C. (1993). How coping mediates the effect of optimism on distress: A study of women with early stage breast cancer. *Journal of Personality and Social Psychology, 65*, 375-390.

Carver, C. S., & Scheier, M. F. (1998). *On the self-regulation of behavior*. New York: Cambridge University Press.

Carver, C. S., & Scheier, M. F. (1999). Optimism. In C. R. Snyder (Ed.), *Coping: The psychology of what works* (pp. 182-204). New York: Oxford University Press.

Carver, C. S., & Scheier, M. F. (2002a). Optimism. In C. R. Snyder & S. J. Lopez (Eds.), *Handbook of positive psychology* (pp. 231-243). New York: Oxford University Press.

Carver, C. S., & Scheier, M. F. (2002b). The hopeful optimist. *Psychological Inquiry, 13*, 288-290.

Carver, C. S., Scheier, M. F., Miller, C., & Fulford, D. (2009). Optimism. In S. J. Lopez & C. R. Snyder (Eds.), *Handbook of positive psychology* (2nd ed; pp. 303-311). New York: Oxford University Press.

Carver, C. S., Scheier, M. E, & Weintraub, J. K. (1989). Assessing coping strategies: A theoretically based approach. *Journal of Personality and Social Psychology, 56,* 267-283.

Chang, E. C., & DeSimone, S. L. (2001). The influence of hope on appraisals, coping, and dysphoria: A test of hope theory. *Journal of Social and Clinical Psychology*, 20, 117–129.

Chorpita, B. F., & Barlow, D. H. (1998). The development of anxiety: The role of control in the early environment. *Psychological Bulletin, 124, 3-21.*

Cohen, S., Kamarck, T., Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior, 24,* 385-396.

Cole, D. A., & Maxwell, S. E. (2003). Testing mediational models with longitudinal data: Myths and tips in the use of structural equation modeling. *Journal of Abnormal Psychology, 112,* 558-577.

Diener, E. (1984). Subjective well-being. *Psychological Bulletin, 95,* 542-575.

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction with Life Scale. *Journal of Personality Assessment, 49,* 71-75.

Diener, E., Suh, M., Lucas, E. & Smith, H. (1999). Subjective well-being: Three decades of progress. *Psychological Bulletin, 125,* 276-302.

Enders, C. K. (in press). *Applied missing data analysis.* New York, NY: Guilford Press.

Fitzgerald, T. E., Tennen, H., Affleck, G., & Pransky, G. S. (1993). The relative importance of dispositional optimism and control appraisals in quality of life after coronary artery bypass surgery. *Journal of Behavioral Medicine, 16,* 25–43.

Fontaine, K. R., Manstead, A. S. R., & Wagner, H. (1993). Optimism, perceived control over stress, and coping. *European Journal of Personality, 7,* 267-281.

Freud, S. (1928). *The future of an illusion.* London: Hogarth.

Gadermann, A. M., & Zumbo, B. D. (2007). Investigating the intra-individual variability and trajectories of subjective well-being. *Social Indicators Research: An International and Interdisciplinary Journal for Quality-of-Life Measurement, 81,* 1-33.

Gallagher, M. W. (2009). *Broadening the Role of Positive Emotions within Hope Theory: A Meta-Analytic Review.* Manuscript in Preparation.

Gallagher, M. W., & Lopez, S. J. (2009). Positive expectancies and mental health: Identifying the unique effects of hope and optimism. *Journal of Positive Psychology, 4,* 548-556.

Gallagher, M. W., Lopez, S. J., & Pressman, S. D. (2009). *Optimism is Universal: Exploring Demographic Predictors of Optimism in a Representative Sample of the World.* Manuscript under review.

Gallagher, M. W., Lopez, S. J., & Preacher, K. J. (2009). The hierarchical structure of well-being. *Journal of Personality, 77,* 1025-1050.

Gross, J. J. (1998). The emerging field of emotion regulation: An integrative review. *Review of General Psychology, 2,* 271-299.

Gross, J. J., & John, O. P. (2003). Individual differences in two emotion regulation processes: Implications for affect, relationships, and well-being. *Journal of Personality and Social Psychology, 85,* 348-362.

Harris, C. B. (1988). *Hope: Construct definition and the development of an individual differences scale.* Unpublished doctoral dissertation, Department of Psychology, University of Kansas, Lawrence.

Herzberg, P. Y., Glaesmer, H., & Hoyer, J. (2006). Separating optimism and pessimism: A robust psychometric analysis of the Revised Life Orientation Test (LOT-R). *Psychological Assessment, 18,* 433-438.

Hofmann, S. G. (2004). Cognitive mediation of treatment change in social phobia. *Journal of Consulting and Clinical Psychology, 72,* 392–399.

Hu, L., & Bentler, P. M. (1998). Cutoff criteria for fit indexes in covariance structure modeling: Sensitivity to underparameterized model misspecification. *Psychological Methods, 3,* 424-453.

Jöreskog, K. G., & Sörbom, D. (1996). *LISREL 8: User's reference guide*. Chicago: Scientific Software International.

Irving, L. M., Snyder, C. R., & Crowson, J. J., Jr., (1998). Hope and the negotiation of cancer facts by college women. *Journal of Personality, 66,* 195-214.

Kashdan, T. B., Biswas-Diener, R., & King, L. A. (2008). Reconsidering happiness: The costs of distinguishing between hedonics and eudaimonia. *Journal of Positive Psychology, 3,* 219-233.

Keyes, C. L. M. (1998). Social well-being. *Social Psychology Quarterly, 61,* 121–140.

Keyes, C. L. M. (2002). The mental health continuum: From languishing to flourishing in life. *Journal of Health and Social Behavior, 43,* 207–222.

Keyes, C. L. M. (2005). Mental health and/or mental illness? Investigating axioms of the complete state model of health. *Journal of Consulting and Clinical Psychology, 73,* 539-548.

Keyes, C. L. M. (2007). Promoting and protecting mental health as flourishing. *American Psychologist, 62,* 95-108.

Kwon, P. (2002). Hope, defense mechanisms, and adjustment: Implications for false hope and defensive hopelessness. *Journal of Personality, 70,* 207–231.

Langelle, C. (1989). *An assessment of hope in a community sample.* Unpublished master's thesis, Department of Psychology, University of Kansas, Lawrence.

Little, T. D., Bovaird, J. A., & Widaman, K. F. (2006). On the merits of orthogonalizing powered and interaction terms: Implications for modeling interactions among latent variables. Structural Equation Modeling: A Multidisciplinary Journal, 13, 497-519.

Little, T. D., & Dill, E. J. (2009). *The Inventory of Felt Emotion and Energy in Life (I FEEL): A Comprehensive Multidimensional Measure of Internalizing Symptoms in Adolescence.* Manuscript under review.

Little, T. D., Hawley, P. H., Henrich, C. C., & Marsland, K. (2002). Three views of the agentic self: a developmental synthesis. In E. L. Deci, & R. M. Ryan (Eds.), Handbook of self-determination research (pp. 389-404). Rochester, NY: University of Rochester press.

Little, T. D., Lopez, D. F., & Wanner, B. (2001). Children's action-control behaviors (Coping): A longitudinal validation of the behavioral inventory of strategic control. *Anxiety, Stress, and Coping, 14,* 315-336.

Little, T. D., McConnell, E. K., Howard, W. J., & Stump, K. N. (2008). Missing data in large data projects: Two methods of missing data imputation when working with large data projects. (online) Retrieve January 7th, 2009 from http://quant.ku.edu/pdf/11._Imputation_with_Large_Data_Sets.pdf

Little, T. D., Slegers, D. W., & Card, N. A. (2006). A non-arbitrary method of identifying and scaling latent variables in SEM and MACS models. *Structural Equation Modeling, 13,* 59-72.

Little, T. D., Snyder, C. R., & Wehmeyer, M. (2006). The agentic self: On the nature and origins of personal agency across the lifespan. In. D. K. Mroczek & T. D. Little (Eds.). *Handbook of Personality Development* (pp. 61-80). Mahwah, NJ: LEA.

Lopez, D. F., & Little, T. D. (1996). Children's action-control beliefs and emotional regulation in the social domain. *Developmental Psychology, 32,* 299-312.

Lovibond, S.H. & Lovibond, P.F. (1995). *Manual for the Depression Anxiety Stress Scales. (2nd. Ed.)* Sydney: Psychology Foundation.

Lyubomirsky, S., & Lepper, H. (1999). A measure of subjective happiness: Preliminary reliability and construct validation. *Social Indicators Research, 46,* 137-155.

MacCallum, R. C., & Austin, J. T. (2000). Applications of structural equation modeling in psychological research. *Annual Review of Psychology, 51,* 201-226.

MacKinnon, D. P., Lockwood, C. M., & Williams, J. (2004). Confidence limits for the indirect effect: Distribution of the product and resampling methods. *Multivariate Behavioral Research, 39*(1), 99-128.

Maddux, J. E. (2009). Stopping the "madness": Positive psychology and deconstructing the illness ideology and the DSM. In S. J. Lopez & C. R. Snyder (Eds.), *Handbook of positive psychology* (2nd ed; pp. 61-69). New York: Oxford University Press.

Magaletta, P. R., & Oliver, J. M. (1999). The hope construct, will and ways: Their relative relations with self-efficacy, optimism, and general well-being. *Journal of Clinical Psychology, 55*, 539–551.

Michael, S. T. (2000). Hope conquers fear: Overcoming anxiety and panic attacks. In C. R. Snyder (Ed.), *Handbook of hope: Theory, measures, and applications* (pp. 355–378). San Diego, CA: Academic.

Mischel, W. (1969). *Personality and assessment*. New York: Wiley.

Mroczek, D. K., & Spiro, A. (2005). Change in life satisfaction during adulthood: Findings from the Veteran Affairs Normative Aging Study. *Journal of Personality and Social Psychology, 88*, 189-202.

Ong, A. D., Edwards, L. M., Bergeman, C. S. (2006). Hope as a source of resilience in later adulthood. *Personality and Individual Differences, 41*, 1263-1273.

Park, N., Peterson, C., & Seligman, M. (2004). Strengths of character and well-being. *Journal of Social and Clinical Psychology, 23*, 603-619.

Peale, N. V. (1952). *The power of positive thinking*. New York: Prentice-Hall.

Peterson, C. (2000). The future of optimism. *American Psychologist*, 55, 44–55.

Preacher, K. J., & Coffman, D. L. (2006, May). Computing power and minimum sample size for RMSEA [Computer software]. Available from http://www.quantpsy.org/.

Rand, K. L., & Cheavens, J. S. (2009). Hope theory. In S. J. Lopez & C. R. Snyder (Eds.), *Handbook of positive psychology* (2nd ed; pp. 323-333). New York: Oxford University Press.

Rand, K. L. (2009). Hope and optimism: Latent structures and influences on grade expectancy and academic performance. *Journal of Personality, 77*, 231-260.

Raudenbush, S. W., & Bryk, A. S. (2002). *Hierarchical linear models: Applications and data analytic methods.* (2nd ed). Newbury Park, CA: Sage.

Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs, 80*.

Ryan, R. M., & Deci, E. L. (2001). On happiness and human potentials: A review of research on hedonic and eudaimonic well-being. *Annual Review of Psychology, 52*, 141-166.

Ryan, R. M., Huta, V., & Deci, E. L. (2006). Living well: A self-determination theory of eudaimonia. *Journal of Happiness Studies, 9*, 139-170.

Ryff, C. D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology, 57,* 1069–1081.

Schafer. J. L. & Graham, J. W. (2002). Missing data: Our view of the state of the art. *Psychological Methods, 7*, 147-177.

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

Scheier, M. F., & Carver, C. S. (1992). Effects of optimism on psychological and physical well-being: Theoretical overview and empirical update. *Cognitive Therapy and Research, 16,* 201-228.

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

Scheier, M. F., Matthews, K. A., Owens, J. F., Magovern, G. J., Lefebvre, R. C., Abbott, R. A.. & Carver, C. S. (1989). Dispositional optimism and recovery from coronary artery bypass surgery: The beneficial effects on physical and psychological well-being. *Journal of Personality and Social Psychology, 57,* 1024-1040.

Scheier, M. F., Weintraub, J. K., & Carver, C. S. (1986). Coping with stress: Divergent strategies of optimists and pessimists. *Journal of Personality and Social Psychology,* 51, 1257-1264.

Selig, J. P. (2009). *Time for a change? Reassessing the role of time in causal models.* Unpublished doctoral dissertation, Department of Psychology, University of Kansas, Lawrence.

Selig, J. P., & Preacher, K. J. (2009). Monte Carlo Method for Assessing Mediation, An interactive tool for creating confidence intervals for indirect effects [Computer software]. Available from http://www.quantpsy.org.

Shorey, H. S., Little, T., Rand, K., Snyder, C. R., Monsson, Y., & Gallagher, M. W. (2009). *Validation of the Revised Snyder Hope Scale (HS-R2): The Will, the Ways, and Now the Goals for Positive Future Outcomes*. Manuscript under review.

Snyder, C. R. (1989). Reality negotiation: From excuses to hope and beyond. *Journal of Social and Clinical Psychology, 8,* 130–157.

Snyder, C. R. (1994). *The psychology of hope: You can get there from here.* New York: Free Press.

Snyder, C. R. (2002). Hope theory: Rainbows in the mind. *Psychological Inquiry, 13,* 249-275.

Snyder, C. R., Harris, C., Anderson, J. R., Holleran, S. A., Irving, L. M., Sigmon, S.T. et al. (1991). The will and the ways: Development and validation of an individual-differences measure of hope. *Journal of Personality and Social Psychology, 60,* 570-585.

Snyder, C. R., Lapointe, A. B., Crowson, J. J., Jr., & Early, S. (1998). Preferences of high- and low-hope people for self-referential input. *Cognition & Emotion, 12,* 807–823.

Snyder, C. R., Sympson, S. C., Michael, S. T., & Cheavens, J. (2001). The optimism and hope constructs: Variants on a positive expectancy theme. In E. Chang (Ed.), *Optimism* (pp. 101-126). Washington, D. C.: American Psychological Association.

Snyder, C. R., Sympson, S. C., Ybasco, F. C., Borders, T. F., Babyak, M. A., & Higgins, R. L. (1996). Development and validation of the State Hope Scale. *Journal of Personality and Social Psychology, 70,* 321–335.

Spielberger, C., Gorsuch, R. & Lushene, R. (1970). *Manual for the State- Trait Anxiety Inventory*. Palo Alto, California, Consulting Psychologist Press.

Stanley, M. A., Novy, D. M., Hopko, D. R., Beck, J. G., Averill, P. M., & Swann, A. C. (2002). Measures of self-efficacy and optimism in older adults with generalized anxiety. *Assessment, 9,* 70-81.

Steiger, J. H., & Lind, J. C. (1980). Statistically-based tests for the number of common factors. Paper presented at the annual Spring Meeting of the Psychometric Society in Iowa City. May 30, 1980.

Taylor, S. E., & Brown, J. D. (1988). Illusion and well-being: A social psychological perspective on mental health. *Psychological Bulletin, 103,* 193-210.

Tiger, L. (1979). *Optimism: The biology of hope.* New York: Simon & Schuster.

Voltaire, F. (1759). *Candide, ou L'Optimisme*. Geneve: Cramer.

Waterman, A.S. (1993). Two conceptions of happiness: Contrasts of personal expressiveness (eudaimonia) and hedonic enjoyment. *Journal of Personality and Social Psychology, 64,* 678-691.

Weems, C. F., & Silverman, W. K. (2004). An integrative model of control: Implications for understanding emotion regulation and dysregulation in childhood anxiety. *Journal of Affective Disorders, 91,* 113-124.

Wehmeyer, M. L., Little, T. D., & Sergeant, J. (2009). *Self-Determination*. In S. J. Lopez & C. R. Snyder (Eds.), *Handbook of positive psychology* (2nd ed; pp. 357-366). New York: Oxford University Press.

Williams, S. L., & Watson, N. (1985). Perceived danger and perceived self-efficacy as cognitive mediators of acrophobic behavior. *Behavior Therapy, 16,* 136-146.

Williams, S. L., & Zane, G. (1989). Guided mastery and stimulus exposure treatment for severe performance anxiety in agoraphobics. *Behavior Research Therapy, 27,* 238-245.

Williams, S. L., Turner, S. M., & Peer, D. F. (1985). Guided mastery and performance desensitization treatments for severe acrophobia. *Journal of Consulting and Clinical Psychology, 53,* 237-247.

Williams, S. L., (1992). Perceived self-effiacy and phobic disability. In R. Schwarzer (Ed.), *Self-Efficacy: Thought control of action* (pp. 149-176). Washington, D. C.: Hemisphere

Woodbury, C. A. (1999). The relationship of anxiety, locus of control and hope to career indecision of African American students. *Dissertation Abstracts International, 59*, 4072.

Yasuda, T., Lawrenz, C., Whitlock, R. V., Lubin, B., & Lei, P. (2004). Assessment of intraindividual variability in positive and negative affect using latent state-trait model analyses. *Educational and Psychological Measurement, 64*, 514-530.

Yue, X., 1996. Test anxiety and self-efficacy: levels and relationship among secondary school students in Hong Kong *Psychologia, 39*, 193–202.

Zimbardo, P. G., & Boyd, J. N. (1999). Putting time in perspective: A valid, reliable individual differences metric. *Journal of Personality and Social Psychology, 77*, 1271-1288.

Footnote

[1] Seligman and colleagues' theory of attributional style is commonly referred to as optimism, but this theory focuses on causal explanations used to explain bad outcomes. Although attributional style may be an important predictor of mental health or mental illness, the theory is not truly a measure of positive expectancies, and is therefore not the focus of the present study

[2] Longitudinal data collected using panel designs similar to the methods used in the present study are often analyzed using autoregressive cross-lagged panel models as described by Cole and Maxwell (2003) and others. Preliminary analyses were conducted using these methods, but I decided that the highly stable nature of the outcomes examined in the present study made intercept only growth curve models a better method of analysis. Results from an example model conducted using autoregressive cross-lagged methods can be seen in Appendix E.

Appendix A: Descriptive Statistics

Wave 1 Descriptive Statistics

	Mean	Median	Std. Dev.	Skewness	Min	Max
Agency	5.90	6.17	1.18	-0.49	3.00	8.00
Optimism	3.45	3.67	0.97	-0.34	1.00	5.00
Pessimism	3.23	3.33	1.03	-0.17	1.00	5.00
Positive Affect	4.54	4.75	1.20	-0.61	1.17	7.00
Negative Affect	3.41	3.33	1.42	0.21	1.00	6.67
Life Satisfaction	4.58	5.00	1.36	-0.62	1.00	6.75
Autonomy	4.24	4.29	1.02	-0.13	1.43	6.86
Environmental Mastery	4.48	4.57	1.05	-0.06	1.57	7.00
Personal Growth	5.18	5.29	0.82	-0.25	2.71	7.00
Purpose in Life	5.15	5.14	1.01	-0.28	2.71	7.00
Self Acceptance	4.56	4.86	1.41	-0.49	1.00	7.00
Social Acceptance	3.97	3.86	1.18	0.42	1.71	6.86
Social Actualization	4.77	4.71	1.10	-0.13	2.00	7.00
Social Coherence	4.99	5.17	0.91	-0.28	2.67	7.00
Social Contribution	4.91	4.83	1.05	-0.35	1.67	6.83
Social Integration	4.54	4.57	1.28	-0.18	1.14	7.00
Positive Relations	5.16	5.21	1.02	-0.20	2.57	7.00
Psychological Distress	1.90	1.81	0.63	0.87	1.00	3.95
Depression	1.71	1.43	0.71	1.34	1.00	4.00
Anxiety (DASS)	1.75	1.57	0.68	1.01	1.00	4.00
General Distress	2.22	2.14	0.73	0.36	1.00	4.00
Anxiety (STAI)	2.26	2.25	0.63	0.00	1.05	3.65
Cognitive Reappraisal	4.85	5.00	0.98	-0.53	2.00	7.00
Perceived Stress	1.96	1.90	0.74	0.18	0.40	3.50

Wave 2 Descriptive Statistics

	Mean	Median	Std. Dev.	Skewness	Min	Max
Agency	5.82	6.00	1.24	-0.33	2.33	7.83
Optimism	3.43	3.50	0.98	-0.23	1.00	5.00
Pessimism	3.24	3.33	1.11	-0.07	1.00	5.00
Positive Affect	4.65	4.83	1.23	-0.63	1.17	7.00
Negative Affect	3.19	3.17	1.42	0.35	1.00	6.33
Life Satisfaction	4.69	4.80	1.27	-0.55	1.00	7.00
Autonomy	4.31	4.29	0.99	-0.06	2.14	6.86
Environmental Mastery	4.56	4.43	0.96	-0.05	1.86	7.00
Personal Growth	5.12	5.14	0.82	-0.08	3.29	7.00
Purpose in Life	5.14	5.14	1.04	-0.21	2.29	7.00
Self Acceptance	4.74	4.86	1.32	-0.69	1.00	7.00
Social Acceptance	4.01	3.93	1.21	0.41	1.86	6.86
Social Actualization	4.81	4.71	1.08	-0.18	1.86	7.00
Social Coherence	5.01	5.17	0.89	-0.12	2.83	7.00
Social Contribution	4.89	4.83	1.07	-0.36	2.00	6.83
Social Integration	4.53	4.71	1.29	-0.33	1.00	7.00
Positive Relations	5.20	5.29	1.01	-0.32	2.71	7.00
Psychological Distress	1.78	1.67	0.58	0.97	1.00	3.43
Depression	1.67	1.43	0.68	1.18	1.00	3.57
Anxiety (DASS)	1.57	1.43	0.61	1.39	1.00	3.71
General Distress	2.10	2.00	0.69	0.44	1.00	3.71
Anxiety (STAI)	2.18	2.15	0.61	0.27	1.00	3.70
Cognitive Reappraisal	4.92	5.00	0.96	-0.82	2.00	7.00
Perceived Stress	1.81	1.80	0.73	0.19	0.30	3.50

Wave 3 Descriptive Statistics

	Mean	Median	Std. Dev.	Skewness	Min	Max
Agency	5.91	6.33	1.33	-0.63	1.83	8.00
Optimism	3.45	3.67	1.00	-0.41	1.00	5.00
Pessimism	3.29	3.33	1.17	-0.19	1.00	5.00
Positive Affect	4.70	4.83	1.34	-0.55	1.17	7.00
Negative Affect	3.06	2.75	1.44	0.63	1.00	6.33
Life Satisfaction	4.80	5.00	1.41	-0.59	1.00	7.00
Autonomy	4.34	4.43	1.12	-0.09	1.29	7.00
Environmental Mastery	4.73	4.86	0.97	-0.23	2.29	6.86
Personal Growth	5.19	5.21	0.84	-0.31	2.86	7.00
Purpose in Life	5.17	5.14	1.05	-0.49	2.29	7.00
Self Acceptance	4.79	5.14	1.41	-0.78	1.00	7.00
Social Acceptance	4.03	4.00	1.31	0.33	1.29	6.86
Social Actualization	4.93	4.86	1.15	-0.32	1.57	7.00
Social Coherence	5.06	5.17	1.07	-0.36	2.67	7.00
Social Contribution	4.97	5.08	1.13	-0.56	1.67	7.00
Social Integration	4.59	4.64	1.37	-0.41	1.00	7.00
Positive Relations	5.39	5.43	0.96	-0.65	2.57	7.00
Psychological Distress	1.70	1.52	0.64	1.22	1.00	3.81
Depression	1.62	1.29	0.74	1.75	1.00	4.00
Anxiety (DASS)	1.49	1.29	0.59	1.49	1.00	3.71
General Distress	2.00	1.86	0.78	0.59	1.00	3.86
Anxiety (STAI)	2.09	1.98	0.69	0.42	1.00	3.90
Cognitive Reappraisal	4.90	5.00	1.03	-0.92	1.00	7.00
Perceived Stress	1.74	1.70	0.78	0.37	0.20	3.80

Wave 4 Descriptive Statistics

	Mean	Median	Std. Dev.	Skewness	Min	Max
Agency	6.11	6.33	1.30	-0.57	2.67	8.00
Optimism	3.56	3.67	1.10	-0.65	1.00	5.00
Pessimism	3.33	3.33	1.22	-0.26	1.00	5.00
Positive Affect	4.79	5.00	1.34	-0.84	1.00	7.00
Negative Affect	2.90	2.50	1.49	0.79	1.00	6.67
Life Satisfaction	4.94	5.40	1.44	-0.86	1.00	7.00
Autonomy	4.46	4.43	1.12	-0.22	1.29	7.00
Environmental Mastery	4.82	5.14	1.03	-0.41	1.43	7.00
Personal Growth	5.15	5.14	0.91	-0.18	2.86	7.00
Purpose in Life	5.33	5.29	1.09	-0.35	2.57	7.00
Self Acceptance	4.93	5.14	1.48	-0.91	1.00	7.00
Social Acceptance	4.02	4.00	1.32	0.28	1.29	6.86
Social Actualization	4.96	4.86	1.19	-0.22	1.86	7.00
Social Coherence	5.13	5.17	1.07	-0.46	1.83	7.00
Social Contribution	5.04	5.17	1.12	-0.50	1.83	7.00
Social Integration	4.65	4.71	1.37	-0.34	1.14	7.00
Positive Relations	5.36	5.43	0.97	-0.61	2.14	7.00
Psychological Distress	1.63	1.48	0.56	1.44	1.00	3.62
Depression	1.56	1.29	0.69	1.66	1.00	3.57
Anxiety (DASS)	1.41	1.29	0.52	2.29	1.00	3.71
General Distress	1.94	1.86	0.71	0.59	1.00	3.86
Anxiety (STAI)	2.06	1.90	0.68	0.54	1.00	3.65
Cognitive Reappraisal	4.96	5.00	1.14	-0.86	1.00	7.00
Perceived Stress	1.70	1.60	0.76	0.32	.20	3.60

Appendix B: Internal consistency of measures across four waves of data collection

Construct	Wave 1	Wave 2	Wave 3	Wave 4
Agency	.809	.840	.859	.866
Optimism	.705	.791	.774	.878
Pessimism	.821	.861	.891	.923
Subjective Happiness	.892	.890	.910	.928
Positive Affect	.875	.905	.918	.916
Negative Affect	.873	.895	.907	.913
Autonomy	.742	.747	.825	.803
Environmental Mastery	.766	.775	.791	.813
Personal Growth	.660	.655	.718	.715
Positive Relations	.726	.785	.770	.763
Purpose in Life	.774	.825	.822	.838
Self Acceptance	.904	.896	.917	.924
Social Acceptance	.859	.908	.918	.917
Social Actualization	.854	.876	.899	.917
Social Coherence	.685	.728	.826	.830
Social Contribution	.778	.829	.853	.866
Social Integration	.879	.920	.927	.941
Cognitive Reappraisal	.811	.864	.889	.903
Perceived Stress	.881	.890	.907	.901
Mental Distress	.936	.932	.950	.944
DASS_Depression	.900	.902	.928	.918
DASS_Anxiety	.835	.833	.837	.827
DASS_Distress	.867	.861	.904	.892
State Anxiety (STAI)	.948	.944	.961	.958
Trait Anxiety (STAI_prescreen)	.923	--	--	--

Appendix C: Complete Correlation Matrix

Table Key

	Variables 1 – 22 (Wave 1)	Variables 23 – 44 (Wave 1)	Variables 45 – 66 (Wave 1)	Variables 67 – 88 (Wave 1)
Variables 1 - 29	Page 69	Page 72	Page 75	Page 78
Variables 30 – 58	Page 70	Page 73	Page 76	Page 79
Variables 59 – 88	Page 71	Page 74	Page 77	Page 80

Correlation Matrix Page 1

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1athope	1	0.819	0.614	0.347	0.635	0.554	0.512	0.685	0.696	0.558	0.347	0.645	0.460	0.579	0.575	-0.508	-0.584	0.276	0.579	-0.618	-0.584	0.005
2ashope	0.819	1	0.706	0.358	0.655	0.474	0.466	0.653	0.740	0.608	0.331	0.679	0.369	0.454	0.557	-0.438	-0.546	0.372	0.615	-0.592	-0.538	-0.037
3alifesat	0.614	0.706	1	0.311	0.760	0.364	0.571	0.644	0.862	0.695	0.446	0.607	0.410	0.385	0.620	-0.622	-0.691	0.422	0.700	-0.726	-0.655	-0.137
4Aautonomy	0.347	0.358	0.311	1	0.400	0.287	0.312	0.339	0.320	0.325	0.315	0.295	0.195	0.382	0.333	-0.277	-0.401	0.204	0.304	-0.282	-0.340	-0.191
5aenvimast	0.635	0.655	0.760	0.400	1	0.351	0.493	0.610	0.767	0.631	0.438	0.563	0.365	0.426	0.568	-0.552	-0.698	0.361	0.671	-0.667	-0.736	-0.229
6apersgrow	0.554	0.474	0.364	0.287	0.351	1	0.541	0.476	0.478	0.502	0.383	0.559	0.414	0.462	0.475	-0.308	-0.371	0.238	0.446	-0.453	-0.365	0.056
7aposrelat	0.512	0.466	0.571	0.312	0.493	0.541	1	0.521	0.687	0.758	0.568	0.534	0.495	0.466	0.565	-0.569	-0.570	0.388	0.684	-0.713	-0.533	-0.034
8apurplife	0.685	0.653	0.644	0.339	0.610	0.476	0.521	1	0.732	0.646	0.429	0.675	0.541	0.547	0.628	-0.534	-0.581	0.327	0.588	-0.678	-0.574	-0.086
9aselfacc	0.696	0.740	0.862	0.320	0.767	0.478	0.687	0.732	1	0.793	0.481	0.657	0.486	0.419	0.741	-0.644	-0.690	0.450	0.783	-0.812	-0.687	-0.105
10asocinteg	0.558	0.608	0.695	0.325	0.631	0.502	0.758	0.646	0.793	1	0.606	0.703	0.599	0.533	0.616	-0.593	-0.669	0.425	0.748	-0.722	-0.633	-0.158
11asocaccep	0.347	0.331	0.446	0.315	0.438	0.383	0.568	0.429	0.481	0.606	1	0.427	0.644	0.506	0.479	-0.503	-0.508	0.354	0.471	-0.618	-0.522	-0.246
12asoccontr	0.645	0.679	0.607	0.295	0.563	0.559	0.534	0.675	0.657	0.703	0.427	1	0.519	0.591	0.563	-0.492	-0.557	0.316	0.581	-0.614	-0.587	-0.038
13asocactua	0.460	0.369	0.410	0.195	0.365	0.414	0.495	0.541	0.486	0.599	0.644	0.519	1	0.584	0.411	-0.421	-0.442	0.318	0.432	-0.527	-0.375	-0.033
14asoccoher	0.579	0.454	0.385	0.382	0.426	0.462	0.466	0.547	0.419	0.533	0.506	0.591	0.584	1	0.384	-0.444	-0.519	0.265	0.367	-0.525	-0.483	-0.105
15aoptimism	0.575	0.557	0.620	0.333	0.568	0.475	0.565	0.628	0.741	0.616	0.479	0.563	0.411	0.384	1	-0.580	-0.622	0.365	0.669	-0.735	-0.591	-0.151
16aPsycDist	-0.508	-0.438	-0.622	-0.277	-0.552	-0.308	-0.569	-0.534	-0.644	-0.593	-0.503	-0.492	-0.421	-0.444	-0.580	1	0.820	-0.360	-0.630	0.713	0.761	0.183
17aSTAIstate	-0.584	-0.546	-0.691	-0.401	-0.698	-0.371	-0.570	-0.581	-0.690	-0.669	-0.508	-0.557	-0.442	-0.519	-0.622	0.820	1	-0.406	-0.687	0.759	0.837	0.243
18aCogReap	0.276	0.372	0.422	0.204	0.361	0.238	0.388	0.327	0.450	0.425	0.354	0.316	0.318	0.265	0.365	-0.360	-0.406	1	0.336	-0.362	-0.305	0.029
19aPosAff	0.579	0.615	0.700	0.304	0.671	0.446	0.684	0.588	0.783	0.748	0.471	0.581	0.432	0.367	0.669	-0.630	-0.687	0.336	1	-0.753	-0.683	-0.183
20aNegAff	-0.618	-0.592	-0.726	-0.282	-0.667	-0.453	-0.713	-0.678	-0.812	-0.722	-0.618	-0.614	-0.527	-0.525	-0.735	0.713	0.759	-0.362	-0.753	1	0.724	0.179
21aPercStress	-0.584	-0.538	-0.655	-0.340	-0.736	-0.365	-0.533	-0.574	-0.687	-0.633	-0.522	-0.587	-0.375	-0.483	-0.591	0.761	0.837	-0.305	-0.683	0.724	1	0.366
22aLifeStress	0.005	-0.037	-0.137	-0.191	-0.229	0.056	-0.034	-0.086	-0.105	-0.158	-0.246	-0.038	-0.033	-0.105	-0.151	0.183	0.243	0.029	-0.183	0.179	0.366	1
23bthope	0.805	0.705	0.569	0.306	0.544	0.485	0.489	0.644	0.649	0.551	0.353	0.681	0.441	0.554	0.553	-0.492	-0.557	0.307	0.483	-0.603	-0.594	-0.008
24bshope	0.669	0.734	0.639	0.256	0.510	0.359	0.417	0.628	0.632	0.539	0.334	0.670	0.470	0.485	0.478	-0.442	-0.517	0.355	0.450	-0.539	-0.496	-0.066
25blifesat	0.555	0.663	0.840	0.320	0.611	0.262	0.514	0.567	0.786	0.627	0.383	0.537	0.364	0.345	0.582	-0.518	-0.601	0.356	0.613	-0.637	-0.564	-0.063
26bautonomy	0.337	0.273	0.211	0.833	0.290	0.201	0.283	0.303	0.239	0.302	0.274	0.206	0.177	0.337	0.233	-0.256	-0.340	0.190	0.226	-0.262	-0.267	-0.132
27benvimast	0.649	0.651	0.686	0.418	0.800	0.307	0.495	0.510	0.740	0.628	0.363	0.496	0.356	0.385	0.541	-0.544	-0.675	0.364	0.602	-0.631	-0.670	-0.127
28bpersgrow	0.488	0.513	0.335	0.323	0.306	0.743	0.447	0.429	0.422	0.457	0.378	0.524	0.330	0.442	0.447	-0.273	-0.362	0.216	0.373	-0.401	-0.374	-0.067
29bposrelat	0.439	0.445	0.525	0.371	0.470	0.454	0.847	0.443	0.614	0.727	0.505	0.527	0.364	0.405	0.468	-0.472	-0.522	0.291	0.591	-0.653	-0.496	-0.066

Correlation Matrix Page 2

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
30bpurplife	0.692	0.660	0.626	0.383	0.558	0.486	0.571	0.799	0.693	0.645	0.471	0.604	0.531	0.499	0.658	-0.550	-0.604	0.374	0.562	-0.663	-0.589	-0.097
31bselfacc	0.635	0.677	0.815	0.354	0.663	0.445	0.685	0.644	0.898	0.777	0.461	0.618	0.434	0.367	0.689	-0.592	-0.666	0.369	0.745	-0.750	-0.654	-0.064
32bsocinteg	0.481	0.515	0.628	0.267	0.558	0.431	0.681	0.569	0.723	0.896	0.569	0.622	0.506	0.433	0.510	-0.529	-0.615	0.360	0.687	-0.672	-0.599	-0.083
33bsocaccep	0.222	0.235	0.388	0.345	0.379	0.339	0.519	0.336	0.387	0.568	0.837	0.379	0.555	0.452	0.406	-0.431	-0.495	0.250	0.414	-0.537	-0.491	-0.279
34bsoccontr	0.522	0.571	0.512	0.186	0.476	0.535	0.501	0.584	0.591	0.686	0.472	0.807	0.465	0.482	0.547	-0.438	-0.510	0.265	0.534	-0.580	-0.554	-0.112
35bsocactua	0.391	0.363	0.375	0.245	0.323	0.420	0.449	0.450	0.438	0.572	0.633	0.476	0.818	0.493	0.409	-0.322	-0.429	0.320	0.344	-0.448	-0.375	-0.083
36bsoccoher	0.490	0.375	0.284	0.353	0.290	0.478	0.421	0.435	0.361	0.473	0.392	0.533	0.555	0.684	0.332	-0.315	-0.414	0.289	0.292	-0.367	-0.366	-0.072
37boptimism	0.575	0.502	0.577	0.335	0.486	0.421	0.569	0.546	0.658	0.569	0.480	0.545	0.453	0.443	0.781	-0.515	-0.554	0.325	0.601	-0.734	-0.516	-0.105
38bPsycDist	-0.409	-0.334	-0.471	-0.321	-0.416	-0.275	-0.479	-0.413	-0.514	-0.554	-0.418	-0.396	-0.385	-0.362	-0.541	0.721	0.664	-0.244	-0.545	0.617	0.595	0.173
39bSTAIstate	-0.516	-0.415	-0.591	-0.411	-0.572	-0.259	-0.494	-0.451	-0.580	-0.537	-0.386	-0.414	-0.331	-0.373	-0.557	0.660	0.799	-0.306	-0.591	0.639	0.677	0.199
40bCogReap	0.368	0.387	0.393	0.063	0.338	0.304	0.399	0.353	0.458	0.419	0.343	0.392	0.295	0.339	0.369	-0.334	-0.349	0.616	0.376	-0.460	-0.329	-0.003
41bPosAff	0.583	0.561	0.694	0.293	0.626	0.414	0.646	0.602	0.777	0.716	0.457	0.586	0.471	0.400	0.670	-0.638	-0.676	0.365	0.815	-0.757	-0.633	-0.084
42bNegAff	-0.569	-0.543	-0.662	-0.219	-0.565	-0.465	-0.705	-0.619	-0.746	-0.688	-0.545	-0.596	-0.494	-0.464	-0.659	0.641	0.666	-0.343	-0.704	0.852	0.638	0.100
43bPercStress	-0.376	-0.331	-0.461	-0.325	-0.406	-0.204	-0.415	-0.445	-0.493	-0.481	-0.390	-0.435	-0.320	-0.329	-0.512	0.581	0.605	-0.143	-0.481	0.583	0.645	0.219
44bLifeStress	-0.018	-0.055	-0.181	-0.102	-0.116	-0.101	-0.141	-0.024	-0.173	-0.201	-0.153	-0.050	0.059	-0.003	-0.177	0.172	0.254	-0.047	-0.240	0.177	0.284	0.373
45cthope	0.770	0.705	0.618	0.301	0.587	0.376	0.471	0.650	0.664	0.568	0.401	0.607	0.353	0.523	0.515	-0.514	-0.591	0.157	0.578	-0.615	-0.609	-0.080
46cshope	0.684	0.777	0.658	0.182	0.590	0.281	0.424	0.628	0.684	0.593	0.351	0.560	0.327	0.372	0.501	-0.422	-0.532	0.149	0.593	-0.575	-0.516	-0.074
47clifesat	0.554	0.665	0.839	0.319	0.666	0.212	0.474	0.560	0.762	0.640	0.353	0.528	0.262	0.261	0.602	-0.556	-0.658	0.317	0.645	-0.641	-0.626	-0.145
48cautonomy	0.314	0.270	0.228	0.801	0.269	0.342	0.384	0.335	0.280	0.333	0.275	0.273	0.198	0.352	0.266	-0.279	-0.373	0.226	0.266	-0.307	-0.294	-0.121
49cenvimast	0.601	0.591	0.681	0.399	0.712	0.270	0.445	0.611	0.681	0.616	0.436	0.506	0.296	0.408	0.466	-0.566	-0.675	0.251	0.601	-0.638	-0.667	-0.312
50cpersgrow	0.476	0.405	0.372	0.341	0.261	0.617	0.514	0.401	0.453	0.495	0.377	0.536	0.334	0.479	0.463	-0.392	-0.425	0.092	0.499	-0.488	-0.434	-0.085
51cposrelat	0.492	0.479	0.531	0.307	0.469	0.426	0.777	0.468	0.656	0.689	0.520	0.561	0.353	0.402	0.531	-0.569	-0.543	0.328	0.680	-0.680	-0.557	-0.109
52cpurplife	0.638	0.582	0.601	0.247	0.552	0.387	0.515	0.749	0.665	0.577	0.425	0.586	0.450	0.485	0.600	-0.547	-0.580	0.281	0.586	-0.635	-0.599	-0.128
53cselfacc	0.589	0.644	0.786	0.362	0.655	0.337	0.607	0.681	0.833	0.736	0.495	0.567	0.389	0.395	0.623	-0.589	-0.668	0.284	0.754	-0.750	-0.651	-0.166
54csocinteg	0.471	0.495	0.579	0.284	0.521	0.349	0.614	0.562	0.648	0.825	0.571	0.650	0.503	0.497	0.551	-0.555	-0.623	0.292	0.682	-0.668	-0.645	-0.159
55csocaccep	0.266	0.260	0.344	0.361	0.347	0.315	0.508	0.332	0.386	0.521	0.802	0.390	0.569	0.451	0.425	-0.444	-0.464	0.232	0.457	-0.528	-0.449	-0.190
56csoccontr	0.494	0.508	0.466	0.270	0.464	0.415	0.488	0.608	0.538	0.672	0.502	0.732	0.482	0.586	0.588	-0.502	-0.572	0.217	0.559	-0.602	-0.581	-0.151
57csocactua	0.422	0.308	0.343	0.247	0.298	0.447	0.479	0.477	0.391	0.536	0.630	0.455	0.824	0.585	0.388	-0.358	-0.415	0.276	0.385	-0.475	-0.342	-0.088
58csoccoher	0.459	0.290	0.220	0.405	0.271	0.468	0.424	0.365	0.290	0.453	0.451	0.446	0.564	0.722	0.325	-0.276	-0.366	0.179	0.308	-0.320	-0.338	-0.160

Correlation Matrix Page 3

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
59coptimism	0.509	0.580	0.651	0.309	0.538	0.363	0.536	0.594	0.717	0.655	0.565	0.539	0.419	0.438	0.695	-0.549	-0.612	0.264	0.605	-0.728	-0.557	-0.151
60cPsycDist	-0.494	-0.475	-0.571	-0.248	-0.490	-0.197	-0.464	-0.501	-0.566	-0.526	-0.360	-0.382	-0.261	-0.365	-0.452	0.713	0.696	-0.360	-0.548	0.617	0.625	0.181
61cSTAIstate	-0.500	-0.505	-0.621	-0.366	-0.594	-0.184	-0.450	-0.527	-0.615	-0.541	-0.448	-0.418	-0.277	-0.343	-0.524	0.650	0.762	-0.348	-0.606	0.637	0.688	0.194
62cCogReap	0.376	0.300	0.341	0.055	0.275	0.208	0.343	0.321	0.359	0.310	0.332	0.289	0.263	0.343	0.287	-0.364	-0.361	0.509	0.310	-0.430	-0.324	0.092
63cPosAff	0.627	0.644	0.739	0.204	0.627	0.326	0.549	0.608	0.763	0.669	0.410	0.538	0.357	0.364	0.562	-0.627	-0.700	0.317	0.791	-0.725	-0.651	-0.134
64cNegAff	-0.622	-0.638	-0.689	-0.279	-0.646	-0.382	-0.625	-0.646	-0.757	-0.693	-0.537	-0.600	-0.438	-0.465	-0.615	0.698	0.752	-0.361	-0.728	0.844	0.715	0.214
65cPercStress	-0.462	-0.494	-0.583	-0.295	-0.480	-0.331	-0.519	-0.528	-0.609	-0.604	-0.505	-0.512	-0.340	-0.479	-0.535	0.678	0.657	-0.240	-0.612	0.653	0.651	0.303
66cLifeStress	-0.149	-0.209	-0.282	-0.167	-0.258	-0.208	-0.316	-0.237	-0.294	-0.390	-0.234	-0.202	-0.123	-0.218	-0.238	0.242	0.320	-0.086	-0.371	0.314	0.301	0.363
67dthope	0.787	0.661	0.577	0.373	0.582	0.502	0.527	0.600	0.604	0.555	0.368	0.590	0.456	0.562	0.454	-0.431	-0.555	0.218	0.474	-0.575	-0.533	-0.034
68dshope	0.721	0.679	0.635	0.279	0.576	0.446	0.481	0.528	0.615	0.575	0.330	0.575	0.449	0.469	0.487	-0.430	-0.557	0.245	0.462	-0.556	-0.513	-0.043
69dlifesat	0.554	0.627	0.789	0.314	0.617	0.287	0.470	0.500	0.687	0.582	0.338	0.410	0.329	0.253	0.488	-0.410	-0.559	0.335	0.619	-0.559	-0.470	-0.090
70dautonomy	0.334	0.257	0.248	0.736	0.294	0.365	0.368	0.322	0.297	0.306	0.283	0.221	0.197	0.231	0.262	-0.189	-0.325	0.175	0.282	-0.264	-0.307	-0.136
71denvimast	0.673	0.640	0.693	0.355	0.739	0.378	0.496	0.603	0.739	0.690	0.414	0.532	0.473	0.409	0.547	-0.535	-0.671	0.387	0.628	-0.631	-0.583	-0.091
72dpersgrow	0.497	0.489	0.418	0.374	0.384	0.719	0.472	0.376	0.474	0.488	0.337	0.513	0.423	0.539	0.499	-0.354	-0.417	0.176	0.476	-0.469	-0.363	-0.059
73dposrelat	0.577	0.592	0.607	0.347	0.540	0.541	0.763	0.500	0.672	0.724	0.486	0.639	0.451	0.478	0.545	-0.506	-0.571	0.424	0.645	-0.686	-0.537	-0.085
74dpurplife	0.640	0.627	0.637	0.363	0.527	0.494	0.480	0.730	0.642	0.614	0.392	0.612	0.574	0.542	0.575	-0.441	-0.537	0.279	0.524	-0.608	-0.413	-0.092
75dselfacc	0.643	0.684	0.799	0.385	0.673	0.485	0.617	0.622	0.840	0.698	0.429	0.567	0.423	0.374	0.579	-0.520	-0.645	0.319	0.719	-0.701	-0.595	-0.091
76dsocinteg	0.418	0.454	0.575	0.192	0.462	0.405	0.618	0.480	0.621	0.830	0.539	0.622	0.523	0.429	0.493	-0.459	-0.573	0.305	0.640	-0.613	-0.554	-0.140
77dsocaccep	0.275	0.274	0.385	0.317	0.383	0.369	0.503	0.350	0.391	0.560	0.836	0.404	0.628	0.517	0.419	-0.445	-0.490	0.239	0.469	-0.553	-0.482	-0.250
78dsoccontr	0.611	0.596	0.526	0.214	0.474	0.564	0.531	0.576	0.601	0.712	0.459	0.749	0.553	0.509	0.596	-0.476	-0.557	0.253	0.576	-0.606	-0.509	-0.081
79dsocactua	0.410	0.317	0.374	0.227	0.289	0.446	0.446	0.403	0.417	0.522	0.552	0.412	0.801	0.500	0.366	-0.331	-0.412	0.187	0.372	-0.439	-0.322	-0.041
80dsoccoher	0.450	0.257	0.296	0.381	0.325	0.551	0.515	0.446	0.355	0.510	0.468	0.454	0.607	0.728	0.281	-0.325	-0.395	0.141	0.297	-0.395	-0.359	-0.076
81doptimism	0.401	0.429	0.505	0.307	0.439	0.371	0.460	0.448	0.597	0.561	0.395	0.441	0.359	0.268	0.609	-0.317	-0.456	0.203	0.519	-0.579	-0.417	-0.158
82dPsycDist	-0.543	-0.428	-0.544	-0.352	-0.492	-0.317	-0.540	-0.466	-0.568	-0.547	-0.407	-0.439	-0.451	-0.414	-0.465	0.737	0.708	-0.325	-0.515	0.611	0.608	0.118
83dSTAIstate	-0.475	-0.408	-0.593	-0.433	-0.566	-0.310	-0.513	-0.445	-0.574	-0.556	-0.477	-0.480	-0.472	-0.427	-0.535	0.675	0.762	-0.234	-0.589	0.625	0.661	0.197
84dCogReap	0.237	0.244	0.357	0.134	0.303	0.185	0.367	0.249	0.388	0.335	0.363	0.265	0.295	0.286	0.295	-0.286	-0.322	0.554	0.313	-0.365	-0.312	0.090
85dPosAff	0.591	0.559	0.714	0.312	0.640	0.399	0.634	0.546	0.707	0.658	0.420	0.525	0.446	0.338	0.553	-0.527	-0.621	0.279	0.743	-0.665	-0.568	-0.075
86dNegAff	-0.555	-0.543	-0.631	-0.316	-0.572	-0.401	-0.629	-0.478	-0.658	-0.612	-0.465	-0.486	-0.432	-0.389	-0.575	0.527	0.638	-0.334	-0.666	0.752	0.518	0.117
87dPercStress	-0.461	-0.411	-0.527	-0.337	-0.523	-0.375	-0.550	-0.407	-0.511	-0.555	-0.449	-0.421	-0.450	-0.406	-0.391	0.511	0.657	-0.219	-0.560	0.583	0.561	0.204
88dLifeStress	-0.064	-0.082	-0.112	-0.054	-0.052	-0.064	-0.143	-0.054	-0.020	-0.199	-0.079	-0.163	-0.125	-0.166	0.035	0.153	0.189	0.047	-0.141	0.192	0.147	0.311

Correlation Matrix Page 4

	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
1athope	0.805	0.669	0.555	0.337	0.649	0.488	0.439	0.692	0.635	0.481	0.222	0.522	0.391	0.490	0.575	-0.409	-0.516	0.368	0.583	-0.569	-0.376	-0.018
2ashope	0.705	0.734	0.663	0.273	0.651	0.513	0.445	0.660	0.677	0.515	0.235	0.571	0.363	0.375	0.502	-0.334	-0.415	0.387	0.561	-0.543	-0.331	-0.055
3alifesat	0.569	0.639	0.840	0.211	0.686	0.335	0.525	0.626	0.815	0.628	0.388	0.512	0.375	0.284	0.577	-0.471	-0.591	0.393	0.694	-0.662	-0.461	-0.181
4Aautonomy	0.306	0.256	0.320	0.833	0.418	0.323	0.371	0.383	0.354	0.267	0.345	0.186	0.245	0.353	0.335	-0.321	-0.411	0.063	0.293	-0.219	-0.325	-0.102
5aenvimast	0.544	0.510	0.611	0.290	0.800	0.306	0.470	0.558	0.663	0.558	0.379	0.476	0.323	0.290	0.486	-0.416	-0.572	0.338	0.626	-0.565	-0.406	-0.116
6apersgrow	0.485	0.359	0.262	0.201	0.307	0.743	0.454	0.486	0.445	0.431	0.339	0.535	0.420	0.478	0.421	-0.275	-0.259	0.304	0.414	-0.465	-0.204	-0.101
7aposrelat	0.489	0.417	0.514	0.283	0.495	0.447	0.847	0.571	0.685	0.681	0.519	0.501	0.449	0.421	0.569	-0.479	-0.494	0.399	0.646	-0.705	-0.415	-0.141
8apurplife	0.644	0.628	0.567	0.303	0.510	0.429	0.443	0.799	0.644	0.569	0.336	0.584	0.450	0.435	0.546	-0.413	-0.451	0.353	0.602	-0.619	-0.445	-0.024
9aselfacc	0.649	0.632	0.786	0.239	0.740	0.422	0.614	0.693	0.898	0.723	0.387	0.591	0.438	0.361	0.658	-0.514	-0.580	0.458	0.777	-0.746	-0.493	-0.173
10asocinteg	0.551	0.539	0.627	0.302	0.628	0.457	0.727	0.645	0.777	0.896	0.568	0.686	0.572	0.473	0.569	-0.554	-0.537	0.419	0.716	-0.688	-0.481	-0.201
11asocaccep	0.353	0.334	0.383	0.274	0.363	0.378	0.505	0.471	0.461	0.569	0.837	0.472	0.633	0.392	0.480	-0.418	-0.386	0.343	0.457	-0.545	-0.390	-0.153
12asoccontr	0.681	0.670	0.537	0.206	0.496	0.524	0.527	0.604	0.618	0.622	0.379	0.807	0.476	0.533	0.545	-0.396	-0.414	0.392	0.586	-0.596	-0.435	-0.050
13asocactua	0.441	0.470	0.364	0.177	0.356	0.330	0.364	0.531	0.434	0.506	0.555	0.465	0.818	0.555	0.453	-0.385	-0.331	0.295	0.471	-0.494	-0.320	0.059
14asoccoher	0.554	0.485	0.345	0.337	0.385	0.442	0.405	0.499	0.367	0.433	0.452	0.482	0.493	0.684	0.443	-0.362	-0.373	0.339	0.400	-0.464	-0.329	-0.003
15aoptimism	0.553	0.478	0.582	0.233	0.541	0.447	0.468	0.658	0.689	0.510	0.406	0.547	0.409	0.332	0.781	-0.541	-0.557	0.369	0.670	-0.659	-0.512	-0.177
16aPsycDist	-0.492	-0.442	-0.518	-0.256	-0.544	-0.273	-0.472	-0.550	-0.592	-0.529	-0.431	-0.438	-0.322	-0.315	-0.515	0.721	0.660	-0.334	-0.638	0.641	0.581	0.172
17aSTAIstate	-0.557	-0.517	-0.601	-0.340	-0.675	-0.362	-0.522	-0.604	-0.666	-0.615	-0.495	-0.510	-0.429	-0.414	-0.554	0.664	0.799	-0.349	-0.676	0.666	0.605	0.254
18aCogReap	0.307	0.355	0.356	0.190	0.364	0.216	0.291	0.374	0.369	0.360	0.250	0.265	0.320	0.289	0.325	-0.244	-0.306	0.616	0.365	-0.343	-0.143	-0.047
19aPosAff	0.483	0.450	0.613	0.226	0.602	0.373	0.591	0.562	0.745	0.687	0.414	0.534	0.344	0.292	0.601	-0.545	-0.591	0.376	0.815	-0.704	-0.481	-0.240
20aNegAff	-0.603	-0.539	-0.637	-0.262	-0.631	-0.401	-0.653	-0.663	-0.750	-0.672	-0.537	-0.580	-0.448	-0.367	-0.734	0.617	0.639	-0.460	-0.757	0.852	0.583	0.177
21aPercStress	-0.594	-0.496	-0.564	-0.267	-0.670	-0.374	-0.496	-0.589	-0.654	-0.599	-0.491	-0.554	-0.375	-0.366	-0.516	0.595	0.677	-0.329	-0.633	0.638	0.645	0.284
22aLifeStress	-0.008	-0.066	-0.063	-0.132	-0.127	-0.067	-0.066	-0.097	-0.064	-0.083	-0.279	-0.112	-0.083	-0.072	-0.105	0.173	0.199	-0.003	-0.084	0.100	0.219	0.373
23bthope	1	0.848	0.610	0.318	0.671	0.549	0.498	0.766	0.662	0.522	0.316	0.649	0.453	0.605	0.648	-0.462	-0.552	0.398	0.566	-0.628	-0.507	-0.027
24bshope	0.848	1	0.711	0.221	0.620	0.446	0.451	0.694	0.639	0.496	0.340	0.633	0.468	0.557	0.541	-0.410	-0.473	0.373	0.522	-0.577	-0.458	-0.074
25blifesat	0.610	0.711	1	0.269	0.705	0.302	0.539	0.622	0.832	0.646	0.386	0.560	0.368	0.353	0.589	-0.497	-0.632	0.401	0.705	-0.648	-0.532	-0.115
26bautonomy	0.318	0.221	0.269	1	0.376	0.281	0.383	0.341	0.319	0.278	0.295	0.122	0.226	0.307	0.347	-0.354	-0.420	0.051	0.264	-0.255	-0.364	-0.016
27benvimast	0.671	0.620	0.705	0.376	1	0.374	0.559	0.651	0.757	0.612	0.384	0.487	0.406	0.356	0.551	-0.489	-0.689	0.310	0.656	-0.598	-0.507	-0.073
28bpersgrow	0.549	0.446	0.302	0.281	0.374	1	0.494	0.594	0.473	0.426	0.393	0.551	0.513	0.449	0.421	-0.255	-0.269	0.192	0.306	-0.455	-0.292	-0.093
29bposrelat	0.498	0.451	0.539	0.383	0.559	0.494	1	0.576	0.704	0.762	0.576	0.573	0.447	0.419	0.529	-0.446	-0.490	0.324	0.621	-0.662	-0.467	-0.125

Correlation Matrix Page 5

	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
30bpurplife	0.766	0.694	0.622	0.341	0.651	0.594	0.576	1	0.740	0.622	0.435	0.647	0.580	0.526	0.623	-0.487	-0.542	0.290	0.614	-0.659	-0.489	-0.032
31bselfacc	0.662	0.639	0.832	0.319	0.757	0.473	0.704	0.740	1	0.793	0.459	0.631	0.473	0.372	0.668	-0.586	-0.646	0.351	0.778	-0.745	-0.604	-0.183
32bsocinteg	0.522	0.496	0.646	0.278	0.612	0.426	0.762	0.622	0.793	1	0.592	0.713	0.572	0.380	0.494	-0.548	-0.544	0.385	0.712	-0.690	-0.498	-0.150
33bsocaccep	0.316	0.340	0.386	0.295	0.384	0.393	0.576	0.435	0.459	0.592	1	0.464	0.677	0.411	0.437	-0.481	-0.458	0.238	0.415	-0.525	-0.502	-0.251
34bsoccontr	0.649	0.633	0.560	0.122	0.487	0.551	0.573	0.647	0.631	0.713	0.464	1	0.545	0.539	0.536	-0.440	-0.422	0.378	0.561	-0.621	-0.433	-0.066
35bsocactua	0.453	0.468	0.368	0.226	0.406	0.513	0.447	0.580	0.473	0.572	0.677	0.545	1	0.571	0.428	-0.386	-0.384	0.206	0.397	-0.458	-0.342	0.041
36bsoccoher	0.605	0.557	0.353	0.307	0.356	0.449	0.419	0.526	0.372	0.380	0.411	0.539	0.571	1	0.477	-0.328	-0.375	0.288	0.295	-0.428	-0.290	-0.027
37boptimism	0.648	0.541	0.589	0.347	0.551	0.421	0.529	0.623	0.668	0.494	0.437	0.536	0.428	0.477	1	-0.561	-0.595	0.431	0.640	-0.743	-0.558	-0.118
38bPsycDist	-0.462	-0.410	-0.497	-0.354	-0.489	-0.255	-0.446	-0.487	-0.586	-0.548	-0.481	-0.440	-0.386	-0.328	-0.561	1	0.755	-0.319	-0.659	0.632	0.786	0.279
39bSTAIstate	-0.552	-0.473	-0.632	-0.420	-0.689	-0.269	-0.490	-0.542	-0.646	-0.544	-0.458	-0.422	-0.384	-0.375	-0.595	0.755	1	-0.313	-0.703	0.656	0.727	0.247
40bCogReap	0.398	0.373	0.401	0.051	0.310	0.192	0.324	0.290	0.351	0.385	0.238	0.378	0.206	0.288	0.431	-0.319	-0.313	1	0.453	-0.449	-0.250	-0.128
41bPosAff	0.566	0.522	0.705	0.264	0.656	0.306	0.621	0.614	0.778	0.712	0.415	0.561	0.397	0.295	0.640	-0.659	-0.703	0.453	1	-0.714	-0.626	-0.132
42bNegAff	-0.628	-0.577	-0.648	-0.255	-0.598	-0.455	-0.662	-0.659	-0.745	-0.690	-0.525	-0.621	-0.458	-0.428	-0.743	0.632	0.656	-0.449	-0.714	1	0.593	0.195
43bPercStress	-0.507	-0.458	-0.532	-0.364	-0.507	-0.292	-0.467	-0.489	-0.604	-0.498	-0.502	-0.433	-0.342	-0.290	-0.558	0.786	0.727	-0.250	-0.626	0.593	1	0.345
44bLifeStress	-0.027	-0.074	-0.115	-0.016	-0.073	-0.093	-0.125	-0.032	-0.183	-0.150	-0.251	-0.066	0.041	-0.027	-0.118	0.279	0.247	-0.128	-0.132	0.195	0.345	1
45cthope	0.756	0.638	0.576	0.298	0.606	0.474	0.503	0.686	0.637	0.562	0.337	0.570	0.342	0.378	0.548	-0.338	-0.479	0.294	0.577	-0.612	-0.413	-0.065
46cshope	0.641	0.685	0.675	0.142	0.619	0.344	0.458	0.617	0.664	0.603	0.303	0.567	0.339	0.260	0.479	-0.324	-0.465	0.294	0.596	-0.579	-0.388	-0.082
47clifesat	0.585	0.633	0.868	0.276	0.727	0.293	0.544	0.605	0.800	0.657	0.368	0.541	0.319	0.242	0.561	-0.515	-0.651	0.318	0.690	-0.614	-0.580	-0.202
48cautonomy	0.311	0.236	0.296	0.835	0.342	0.385	0.473	0.392	0.336	0.322	0.338	0.193	0.235	0.361	0.353	-0.308	-0.421	0.178	0.336	-0.297	-0.358	-0.058
49cenvimast	0.572	0.554	0.639	0.389	0.761	0.322	0.512	0.629	0.651	0.597	0.410	0.491	0.327	0.291	0.475	-0.423	-0.608	0.271	0.622	-0.593	-0.446	-0.124
50cpersgrow	0.482	0.374	0.357	0.302	0.328	0.705	0.495	0.511	0.474	0.431	0.338	0.533	0.375	0.437	0.547	-0.301	-0.358	0.180	0.439	-0.534	-0.382	-0.148
51cposrelat	0.524	0.448	0.522	0.294	0.497	0.432	0.799	0.563	0.639	0.673	0.493	0.590	0.360	0.425	0.597	-0.429	-0.500	0.430	0.642	-0.706	-0.448	-0.144
52cpurplife	0.724	0.675	0.634	0.212	0.546	0.429	0.510	0.792	0.661	0.575	0.410	0.640	0.411	0.492	0.573	-0.496	-0.521	0.360	0.603	-0.682	-0.537	-0.138
53cselfacc	0.601	0.582	0.797	0.355	0.666	0.419	0.655	0.705	0.860	0.732	0.479	0.602	0.412	0.347	0.647	-0.515	-0.593	0.334	0.732	-0.706	-0.572	-0.162
54csocinteg	0.560	0.529	0.615	0.262	0.576	0.404	0.666	0.640	0.673	0.856	0.603	0.741	0.534	0.453	0.565	-0.528	-0.551	0.400	0.662	-0.674	-0.532	-0.158
55csocaccep	0.331	0.325	0.350	0.282	0.346	0.392	0.519	0.453	0.377	0.508	0.833	0.458	0.627	0.430	0.462	-0.383	-0.400	0.236	0.399	-0.522	-0.394	-0.164
56csoccontr	0.606	0.576	0.521	0.177	0.480	0.488	0.560	0.662	0.565	0.698	0.554	0.809	0.529	0.481	0.568	-0.505	-0.470	0.403	0.612	-0.605	-0.543	-0.094
57csocactua	0.409	0.406	0.319	0.223	0.339	0.443	0.420	0.561	0.371	0.486	0.614	0.480	0.829	0.549	0.439	-0.390	-0.376	0.271	0.472	-0.461	-0.302	0.076
58csoccoher	0.472	0.390	0.238	0.370	0.349	0.502	0.377	0.479	0.308	0.378	0.503	0.440	0.599	0.767	0.392	-0.382	-0.338	0.217	0.285	-0.383	-0.288	-0.041

Correlation Matrix Page 6

	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
59coptimism	0.551	0.535	0.647	0.303	0.570	0.459	0.586	0.598	0.699	0.627	0.497	0.556	0.444	0.320	0.743	-0.473	-0.554	0.291	0.616	-0.710	-0.515	-0.138
60cPsycDist	-0.556	-0.480	-0.534	-0.306	-0.533	-0.268	-0.453	-0.566	-0.604	-0.561	-0.405	-0.388	-0.283	-0.287	-0.506	0.638	0.692	-0.337	-0.554	0.637	0.562	0.166
61cSTAIstate	-0.573	-0.528	-0.668	-0.382	-0.685	-0.286	-0.488	-0.595	-0.649	-0.595	-0.460	-0.485	-0.365	-0.351	-0.555	0.623	0.798	-0.342	-0.622	0.666	0.594	0.121
62cCogReap	0.375	0.326	0.319	0.051	0.321	0.145	0.256	0.324	0.246	0.323	0.198	0.296	0.181	0.222	0.340	-0.201	-0.269	0.701	0.381	-0.394	-0.182	-0.018
63cPosAff	0.555	0.535	0.685	0.195	0.647	0.301	0.542	0.598	0.718	0.673	0.336	0.519	0.315	0.251	0.570	-0.472	-0.647	0.376	0.806	-0.702	-0.477	-0.152
64cNegAff	-0.625	-0.579	-0.668	-0.277	-0.657	-0.373	-0.614	-0.677	-0.731	-0.696	-0.482	-0.624	-0.393	-0.388	-0.677	0.586	0.665	-0.469	-0.751	0.832	0.560	0.183
65cPercStress	-0.485	-0.486	-0.494	-0.243	-0.492	-0.397	-0.507	-0.542	-0.569	-0.557	-0.518	-0.471	-0.331	-0.296	-0.474	0.509	0.562	-0.311	-0.603	0.629	0.550	0.277
66cLifeStress	-0.123	-0.186	-0.254	-0.146	-0.202	-0.155	-0.320	-0.216	-0.242	-0.283	-0.259	-0.225	-0.134	-0.216	-0.266	0.207	0.270	-0.103	-0.273	0.332	0.134	0.371
67dthope	0.786	0.679	0.581	0.411	0.635	0.529	0.565	0.684	0.634	0.539	0.354	0.563	0.445	0.512	0.579	-0.442	-0.549	0.332	0.569	-0.584	-0.414	0.020
68dshope	0.693	0.679	0.626	0.281	0.627	0.455	0.504	0.637	0.660	0.561	0.350	0.600	0.456	0.420	0.532	-0.485	-0.544	0.331	0.567	-0.545	-0.422	-0.044
69dlifesat	0.474	0.508	0.813	0.338	0.614	0.286	0.479	0.521	0.722	0.567	0.336	0.414	0.339	0.290	0.531	-0.422	-0.590	0.321	0.635	-0.563	-0.417	-0.102
70dautonomy	0.230	0.162	0.256	0.803	0.297	0.362	0.423	0.295	0.327	0.275	0.311	0.137	0.246	0.341	0.337	-0.258	-0.340	0.095	0.235	-0.280	-0.267	-0.066
71denvimast	0.598	0.551	0.630	0.308	0.796	0.316	0.510	0.650	0.702	0.662	0.394	0.478	0.442	0.297	0.464	-0.483	-0.588	0.373	0.727	-0.531	-0.457	-0.051
72dpersgrow	0.441	0.388	0.354	0.297	0.362	0.687	0.449	0.453	0.466	0.393	0.364	0.476	0.434	0.407	0.475	-0.404	-0.310	0.238	0.487	-0.431	-0.364	-0.123
73dposrelat	0.592	0.564	0.596	0.311	0.618	0.481	0.807	0.621	0.701	0.700	0.518	0.608	0.462	0.478	0.578	-0.489	-0.529	0.485	0.673	-0.674	-0.512	-0.131
74dpurplife	0.598	0.621	0.603	0.323	0.546	0.462	0.476	0.752	0.659	0.558	0.398	0.599	0.506	0.433	0.563	-0.488	-0.520	0.307	0.612	-0.592	-0.463	-0.077
75dselfacc	0.567	0.554	0.795	0.387	0.691	0.460	0.611	0.626	0.877	0.693	0.400	0.536	0.431	0.349	0.621	-0.506	-0.622	0.342	0.722	-0.715	-0.498	-0.141
76dsocinteg	0.509	0.467	0.586	0.193	0.539	0.384	0.661	0.567	0.677	0.882	0.563	0.692	0.581	0.382	0.498	-0.503	-0.504	0.390	0.674	-0.631	-0.484	-0.142
77dsocaccep	0.350	0.353	0.400	0.277	0.368	0.364	0.512	0.430	0.397	0.540	0.877	0.452	0.639	0.425	0.484	-0.471	-0.418	0.333	0.477	-0.520	-0.459	-0.162
78dsoccontr	0.625	0.579	0.543	0.183	0.540	0.534	0.580	0.666	0.650	0.726	0.487	0.774	0.588	0.414	0.582	-0.512	-0.498	0.362	0.686	-0.590	-0.481	-0.056
79dsocactua	0.378	0.405	0.382	0.202	0.404	0.359	0.407	0.466	0.409	0.473	0.588	0.415	0.814	0.505	0.383	-0.408	-0.395	0.210	0.460	-0.406	-0.343	0.061
80dsoccoher	0.502	0.456	0.307	0.354	0.343	0.486	0.480	0.482	0.362	0.462	0.495	0.460	0.578	0.704	0.385	-0.403	-0.362	0.268	0.345	-0.444	-0.305	-0.039
81doptimism	0.456	0.439	0.509	0.329	0.427	0.386	0.502	0.464	0.622	0.523	0.407	0.507	0.417	0.338	0.713	-0.480	-0.479	0.231	0.491	-0.613	-0.465	-0.195
82dPsycDist	-0.528	-0.479	-0.508	-0.385	-0.566	-0.332	-0.527	-0.539	-0.617	-0.540	-0.461	-0.405	-0.446	-0.415	-0.544	0.755	0.738	-0.254	-0.611	0.627	0.651	0.129
83dSTAIstate	-0.469	-0.440	-0.576	-0.399	-0.624	-0.320	-0.518	-0.508	-0.598	-0.511	-0.526	-0.436	-0.465	-0.386	-0.583	0.708	0.772	-0.231	-0.658	0.629	0.660	0.169
84dCogReap	0.300	0.291	0.352	0.056	0.284	0.118	0.289	0.309	0.308	0.355	0.267	0.291	0.236	0.224	0.292	-0.218	-0.192	0.674	0.349	-0.306	-0.161	0.007
85dPosAff	0.553	0.552	0.693	0.280	0.661	0.341	0.621	0.621	0.740	0.673	0.423	0.551	0.422	0.327	0.596	-0.566	-0.659	0.329	0.773	-0.693	-0.489	-0.113
86dNegAff	-0.474	-0.413	-0.586	-0.340	-0.592	-0.433	-0.638	-0.557	-0.698	-0.614	-0.500	-0.468	-0.447	-0.294	-0.640	0.569	0.669	-0.308	-0.704	0.760	0.542	0.137
87dPercStress	-0.377	-0.351	-0.439	-0.391	-0.561	-0.408	-0.558	-0.432	-0.537	-0.500	-0.500	-0.332	-0.433	-0.263	-0.446	0.555	0.618	-0.151	-0.602	0.572	0.516	0.118
88dLifeStress	-0.118	-0.180	-0.142	-0.038	-0.141	-0.031	-0.165	-0.079	-0.084	-0.164	-0.124	-0.223	-0.094	-0.164	-0.090	0.300	0.239	-0.004	-0.188	0.268	0.224	0.233

Correlation Matrix Page 7

	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66
1athope	0.770	0.684	0.554	0.314	0.601	0.476	0.492	0.638	0.589	0.471	0.266	0.494	0.422	0.459	0.509	-0.494	-0.500	0.376	0.627	-0.622	-0.462	-0.149
2ashope	0.705	0.777	0.665	0.270	0.591	0.405	0.479	0.582	0.644	0.495	0.260	0.508	0.308	0.290	0.580	-0.475	-0.505	0.300	0.644	-0.638	-0.494	-0.209
3alifesat	0.618	0.658	0.839	0.228	0.681	0.372	0.531	0.601	0.786	0.579	0.344	0.466	0.343	0.220	0.651	-0.571	-0.621	0.341	0.739	-0.689	-0.583	-0.282
4Aautonomy	0.301	0.182	0.319	0.801	0.399	0.341	0.307	0.247	0.362	0.284	0.361	0.270	0.247	0.405	0.309	-0.248	-0.366	0.055	0.204	-0.279	-0.295	-0.167
5aenvimast	0.587	0.590	0.666	0.269	0.712	0.261	0.469	0.552	0.655	0.521	0.347	0.464	0.298	0.271	0.538	-0.490	-0.594	0.275	0.627	-0.646	-0.480	-0.258
6apersgrow	0.376	0.281	0.212	0.342	0.270	0.617	0.426	0.387	0.337	0.349	0.315	0.415	0.447	0.468	0.363	-0.197	-0.184	0.208	0.326	-0.382	-0.331	-0.208
7aposrelat	0.471	0.424	0.474	0.384	0.445	0.514	0.777	0.515	0.607	0.614	0.508	0.488	0.479	0.424	0.536	-0.464	-0.450	0.343	0.549	-0.625	-0.519	-0.316
8apurplife	0.650	0.628	0.560	0.335	0.611	0.401	0.468	0.749	0.681	0.562	0.332	0.608	0.477	0.365	0.594	-0.501	-0.527	0.321	0.608	-0.646	-0.528	-0.237
9aselfacc	0.664	0.684	0.762	0.280	0.681	0.453	0.656	0.665	0.833	0.648	0.386	0.538	0.391	0.290	0.717	-0.566	-0.615	0.359	0.763	-0.757	-0.609	-0.294
10asocinteg	0.568	0.593	0.640	0.333	0.616	0.495	0.689	0.577	0.736	0.825	0.521	0.672	0.536	0.453	0.655	-0.526	-0.541	0.310	0.669	-0.693	-0.604	-0.390
11asocaccep	0.401	0.351	0.353	0.275	0.436	0.377	0.520	0.425	0.495	0.571	0.802	0.502	0.630	0.451	0.565	-0.360	-0.448	0.332	0.410	-0.537	-0.505	-0.234
12asoccontr	0.607	0.560	0.528	0.273	0.506	0.536	0.561	0.586	0.567	0.650	0.390	0.732	0.455	0.446	0.539	-0.382	-0.418	0.289	0.538	-0.600	-0.512	-0.202
13asocactua	0.353	0.327	0.262	0.198	0.296	0.334	0.353	0.450	0.389	0.503	0.569	0.482	0.824	0.564	0.419	-0.261	-0.277	0.263	0.357	-0.438	-0.340	-0.123
14asoccoher	0.523	0.372	0.261	0.352	0.408	0.479	0.402	0.485	0.395	0.497	0.451	0.586	0.585	0.722	0.438	-0.365	-0.343	0.343	0.364	-0.465	-0.479	-0.218
15aoptimism	0.515	0.501	0.602	0.266	0.466	0.463	0.531	0.600	0.623	0.551	0.425	0.588	0.388	0.325	0.695	-0.452	-0.524	0.287	0.562	-0.615	-0.535	-0.238
16aPsycDist	-0.514	-0.422	-0.556	-0.279	-0.566	-0.392	-0.569	-0.547	-0.589	-0.555	-0.444	-0.502	-0.358	-0.276	-0.549	0.713	0.650	-0.364	-0.627	0.698	0.678	0.242
17aSTAIstate	-0.591	-0.532	-0.658	-0.373	-0.675	-0.425	-0.543	-0.580	-0.668	-0.623	-0.464	-0.572	-0.415	-0.366	-0.612	0.696	0.762	-0.361	-0.700	0.752	0.657	0.320
18aCogReap	0.157	0.149	0.317	0.226	0.251	0.092	0.328	0.281	0.284	0.292	0.232	0.217	0.276	0.179	0.264	-0.360	-0.348	0.509	0.317	-0.361	-0.240	-0.086
19aPosAff	0.578	0.593	0.645	0.266	0.601	0.499	0.680	0.586	0.754	0.682	0.457	0.559	0.385	0.308	0.605	-0.548	-0.606	0.310	0.791	-0.728	-0.612	-0.371
20aNegAff	-0.615	-0.575	-0.641	-0.307	-0.638	-0.488	-0.680	-0.635	-0.750	-0.668	-0.528	-0.602	-0.475	-0.320	-0.728	0.617	0.637	-0.430	-0.725	0.844	0.653	0.314
21aPercStress	-0.609	-0.516	-0.626	-0.294	-0.667	-0.434	-0.557	-0.599	-0.651	-0.645	-0.449	-0.581	-0.342	-0.338	-0.557	0.625	0.688	-0.324	-0.651	0.715	0.651	0.301
22aLifeStress	-0.080	-0.074	-0.145	-0.121	-0.312	-0.085	-0.109	-0.128	-0.166	-0.159	-0.190	-0.151	-0.088	-0.160	-0.151	0.181	0.194	0.092	-0.134	0.214	0.303	0.363
23bthope	0.756	0.641	0.585	0.311	0.572	0.482	0.524	0.724	0.601	0.560	0.331	0.606	0.409	0.472	0.551	-0.556	-0.573	0.375	0.555	-0.625	-0.485	-0.123
24bshope	0.638	0.685	0.633	0.236	0.554	0.374	0.448	0.675	0.582	0.529	0.325	0.576	0.406	0.390	0.535	-0.480	-0.528	0.326	0.535	-0.579	-0.486	-0.186
25blifesat	0.576	0.675	0.868	0.296	0.639	0.357	0.522	0.634	0.797	0.615	0.350	0.521	0.319	0.238	0.647	-0.534	-0.668	0.319	0.685	-0.668	-0.494	-0.254
26bautonomy	0.298	0.142	0.276	0.835	0.389	0.302	0.294	0.212	0.355	0.262	0.282	0.177	0.223	0.370	0.303	-0.306	-0.382	0.051	0.195	-0.277	-0.243	-0.146
27benvimast	0.606	0.619	0.727	0.342	0.761	0.328	0.497	0.546	0.666	0.576	0.346	0.480	0.339	0.349	0.570	-0.533	-0.685	0.321	0.647	-0.657	-0.492	-0.202
28bpersgrow	0.474	0.344	0.293	0.385	0.322	0.705	0.432	0.429	0.419	0.404	0.392	0.488	0.443	0.502	0.459	-0.268	-0.286	0.145	0.301	-0.373	-0.397	-0.155
29bposrelat	0.503	0.458	0.544	0.473	0.512	0.495	0.799	0.510	0.655	0.666	0.519	0.560	0.420	0.377	0.586	-0.453	-0.488	0.256	0.542	-0.614	-0.507	-0.320

Correlation Matrix Page 8

	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66
30bpurplife	0.686	0.617	0.605	0.392	0.629	0.511	0.563	0.792	0.705	0.640	0.453	0.662	0.561	0.479	0.598	-0.566	-0.595	0.324	0.598	-0.677	-0.542	-0.216
31bselfacc	0.637	0.664	0.800	0.336	0.651	0.474	0.639	0.661	0.860	0.673	0.377	0.565	0.371	0.308	0.699	-0.604	-0.649	0.246	0.718	-0.731	-0.569	-0.242
32bsocinteg	0.562	0.603	0.657	0.322	0.597	0.431	0.673	0.575	0.732	0.856	0.508	0.698	0.486	0.378	0.627	-0.561	-0.595	0.323	0.673	-0.696	-0.557	-0.283
33bsocaccep	0.337	0.303	0.368	0.338	0.410	0.338	0.493	0.410	0.479	0.603	0.833	0.554	0.614	0.503	0.497	-0.405	-0.460	0.198	0.336	-0.482	-0.518	-0.259
34bsoccontr	0.570	0.567	0.541	0.193	0.491	0.533	0.590	0.640	0.602	0.741	0.458	0.809	0.480	0.440	0.556	-0.388	-0.485	0.296	0.519	-0.624	-0.471	-0.225
35bsocactua	0.342	0.339	0.319	0.235	0.327	0.375	0.360	0.411	0.412	0.534	0.627	0.529	0.829	0.599	0.444	-0.283	-0.365	0.181	0.315	-0.393	-0.331	-0.134
36bsoccoher	0.378	0.260	0.242	0.361	0.291	0.437	0.425	0.492	0.347	0.453	0.430	0.481	0.549	0.767	0.320	-0.287	-0.351	0.222	0.251	-0.388	-0.296	-0.216
37boptimism	0.548	0.479	0.561	0.353	0.475	0.547	0.597	0.573	0.647	0.565	0.462	0.568	0.439	0.392	0.743	-0.506	-0.555	0.340	0.570	-0.677	-0.474	-0.266
38bPsycDist	-0.338	-0.324	-0.515	-0.308	-0.423	-0.301	-0.429	-0.496	-0.515	-0.528	-0.383	-0.505	-0.390	-0.382	-0.473	0.638	0.623	-0.201	-0.472	0.586	0.509	0.207
39bSTAIstate	-0.479	-0.465	-0.651	-0.421	-0.608	-0.358	-0.500	-0.521	-0.593	-0.551	-0.400	-0.470	-0.376	-0.338	-0.554	0.692	0.798	-0.269	-0.647	0.665	0.562	0.270
40bCogReap	0.294	0.294	0.318	0.178	0.271	0.180	0.430	0.360	0.334	0.400	0.236	0.403	0.271	0.217	0.291	-0.337	-0.342	0.701	0.376	-0.469	-0.311	-0.103
41bPosAff	0.577	0.596	0.690	0.336	0.622	0.439	0.642	0.603	0.732	0.662	0.399	0.612	0.472	0.285	0.616	-0.554	-0.622	0.381	0.806	-0.751	-0.603	-0.273
42bNegAff	-0.612	-0.579	-0.614	-0.297	-0.593	-0.534	-0.706	-0.682	-0.706	-0.674	-0.522	-0.605	-0.461	-0.383	-0.710	0.637	0.666	-0.394	-0.702	0.832	0.629	0.332
43bPercStress	-0.413	-0.388	-0.580	-0.358	-0.446	-0.382	-0.448	-0.537	-0.572	-0.532	-0.394	-0.543	-0.302	-0.288	-0.515	0.562	0.594	-0.182	-0.477	0.560	0.550	0.134
44bLifeStress	-0.065	-0.082	-0.202	-0.058	-0.124	-0.148	-0.144	-0.138	-0.162	-0.158	-0.164	-0.094	0.076	-0.041	-0.138	0.166	0.121	-0.018	-0.152	0.183	0.277	0.371
45cthope	1	0.866	0.648	0.350	0.730	0.530	0.631	0.716	0.742	0.658	0.427	0.624	0.389	0.367	0.704	-0.589	-0.630	0.388	0.763	-0.724	-0.664	-0.231
46cshope	0.866	1	0.728	0.181	0.684	0.364	0.530	0.660	0.724	0.628	0.334	0.596	0.317	0.220	0.697	-0.522	-0.601	0.337	0.785	-0.706	-0.584	-0.225
47clifesat	0.648	0.728	1	0.260	0.712	0.338	0.553	0.658	0.817	0.639	0.351	0.558	0.230	0.177	0.651	-0.601	-0.721	0.284	0.750	-0.692	-0.552	-0.291
48cautonomy	0.350	0.181	0.260	1	0.407	0.451	0.435	0.293	0.396	0.367	0.376	0.307	0.329	0.391	0.344	-0.331	-0.394	0.141	0.259	-0.348	-0.365	-0.195
49cenvimast	0.730	0.684	0.712	0.407	1	0.419	0.563	0.603	0.783	0.655	0.459	0.541	0.398	0.340	0.646	-0.599	-0.729	0.316	0.769	-0.714	-0.672	-0.345
50cpersgrow	0.530	0.364	0.338	0.451	0.419	1	0.665	0.462	0.551	0.555	0.532	0.568	0.460	0.462	0.522	-0.303	-0.326	0.238	0.458	-0.482	-0.548	-0.315
51cposrelat	0.631	0.530	0.553	0.435	0.563	0.665	1	0.613	0.724	0.760	0.649	0.623	0.410	0.375	0.604	-0.535	-0.558	0.408	0.668	-0.727	-0.670	-0.415
52cpurplife	0.716	0.660	0.658	0.293	0.603	0.462	0.613	1	0.727	0.659	0.466	0.713	0.465	0.418	0.562	-0.567	-0.611	0.348	0.605	-0.666	-0.552	-0.234
53cselfacc	0.742	0.724	0.817	0.396	0.783	0.551	0.724	0.727	1	0.752	0.511	0.628	0.406	0.310	0.757	-0.626	-0.718	0.306	0.782	-0.773	-0.676	-0.344
54csocinteg	0.658	0.628	0.639	0.367	0.655	0.555	0.760	0.659	0.752	1	0.675	0.820	0.558	0.465	0.657	-0.545	-0.645	0.418	0.700	-0.730	-0.676	-0.320
55csocaccep	0.427	0.334	0.351	0.376	0.459	0.532	0.649	0.466	0.511	0.675	1	0.585	0.660	0.502	0.516	-0.348	-0.477	0.287	0.415	-0.505	-0.564	-0.342
56csoccontr	0.624	0.596	0.558	0.307	0.541	0.568	0.623	0.713	0.628	0.820	0.585	1	0.561	0.535	0.596	-0.450	-0.524	0.372	0.550	-0.662	-0.589	-0.183
57csocactua	0.389	0.317	0.230	0.329	0.398	0.460	0.410	0.465	0.406	0.558	0.660	0.561	1	0.670	0.445	-0.263	-0.338	0.299	0.381	-0.427	-0.421	-0.118
58csoccoher	0.367	0.220	0.177	0.391	0.340	0.462	0.375	0.418	0.310	0.465	0.502	0.535	0.670	1	0.254	-0.238	-0.302	0.191	0.212	-0.331	-0.357	-0.152

Correlation Matrix Page 9

	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66
59coptimism	0.704	0.697	0.651	0.344	0.646	0.522	0.604	0.562	0.757	0.657	0.516	0.596	0.445	0.254	1	-0.586	-0.650	0.308	0.719	-0.731	-0.681	-0.327
60cPsycDist	-0.589	-0.522	-0.601	-0.331	-0.599	-0.303	-0.535	-0.567	-0.626	-0.545	-0.348	-0.450	-0.263	-0.238	-0.586	1	0.781	-0.281	-0.677	0.721	0.696	0.271
61cSTAIstate	-0.630	-0.601	-0.721	-0.394	-0.729	-0.326	-0.558	-0.611	-0.718	-0.645	-0.477	-0.524	-0.338	-0.302	-0.650	0.781	1	-0.350	-0.757	0.770	0.638	0.247
62cCogReap	0.388	0.337	0.284	0.141	0.316	0.238	0.408	0.348	0.306	0.418	0.287	0.372	0.299	0.191	0.308	-0.281	-0.350	1	0.448	-0.446	-0.379	-0.054
63cPosAff	0.763	0.785	0.750	0.259	0.769	0.458	0.668	0.605	0.782	0.700	0.415	0.550	0.381	0.212	0.719	-0.677	-0.757	0.448	1	-0.833	-0.716	-0.358
64cNegAff	-0.724	-0.706	-0.692	-0.348	-0.714	-0.482	-0.727	-0.666	-0.773	-0.730	-0.505	-0.662	-0.427	-0.331	-0.731	0.721	0.770	-0.446	-0.833	1	0.698	0.363
65cPercStress	-0.664	-0.584	-0.552	-0.365	-0.672	-0.548	-0.670	-0.552	-0.676	-0.676	-0.564	-0.589	-0.421	-0.357	-0.681	0.696	0.638	-0.379	-0.716	0.698	1	0.396
66cLifeStress	-0.231	-0.225	-0.291	-0.195	-0.345	-0.315	-0.415	-0.234	-0.344	-0.320	-0.342	-0.183	-0.118	-0.152	-0.327	0.271	0.247	-0.054	-0.358	0.363	0.396	1
67dthope	0.773	0.654	0.546	0.469	0.630	0.468	0.500	0.624	0.620	0.536	0.355	0.540	0.510	0.475	0.583	-0.547	-0.578	0.281	0.589	-0.661	-0.467	-0.230
68dshope	0.680	0.680	0.610	0.357	0.585	0.390	0.433	0.586	0.598	0.539	0.308	0.552	0.469	0.388	0.534	-0.531	-0.542	0.240	0.566	-0.616	-0.437	-0.173
69dlifesat	0.519	0.603	0.822	0.322	0.608	0.297	0.459	0.524	0.747	0.486	0.280	0.364	0.303	0.223	0.534	-0.530	-0.632	0.199	0.674	-0.629	-0.357	-0.298
70dautonomy	0.250	0.120	0.254	0.785	0.355	0.307	0.299	0.188	0.353	0.235	0.272	0.119	0.246	0.354	0.283	-0.217	-0.338	0.028	0.205	-0.254	-0.180	-0.224
71denvimast	0.620	0.634	0.689	0.326	0.731	0.286	0.470	0.561	0.658	0.595	0.357	0.548	0.462	0.373	0.502	-0.488	-0.588	0.349	0.686	-0.644	-0.487	-0.151
72dpersgrow	0.383	0.305	0.293	0.381	0.308	0.627	0.371	0.344	0.403	0.374	0.338	0.505	0.510	0.520	0.431	-0.152	-0.199	0.218	0.343	-0.397	-0.347	-0.137
73dposrelat	0.520	0.495	0.603	0.417	0.533	0.500	0.772	0.580	0.644	0.673	0.508	0.638	0.478	0.478	0.507	-0.454	-0.509	0.380	0.592	-0.691	-0.506	-0.222
74dpurplife	0.574	0.568	0.552	0.350	0.550	0.411	0.421	0.627	0.606	0.551	0.356	0.621	0.571	0.499	0.563	-0.455	-0.487	0.229	0.565	-0.631	-0.472	-0.188
75dselfacc	0.623	0.639	0.748	0.386	0.692	0.466	0.573	0.574	0.837	0.585	0.347	0.453	0.392	0.318	0.678	-0.589	-0.649	0.199	0.724	-0.734	-0.512	-0.281
76dsocinteg	0.526	0.550	0.598	0.258	0.532	0.420	0.605	0.529	0.652	0.859	0.513	0.723	0.543	0.408	0.565	-0.443	-0.545	0.329	0.627	-0.645	-0.497	-0.237
77dsocaccep	0.378	0.330	0.355	0.317	0.414	0.387	0.505	0.452	0.470	0.619	0.858	0.582	0.686	0.527	0.488	-0.292	-0.439	0.278	0.388	-0.507	-0.461	-0.282
78dsoccontr	0.605	0.603	0.553	0.295	0.508	0.527	0.564	0.596	0.591	0.725	0.452	0.816	0.587	0.467	0.565	-0.439	-0.459	0.257	0.588	-0.646	-0.493	-0.159
79dsocactua	0.319	0.318	0.293	0.224	0.311	0.323	0.313	0.359	0.352	0.473	0.563	0.452	0.834	0.593	0.377	-0.178	-0.321	0.198	0.350	-0.372	-0.277	-0.120
80dsoccoher	0.408	0.264	0.190	0.440	0.339	0.455	0.381	0.443	0.337	0.469	0.463	0.478	0.678	0.800	0.345	-0.262	-0.298	0.250	0.249	-0.364	-0.364	-0.227
81doptimism	0.412	0.423	0.517	0.300	0.369	0.364	0.406	0.440	0.575	0.468	0.348	0.417	0.331	0.255	0.672	-0.370	-0.466	0.064	0.429	-0.550	-0.329	-0.304
82dPsycDist	-0.501	-0.426	-0.554	-0.427	-0.535	-0.434	-0.565	-0.525	-0.578	-0.527	-0.434	-0.477	-0.466	-0.374	-0.538	0.757	0.659	-0.262	-0.578	0.662	0.586	0.170
83dSTAIstate	-0.480	-0.426	-0.608	-0.441	-0.599	-0.478	-0.517	-0.517	-0.615	-0.558	-0.535	-0.522	-0.516	-0.395	-0.575	0.562	0.682	-0.242	-0.580	0.634	0.554	0.300
84dCogReap	0.273	0.233	0.307	0.181	0.220	0.150	0.386	0.343	0.324	0.401	0.320	0.351	0.300	0.209	0.231	-0.205	-0.322	0.717	0.310	-0.373	-0.215	-0.002
85dPosAff	0.614	0.630	0.712	0.348	0.660	0.444	0.616	0.603	0.731	0.661	0.463	0.557	0.502	0.343	0.583	-0.568	-0.688	0.328	0.768	-0.724	-0.521	-0.313
86dNegAff	-0.561	-0.540	-0.628	-0.388	-0.596	-0.507	-0.658	-0.527	-0.704	-0.584	-0.489	-0.527	-0.475	-0.360	-0.638	0.612	0.636	-0.270	-0.696	0.779	0.564	0.236
87dPercStress	-0.448	-0.370	-0.447	-0.407	-0.577	-0.409	-0.456	-0.337	-0.523	-0.448	-0.399	-0.373	-0.513	-0.375	-0.542	0.503	0.538	-0.122	-0.551	0.572	0.525	0.295
88dLifeStress	-0.041	-0.095	-0.108	-0.039	-0.166	-0.099	-0.080	-0.055	-0.048	-0.152	-0.038	-0.159	-0.102	-0.180	-0.062	0.125	0.123	0.031	-0.158	0.276	0.175	0.258

Correlation Matrix Page 10

	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88
1athope	0.787	0.721	0.554	0.334	0.673	0.497	0.577	0.640	0.643	0.418	0.275	0.611	0.410	0.450	0.401	-0.543	-0.475	0.237	0.591	-0.555	-0.461	-0.064
2ashope	0.661	0.679	0.627	0.257	0.640	0.489	0.592	0.627	0.684	0.454	0.274	0.596	0.317	0.257	0.429	-0.428	-0.408	0.244	0.559	-0.543	-0.411	-0.082
3alifesat	0.577	0.635	0.789	0.248	0.693	0.418	0.607	0.637	0.799	0.575	0.385	0.526	0.374	0.296	0.505	-0.544	-0.593	0.357	0.714	-0.631	-0.527	-0.112
4Aautonomy	0.373	0.279	0.314	0.736	0.355	0.374	0.347	0.363	0.385	0.192	0.317	0.214	0.227	0.381	0.307	-0.352	-0.433	0.134	0.312	-0.316	-0.337	-0.054
5aenvimast	0.582	0.576	0.617	0.294	0.739	0.384	0.540	0.527	0.673	0.462	0.383	0.474	0.289	0.325	0.439	-0.492	-0.566	0.303	0.640	-0.572	-0.523	-0.052
6apersgrow	0.502	0.446	0.287	0.365	0.378	0.719	0.541	0.494	0.485	0.405	0.369	0.564	0.446	0.551	0.371	-0.317	-0.310	0.185	0.399	-0.401	-0.375	-0.064
7aposrelat	0.527	0.481	0.470	0.368	0.496	0.472	0.763	0.480	0.617	0.618	0.503	0.531	0.446	0.515	0.460	-0.540	-0.513	0.367	0.634	-0.629	-0.550	-0.143
8apurplife	0.600	0.528	0.500	0.322	0.603	0.376	0.500	0.730	0.622	0.480	0.350	0.576	0.403	0.446	0.448	-0.466	-0.445	0.249	0.546	-0.478	-0.407	-0.054
9aselfacc	0.604	0.615	0.687	0.297	0.739	0.474	0.672	0.642	0.840	0.621	0.391	0.601	0.417	0.355	0.597	-0.568	-0.574	0.388	0.707	-0.658	-0.511	-0.020
10asocinteg	0.555	0.575	0.582	0.306	0.690	0.488	0.724	0.614	0.698	0.830	0.560	0.712	0.522	0.510	0.561	-0.547	-0.556	0.335	0.658	-0.612	-0.555	-0.199
11asocaccep	0.368	0.330	0.338	0.283	0.414	0.337	0.486	0.392	0.429	0.539	0.836	0.459	0.552	0.468	0.395	-0.407	-0.477	0.363	0.420	-0.465	-0.449	-0.079
12asoccontr	0.590	0.575	0.410	0.221	0.532	0.513	0.639	0.612	0.567	0.622	0.404	0.749	0.412	0.454	0.441	-0.439	-0.480	0.265	0.525	-0.486	-0.421	-0.163
13asocactua	0.456	0.449	0.329	0.197	0.473	0.423	0.451	0.574	0.423	0.523	0.628	0.553	0.801	0.607	0.359	-0.451	-0.472	0.295	0.446	-0.432	-0.450	-0.125
14asoccoher	0.562	0.469	0.253	0.231	0.409	0.539	0.478	0.542	0.374	0.429	0.517	0.509	0.500	0.728	0.268	-0.414	-0.427	0.286	0.338	-0.389	-0.406	-0.166
15aoptimism	0.454	0.487	0.488	0.262	0.547	0.499	0.545	0.575	0.579	0.493	0.419	0.596	0.366	0.281	0.609	-0.465	-0.535	0.295	0.553	-0.575	-0.391	0.035
16aPsycDist	-0.431	-0.430	-0.410	-0.189	-0.535	-0.354	-0.506	-0.441	-0.520	-0.459	-0.445	-0.476	-0.331	-0.325	-0.317	0.737	0.675	-0.286	-0.527	0.527	0.511	0.153
17aSTAIstate	-0.555	-0.557	-0.559	-0.325	-0.671	-0.417	-0.571	-0.537	-0.645	-0.573	-0.490	-0.557	-0.412	-0.395	-0.456	0.708	0.762	-0.322	-0.621	0.638	0.657	0.189
18aCogReap	0.218	0.245	0.335	0.175	0.387	0.176	0.424	0.279	0.319	0.305	0.239	0.253	0.187	0.141	0.203	-0.325	-0.234	0.554	0.279	-0.334	-0.219	0.047
19aPosAff	0.474	0.462	0.619	0.282	0.628	0.476	0.645	0.524	0.719	0.640	0.469	0.576	0.372	0.297	0.519	-0.515	-0.589	0.313	0.743	-0.666	-0.560	-0.141
20aNegAff	-0.575	-0.556	-0.559	-0.264	-0.631	-0.469	-0.686	-0.608	-0.701	-0.613	-0.553	-0.606	-0.439	-0.395	-0.579	0.611	0.625	-0.365	-0.665	0.752	0.583	0.192
21aPercStress	-0.533	-0.513	-0.470	-0.307	-0.583	-0.363	-0.537	-0.413	-0.595	-0.554	-0.482	-0.509	-0.322	-0.359	-0.417	0.608	0.661	-0.312	-0.568	0.518	0.561	0.147
22aLifeStress	-0.034	-0.043	-0.090	-0.136	-0.091	-0.059	-0.085	-0.092	-0.091	-0.140	-0.250	-0.081	-0.041	-0.076	-0.158	0.118	0.197	0.090	-0.075	0.117	0.204	0.311
23bthope	0.786	0.693	0.474	0.230	0.598	0.441	0.592	0.598	0.567	0.509	0.350	0.625	0.378	0.502	0.456	-0.528	-0.469	0.300	0.553	-0.474	-0.377	-0.118
24bshope	0.679	0.679	0.508	0.162	0.551	0.388	0.564	0.621	0.554	0.467	0.353	0.579	0.405	0.456	0.439	-0.479	-0.440	0.291	0.552	-0.413	-0.351	-0.180
25blifesat	0.581	0.626	0.813	0.256	0.630	0.354	0.596	0.603	0.795	0.586	0.400	0.543	0.382	0.307	0.509	-0.508	-0.576	0.352	0.693	-0.586	-0.439	-0.142
26bautonomy	0.411	0.281	0.338	0.803	0.308	0.297	0.311	0.323	0.387	0.193	0.277	0.183	0.202	0.354	0.329	-0.385	-0.399	0.056	0.280	-0.340	-0.391	-0.038
27benvimast	0.635	0.627	0.614	0.297	0.796	0.362	0.618	0.546	0.691	0.539	0.368	0.540	0.404	0.343	0.427	-0.566	-0.624	0.284	0.661	-0.592	-0.561	-0.141
28bpersgrow	0.529	0.455	0.286	0.362	0.316	0.687	0.481	0.462	0.460	0.384	0.364	0.534	0.359	0.486	0.386	-0.332	-0.320	0.118	0.341	-0.433	-0.408	-0.031
29bposrelat	0.565	0.504	0.479	0.423	0.510	0.449	0.807	0.476	0.611	0.661	0.512	0.580	0.407	0.480	0.502	-0.527	-0.518	0.289	0.621	-0.638	-0.558	-0.165

Correlation Matrix Page 11

	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88
30bpurplife	0.684	0.637	0.521	0.295	0.650	0.453	0.621	0.752	0.626	0.567	0.430	0.666	0.466	0.482	0.464	-0.539	-0.508	0.309	0.621	-0.557	-0.432	-0.079
31bselfacc	0.634	0.660	0.722	0.327	0.702	0.466	0.701	0.659	0.877	0.677	0.397	0.650	0.409	0.362	0.622	-0.617	-0.598	0.308	0.740	-0.698	-0.537	-0.084
32bsocinteg	0.539	0.561	0.567	0.275	0.662	0.393	0.700	0.558	0.693	0.882	0.540	0.726	0.473	0.462	0.523	-0.540	-0.511	0.355	0.673	-0.614	-0.500	-0.164
33bsocaccep	0.354	0.350	0.336	0.311	0.394	0.364	0.518	0.398	0.400	0.563	0.877	0.487	0.588	0.495	0.407	-0.461	-0.526	0.267	0.423	-0.500	-0.500	-0.124
34bsoccontr	0.563	0.600	0.414	0.137	0.478	0.476	0.608	0.599	0.536	0.692	0.452	0.774	0.415	0.460	0.507	-0.405	-0.436	0.291	0.551	-0.468	-0.332	-0.223
35bsocactua	0.445	0.456	0.339	0.246	0.442	0.434	0.462	0.506	0.431	0.581	0.639	0.588	0.814	0.578	0.417	-0.446	-0.465	0.236	0.422	-0.447	-0.433	-0.094
36bsoccoher	0.512	0.420	0.290	0.341	0.297	0.407	0.478	0.433	0.349	0.382	0.425	0.414	0.505	0.704	0.338	-0.415	-0.386	0.224	0.327	-0.294	-0.263	-0.164
37boptimism	0.579	0.532	0.531	0.337	0.464	0.475	0.578	0.563	0.621	0.498	0.484	0.582	0.383	0.385	0.713	-0.544	-0.583	0.292	0.596	-0.640	-0.446	-0.090
38bPsycDist	-0.442	-0.485	-0.422	-0.258	-0.483	-0.404	-0.489	-0.488	-0.506	-0.503	-0.471	-0.512	-0.408	-0.403	-0.480	0.755	0.708	-0.218	-0.566	0.569	0.555	0.300
39bSTAIstate	-0.549	-0.544	-0.590	-0.340	-0.588	-0.310	-0.529	-0.520	-0.622	-0.504	-0.418	-0.498	-0.395	-0.362	-0.479	0.738	0.772	-0.192	-0.659	0.669	0.618	0.239
40bCogReap	0.332	0.331	0.321	0.095	0.373	0.238	0.485	0.307	0.342	0.390	0.333	0.362	0.210	0.268	0.231	-0.254	-0.231	0.674	0.329	-0.308	-0.151	-0.004
41bPosAff	0.569	0.567	0.635	0.235	0.727	0.487	0.673	0.612	0.722	0.674	0.477	0.686	0.460	0.345	0.491	-0.611	-0.658	0.349	0.773	-0.704	-0.602	-0.188
42bNegAff	-0.584	-0.545	-0.563	-0.280	-0.531	-0.431	-0.674	-0.592	-0.715	-0.631	-0.520	-0.590	-0.406	-0.444	-0.613	0.627	0.629	-0.306	-0.693	0.760	0.572	0.268
43bPercStress	-0.414	-0.422	-0.417	-0.267	-0.457	-0.364	-0.512	-0.463	-0.498	-0.484	-0.459	-0.481	-0.343	-0.305	-0.465	0.651	0.660	-0.161	-0.489	0.542	0.516	0.224
44bLifeStress	0.020	-0.044	-0.102	-0.066	-0.051	-0.123	-0.131	-0.077	-0.141	-0.142	-0.162	-0.056	0.061	-0.039	-0.195	0.129	0.169	0.007	-0.113	0.137	0.118	0.233
45cthope	0.773	0.680	0.519	0.250	0.620	0.383	0.520	0.574	0.623	0.526	0.378	0.605	0.319	0.408	0.412	-0.501	-0.480	0.273	0.614	-0.561	-0.448	-0.041
46cshope	0.654	0.680	0.603	0.120	0.634	0.305	0.495	0.568	0.639	0.550	0.330	0.603	0.318	0.264	0.423	-0.426	-0.426	0.233	0.630	-0.540	-0.370	-0.095
47clifesat	0.546	0.610	0.822	0.254	0.689	0.293	0.603	0.552	0.748	0.598	0.355	0.553	0.293	0.190	0.517	-0.554	-0.608	0.307	0.712	-0.628	-0.447	-0.108
48cautonomy	0.469	0.357	0.322	0.785	0.326	0.381	0.417	0.350	0.386	0.258	0.317	0.295	0.224	0.440	0.300	-0.427	-0.441	0.181	0.348	-0.388	-0.407	-0.039
49cenvimast	0.630	0.585	0.608	0.355	0.731	0.308	0.533	0.550	0.692	0.532	0.414	0.508	0.311	0.339	0.369	-0.535	-0.599	0.220	0.660	-0.596	-0.577	-0.166
50cpersgrow	0.468	0.390	0.297	0.307	0.286	0.627	0.500	0.411	0.466	0.420	0.387	0.527	0.323	0.455	0.364	-0.434	-0.478	0.150	0.444	-0.507	-0.409	-0.099
51cposrelat	0.500	0.433	0.459	0.299	0.470	0.371	0.772	0.421	0.573	0.605	0.505	0.564	0.313	0.381	0.406	-0.565	-0.517	0.386	0.616	-0.658	-0.456	-0.080
52cpurplife	0.624	0.586	0.524	0.188	0.561	0.344	0.580	0.627	0.574	0.529	0.452	0.596	0.359	0.443	0.440	-0.525	-0.517	0.343	0.603	-0.527	-0.337	-0.055
53cselfacc	0.620	0.598	0.747	0.353	0.658	0.403	0.644	0.606	0.837	0.652	0.470	0.591	0.352	0.337	0.575	-0.578	-0.615	0.324	0.731	-0.704	-0.523	-0.048
54csocinteg	0.536	0.539	0.486	0.235	0.595	0.374	0.673	0.551	0.585	0.859	0.619	0.725	0.473	0.469	0.468	-0.527	-0.558	0.401	0.661	-0.584	-0.448	-0.152
55csocaccep	0.355	0.308	0.280	0.272	0.357	0.338	0.508	0.356	0.347	0.513	0.858	0.452	0.563	0.463	0.348	-0.434	-0.535	0.320	0.463	-0.489	-0.399	-0.038
56csoccontr	0.540	0.552	0.364	0.119	0.548	0.505	0.638	0.621	0.453	0.723	0.582	0.816	0.452	0.478	0.417	-0.477	-0.522	0.351	0.557	-0.527	-0.373	-0.159
57csocactua	0.510	0.469	0.303	0.246	0.462	0.510	0.478	0.571	0.392	0.543	0.686	0.587	0.834	0.678	0.331	-0.466	-0.516	0.300	0.502	-0.475	-0.513	-0.102
58csoccoher	0.475	0.388	0.223	0.354	0.373	0.520	0.478	0.499	0.318	0.408	0.527	0.467	0.593	0.800	0.255	-0.374	-0.395	0.209	0.343	-0.360	-0.375	-0.180

Correlation Matrix Page 12

	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88
59coptimism	0.583	0.534	0.534	0.283	0.502	0.431	0.507	0.563	0.678	0.565	0.488	0.565	0.377	0.345	0.672	-0.538	-0.575	0.231	0.583	-0.638	-0.542	-0.062
60cPsycDist	-0.547	-0.531	-0.530	-0.217	-0.488	-0.152	-0.454	-0.455	-0.589	-0.443	-0.292	-0.439	-0.178	-0.262	-0.370	0.757	0.562	-0.205	-0.568	0.612	0.503	0.125
61cSTAIstate	-0.578	-0.542	-0.632	-0.338	-0.588	-0.199	-0.509	-0.487	-0.649	-0.545	-0.439	-0.459	-0.321	-0.298	-0.466	0.659	0.682	-0.322	-0.688	0.636	0.538	0.123
62cCogReap	0.281	0.240	0.199	0.028	0.349	0.218	0.380	0.229	0.199	0.329	0.278	0.257	0.198	0.250	0.064	-0.262	-0.242	0.717	0.328	-0.270	-0.122	0.031
63cPosAff	0.589	0.566	0.674	0.205	0.686	0.343	0.592	0.565	0.724	0.627	0.388	0.588	0.350	0.249	0.429	-0.578	-0.580	0.310	0.768	-0.696	-0.551	-0.158
64cNegAff	-0.661	-0.616	-0.629	-0.254	-0.644	-0.397	-0.691	-0.631	-0.734	-0.645	-0.507	-0.646	-0.372	-0.364	-0.550	0.662	0.634	-0.373	-0.724	0.779	0.572	0.276
65cPercStress	-0.467	-0.437	-0.357	-0.180	-0.487	-0.347	-0.506	-0.472	-0.512	-0.497	-0.461	-0.493	-0.277	-0.364	-0.329	0.586	0.554	-0.215	-0.521	0.564	0.525	0.175
66cLifeStress	-0.230	-0.173	-0.298	-0.224	-0.151	-0.137	-0.222	-0.188	-0.281	-0.237	-0.282	-0.159	-0.120	-0.227	-0.304	0.170	0.300	-0.002	-0.313	0.236	0.295	0.258
67dthope	1	0.904	0.578	0.434	0.634	0.511	0.598	0.686	0.694	0.517	0.403	0.648	0.486	0.644	0.572	-0.587	-0.566	0.285	0.739	-0.582	-0.590	-0.118
68dshope	0.904	1	0.631	0.326	0.661	0.489	0.580	0.690	0.686	0.539	0.356	0.693	0.479	0.528	0.551	-0.584	-0.586	0.310	0.757	-0.578	-0.561	-0.122
69dlifesat	0.578	0.631	1	0.407	0.651	0.366	0.577	0.583	0.828	0.514	0.353	0.474	0.364	0.228	0.523	-0.531	-0.587	0.242	0.728	-0.693	-0.543	-0.106
70dautonomy	0.434	0.326	0.407	1	0.261	0.329	0.335	0.270	0.456	0.196	0.280	0.161	0.261	0.407	0.386	-0.338	-0.404	0.123	0.358	-0.324	-0.458	0.105
71denvimast	0.634	0.661	0.651	0.261	1	0.493	0.694	0.712	0.675	0.658	0.454	0.676	0.530	0.395	0.378	-0.533	-0.561	0.397	0.711	-0.621	-0.556	-0.100
72dpersgrow	0.511	0.489	0.366	0.329	0.493	1	0.593	0.613	0.476	0.453	0.485	0.590	0.541	0.547	0.429	-0.348	-0.425	0.260	0.450	-0.483	-0.486	-0.107
73dposrelat	0.598	0.580	0.577	0.335	0.694	0.593	1	0.677	0.650	0.732	0.572	0.705	0.532	0.492	0.453	-0.550	-0.530	0.434	0.674	-0.713	-0.533	-0.188
74dpurplife	0.686	0.690	0.583	0.270	0.712	0.613	0.677	1	0.680	0.588	0.464	0.724	0.606	0.552	0.519	-0.505	-0.505	0.230	0.664	-0.651	-0.533	-0.230
75dselfacc	0.694	0.686	0.828	0.456	0.675	0.476	0.650	0.680	1	0.610	0.400	0.605	0.441	0.404	0.659	-0.636	-0.643	0.229	0.793	-0.779	-0.646	-0.132
76dsocinteg	0.517	0.539	0.514	0.196	0.658	0.453	0.732	0.588	0.610	1	0.628	0.775	0.584	0.468	0.500	-0.441	-0.511	0.392	0.675	-0.564	-0.474	-0.214
77dsocaccep	0.403	0.356	0.353	0.280	0.454	0.485	0.572	0.464	0.400	0.628	1	0.539	0.704	0.553	0.436	-0.383	-0.551	0.376	0.485	-0.481	-0.495	-0.138
78dsoccontr	0.648	0.693	0.474	0.161	0.676	0.590	0.705	0.724	0.605	0.775	0.539	1	0.583	0.490	0.498	-0.537	-0.543	0.271	0.655	-0.630	-0.528	-0.198
79dsocactua	0.486	0.479	0.364	0.261	0.530	0.541	0.532	0.606	0.441	0.584	0.704	0.583	1	0.653	0.376	-0.417	-0.506	0.284	0.518	-0.441	-0.508	-0.136
80dsoccoher	0.644	0.528	0.228	0.407	0.395	0.547	0.492	0.552	0.404	0.468	0.553	0.490	0.653	1	0.408	-0.430	-0.441	0.318	0.491	-0.335	-0.432	-0.188
81doptimism	0.572	0.551	0.523	0.386	0.378	0.429	0.453	0.519	0.659	0.500	0.436	0.498	0.376	0.408	1	-0.438	-0.529	0.186	0.599	-0.545	-0.475	-0.135
82dPsycDist	-0.587	-0.584	-0.531	-0.338	-0.533	-0.348	-0.550	-0.505	-0.636	-0.441	-0.383	-0.537	-0.417	-0.430	-0.438	1	0.781	-0.183	-0.644	0.743	0.676	0.195
83dSTAIstate	-0.566	-0.586	-0.587	-0.404	-0.561	-0.425	-0.530	-0.505	-0.643	-0.511	-0.551	-0.543	-0.506	-0.441	-0.529	0.781	1	-0.217	-0.703	0.681	0.748	0.188
84dCogReap	0.285	0.310	0.242	0.123	0.397	0.260	0.434	0.230	0.229	0.392	0.376	0.271	0.284	0.318	0.186	-0.183	-0.217	1	0.404	-0.161	-0.113	0.178
85dPosAff	0.739	0.757	0.728	0.358	0.711	0.450	0.674	0.664	0.793	0.675	0.485	0.655	0.518	0.491	0.599	-0.644	-0.703	0.404	1	-0.723	-0.633	-0.178
86dNegAff	-0.582	-0.578	-0.693	-0.324	-0.621	-0.483	-0.713	-0.651	-0.779	-0.564	-0.481	-0.630	-0.441	-0.335	-0.545	0.743	0.681	-0.161	-0.723	1	0.702	0.234
87dPercStress	-0.590	-0.561	-0.543	-0.458	-0.556	-0.486	-0.533	-0.533	-0.646	-0.474	-0.495	-0.528	-0.508	-0.432	-0.475	0.676	0.748	-0.113	-0.633	0.702	1	0.272
88dLifeStress	-0.118	-0.122	-0.106	0.105	-0.100	-0.107	-0.188	-0.230	-0.132	-0.214	-0.138	-0.198	-0.136	-0.188	-0.135	0.195	0.188	0.178	-0.178	0.234	0.272	1

Appendix D: Results of Factorial Invariance Analysis

Agency

Model Fit Comparison:

Model	df	χ^2	p	$\Delta\chi^2$	RMSEA	RMSEA CI	CFI	NNFI	SRMR
Configural	30	69.711	.000	--	.0987	.069 - .129	.986	.969	.0468
Weak	36	73.257	.000	3.916	.0872	.058 - .116	.987	.976	.0535
Strong	42	89.999	.000	16.742	.0917	.065 - .118	.983	.974	.0580

Loadings of Strong Factorial Invariance Model:

Indicator	Loading	Residual	C.S. Loading	Intercept	h^2
Wave 1					
Parcel 1	.861(.044)	.768(.112)	.717	.773(.266)	.515
Parcel 2	1.073(.049)	.986(.151)	.750	-.606(.294)	.562
Parcel 3	1.066(.045)	.670(.126)	.807	-.166(.271)	.651
Wave 2					
Parcel 1	.861(.044)	.843(.125)	.723	.773(.266)	.523
Parcel 2	1.073(.049)	1.029(.163)	.763	-.606(.294)	.583
Parcel 3	1.066(.045)	.642(.132)	.830	-.166(.271)	.688
Wave 3					
Parcel 1	.861(.044)	1.048(.157)	.732	.773(.266)	.536
Parcel 2	1.073(.049)	1.123(.187)	.792	-.606(.294)	.627
Parcel 3	1.066(.045)	1.074(.191)	.796	-.166(.271)	.634
Wave 4					
Parcel 1	.861(.044)	.551(.103)	.821	.773(.266)	.673
Parcel 2	1.073(.049)	1.959(.277)	.689	-.606(.294)	.474
Parcel 3	1.066(.045)	1.125(.192)	.780	-.166(.271)	.608

Optimism

Model Fit Comparison:

Model	df	χ^2	p	$\Delta\chi^2$	RMSEA	RMSEA CI	CFI	NNFI	SRMR
Configural	30	53.842	.005	--	.0764	.0419 - .109	.989	.975	.0381
Weak	36	67.621	.001	13.779	.0804	.050 - .110	.986	.975	.0577
Strong	42	77.108	.001	9.487	.0784	.050 - .106	.988	.980	.0579

Loadings of Strong Factorial Invariance Model:

Indicator	Loading	Residual	C.S. Loading	Intercept	h^2
Wave 1					
Parcel 1	.973(.031)	.449(.068)	.774	-.175(.109)	.599
Parcel 2	1.019(.031)	.294(.055)	.845	.035(.109)	.714
Parcel 3	1.008(.034)	.362(.060)	.816	.140(.119)	.666
Wave 2					
Parcel 1	.973(.031)	.363(.057)	.813	-.175(.109)	.660
Parcel 2	1.019(.031)	.340(.056)	.834	.035(.109)	.695
Parcel 3	1.008(.034)	.345(.056)	.829	.140(.119)	.687
Wave 3					
Parcel 1	.973(.031)	.459(.079)	.818	-.175(.109)	.669
Parcel 2	1.019(.031)	.621(.098)	.788	.035(.109)	.621
Parcel 3	1.008(.034)	1.146(.157)	.682	.140(.119)	.465
Wave 4					
Parcel 1	.973(.031)	.322(.059)	.872	-.175(.109)	.761
Parcel 2	1.019(.031)	.298(.059)	.889	.035(.109)	.790
Parcel 3	1.008(.034)	.784(.111)	.764	.140(.119)	.584

Anxiety (STAI)

Model Fit Comparison:

Model	df	χ^2	p	$\Delta\chi^2$	RMSEA	RMSEA CI	CFI	NNFI	SRMR
Configural	30	56.28	.003	--	.080	.047 - .112	.994	.986	.0308
Weak	36	65.528	.002	9.248	.078	.047 - .107	.993	.987	.0475
Strong	42	77.953	.001	12.425	.079	.051 - .106	.992	.986	.0491

Loadings of Strong Factorial Invariance Model:

Indicator	Loading	Residual	C.S. Loading	Intercept	h^2
Wave 1					
Parcel 1	1.061(.019)	.034(.010)	.963	-.120(.042)	.927
Parcel 2	1.037(.022)	.083(.013)	.912	.046(.050)	.831
Parcel 3	.902(.022)	.075(.011)	.897	.073(.051)	.805
Wave 2					
Parcel 1	1.061(.019)	.043(.011)	.952	-.120(.042)	.906
Parcel 2	1.037(.022)	.067(.012)	.924	.046(.050)	.854
Parcel 3	.902(.022)	.108(.015)	.856	.073(.051)	.732
Wave 3					
Parcel 1	1.061(.019)	.044(.014)	.963	-.120(.042)	.928
Parcel 2	1.037(.022)	.117(.019)	.906	.046(.050)	.822
Parcel 3	.902(.022)	.128(.019)	.872	.073(.051)	.760
Wave 4					
Parcel 1	1.061(.019)	.033(.015)	.968	-.120(.042)	.936
Parcel 2	1.037(.022)	.151(.022)	.868	.046(.050)	.754
Parcel 3	.902(.022)	.180(.024)	.813	.073(.051)	.660

Model Fit Comparison:

Model	df	χ^2	p	$\Delta\chi^2$	RMSEA	RMSEA CI	CFI	NNFI	SRMR
Configural	30	33.349	.308	--	.0287	.0 - .0729	.998	.995	.0416
Weak	36	38.906	.340	4.557	.0244	.0 - .0674	.998	.996	.0486
Strong	42	55.683	.077	16.777	.0489	.0 - .0807	.994	.991	.0484

Loadings of Strong Factorial Invariance Model:

Indicator	Loading	Residual	C.S. Loading	Intercept	h^2
Wave 1					
Parcel 1	.935(.032)	.429(.067)	.780	.410(.160)	.609
Parcel 2	1.146(.031)	.225(.071)	.904	-.729(.155)	.816
Parcel 3	.919(.035)	.908(.120)	.645	.319(.176)	.416
Wave 2					
Parcel 1	.935(.032)	.481(.066)	.765	.410(.160)	.585
Parcel 2	1.146(.031)	.099(.052)	.955	-.729(.155)	.911
Parcel 3	.919(.035)	.752(.097)	.682	.319(.176)	.465
Wave 3					
Parcel 1	.935(.032)	.476(.070)	.798	.410(.160)	.636
Parcel 2	1.146(.031)	.248(.070)	.913	-.729(.155)	.834
Parcel 3	.919(.035)	.743(.100)	.721	.319(.176)	.520
Wave 4					
Parcel 1	.935(.032)	.557(.083)	.816	.410(.160)	.666
Parcel 2	1.146(.031)	.249(.082)	.933	-.729(.155)	.870
Parcel 3	.919(.035)	.798(.109)	.757	.319(.176)	.574

Model Fit Comparison:

Model	df	χ^2	p	$\Delta\chi^2$	RMSEA	RMSEA CI	CFI	NNFI	SRMR
Configural	30	45.390	.036	--	.0614	.017 - .096	.993	.985	.0370
Weak	36	56.214	.017	10.824	.0643	.028 - .096	.991	.983	.0574
Strong	42	68.641	.006	12.427	.0683	.037 - .097	.988	.981	.0577

Loadings of Strong Factorial Invariance Model:

Indicator	Loading	Residual	C.S. Loading	Intercept	h^2
Wave 1					
Parcel 1	.866(.031)	.189(.029)	.799	.075(.060)	.638
Parcel 2	1.082(.032)	.106(.029)	.912	-.253(.063)	.831
Parcel 3	1052(.034)	.342(.050)	.768	.178(.067)	.590
Wave 2					
Parcel 1	.866(.031)	.218(.034)	.792	.075(.060)	.628
Parcel 2	1.082(.032)	.183(.039)	.871	-.253(.063)	.758
Parcel 3	1052(.034)	.261(.044)	.822	.178(.067)	.676
Wave 3					
Parcel 1	.866(.031)	.302(.045)	.772	.075(.060)	.596
Parcel 2	1.082(.032)	.260(.051)	.853	-.253(.063)	.728
Parcel 3	1052(.034)	.308(.053)	.826	.178(.067)	.682
Wave 4					
Parcel 1	.866(.031)	.421(.060)	.710	.075(.060)	.504
Parcel 2	1.082(.032)	.289(.056)	.836	-.253(.063)	.698
Parcel 3	1052(.034)	.268(.052)	.838	.178(.067)	.703

Model Fit Comparison:

Model	df	χ^2	p	$\Delta\chi^2$	RMSEA	RMSEA CI	CFI	NNFI	SRMR
Configural	30	64.191	.000	--	.0915	.060 - .123	.993	.985	.019
Weak	36	68.320	.001	3.129	.0812	.051 - .110	.993	.988	.031
Strong	42	80.626	.000	12.306	.0822	.055 - .109	.992	.988	.031

Loadings of Strong Factorial Invariance Model:

Indicator	Loading	Residual	C.S. Loading	Intercept	h^2
Wave 1					
Positive Affect	.981(.027)	.213(.051)	.926	.007(.131)	.858
Negative Affect	1.038(.033)	.613(.090)	.838	-.031(.159)	.702
Life Satisfaction	.980(.030)	.497(.076)	.849	.024(.144)	.721
Wave 2					
Positive Affect	.981(.027)	.290(.055)	.897	.007(.131)	.804
Negative Affect	1.038(.033)	.722(.100)	.806	-.031(.159)	.649
Life Satisfaction	.980(.030)	.379(.060)	.871	.024(.144)	.758
Wave 3					
Positive Affect	.981(.027)	.377(.069)	.896	.007(.131)	.803
Negative Affect	1.038(.033)	.491(.077)	.882	-.031(.159)	.778
Life Satisfaction	.980(.030)	.341(.060)	.904	.024(.144)	.818
Wave 4					
Positive Affect	.981(.027)	.399(.075)	.883	.007(.131)	.779
Negative Affect	1.038(.033)	.660(.102)	.840	-.031(.159)	.705
Life Satisfaction	.980(.030)	.519(.084)	.855	.024(.144)	.730

Model Fit Comparison:

Model	df	χ^2	p	$\Delta\chi^2$	RMSEA	RMSEA CI	CFI	NNFI	SRMR
Configural	134	346.167	.000	--	.0991	.085 - .113	.975	.965	.0952
Weak	146	336.995	.000	-9.172	.0981	.084 - .112	.974	.966	.0854
Strong	158	387.152	.000	50.157	.103	.090 - .116	.968	.962	.0743

Loadings of Strong Factorial Invariance Model:

Indicator	Loading	Residual	C.S. Loading	Intercept	h^2
Wave 1					
Autonomy	.508(.067)	.870(.107)	.387	1.876(.327)	.150
Environmental Mastery	1.107(.047)	.378(.057)	.811	-.700(.229)	.658
Personal Growth	.673(.055)	.506(.064)	.589	1.930(.269)	.347
Purpose in Life	1.080(.049)	.381(.056)	.803	-.002(.239)	.645
Self Acceptance	1.632(.057)	.314(.074)	.913	-3.104(.276)	.834
Wave 2					
Autonomy	.508(.067)	.832(.103)	.380	1.876(.327)	.145
Environmental Mastery	1.107(.047)	.339(.052)	.815	-.700(.229)	.664
Personal Growth	.673(.055)	.482(.062)	.582	1.930(.269)	.339
Purpose in Life	1.080(.049)	.357(.053)	.801	-.002(.239)	.641
Self Acceptance	1.632(.057)	.333(.074)	.902	-3.104(.276)	.814
Wave 3					
Autonomy	.508(.067)	1.016(.125)	.384	1.876(.327)	.147
Environmental Mastery	1.107(.047)	.366(.057)	834	-.700(.229)	.695
Personal Growth	.673(.055)	.651(.082)	.567	1.930(.269)	.321
Purpose in Life	1.080(.049)	.462(.066)	.795	-.002(.239)	.633
Self Acceptance	1.632(.057)	.274(.077)	.932	-3.104(.276)	.869
Wave 4					
Autonomy	.508(.067)	1.144(.141)	.359	1.876(.327)	.129
Environmental Mastery	1.107(.047)	.326(.055)	.844	-.700(.229)	.712
Personal Growth	.673(.055)	.650(.083)	.561	1.930(.269)	.314
Purpose in Life	1.080(.049)	.498(.073)	.779	-.002(.239)	.606
Self Acceptance	1.632(.057)	.618(.112)	.860	-3.104(.276)	.739

Model Fit Comparison:

Model	df	χ^2	p	$\Delta\chi^2$	RMSEA	RMSEA CI	CFI	NNFI	SRMR
Configural	210	473.576	.000	--	.0961	.085 - .108	.979	.973	.0987
Weak	225	484.569	.000	10.993	.0921	.081 - .103	.980	.975	.103
Strong	240	509.750	.000	25.181	.0909	.080 - .102	.979	.976	.101

Loadings of Strong Factorial Invariance Model:

Indicator	Loading	Residual	C.S. Loading	Intercept	h^2
Wave 1					
Acceptance	1.111(.054)	.719(.097)	.733	-1.292(.264)	.538
Actualization	.930(.053)	.620(.082)	.698	.398(.257)	.487
Coherence	.614(.055)	.491(.062)	.585	2.096(.265)	.342
Contribution	1.030(.045)	.453(.064)	.783	.024(.218)	.614
Integration	1.355(.045)	.305(.059)	.896	-1.918(.218)	.803
Positive Relations	.960(.043)	.428(.060)	.771	.693(.209)	.594
Wave 2					
Acceptance	1.111(.054)	.740(.100)	.731	-1.292(.264)	.534
Actualization	.930(.053)	.592(.079)	.708	.398(.257)	.501
Coherence	.614(.055)	.641(.081)	.537	2.096(.265)	.288
Contribution	1.030(.045)	.457(.065)	.784	.024(.218)	.614
Integration	1.355(.045)	.358(.065)	.882	-1.918(.218)	.779
Positive Relations	.960(.043)	.397(.057)	.784	.693(.209)	.615
Wave 3					
Acceptance	1.111(.054)	.842(.113)	.750	-1.292(.264)	.562
Actualization	.930(.053)	.790(.103)	.699	.398(.257)	.489
Coherence	.614(.055)	.809(.101)	.538	2.096(.265)	.290
Contribution	1.030(.045)	.372(.056)	.845	.024(.218)	.714
Integration	1.355(.045)	.286(.061)	.921	-1.918(.218)	.849
Positive Relations	.960(.043)	.430(.061)	.808	.693(.209)	.652
Wave 4					
Acceptance	1.111(.054)	.765(.104)	.750	-1.292(.264)	.562
Actualization	.930(.053)	.691(.091)	.707	.398(.257)	.499
Coherence	.614(.055)	.934(.116)	.493	2.096(.265)	.243
Contribution	1.030(.045)	.421(.062)	.817	.024(.218)	.667
Integration	1.355(.045)	.389(.070)	.889	-1.918(.218)	.790
Positive Relations	.960(.043)	.305(.047)	.840	.693(.209)	.706

Model Fit Comparison:

Model	df	χ^2	p	$\Delta\chi^2$	RMSEA	RMSEA CI	CFI	NNFI	SRMR
Configural	30	74.164	.000	--	.104	.074 - .134	.986	.969	.0753
Weak	36	91.276	.000	17.122	.106	.079 - .134	.982	.967	.0858
Strong	42	107.195	.000	15.919	.107	.082 - .132	.979	.967	.0778

Loadings of Strong Factorial Invariance Model:

Indicator	Loading	Residual	C.S. Loading	Intercept	h^2
Wave 1					
Depression	.940(.036)	.183(.029)	.780	-.012(.066)	.610
Anxiety	.866(.033)	.177(.027)	.760	.035(.059)	.578
Distress	1.195(.038)	.136(.033)	.879	-.023(.069)	.773
Wave 2					
Depression	.940(.036)	.218(.032)	.736	-.012(.066)	.541
Anxiety	.866(.033)	.139(.023)	.782	.035(.059)	.611
Distress	1.195(.038)	.133(.032)	.870	-.023(.069)	.757
Wave 3					
Depression	.940(.036)	.191(.028)	.779	-.012(.066)	.607
Anxiety	.866(.033)	.092(.018)	.855	.035(.059)	.730
Distress	1.195(.038)	.158(.033)	.867	-.023(.069)	.752
Wave 4					
Depression	.940(.036)	.207(.031)	.729	-.012(.066)	.531
Anxiety	.866(.033)	.102(.018)	.813	.035(.059)	.661
Distress	1.195(.038)	.161(.032)	.838	-.023(.069)	.703

Model Fit Comparison:

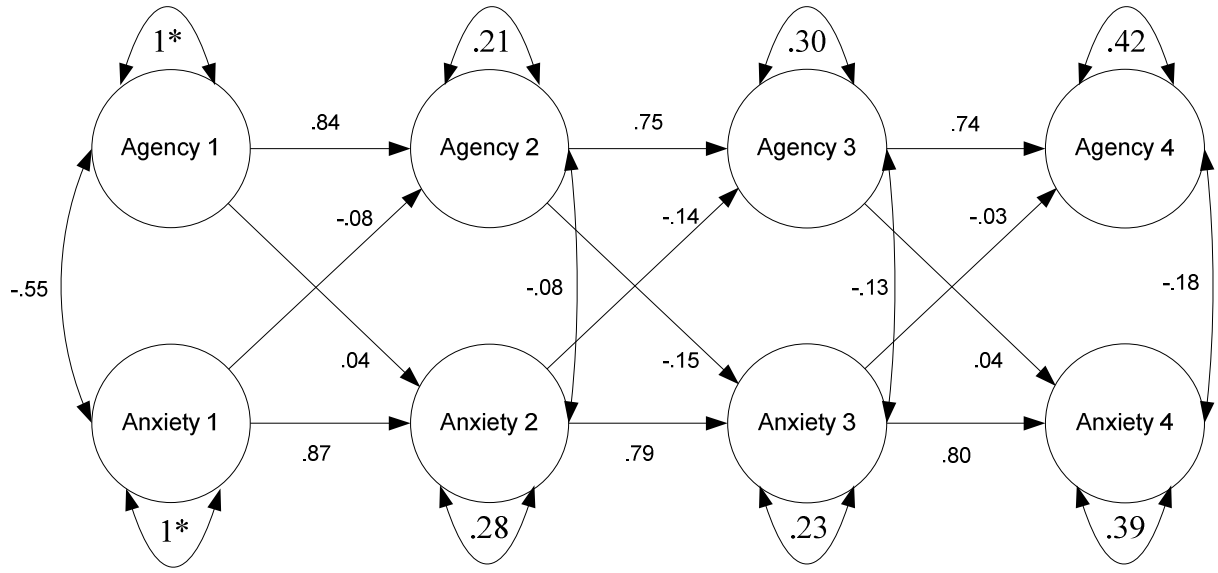
Model	df	χ^2	p	$\Delta\chi^2$	RMSEA	RMSEA CI	CFI	NNFI	SRMR
Configural	30	57.667	.002	--	.082	.049 - .114	.995	.988	.0842
Weak	36	61.575	.005	3.883	.072	.040 - .102	.995	.991	.0776
Strong	42	76.492	.001	14.917	.078	.049 - .105	.993	.990	.0923

Loadings of Strong Factorial Invariance Model:

Indicator	Loading	Residual	C.S. Loading	Intercept	h^2
Wave 1					
Hedonic Well-Being	1.145(.036)	.440(.065)	.811	-.766(.178)	.658
Eudaimonic Well-Being	1.002(.031)	.063(.029)	.955	.032(.152)	.911
Social Well-Being	.853(.032)	.232(.035)	.818	.734(.153)	.670
Wave 2					
Hedonic Well-Being	1.145(.036)	.434(.064)	.807	-.766(.178)	.651
Eudaimonic Well-Being	1.002(.031)	.077(.031)	.943	.032(.152)	.889
Social Well-Being	.853(.032)	.257(.038)	.798	.734(.153)	.636
Wave 3					
Hedonic Well-Being	1.145(.036)	.580(.084)	.797	-.766(.178)	.636
Eudaimonic Well-Being	1.002(.031)	.046(.035)	.972	.032(.152)	.944
Social Well-Being	.853(.032)	.345(.049)	.787	.734(.153)	.620
Wave 4					
Hedonic Well-Being	1.145(.036)	.455(.070)	.835	-.766(.178)	.698
Eudaimonic Well-Being	1.002(.031)	.039(.033)	.977	.032(.152)	.954
Social Well-Being	.853(.032)	.346(.049)	.792	.734(.153)	.628

Appendix E: Alternative Longitudinal models

Longitudinal cross-lagged effects of Agency and Anxiety:



Model fit: (χ^2 (212, n=137) = 448.321, p <.001; NNFI = .967; CFI = .975 RMSEA = .091; SRMR=.091