

## ABSTRACT

Title of dissertation:     **LONGITUDINAL PREDICTION OF DOMAIN  
SATISFACTION AND GLOBAL LIFE SATISFACTION:  
TEST OF A SOCIAL COGNITIVE MODEL**

Daniel Browne Singley, Doctor of Philosophy, 2005

Dissertation directed by: Professor Robert Lent  
Counseling and Personnel Services

The experience of life satisfaction has been studied at a global level and in specific domains of life such as work, marriage, and academic satisfaction. Global life satisfaction has been described as a predictor of, as well as an outcome of, domain-specific life satisfaction. “Top-down” conceptualizations of well-being indicate that one’s level of overall satisfaction is essentially a personality trait, whereas “bottom-up” approaches assert that the experience of satisfaction in different domains of life combine to yield an overall sense of satisfaction. In order to integrate these two approaches, the current study utilized a longitudinal methodology and structural equation modeling to address how personality traits, domain-specific social cognitive variables, and life satisfaction (both general and domain-specific) relate to each other over time. A model of the hypothesized psychological processes involved in goal evaluations, life satisfaction, and positive affect is outlined. Of particular interest was the extent to which social cognitive variables (self-efficacy, social supports, and goal progress) account for unique variance in subsequent life satisfaction and domain-specific life satisfaction after controlling for personality effects (positive affect).

In this study, 769 university students completed an online survey of their goals, academic satisfaction, and general life satisfaction at two points in time 8 weeks apart. Based on previous theory and empirical research on domain-specific satisfaction, this integrative model is cognitively-based and posits that if one has positive perceptions (high self-efficacy, resource availability, progress in goal pursuit) regarding one's goals in a particular life domain (e.g., family, work), then one will experience higher levels of satisfaction in that domain. Global life satisfaction and domain-specific satisfaction were hypothesized to have reciprocal effects on each other over time, as were goal progress and goal self-efficacy. Results generally supported the proposed model. The social cognitive variables accounted for significant variance in subsequent global and domain-specific satisfaction even after controlling for the effects of personality. Goal-oriented perceptions may, therefore, nurture a sense of satisfaction independent of personality traits. Self-efficacy and goal progress were found to have reciprocal effects, whereas global life satisfaction and domain-specific satisfaction did not. Results and implications for future research are discussed.

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LIFE SATISFACTION: TEST OF A SOCIAL COGNITIVE MODEL

by

Daniel Browne Singley

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Advisory Committee:

Professor Robert W. Lent, Chairperson  
Professor Paul Hanges- Dean's Representative  
Professor Mary Ann Hoffman  
Professor Dennis Kivlighan  
Professor William E. Sedlacek  
Dr. Linda Tipton

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## Chapter 1. Introduction

Although the study of well-being in Counseling Psychology is still in a nascent stage, the current trend in theory and research toward more sophisticated studies is encouraging. The earliest studies of this topic addressed the relation of demographics and personality to well-being and tended to utilize one-item indicators of life satisfaction or happiness (Andrews & Withey, 1976; Wilson, 1967). The quality of assessment instruments has evolved along with theory and research, and the study of well-being in psychology has shown definite signs of maturing (Diener, Emmons, Larsen, & Griffin, 1985; Diener, Suh., Lucas, & Smith, 1999; Lucas, Diener, & Suh, 1996). Empirical and theoretical work emphasizing biological and behavioral genetics influences on personality and well-being has become a vibrant area of study even while other approaches have gained in prominence.

Ryan and Deci (2001) have described the field of well-being as having its foundations in two distinct, yet related philosophical traditions: the hedonic and eudaimonic positions. These two traditions of well-being study are rather broad and each includes a wide variety of theories and research in which well-being is operationalized, conceptualized, and investigated somewhat differently. The hedonic position is best exemplified by Diener's work on Subjective Well-Being (SWB; Diener, 1984), while the eudaimonic approach is perhaps best represented by Carol Ryff's work on Psychological Well-Being (PWB; Ryff & Keyes, 1995).

In the hedonic view, well-being is the experience of "feeling good." Diener's (1984) tripartite conceptualization of SWB depicts it as an individual's relative experience of positive and negative feelings, or a state characterized by high positive

affect, low negative affect, and high cognitive life satisfaction. Fundamentally, this approach reflects emotional well-being. In the hedonic SWB model, affect embodies the “feeling” aspect of happiness, whereas life satisfaction has been conceptualized to indicate the cognitive or “thinking” component. Life satisfaction is generally defined as a global cognitive estimate regarding how satisfied a person is with his/her life in general. These individual components were empirically-derived, and positive and negative affect were found to represent aspects of well-being that are distinct from life satisfaction (Andrews & Withey, 1976). Positive and negative affect were also found to reflect independent but related constructs rather than opposite ends on a single affective continuum (Diener, 1984). Empirical studies have repeatedly shown that predictors of well-being such as personality, resources, goal perceptions, and goal content have unique relationships with positive affect, negative affect, and life satisfaction (Brunstein, 1993; Brunstein, Schultheiss, & Grassman, 1998; Emmons, 1986, 1991). The hedonic approach to well-being is currently the most popular in psychological research, and the Satisfaction With Life Scale (SWLS; Diener, Emmons, Larsen, & Griffen, 1985) and the Positive and Negative Affect Scale (PANAS; Watson & Clark, 1994) are the measures that are most frequently used to assess global life satisfaction and positive/negative affect, respectively.

Another hedonically-oriented way to address how satisfied a person is with life is by assessing her/his satisfaction in specific life domains. The “spillover hypothesis” posits that happiness in a given area of life (e.g., job) spills over into a general sense of satisfaction with life (Rain, Lane, & Steiner, 1991). Tait, Padgett, and Baldwin (1989) conducted a meta-analysis and found an average correlation of .44 between life

satisfaction and job satisfaction. A number of studies have shown a moderate-to-strong relationship between domain-specific and global life satisfaction (Kozma, Stone, & Stones, 2000; Schwarz, Strack, & Mai, 1991). There is, thus, ample evidence that satisfaction with life domains such as job, leisure, school, and social life are related to, but distinct from, global satisfaction with one's life (Oishi, Diener, Suh & Lucas, 1999; Lent et al., in press; Schwarz et al., 1991).

Measures of affect and life satisfaction (both global and domain-specific) are widely used, serving as the predominant criterion measures in studies of SWB in psychology. However, combining positive affect, negative affect, and life satisfaction into a singular aggregate index of SWB, as is sometimes done in the literature (Diener et al., 1999), is problematic. It is therefore important to attend to how specific domains or dimensions in life are differentially related to the cognitive and affective components of SWB.

Ryff's (1989) multidimensional model of Psychological Well-Being (PWB) exemplifies the eudaimonic approach to well-being, which is concerned with growth, purpose, and meaning in life. This tradition is closely aligned with the humanistic concept of humans as seeking to self-actualize, or reach their highest human potential. Eudaimonic well-being is not generally concerned with whether a person "feels good," but rather how s/he derives meaning from life. Although there appears to be less consensus on how to operationalize eudaimonic than hedonic well-being, Ryff's (1995) PWB theory and measurement instrument represent an important approach to the study of eudaimonic well-being.

Ryff's (1995) approach views happiness as a by-product, not an end in itself, of "the striving for perfection that represents the realization of one's true potential" (1995, p. 100). This approach conceptualizes six areas of life as key to mental and physical health: autonomy, personal growth, self-acceptance, purpose in life, environmental mastery, and positive relations with others. Rather than addressing the experience of satisfaction (which is central in the hedonic approach) in each of these areas, it is the person's subjective perception that s/he is being successful in each that engenders the sense of meaning and purpose that characterizes high PWB. The principle of "striving for perfection" in these life areas suggests that each contains characteristic goal pursuits which one would use as a referent to gauge one's PWB (e.g. "To what extent have I achieved positive relations with others?"). However, a major conceptual problem with this approach is that the six life areas have been discussed by Ryff and her colleagues as being both outcomes and predictors of eudaimonic well-being (cf. Robbins & Kliewer, 2000). Self-Determination Theory (SDT; Deci & Ryan, 1987) is another meaning-based eudaimonic approach to well-being. SDT conceptualizes well-being as being facilitated by the satisfaction of basic needs of autonomy, competence, and relatedness. SDT researchers often employ measures of vitality and self-actualization to define high levels of well-being.

In general, then, hedonic approaches focus on the subjective feeling of well-being, whereas eudaimonic models focus on the experience of meaning, growth (realizing one's "inner daimon" or true self), and purpose that accompanies participation in "the good life." It is important to note that both hedonic (Brunstein, 1993; Brunstein et al, 1998; Diener & Fujita, 1995) and eudaimonic approaches have been concerned with the role of

personal goals in well-being. For example, the eudaimonic approach conceptualizes well-being as the experience of meaning derived from pursuing activities that represent a person's values and/or needs. The PWB life areas and SDT needs categories implicitly acknowledge the need to formulate, pursue, and evaluate goals within these areas of life because eudaimonic well-being rests upon one's judgements of "how well am I doing." The eudaimonic approach thus implies that meaning is partly derived from pursuing goals that are linked to one's need or values.

Different researchers have tended to adopt either hedonic or eudaimonic models in their programs of research and theory, and although they are considered to measure separate aspects of well-being, neither is conceptually "better," nor are they by any means mutually exclusive. Several researchers have employed factor analysis (Compton, Smith, Cornish, & Qualls, 1996; McGregor & Little, 1998; Keyes, Shmotkin, & Ryff, 2002) to address the relationship between assessments of these two approaches to well-being. Results consistently show that two factors, happiness and meaning or growth (corresponding to hedonic and eudaimonic well-being, respectively), represent the two basic dimensions of well-being. It seems likely that both processes -- eudaimonic "doing" and hedonic "feeling" -- are central to a holistic approach to understanding well-being. Given that the eudaimonic approach sees happiness as a "byproduct" of participation in meaningful life activities, one approach to integrating these two fields of research would be to posit hedonic well-being (SWB) as an outcome of realizing one's "inner daimon" by successfully striving toward goals congruent with one's needs or values. Explicating how participation in activities that realize one's true potential might

result in enhanced emotional well being would help to clarify the processes linking cognitions, behaviors, and emotions.

Two prevalent positions on the foundations of life satisfaction are the personality (top-down) and the situational (bottom-up) approaches. These two models differ in how they conceptualize the causes of well-being. The top-down personality approach reflects the earliest attempt to understand why some people generally experience higher positive affect, less negative affect, and a general sense of satisfaction with their lives.

Researchers in this tradition have typically thought of SWB as being much like a personality trait that is constant across situations (Costa & McCrae, 1980). This approach is generally unconcerned with how (i.e., the process through which) having such personality traits translates into well-being. Happiness is essentially viewed as a relatively stable personality trait, and having this type of personality colors a person's perceptions and experience of happiness in everyday life, resulting in a predisposition to experience daily life in a consistent way. An implication of this approach is that having a "happy disposition" should engender satisfaction in all life domains. It should not matter what activity or domain one is involved in because one's "cerebral joy juice" (Meehl, 1975) ensures that the experience will be a happy one. The top-down position holds that individual differences in genetics account for the majority of variance in well-being across individuals.

In contrast to the top-down position, the situational or bottom-up approach holds that the experience of well-being is actually created in an ongoing way such that, at any given moment, a person's "online" experience of well-being is a function of how s/he perceives the self interacting with a particular environmental context (Cantor &

Sanderson, 1999; Carver & Scheier, 1990). Therefore, the bottom-up position asserts that individuals construct their own level of happiness via their behavior and thoughts in a particular social context. According to a social cognitive (Bandura, 1986) version of this position, self-efficacy, environmental supports, and goals (especially goal progress) are variables that may play crucial roles in an individual's "bottom-up" experience of well-being (Lent, 2004; Lent et al., in press; Singley, Sheu, & Liang, 2004).

Both the top-down and bottom-up views have received support (Heller, Watson, & Ilies, 2004). It seems likely that happiness may be jointly determined by both personality traits and by a person's perceptions regarding how s/he interacts with the environment. Given this probable confluence of "top-down" and "bottom-up" effects on life satisfaction, it would be helpful to begin to develop models of how these processes interact to engender a sense of satisfaction with one's life.

A process-oriented model, based on social cognitive theory, that integrates the personality and situational perspectives on well-being would help to explicate how each of these approaches provides a unique insight into the maintenance and experience of SWB. The current study tests an integrative, cognitively-based model of hedonic well-being that focuses on domain-specific and global life satisfaction as the criteria of interest. Drawing on the strengths of previous research and theory, this study will address how social supports, self-efficacy, and progress with personal goals, along with trait positive affect, relate to global and domain-specific life satisfaction. A few studies (Lent et al., in press; Singley et al., 2004) have recently begun to empirically examine these relationships in a cross-sectional framework. In order to facilitate the development of more sophisticated models of well-being, the current study will utilize a longitudinal

design to address the temporal nature of the relationships between variables in the model. In particular, this study will examine the plausibility of social cognitive (supports, self-efficacy, goal progress) and personality factors (positive affectivity) as causal antecedents of domain-specific and global life satisfaction. A key aspect of this study is its focus on idiographically-generated goals (i.e., assessing goals in participants' own words), which may offer a clinically-relevant alternative to the predominant reliance upon nomothetic assessment methods in the SWB literature (Ryff & Keyes, 1995; Sheldon & Kasser, 1995).

## Chapter 2. Literature Review

In this section, I will review literature relevant to the proposed study. After briefly describing several models of well-being in psychology, I will review theory and empirical findings that support the individual constructs and hypothesized relationships in the model to be tested in this study. The statement of the problem follows the literature review.

### *Well-Being Conceptualizations*

The evolution of two separate yet related approaches to the study of well-being has allowed for the development of programs of research that have yielded ever-more complex and detailed understandings of happiness and meaning. Work on hedonic SWB (Diener, 1984) and eudamonic PWB (Ryff & Keyes, 1995) has come to dominate the literature, and each approach carries with it tacit assumptions about the nature of well-being. Therefore, before moving to a discussion of well-being predictors and explanatory models, it is important to elucidate the structure and meaning of PWB and SWB.

*Psychological Well-Being.* There is a long-standing debate regarding empiricism versus rationalism in psychology. Whereas empiricists tend to assert that psychological constructs should be derived via empirical research, rationalists contend that such constructs should be deduced using theoretical models (Nunnally, 1967). Carol Ryff (Ryff, 1989, 1991) has asserted that the SWB conceptualization was not theoretically-guided and is overly focused on the subjective experience of emotional well-being. Her multidimensional PWB approach is intended to be a more theoretically driven formulation of well-being that addresses “objective” indicators of effective psychological development. This approach integrates social and developmental psychological theory,

and holds that a person's status in six areas of life (autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance) essentially composes well-being. PWB reflects a person's ability to successfully engage in pursuits relevant to these six life areas, and Ryff (1991) contends that this approach to well-being emphasizes external or objective criteria beyond a person's emotional experience. In essence, the PWB construct is intended to indicate "how well one is doing" rather than "how one feels." However, the objective and external nature of the PWB approach is called into question when one considers that ratings on pursuits within these domains are generally self-reported. Thus, it is not clear how PWB can be considered either objective or external.

Although PWB has received much attention in the study of well-being, there are several reasons that the current project utilizes SWB outcome indicators instead of PWB. As noted by Robbins and Kliewer (2000), "The broader psychological well-being concept is a 'mixture' of internal and external perspectives, and various constructs fall along a continuum with well-being constructs used as both outcome variables and as process or mediating variables" (p. 315). Furthermore, there is a considerable lack of clarity regarding the meaning, independence, and temporal relationships among the PWB dimensions. It is also somewhat difficult to see how phenomenological constructs such as "purpose in life" and "self-acceptance" could be measured objectively or externally.

Although Ryff's (1989) "construct-oriented" approach to the development of the scales and items for the six dimensions of PWB is, indeed, theoretically based, serious questions remain regarding the structure and meaning of PWB. This somewhat fuzzy understanding of the nature of PWB suggests the need to further establish the validity of

the scales used to measure this construct, and to distinguish them from SWB. However important it is to understand the meaning of well-being as reflected by PWB, it is necessary to use valid, reliable, and clearly defined outcome measures to test process-oriented models

Addressing the extent to which one is able to successfully take part in valued life activities as an indicator of one's well-being has intuitive appeal. Participation in life can be seen as setting and approaching one's goals, and Ryff's (1995) theory and scales implicitly reflect "how one is doing" with general goals couched in six life areas. Competence in SDT theory (Deci & Ryan, 1987), and the PWB domains of environmental mastery and positive relations with others, represent three areas that overlap, conceptually, with the social cognitive constructs of self-efficacy, goal progress, and social supports, respectively. In this way, social cognitive theory offers some guidance as to how several eudaimonic constructs from different theoretical perspectives may relate to each other, as well as to hedonic life satisfaction (e.g. as an outcome indicator). Social supports, self-efficacy, and a sense of making progress with one's valued goals can be seen both as indicators of eudaimonic functioning as well as predictors of life satisfaction, or hedonic well-being.

*Subjective Well-Being.* While Ryff's PWB construct addresses positive psychological functioning, SWB reflects a clearly defined, empirically-derived approach to measuring emotional well-being. Whereas Ryff's PWB approach has attracted a modicum of research activity, research and theory on the development of models utilizing the SWB construct has proven to be fertile ground for many programs of empirical investigation (Diener et al., 1999). As noted above, the SWB construct is most frequently

operationalized using Diener's (1984) tripartite conceptualization, which includes positive affect, negative affect, and life satisfaction. A 2-year multimethod-multitrait study by Lucas et al. (1996) indicated that life satisfaction is related to yet discernable from positive and negative affect. The Satisfaction with Life Scale (SWLS; Diener et al., 1985) and the Positive and Negative Affect Scale (PANAS; Watson et al., 1988) are the measures most commonly utilized to measure global life satisfaction and positive/negative affect, respectively.

Satisfaction has been shown to have global and domain-specific components, indicating that a person can provide overall satisfaction judgments that are distinct from estimates of satisfaction in specific life domains such as school, work, or romance. Furthermore, research by Kahneman (1999) has shown that single reports of global well-being are different than daily reports of well-being. For example, it has been empirically determined that aggregating or averaging a series of responses to the question, "How satisfied are you right now?" over time is not equivalent to asking a person "In general, how satisfied are you with your life?" This finding indicates the need to understand how specific contexts and referents influence satisfaction evaluations (Schwarz & Strack, 1999).

SWB is comprised of related yet differentiated cognitive (e.g., global and domain-specific life satisfaction) and affective (e.g., positive and negative affect) components. In the SWB model, affect embodies the "feeling" aspect of happiness, whereas life satisfaction has been conceptualized to indicate the cognitive or "thinking" component. Life satisfaction is defined as a global cognitive estimation regarding how satisfied a person is with his/her life in general. Affect refers to the quality of one's

emotional experience of happiness (positive and negative). Positive and negative affect reflect two relatively distinct constructs rather than opposite ends of a single affective continuum (Diener, 1984). Various authors have advocated the need to address how the cognitive and affective components of SWB may operate independently in varying situations and what factors may predict or promote these separable components (Diener, 1999; Emmons, 1991).

*Domain-Specific Satisfaction.* A wealth of research indicates that global and domain-specific satisfaction are discernable from each other, and the relationship between these constructs has been shown to vary considerably from study to study (Kozma et al., 2000; Lent et al., in press; Oishi et al., 1999; Schwartz et al., 1991; Singley et al, 2004). Tait et al.'s (1989) meta-analysis found life and job satisfaction to be correlated at .44 on average. Similarly, Myers and Cairo (1992) found that job and life satisfaction correlated .50, indicating that these two types of satisfaction share approximately 25% of common variance. Schwarz et al. (1991) measured the relationships between global life satisfaction and domain-specific satisfaction in several different areas (work, marriage, and leisure). Results indicated that the correlation between global and domain-specific satisfaction ranged from .32 to .46 for the different life domains. In contrast to these studies indicating at least a moderate relationship between global and domain-specific satisfaction, Robbins, Lee, and Wan (1994) found that the model which best fit their data treated leisure and life satisfaction as completely independent.

To help address the variation in findings across different studies of global and domain-specific satisfaction, Schwarz and Strack (1999) noted that it is important to

understand the influence of context on satisfaction evaluations. According to these authors, answering the question “How happy are you?” is actually a fairly abstract and complex judgment. In formulating a thoughtful and comprehensive answer, one would need to address a broad span of factors (e.g. “Compared to what?” or “All the time?” or “On average, across all domains of life, how happy am I?”). This task carries a considerable cognitive load, so people naturally employ simplifying strategies to make such an estimation manageable. Domain-specific judgments are not as complex as global ones. The question, “How satisfied are you with your job?” is far more circumscribed than asking about global happiness, and the presence of chronically accessible information such as pay, comparison to other jobs, and the subjective experience of happiness while working render such domain-specific judgments easier to make.

The question of global versus domain-specific satisfaction is relevant to the discussion of top-down versus bottom-up conceptualizations of SWB. According to the temperamental, top-down view, one’s personality would be likely to engender a tendency to construe and react to one’s surrounding similarly across contexts. Global life satisfaction should therefore be highly correlated with (and causally predominant to) domain satisfaction. Similarly, satisfaction in specific life domains would be expected to be somewhat uniform because of the consistent influence of a person’s personality. However, in a bottom-up model, a person’s satisfaction in individual life domains should hypothetically vary more across contexts because her/his satisfaction with each situation is contingent more on the specifics of that situation (e.g., goal perceptions, availability of resources) than on invariant personality traits. Both top-down and bottom-up influences are likely to impact SWB (Lent, 2004).

A recent meta-analytic study by Heller, Watson, and Ilies (2004) addressed the question of top-down and bottom-up effects of life satisfaction by aggregating data and results from nearly 300 previous studies. The authors included studies addressing how personality (neuroticism, extraversion, agreeableness, and conscientiousness) relates to both domain satisfaction (job and marital) and global life satisfaction. They tested three path models: (a) a “direct effects” top-down model in which personality traits had direct effects on domain and global satisfaction, but there was no hypothesized relationship between domain and global satisfaction; (b) a “temperament” top-down model in which personality was hypothesized to engender a typical way of evaluating one’s life (i.e. life satisfaction) which, in turn, influences one’s assessment of domain satisfaction (in this model, global life satisfaction was hypothesized to fully mediate the relationship between personality and domain satisfaction); and (c) an integrative model in which both personality and domain satisfaction jointly determine global life satisfaction. In this model, domain satisfaction was hypothesized to partially mediate the relationship between personality and global life satisfaction. Results from Heller et al’s (2004) study indicated that the “direct effect” top-down model showed a poor fit to the data. Both the “temperament” top-down model and the integrative models showed good model fit, but the integrative model evidenced the strongest fit of all three models. Further support for the bottom-up approach derives from the finding that job and marital satisfactions were strongly linked to global life satisfaction, but were only weakly linked to each other.

Overall, these results indicate the need to address top-down personality influences on life satisfaction, as well as the role of domain satisfaction as a mediator of the relationship between personality and life satisfaction. The two models that evidenced

good model fit in Heller et al.'s (2004) study supported a possible reciprocal effects relationship between domain satisfaction and global life satisfaction: in the second model, global life satisfaction was a significant predictor of domain satisfaction, whereas in the third model, domain satisfaction significantly predicted global life satisfaction. In other words, domain satisfaction and global life satisfaction predicted each other and may therefore be hypothesized to affect one another reciprocally over time. However, it is important to note that Heller et al.'s (2004) meta-analysis was cross-sectional and therefore cannot be interpreted as indicating temporal precedence or causality. “[T]he comprehensive study of satisfaction and its antecedents cannot be based solely on static cross-sectional data but rather requires the use of multiwave longitudinal designs or shorter diary designs that enable researchers to examine how satisfaction changes over time” (Karney & Bradbury, 1995, p. 595). It is apparent that in order to gain a clearer understanding of the direction of influence among personality, domain satisfaction, and global satisfaction (and perhaps resolve the top-down vs. bottom-up debate), it will be necessary for researchers to use longitudinal designs.

The next section introduces two SWB frameworks that inform the longitudinal model of domain-specific and global life satisfaction that is to be tested in this study.

#### *SWB Models*

In the past three decades, there has been increasing emphasis in the literature on developing more sophisticated models of SWB. Early approaches tended to address the correlation between demographics and SWB, while more recent conceptualizations of the predictors of well-being have taken an increasingly process-oriented approach. Many of these models aim to clarify the relationships among SWB predictors as well as elucidate

how such predictors relate to SWB. In this section, I will present two general categories of SWB models and discuss specific empirical work that exemplifies each type of model.

*Temperamental Model of SWB.* Any given model rests on a set of assumptions that naturally guide the types of hypotheses and empirical investigations used to test it. Robbins and Kliewer (2000) described the temperamental approach to SWB as emphasizing the crucial role of personality and temperament. These authors asserted that SWB models in this tradition predict that personality can affect SWB in one of two ways. McCrae and Costa's (1991) temperamental view indicates that stable personality traits have consistent, direct effects on SWB. This assertion is indicative of a strict top-down conceptualization of SWB as tantamount to a personality trait. Alternately, personality can have an indirect effect on SWB by engendering stable dispositions (e.g. goal directedness), affecting personality-environment fit, or coloring one's perceptions and attributions of life events. In the indirect temperamental view, each of these factors may mediate the relationship between personality traits and SWB.

In positing the importance of understanding personality, the environment, and interaction between the two in relation to SWB, Diener et al. (1999) noted that "The influences of traits on emotions are probably moderated by the environment in which the individual is immersed. Thus, the effects of personality may extend beyond straightforward main effects; personality may interact with situations and the environment to influence SWB" (p. 281). Although empirical research on this position is somewhat lacking, this assertion implies that a person's happiness is the result of a person's subjective evaluations of his/her "fit" with the environment. Diener et al. (1999) noted that such a position is similar to a diathesis-stress model in that the same

genetically-dictated temperament will result in different levels of SWB as a function of the environment in which a person finds him or herself.

Strong support for this assertion came from Tellegen et al.'s (1988) study of twins reared either together or apart. In a heritability study, Tellegen et al. intended to explain SWB as a function of genetics. Results showed that twins raised together were not significantly more similar in SWB than were twins raised apart. The authors estimated that 40% of positive affect and 55% of negative affect could be accounted for by genetics. The effect of shared family environment accounted for 22% of positive affect, but only 2% of negative emotionality. Therefore, one's experience of happiness was shown to be largely a function of genetically-determined temperament, but the clear effect of family environment (at least on positive affect) was also evident.

DeNeve and Cooper (1998) conducted a meta-analysis of the relationship of 137 distinct personality constructs to SWB. Their findings indicated that Neuroticism was the strongest predictor of negative affect, happiness, and life satisfaction. DeNeve and Cooper' results showed somewhat low effect sizes (from .08 to .18) between markers of personality and SWB, and found that individual demographic variables accounted for less than 3% of the variance in SWB components. These authors suggested that the relationship of SWB to personality may be a function of how personality traits predispose one to make negative or positive attributions regarding one's emotions. They also cited the importance of psychosocial factors such as social support, goal striving, daily events, and resources for SWB. This interpretation is consonant with Robbins and Kliewer's (2000) assertion that attributions regarding life events and dispositions such as goal directedness are likely mediators of the relationship between temperament and SWB.

Judge, Heller, and Mount (2002) addressed the relationship between personality factors and domain-specific life satisfaction by conducting a meta-analysis of the five-factor model (Costa & McCrae, 1992) of personality relative to job satisfaction. In the last 20 years or so, personality researchers have reached near consensus that a five-factor model -- often referred to as "the Big Five" (Goldberg, 1990) -- is the best way to describe the structure of personality. This model of personality includes Neuroticism (or emotional instability), Extraversion (or surgency), Openness (or culture), Agreeableness, and Conscientiousness. This model of personality has received a wealth of support, particularly in the literature covering the dispositional sources of domain satisfaction (Judge, Heller, & Mount, 2002; Karney & Bradbury, 1995) and global life satisfaction (DeNeve & Cooper, 1998). Using data collected from 163 independent samples, results indicated that true score correlations with job satisfaction ranged from .02 to .29 for individual personality factors, while the set of all five personality traits had a multiple correlation of .41 with job satisfaction. In a subsequent study, Ilies and Judge (2003) compared the Big Five dispositional framework with a positive affectivity-negative affectivity model of personality. These authors argued that because the Big 5 and PA/NA personality frameworks represent heritable characteristics (Loehlin, 1992; Loehlin, McCrae, & Costa, 1998; Tellegen et al., 1988) that are related to job satisfaction (Connolly & Viswesvaran, 2000), they should mediate genetic influences on job satisfaction. Ilies and Judge (2003) explained that, "In this article, we sought to 'disentangle' genetic and nongenetic influences that are present in the relationships between personality traits and job satisfaction by integrating meta-analytic results summarizing the relationship between personality and job satisfaction with behavioral-

genetic estimates of the genetic nature of personality and of job satisfaction.” (p. 753).

The authors noted that one’s genes impact personality through biological processes directly as well as indirectly via environmental influences and development.

The authors computed the proportion of genetic variance in job satisfaction that each personality framework could explain. The overall heritability of job satisfaction was estimated by utilizing a meta-analysis to cumulate the heritabilities of job satisfaction reported in the literature (Arvey, Bouchard, & Segal, 1989; Arvey, McCall, & Bouchard, 1994). Partial heritability of job satisfaction was estimated using regression coefficients to predict job satisfaction from PA and NA and the heritability values for Positive and Negative Emotionality reported by Tellegen et al. (1988). The authors assessed the heritability of job satisfaction by analyzing the genetic variance in job satisfaction that is explained by the PA-NA and Big 5 dispositional models tested in the study. Results indicated that positive and negative affect together explain approximately 45% of genetic influence on job satisfaction, while the Big 5 personality traits explained only 24% of such effects. Several other personality researchers have made the case that positive affect and negative affect reflect an “affective core” of Extraversion and Neuroticism, respectively (Brief, 1998; Lucas, Diener, Grob, Suh, & Shao, 2000; Tellegen, 1985). Watson, Wiese, Vaidya, and Tellegen (1999) conducted analyses on a combined sample of 4,457 participants and obtained a correlation of .51 between Extraversion and the trait version of the PANAS’s PA measure. The findings reviewed suggest that affective dispositions may be considered markers of personality that are very important in terms of understanding how personality relates to job satisfaction.

Although similar meta-analyses in domains of life other than job and marriage have not been forthcoming, it seems likely that positive and negative affect are likely to be related to satisfaction in other life domains such as academics, leisure, or romance. The above research on personality and SWB suggests the need to continue to develop more sophisticated models to understand how genetic personality traits relate to SWB. The research reviewed here indicates the need to frame temperament as engendering differences in cognitive, emotional, and behavioral styles which, in turn, impact SWB. Furthermore, by disaggregating SWB into its subcomponents, researchers can begin to determine the direct and indirect processes through which positive and negative affect relate to both global and domain satisfaction.

Empirical and theoretical work developing process-oriented models is another thriving area of investigation, and the next section describes an alternative to the temperamental view of SWB.

*Process-Participation Model of SWB.* In contrast to temperamental SWB models, the process-participation approach takes into account a person's environmental context, behaviors, and perceptions. Such models often focus on how participation in goal-directed pursuits relates to SWB (Diener & Fujita, 1995; Ryan & Deci, 2000; Sheldon & Kasser, 1998). In general, perceiving that one is having success at meeting valued goals is predicted to relate to enhanced SWB, whereas an inability to achieve goals relates to lower SWB (Cantor & Sanderson, 1999). This approach is aligned with the "bottom-up" conceptualization of SWB in that it implies that well-being results from evaluating how one is doing with one's goals, as opposed to simply being a function of inherited personality traits. Process-participation models also reflect eudaimonic

conceptualizations of well-being in that they involve considerations regarding one's goal strivings.

Harlow and Cantor (1996) conducted an investigation that vividly demonstrates how participation in daily life may relate to SWB. These authors hypothesized that participation in daily life events would predict life satisfaction over time beyond the effects of social and personality variables. They measured 33 types of daily activities, social support, and both global and domain-specific (i.e., job) satisfaction. Results indicated that domain-specific satisfaction was predicted by being actively engaged in pursuits within that domain, even when controlling for social, personality, and environmental variables. Harlow and Cantor interpreted these findings as indicating that "participation directly represents the enactment of one's personal purposes within one's actual current living context, and thereby is a direct marker of a person's capacity to adjust to and find satisfaction in that particular life context" (p. 1245).

Cantor and Sanderson (1999) drew upon these empirical findings to posit a goal-oriented theoretical model of the relationship between life task participation and SWB. This model incorporates the idea that how one pursues goals merits attention in SWB research because the strength of the relationship between well-being and life task participation is contingent upon the particular goals one pursues. Essentially, when individuals' valued goals are supported by their daily life context (e.g., by having goal-relevant social, personal, and tangible resources), their well-being should be enhanced. Cantor and Sanderson's model places a high value on having social resources because they help individuals to participate in valued life activities and thereby gain well-being. The authors used the terms "life pursuits" and "goals" interchangeably in their chapter, so

participating in valued life tasks might be usefully reframed as attempting to make progress with personally-relevant goal pursuits. In this way, Cantor and Sanderson's model buttresses the assertion of social cognitive (Bandura, 1986) and goal theories (Locke & Latham, 2002) that having social support improves one's ability to pursue goals, and that successful pursuit of one's goals is related to enhanced well-being.

Cantor and Sanderson asserted that approaching feasible goals "... is particularly important for well-being because those who pursue goals at unmanageable levels may experience frustration and hence stop participating in these tasks" (p. 233). Although not explicitly stated by Cantor and Sanderson, their position implicitly acknowledges the possibility of a reciprocal relationship between self-efficacy and goal progress. In essence, self-efficacy promotes the sense that a goal is feasible, and success or failure at goal pursuit may, in turn, impact self-efficacy. Overall, Cantor and Sanderson's model provides a neat overview of how goal-relevant social resources, progress, and self-efficacy may relate to well-being.

Karoly (1999) theorized that the use of goals as indicators of normal and abnormal adjustment allows researchers and clinicians to "... capture the essentially transitive, future-directed nature of daily living in a form that is neither too abstract nor too molecular in scope" (p. 265). The author theorized that the most logical and meaningful way to understand an individual's participation in life and day-to-day adjustment is to assess his or her goal cognition. Similarly Barone, Maddux, and Snyder (1997) stated, "... psychological adaptation and adjustment, as well as the more elusive notion of happiness, depend largely on effective goal-directed behavior and self-

regulation.... Likewise, psychological dysfunction can be viewed as ineffective goal-setting and self-regulation” (p. 248).

Utilizing a social cognitive approach, Karoly (1999) posited that self-regulation of behavior, affect, and cognition is an ongoing interactional system governed by a negative feedback control loop. Building on previous theory by Mischel and Shoda (1995) positing that goals and values are at the heart of the personality system, goals were hypothesized to be essential to the successful negotiation of the person-environment interaction. Karoly (1999) noted that goals and personal standards are the ideal units of measurement to gauge the person-environment “fit” because they “... define the cross-situational relevance of settings, serve as the psychological links to ‘roles’ and social identities, and provide a temporal anchor for thinking and planning” (p. 268). The author reaffirmed the necessity of SWB models to take into account not only the behavior in pursuit of goals, but also the subjectivity of goal evaluations and the specific life domains to which goals belong.

The temperamental and process-oriented approaches to SWB outlined above offer somewhat different insights into the nature of well-being. Although researchers often tend to pick a “pet model” and frame research questions exclusively within that framework, there is also value in integrating different approaches. Doing so allows for research and theory to draw on the areas of conceptual overlap as well as the unique strengths that characterize specific SWB conceptualizations. Robbins and Kliewer’s (2000) review of the literature included several examples of SWB models that reflect different approaches to understanding how various predictors relate to SWB. In their concluding remarks, these authors noted “...the importance of constructing

multidimensional models that incorporate several facets of well-being, and that require careful conceptual and temporal (i.e., causal) delineation. This is especially critical given the current confusion over general versus domain-specific well-being estimates, and between psychological and subjective well-being conceptions" (p. 336). One way that researchers can begin to address SWB models in a more holistic, multidimensional way would be to develop and test frameworks that incorporate both personality and process-participation perspectives.

Both temperamental and process-oriented models of SWB utilize constructs incorporated in Bandura's (1989) social cognitive theory, such as goal perceptions and behaviors, person-environment transactions, and social resources. However, an orderly synthesis of research and theory from these different areas of the research is somewhat difficult due to differing terminology, methodology, and theoretical perspectives. Bandura's (1989) theory provides an ideal framework within which to integrate temperamental and process-oriented models of SWB (Lent, 2004; Singley, 2003), and the next section will describe the social cognitive principles that inform the model to be tested in the current project.

### *Social Cognitive Theory*

Bandura's social cognitive theory (SCT; 1977; 1986) has received extensive attention in the psychological literature and has been used in many different types of interventions aimed at cognitive and behavioral problems as well as health promotion. SCT's emphasis on cognitions indicates that one's mind is an active force that constructs one's reality and directs behavior on the basis of one's values and expectations. SCT seeks to understand and predict individual and group behavior, and to identify methods

with which behavior can be modified or changed. SCT offers a theoretical foundation for the integrative model tested in the current study, as well as implications for how findings from this research might be usefully applied. It is important to note, however, that some of the relationships outlined in the current model – especially those concerning the impact of personality on social cognitive and well-being variables – do not follow from SCT. Although Bandura has not generally incorporated traditional personality conceptions into his general theory, previous research (Lent et al., *in press*; Singley et al., 2004; Singley, 2003) suggests that personality (Positive Affect, Extraversion) plays an important role in the relationship between social cognitive goal perceptions and well-being outcomes. The model tested in the current study extends previous cross-sectional studies by addressing how personality, goal cognitions, and life satisfaction relate to each other over time. Therefore, the longitudinal model tested in the current study incorporates ingredients of SCT along with theories of personality and well-being and offers certain predictions that are not be derivable from SCT alone.

SCT conceptualizes human behavior as part of a dynamic, triadic, and reciprocal interaction of behavior, personal factors, and the environment (Bandura, 1977). According to this theory, each of these three factors plays a unique role in determining psychosocial functioning. SCT contends that behavior is largely regulated through cognitive processes. The SCT principle of reciprocal determinism indicates that some sources of influence are stronger than others and that they do not all occur simultaneously. In fact, the interaction between the environment, behavior, and personal characteristics will differ based on the individual, the particular behavior being examined, and the

specific context in which the behavior occurs (Bandura, 1989). This emphasis on specific contexts strongly informs the domain-specific focus of the current investigation.

The person-behavior interaction involves the bi-directional influences of one's thoughts, emotions, biological properties, and actions (Bandura, 1977; 1986). For example, one's self-efficacy beliefs and goals give shape and direction to behavior. This behavior, in turn, affects one's emotions and cognitions. The bi-directional interaction between one's personal characteristics and the environment is evident in the process through which expectations, beliefs, and cognitive competencies are developed and modified by social influences and physical structures within the environment. An interaction also occurs between behavior and the environment. Bandura (1977; 1986) contends that people are both products and producers of their environment. A person's behavior will determine the aspects of their environment to which they are exposed, and behavior is, in turn, modified by the environment. This process is relevant to the model being tested in this study because the presence of social support in one's environment is hypothesized to relate to goal progress partly by impacting one's sense of self-efficacy for being able to achieve one's goal. Without such social support and self-efficacy, it is very unlikely that one would even initiate goal-oriented behavior.

SCT characterizes self-regulation as a basic and unique human capability (Bandura, 1986). Self-regulation is central to the proposed model of goals and SWB because it is one of the central cognitive "tools" that humans use to guide purposeful behavior. Bandura (1989) proposes that self-regulatory systems mediate external influences by giving people a sense of purpose in their behavior, and by providing people control over their own thoughts, feelings, motivations, and actions. Self-regulation

systems govern what behaviors are performed, and dictate one's response to such behaviors. The use of motivational standards as a guide for behavior involves both discrepancy production (goal setting) and discrepancy reduction (pursuing a goal) (Bandura, 1977; 1986; 1989). A fundamental assumption of SCT is that people continually set goals and compare them to relevant prior experiences. A person's self-efficacy for a given goal has a major impact on her/his self-motivation for pursuing a given goal (Bandura, 1986; 1989). If one feels capable of achieving the goal, then one is likely to work harder and give up less easily compared to a person who has low self-efficacy.

A person's self-efficacy develops (a) as a result of her/his prior achievement in a particular area, (b) from observations of others' successes and failures, (c) from the persuasion of others, and (d) from one's own physiological state and affective reactions (e.g., emotional arousal and anxiety) while performing a behavior (Bandura, 1977). Self-efficacy is a key construct in the model tested in this study because it strongly determines goal-directed behaviors even while it is impacted by one's own prior goal-relevant experiences. Because one's prior achievement in a particular area can also be framed as a person's experience of having made progress with a given goal, goal progress may be considered a substantive determinant of a person's sense of self-efficacy with that goal. However, because self-efficacy is also considered to be an essential precondition for a person undertaking a given goal (i.e. people do not tend to undertake goals that they do not think they can achieve), the relationship between self-efficacy and goal progress is thought to be bidirectional.

Stated another way, self-efficacy and goal progress may have reciprocal effects on each other over time such that one's initial sense of having made progress with a goal engenders higher self-efficacy which, in turn, makes it more likely that the person will make more progress with the goal in the future. This hypothesized reciprocal relationship is similar in nature to that of global life satisfaction and domain satisfaction, which have been conceptualized as mutual influences on one another over time. Testing the temporal predominance of these relationships is central to the present study.

#### *Statement of the Problem*

Previous theory and research indicate that positive affect (Lucas, Diener, & Suh, 1996), pursuing important goals (Brunstein et al, 1998), having resources that facilitate one's goal pursuit (Diener & Fujita, 1995), having high goal self efficacy (Cantor & Sanderson, 1999), and domain satisfaction (Heller et al., 2004) are related to enhanced SWB (e.g., global life satisfaction). A set of recent studies (Lent et al., 2004; Singley et al., 2004) have tested a model of well-being that integrates social cognitive theory, personality theory, and theories of well-being. These investigations examined the extent to which personality factors (e.g., extraversion, positive affect), goal-related resources, goal progress, and self-efficacy predict domain-specific and global life satisfaction. Findings indicated that if one has high self-efficacy, access to goal-relevant resources, and perceives that he or she is making progress on important life goals, then one will experience higher levels of satisfaction in the life domain in which one's goals are embedded (e.g., academics, social life). Domain satisfaction was, in turn, related to global life satisfaction. Self-efficacy, resources, and goal progress may, therefore,

nurture a sense of satisfaction in specific life domains, which is strongly predictive of global life satisfaction.

The findings from Lent et al. (2004) and Singley et al. (2004) generally support the hypothesized predictors of well-being. Lent et al. tested a cross-sectional model that is similar to the one to be tested longitudinally in the present study. In a two-study article testing the model using different samples and measurement approaches, they found that life satisfaction was predicted by social cognitive variables even after controlling for positive affect (Study 1) or extraversion (Study 2). Domain satisfaction and goal progress were the two best direct predictors of global life satisfaction, and goal progress reliably predicted domain satisfaction across domains in both studies. Furthermore, self-efficacy was found to have both a direct and an indirect (via goal progress) relationship with domain satisfaction. Social supports/resources predicted domain satisfaction directly and indirectly (via goal progress and self-efficacy) in Study 1. Although the use of path modeling allowed for a test of the model posited in these two studies, the cross-sectional methodology in each only allowed for contemporaneous correlational relationships to be established. While this is an important step, a further refinement would be to study the temporal nature of the relationships between variables in this model. This point gets at the heart of the “bottom-up” versus “top-down” debate in well-being research because each of these positions asserts a different cause of well-being (situational and personality, respectively).

The current study integrates these two approaches by including both situational (e.g., goal progress) and personality (positive affect) factors as important variables predicting domain-specific and global life satisfaction. Furthermore, utilizing goal-

oriented SCT variables (self-efficacy, goal progress, social support) that represent eudaimonic mechanisms may encourage understanding of how these variables relate to each other as well as to hedonic life satisfaction. In this way, the model being tested is intended to bridge eudaimonic and hedonic approaches to well-being. Finally, the current study will extend previous research on this model by utilizing a longitudinal methodology to test the temporal nature of the relationships in the model (e.g., does making progress with a goal predict subsequent self-efficacy for that goal, or does having a high sense of goal self-efficacy predict subsequent progress with the goal? Is this relationship bi-directional?). The proposed research will allow for a more fine-grained and comprehensive understanding of the integrative social cognitive model (Lent, 2004; Lent et al., in press; Singley et al., 2004) by utilizing longitudinal methodology and path modeling, as called for by Diener et al. (1999) and Oishi (2000). This longitudinal model of domain-specific and global satisfaction will be described in the next section.

#### *Integrative Model of Domain-Specific and Global Life Satisfaction*

The model illustrated in Figure 1 integrates top-down (e.g., trait affect) and bottom-up (e.g., social cognitive) traditions by positing that both personality and situational/cognitive factors influence a person's life satisfaction. Rain et al.'s (1991) "spillover hypothesis" and Judge and Locke's (1993) "part-whole relationship" between work and life satisfaction suggest that people take specific domains of life into account when making global ratings of their life satisfaction. As previously noted, global life satisfaction has been found to be predicted by satisfaction in important life domains (Lent et al., 2004; Singley et al., 2004). In both of these previous studies, goal progress partially mediated the relationship between goal self-efficacy and domain-specific life

satisfaction. The diagram in Figure 1 captures the hypothesized relationships among the predictors of life satisfaction.

INSERT FIGURE 1 HERE

It makes intuitive sense that aspects of one's career, social, or family life may impact overall life satisfaction. As noted by Lent (2004), “..the perceived importance of a given life domain is assumed to affect the strength and, possibly, direction of domain-life satisfaction relationships.” (p. 499) The current research extends the findings of two other recent studies exploring the relationships of goal progress, self-efficacy, goal-relevant social supports, and trait variables to domain satisfaction and global life satisfaction. In particular, it tests the hypothesized paths in the model using a longitudinal design to address the temporal nature of these relationships in the academic life domain (Lent et al., 2004; Singley et al., 2004). The left-to-right progression in Figure 1 generally implies that constructs at time 1 will predict changes in the constructs to the right of them at time 2 (i.e. the directions of the arrows indicate temporal relationships). Hypothesized reciprocal/bidirectional effects are indicated with a dotted line.

Although it has not yet been tested empirically with a clinical sample, the proposed longitudinal model in Figure 1 may ultimately provide the rationale for goal-based, domain-specific clinical/counseling interventions aimed at facilitating enhanced well-being in clients. Counseling can be thought of as generally aimed at facilitating or restoring clients' well-being, and clients seeking relief from symptoms or problems can also be usefully thought of as trying to set, pursue, and attain goals in specific life domains. A client's presenting problem can be thought of as reflecting a way that his/her

goals in life are not functioning well. The proposed model may provide insight into the processes through which clients may be able to get their important goals “back on track” and thereby experience higher life satisfaction. In this way, the current research aims to begin to bridge the gap between SWB theory/research and counseling applications.

### *Hypotheses*

The hypotheses below address the directionality or temporal progression of the paths in Figure 1. The basic logic of these longitudinal hypotheses is that if change in a given variable at time 2 is predicted by a time 1 variable, then the time 1 variable is an antecedent of the time 2 variable. The general left-to-right progression of the model in Figure 1 implies temporal relationships such that variables on the left side should predict the variables to the right of them (as indicated by the directions of the arrows). In a longitudinal perspective, directionality of the relationship between two variables indicates that change in one variable is related to some other variable that precedes it temporally. Given that a variable at time 1 (self-efficacy, for example) is very likely to be highly correlated with itself at time 2, one way to address change in self-efficacy is to calculate an auto-correlation. For instance, self-efficacy at time 1 can be partialled from self-efficacy at time 2, and the remaining variance left is the change in self-efficacy from time 1 to time 2 that may be accounted for by another time 1 variable. In this way, showing that a given variable (X) at time 1 significantly predicts change in Y (that is, Y at time 2 controlling for Y at time 1) allows for an understanding of the temporal precedence of the relationship between the two variables, X and Y. The technique of autocorrelating a given dependent variable at time 2 ( $Y_2$ ) with itself at time 1 ( $Y_1$ ), and having other time 1 variables predict  $Y_2$  provides the basic strategy behind the following hypotheses. It

should be noted that using this autocorrelation technique at only two points in time (instead of three or more) results in a path coefficient whose value is conceptually identical to test-retest reliability or a stability coefficient. These hypotheses will be tested simultaneously in a path model rather than using separate regression analyses for each. Numbers in parentheses refer to path indicators in Figure 1.

1. Controlling for social supports at time 1 (path #1), time 2 supports will be predicted by time 1 positive affect (#12).
2. Controlling for self-efficacy at time 1 (path #5), self-efficacy at time 2 will be predicted by (a) social supports (#2) and (b) positive affect (#13) at time 1
3. Controlling for goal progress at time 1 (#9), goal progress at time 2 will be predicted by time 1 social support (#3).
4. The relationship between self-efficacy and goal progress will be bidirectional in nature:
  - a. Controlling for goal progress at time 1 (#9), goal progress at time 2 will be predicted by time 1 self-efficacy (#6).
  - b. Controlling for self-efficacy at time 1 (#5), self-efficacy at time 2 will be predicted by goal progress at time 1 (#8).
5. Controlling for time 1 domain satisfaction (#16), time 2 domain satisfaction will be predicted by time 1 (a) goal supports (#4), (b) goal self-efficacy (#7), (c) goal progress (#10), and (d) positive affect (#14).
6. Controlling for global life satisfaction at time 1 (#19), time 2 global life satisfaction will be predicted by time 1 (a) goal progress (#11) and (b) positive affect (#15).
7. The relationship between domain and global satisfaction will be bidirectional in nature:

- a. Controlling for global life satisfaction at time 1 (#19), time 2 global life satisfaction will be predicted by time 1 domain satisfaction (#17).
  - b. Controlling for domain satisfaction at time 1 (#16), time 2 domain satisfaction will be predicted by global life satisfaction at time 1 (#18).
8. The full structural model including all of the above cross-lagged longitudinal paths will show significantly better fit to the data than a model including only autocorrelations and covariances at each time period.
9. The full structural model including all of the above cross-lagged longitudinal paths will show significantly better fit to the data than a model that does not include cross-lagged paths from Time 1 social cognitive Contextual variables (#'s 2,3,4,6,7,9,10, and 11) to Time 2 variables.

### Chapter 3. Method

#### *Participants*

Participants who took part at both Time 1 and Time 2 were 769 students (500 women, 269 men) enrolled at a large Mid-Atlantic Eastern university. The sample obtained was reasonably representative of the larger campus population in that it included comparable proportions of freshmen (26.8%), sophomores (20.7%), juniors (20.3%), seniors (14.6%), fifth year or longer undergraduate students (5.1%), and graduate students (12.6%) as are found on the campus as a whole. The mean GPA for participants was 3.2 with a standard deviation of 0.6. Seventy-six percent of the participants were European American, 4.3% were African American, 10.3% were Asian American, 4.4% were Latino/a, 0.9% were Middle Eastern, 0.8% were Pacific Islanders, and 3.6% reported "other" racial/ethnic identifications. A Chi-square analysis comparing study participants with the campus as a whole indicated that the sample in this study is not representative of the campus population with respect to race/ethnicity  $\chi^2(4, N=769) = 10.19, p < .05$ . Data were gathered at two points in time, and only those students who participated at both times were included in data analyses.

Four hundred and twenty-nine students (239 women, 190 men) took part at Time 1 but did not complete the battery of surveys at Time 2. These students had a mean GPA of 3.24 with a standard deviation of 0.53. With respect to race/ethnicity, 66% of these students were European American, 15.4% were Asian/Asian American, 8.2% were African American, 2.6% were Middle Eastern, 2.3% were Latino/a, 0.7% were Pacific Islanders, and 4.9% identified as "other." In terms of year in school, the students who only took part at Time 1 were 30.3% freshmen, 21.7% sophomores, 20.5% juniors,

13.8% seniors, 2.8% fifth year or longer undergrads, and 11% graduate students. A comparison of the participants that dropped out (non-continuers) with those who completed the survey at both times (continuers) showed minimal differences between these two groups with respect to average GPA, proportions of racial/ethnic groups, and representation from different years in school. Similarly, means, standard deviations, and correlations among the variables included in this study were comparable for continuers and non-continuers at Time 1.

### *Measures*

*Demographics Form* Participants were asked to indicate their gender, year in school, ethnicity, GPA, email address, and an identification number (Appendix B).

*Positive and Negative Affect Schedule.* The brief Positive and Negative Affect Schedule (PANAS, Appendix C; Watson, Clark, & Tellegen, 1988) consists of two 10-item mood scales (one each for positive affect and negative affect). The PANAS uses a 5-item Likert-type format (1=very slightly or not at all; 5=extremely) in which participants rate the extent to which they have felt various moods (e.g. interested, excited, strong, enthusiastic) in the past few weeks. Scores are calculated by summing the responses to the ten items in each of the PA and NA scales. These scales have been shown to be highly internally consistent, largely uncorrelated, and stable at appropriate levels over a 2-month time period. The PANAS has demonstrated convergent validity with the positive and negative affect subscales of the Affect Balance Scale (ABS; Derogatis, Yevzeroff, & Wittelsberger, 1975). In a study by Lucas et al. (1996), the PANAS-PA scale correlated at  $r = .60$  with the ABS-PA, and the PANAS-NA correlated at .66 with the ABS-NA. Only the Positive Affect (PA) scale was used in this study because it may be more

sensitive to situational factors than is NA and, therefore, may have more immediate relevance for intervention design (cf. Lent, 2004; Lent et al., in press). The PA scale has adequate internal consistency with coefficient alphas ranging from .86-.90, and 8-week test-retest reliability ranging from .54 to .68 (Watson et al., 1988).

*Satisfaction With Life Scale.* This is a five-item instrument (SWLS, Appendix D; Diener et al., 1985) using a 1-7 Likert scale to measure global life satisfaction (an individual's evaluation of satisfaction with his or her life), and is intended to assess this construct without tapping into positive/negative affect and loneliness (i.e. "In most ways, my life is close to my ideal"). Responses are totaled and divided by five (the number of items in the SWLS) to yield a score between 1 and 7. The SWLS shows convergent validity with Campbell, Converse, and Rodgers' (1976) semantic differential scale of life satisfaction ( $r = .75$ ). The SWLS has also shown discriminant validity from the PANAS: Life satisfaction correlated at  $r = .50$  with positive affect and  $r = -.30$  with negative affect (Watson et al., 1988). The SWLS has been shown to have high internal consistency (Cronbach's alpha= .87) and temporal reliability ( $r = .82$  over a two month period) (Diener et al., 1985).

*Goal-oriented Social Supports.* Social-environmental support relative to the pursuit of an academic goal was assessed with scales adapted from Lent, Brown et al. (2003). In the original instrument, participants indicated how likely they would be to experience 9 support (e.g., "get encouragement from your friends for pursuing this major") and 5 barrier (e.g., "feel pressure from parents or other important people to change your major to some other field") conditions if they were to pursue an engineering major. In the current study, only the supports scale was used, and the referent for each

item was pursuit of the participant's stated academic goal, rather than pursuing an engineering major (Appendix E). Scale scores are formed by summing the items and dividing by the number of items on the scale. This scale has a possible score range of 1-5, with higher scores reflecting stronger positive expectations relative to the pursuit of an academic goal.

Lent, Brown et al. (2003) found that the support scale yielded a coefficient alpha of .86. Furthermore, this scale produced theory-consistent correlations with efficacy beliefs ( $r = .40$ ), outcome expectations ( $r = .48$ ), and goals ( $r = .41$ ). Singley et al. (2004) utilized the modified supports scale to measure participants' perceptions of having social-environmental supports relevant to their goals in two life domains that differed in level of importance (i.e. most important and third most important life domains). Coefficient alpha for the supports scale was .86 for the most important life domain, and .88 for the third most important life domain. Three-week test-retest reliability of the modified supports instrument was found to be .61 for the most important life domain and .81 for the third most important life domain. Singley et al. (2004) found that the modified supports scales produced theory-consistent relationships with efficacy beliefs and goal progress.

*Domain-specific goal self-efficacy.* This four-item subscale measures participants' sense of self-efficacy regarding an academic goal (Appendix F). The measurement used was a subscale of Karoly's (1995) Goal Systems Assessment Battery. Items such as, "I have the ability to reach this goal" are scored on a 5-point Likert type scale where 1= No confidence and 5=Complete confidence. The responses for each participant are totaled and then divided by four, yielding a possible score range of 1-5. This goal self-efficacy

scale has demonstrated theory-consistent correlations with measures of goal progress ( $r = .51$ ), domain-specific satisfaction ( $r = .66$ ), and global life satisfaction ( $r = .13$ ) (Singley, 2003). One-week test-retest reliability of this subscale was found to be .83 (Karoly, 1995) and three-week test-retest reliability has been found to range from .51 for goals in participants' most important life domains to .75 for goals in participants' third most important life domains (Singley et al., 2003). Cronbach's alpha for this scale in the academic domain was found to be .87 (Karoly, 1995). The academic self-efficacy subscale was found to correlate -.50 with a depression assessment instrument (Karoly, 1995).

*Domain-specific life satisfaction.* This construct was measured using a six item self-report survey in which participants rated statements such as, "In general, I am very satisfied with this life domain" in reference to the academic life domain (Appendix G). The response format is a 7-point Likert scale with anchors of 1=strongly disagree to 7=strongly agree. The measure is scored in the same way as the SWLS (i.e., item responses are totaled, then divided by six). Cronbach's alpha for this scale was found to range from .82 for participants' most important life domain to .85 for participants' third most important life domain in a previous study (Singley, 2003). Three-week test-retest reliability has been found to range from .64 for participants' most important life domain to .73 for participants' third most important life domain (Singley et al., 2004). The modified domain-specific life satisfaction has produced theory-consistent correlations with global life satisfaction ( $r = .51$ ), domain-specific goal progress ( $r = .66$ ), and satisfaction in a different life domain ( $r = .11$ ) (Singley, 2003).

*Domain-specific Goal Progress.* This five-item subscale was developed by Singley (2003), and measures how much progress participants perceive they have made with a specific goal (Appendix H). “I am currently making progress toward this goal” is one of the items, and participants rate their progress using a 1-5 Likert scale (1= Strongly Disagree, 5= Strongly Agree). Item totals are summed and then divided by 5, resulting in a possible score of 1-5. Cronbach’s alpha for this scale has been found to range from .83 to .89 in a previous study, and it yielded theory-consistent correlations with domain-specific goal self-efficacy ( $r = .57$ ), domain-specific life satisfaction ( $r = .63$ ) and progress with goals in a different life domain ( $r = .10$ ) (Singley et al., 2004). Three-week test-retest reliability for this measure was found to be .54 for participants’ most important life domain and .71 for participants’ third most important life domain (Singley et al., 2004).

#### *Procedure*

Data were collected online from students at a large mid-Atlantic university during the Spring, 2004 semester at two points in time, eight weeks apart. Eight weeks was chosen because this period of time should allow students time to have experienced a change in their perceptions regarding their stated academic goal for the semester. Participants were recruited via email solicitation (Appendix A). Because of the number of variables included in the path model and the number of analyses required to test the above hypotheses, the desired  $N$  was 250 to have sufficient statistical power. This estimate was arrived at using Bentler’s (1995) assertion that a ratio of 10:1 for sample size to free parameters (approximately 25 in the longitudinal model above) is appropriate in testing path models..

Previous cross-sectional online studies in this research program have yielded return rates ranging from 5% to 10% (Singley, 2003; Singley et al., 2004). Additionally, it was anticipated that there would be some attrition between time 1 and time 2 data collections in the current study. Therefore, 10,000 email addresses were obtained to increase the likelihood that even if the lowest estimate of 5% (500) of students contacted took part, and 25% of time 1 participants (125) dropped out, the amount of participants (375 in the worst-case scenario) would still allow for ample power to conduct the necessary analyses. A list of 10,000 randomly selected students' email addresses was obtained from the Registrar's Office of a large mid-Atlantic state university. A listserv containing these email addresses was set up in such a way that only the person controlling the list (the author) could post to the list. This approach served the dual purpose of preventing potential participants from responding directly to the list (and thereby spamming each other), as well as protecting the identities of those students on the list. Students who wished to take part in the study were directed to click on a hyperlink in the solicitation email that directed them to the study's website. One follow-up email was sent one week after the initial solicitation email. Nine hundred and twelve emails were returned or indicated errors, yielding a total of 9, 088 potential participants.

Participants in this study were asked to fill out an online survey containing the self-report measures described above. In exchange for their participation, participants were entered into a lottery to win one of two cash prizes worth \$25 and \$50 each. Participants filled out the survey at two points in time, eight weeks apart. Time 1 participation took place during the week of March 1<sup>st</sup>, and time 2 occurred during the week of April 26<sup>th</sup>. Participants provided informed consent (Appendix I) by clicking on

a button below the informed consent statement, which described the study in general terms, explained confidentiality, and invited subjects to ask questions (via email) before beginning. Participants were instructed to close all other windows and programs while completing the survey, and to answer all items on the survey. Participation took approximately fifteen minutes at each of the two administrations. Participants typed in their own self-generated idiographic goal statement (e.g., “To make the Dean’s list”), which was saved in a database. This goal statement was incorporated into the instructions of each of the idiographic instruments so that scale items referred to the self-generated goal (e.g., “How confident are you about your goal ‘to make the Dean’s list’?”). An idiographic format was used because it was anticipated to make students’ goal statements more personally meaningful than a generic nomothetic referent (e.g. “Your academic goal”) After logging in at Time 2, each participant’s goal statement was automatically retrieved from the database and included as a referent in each of the idiographic measures included in this study. This procedure ensured that participants were responding to the assessments with the same idiographic goal referent at both times. After submitting their second survey, participants viewed a debriefing statement (Appendix J) explaining the study. The author’s name and email address were made available on the debriefing page for further questions regarding this research. All students on the list received a single follow-up reminder email to participate at time 1, and those who participated at time 1 were sent two emails during the week of April 26th reminding them to take the survey for the second time. At Time 1, the  $N$  was 1198, and at Time 2, the  $N$  was 769, yielding return rates of 13% and 64%, respectively.

## Chapter 4. Results

### *Reliability*

Table 1 shows the correlations (including 8-week test-retest reliabilities), means, standard deviations, and internal consistency reliability estimates for the scales used. Overall, internal consistency values were moderate to high. In general, the alphas for the instruments used in this study were very similar to those of previous studies (Lent et al., 2004; Singley et al., 2004). This finding lends support to the internal consistency of the idiographic format of the social cognitive assessment instruments used. With respect to construct validity, the variables correlated with each other in theory consistent ways at both Time 1 and Time 2. The 8-week reliability correlations of the scores of the instruments used in this study were consistently higher than the 3-week reliability correlations in Singley et al.'s (2004) study using the same measures. These psychometric findings support the use of the idiographic instruments in the longitudinal model tests, below.

### *Path Analyses*

Structural equation modeling with manifest, or observed, variables was used to test the hypothesized relationships in the model. Path analysis using observed variables, which assumes no measurement error, estimates standardized multiple regression (or path) coefficients between variables. In these analyses, the covariance matrix and maximum likelihood procedures of EQS 5.7 (Hu & Bentler, 1999) were used to assess the relationships among variables in the model and to provide indexes of overall model fit to the data.

Goodness of fit was determined by two fit indices that have been shown to have a low occurrence of both Type I and Type II error rates (Hu & Bentler, 1999). The comparative fit index, or CFI, measures improvement in model fit compared with a null model. A CFI value of .95 and above indicates good model fit to the data. RMSEA, or root mean square error of approximation, measures how well a model fits based on degrees of freedom, and the difference between the estimated and the actual covariance matrix. RMSEA values less than .10 are indicative of adequate model fit (Quintana & Maxwell, 1999). It should be noted that the standard chi-square statistic is based on an assumption of multivariate normality that was not met in the current sample. The normalized estimate of Mardia's coefficient in the *Full Model* was found to be 26.7, and a value of greater than 4 indicates that the sample does not reflect a normal distribution (Bentler & Wu, 1995). Satorra and Bentler (2001) recommend using the Satorra-Bentler Chi-Square (S-B  $\chi^2$ ) to improve the chi-square approximation of fit in nonnormal data samples. Therefore, to compare the fit of nested models addressing reciprocal effects, a S-B  $\chi^2$  difference test was used.

The first step in the current model testing procedure was to test a model in which only covariance relationships and autocorrelations among the variables were specified. Second, a test of the full path model containing all of the hypothesized cross-lagged paths was run. Third, models in which paths between self-efficacy and goal progress, and between domain satisfaction and global satisfaction, had been systematically subtracted were compared to test for reciprocal effects between these two sets of variables. It is important to note that the full longitudinal path model contains all of the relationships in each of the reciprocal effects models (i.e. the reciprocal effects models differ from the

full longitudinal model only in that they lack one or more paths included in the full model). The reciprocal effects models are therefore nested within the full longitudinal model and their S-B  $\chi^2$  values can be compared to determine which model best fits the data.

Tracey and Ward (1998) indicated that when there is significant covariation among scales at the same time period in longitudinal research, such variance should be taken into account. Therefore, before addressing the full longitudinal path model, a model was tested specifying the covariance among the 6 variables at Time 1, covariance among the 5 variables at Time 2, and the autocorrelation between the same scales at both times (e.g., Time 1 Self-Efficacy beliefs predicting Time 2 Self-Efficacy beliefs). This initial model (Model 1; Figure 2) did not include any cross-lagged longitudinal paths and is referred to as the *Autocorrelation Only* model. Scale scores of the Time 1 variables were allowed to correlate freely because previous research and theory has shown that they are highly intercorrelated with each other (Lent et al., 2004; Singley et al., 2004). However, in order to be somewhat parsimonious, only eight of the possible ten covariances among the Time 2 scales were included. Although there is no pre-existing empirical data regarding how the Time 2 scales should covary in a longitudinal model, global life satisfaction was theorized to have only a weak relationship with goal supports and goal self-efficacy. These were the two covariances that were not included. Specifying these parameters allowed a more precise representation of the longitudinal relationships among the variables in the structural model. The same covariances and autocorrelations were included in all of the models tested.

#### *Adequacy of the Full Model*

The *Autocorrelation Only* model (Model 1) was used to test the stability of the relations among the variables at the two time points. This baseline model included the covariances described above as well as the autocorrelations of each variable across Time 1 and Time 2. Table 2 contains the results of this model test. Given indications of multivariate kurtosis (Mardia's coefficient = 32.51, normalized estimate = 26.66), the EQS robust maximum likelihood procedure was used. The *Autocorrelation Model* produced an adequate fit to the data: CFI= .95, RMSEA = .09 (90% confidence interval = .08 to .11), and Satorra-Bentler scaled  $\chi^2(27, N=769) = 210.91, p < .001$ .

The full longitudinal path model, or *Full Model* (Model 2; Figure 3), includes all of the paths representing the hypothesized relationships among the variables in the model. The *Full Model* includes the cross-lagged correlations between variables at Times 1 and 2 and it was expected that it would fit the data better than the baseline *Autocorrelated Model*. Significantly increased model fit of the *Full Model* over the *Autocorrelated Model* indicates that adding the cross-lagged paths results in a model that more fully captures the longitudinal relationships between the variables in the model. Since all of the models tested in the current study produced large Mardia's coefficients, indicating multivariate non-normality, Satorra-Bentler scaled Chi-Square values were used to compare model fit (Satorra & Bentler, 2001).

As shown in Table 2, The *Full Model* (Model 2) produced an adequate fit to the data: CFI= .97, RMSEA = .10 (90% confidence interval = .08 to .11), and Satorra-Bentler scaled  $\chi^2(13, N=769, df=13) = 109.06, p < .001$ . Furthermore, the hypothesis (#8) that the *Full Model* would provide a better fit to the data than the *Autocorrelation Model* was supported,  $\chi^2_{\text{diff}}(14, N=769) = 102.37$ , indicating that adding the

longitudinal cross-lagged relationships substantially improved fit compared to simply modeling the autocorrelations and covariances.

Figure 3 provides the path coefficients of the *Full Model*. For the sake of conceptual clarity, it bears repeating here that including the autocorrelations in the model means that the Time 2 criterion variables can most appropriately be thought of as indicators of change over time (i.e. removing the effect of Time 1 domain satisfaction on Time 2 satisfaction makes the Time 2 outcome “change in domain satisfaction over time” as opposed to simply domain satisfaction at Time 2). In this way, a significant path from Time 1 predictor variables to Time 2 criterion variables indicates that the Time 1 variable predicts subsequent change in (and is therefore assumed to be an antecedent of) the Time 2 variable.

Table 3 summarizes the findings related to the individual hypothesized paths in the model. The column in Table 3 titled “Variance accounted for in DV” indicates the percentage of unique variance that each predictor explains for each dependent variable in the model. These percentages were derived using stepwise regression in which all but one of the predictors of a given DV were entered in step one. In step two, the final predictor was entered, and the  $R^2$  change in the second step was interpreted as an indicator of unique variance contributed by that predictor to the DV. As indicated by hypothesis #1, Time 2 goal supports was significantly predicted by Time 1 positive affect (path 12). Together, PA and the goal supports autocorrelation explained 47% of the variance in change in goal supports over time. Hypothesis #2a was not supported because goal-oriented social supports was not found to be a significant predictor of Time 2 goal self-efficacy (path 2). Similarly, hypothesis #2b was not supported because the

longitudinal relationship between Time 1 PA to Time 2 goal self-efficacy was not significant (path 13). Hypothesis #4b was confirmed because Time 1 goal progress was a significant predictor of Time 2 goal self-efficacy (path 8). This link is in line with the social cognitive assertion that previous progress or success in pursuing a given goal serves to inform one's sense of self-efficacy in relation to that goal.

Goal progress was well predicted by the other social cognitive variables in the model. Confirming hypotheses #3 and #4a, respectively, both goal supports (path 3) and goal self-efficacy (path 6) produced significant direct paths to goal progress beyond its autocorrelation. Including the Time 1 goal progress autocorrelation, this set of predictors accounted for 39% of the variance in change in goal progress.

With respect to the social cognitive variables, goal supports and goal progress explained unique variance in Time 2 domain satisfaction beyond its autocorrelation. Supporting hypothesis #5a, Time 1 goal supports was a significant predictor of subsequent domain satisfaction (path 4). Hypothesis 5b was not supported, as Time 1 (T1) self-efficacy was not a significant predictor of subsequent domain satisfaction (path 7). Hypothesis 5c was confirmed by the finding that Time 1 goal progress significantly predicted Time 2 domain satisfaction (path 10). The hypothesized (#5d) longitudinal relationship of Time 1 PA to Time 2 domain satisfaction was not supported (path 14). Together, the Time 1 domain satisfaction autocorrelation, Time 1 PA, and the social cognitive predictors accounted for 48% of the variance in subsequent domain satisfaction.

Goal progress was the only Time 1 social cognitive variable that produced a significant direct path to global satisfaction beyond PA and the autocorrelation (Hypothesis #6a, path 11). In support of hypothesis #6b, PA produced a significant path

to global satisfaction at Time 2 (path 15). The path (17) from Time 1 domain satisfaction to Time 2 global satisfaction approached significance (indeed, its magnitude was the same as the path from Time 1 PA to Time 2 SWLS, which was significant), but hypothesis #7a was not supported because domain satisfaction was not found to be a significant predictor of change in global satisfaction in the *Full Model*. Hypothesis #7b (path 18) was also not supported because the path leading from Time 1 global satisfaction to subsequent domain satisfaction yielded a path coefficient that was not significant. Altogether, the Time 1 global satisfaction autocorrelation, Time 1 PA, and the social cognitive predictors accounted for 58% of the variance in change in global satisfaction.

With respect to hypothesis #9, results indicated that the *Full Model* (2) showed significantly better fit than Model 3, in which the cross-lagged paths from Time 1 social cognitive contextual variables (goal supports [paths 2,3, and 4], self-efficacy [paths 6 and 7], and goal progress [paths 8,10, and 11]) were omitted. Thus, hypothesis #9 was supported, indicating that this set of social cognitive contextual variables does contribute significant variance to the Time 2 dependent variables beyond the effects of their autocorrelations and personality/affective variables.

#### *Tests of Temporal Predominance*

As indicated in the literature review, the temporal relationship between two pairs of bidirectional variables in the model merits careful scrutiny. In particular, previous research and theory suggest that two pairs of constructs (self efficacy and goal progress; domain satisfaction and global satisfaction) may have reciprocal, or bidirectional, relationships. As noted earlier, goal progress can be seen as both a substantive contributor to, as well as an outcome of, goal self-efficacy in SCT (Bandura, 1986). This

potentially circular causality underscores the need to study the direction of influence between goal progress and self-efficacy. Similarly, prior findings suggest that domain satisfaction may be both an antecedent and consequence of global satisfaction.

The *Full Model* results suggest that Time 1 self-efficacy is a significant predictor of change in goal progress at Time 2, and that Time 1 goal progress is a significant predictor of subsequent change in self-efficacy. However, the *Full Model* alone does not allow for a clear understanding of which variable may exert temporal predominance over the other -- or whether their temporal effects on one another are roughly equivalent.

The approach used here to address direction of influence was similar to that utilized in Tracey's (2002) study assessing the temporal precedence of interest and competency beliefs. The question of direction of influence was examined by employing four alternative possibilities for the effects between self-efficacy and goal progress (the same logic and approach was used to test the direction of influence between domain satisfaction and global life satisfaction): (a) Model 4 (Figure 5): goal progress is predictive of subsequent change in self-efficacy, (b) Model 5 (Figure 6): self-efficacy is predictive of subsequent change in goal progress, (c) Model 6 (Figure 7): no cross-lagged effects (i.e., goal progress does not predict subsequent change in self-efficacy, and self-efficacy is not predictive of subsequent change in goal progress), and (d) Model 2 (Figure 3): fully reciprocal effects between self-efficacy and goal progress. These four conditions were operationalized in four different models. Models 4, 5, and 6 were derived by subtracting one or more paths from the *Full Model* (Model 2). S-B  $\chi^2$  values for each of the four conditions were compared to see which one indicated the best fit to the data. As noted in Tracey (2002), "Only by examining the relative fit of these four

models can the question of relative superiority of the models be addressed. The fit of any one model alone does not preclude adequate fit of other models” (p. 155).

As shown in Table 2, the *Full Model*, including reciprocal paths among self-efficacy and goal progress, evidenced the best fit to the data  $S-B\chi^2(13, N=769) = 109.06, p < .001$ . Model 5, indicating self-efficacy to goal progress effects, showed adequate fit to the data  $S-B\chi^2(14, N=769) = 114.85, p < .001$ , as did Model 4, in which goal progress to self-efficacy effects were modeled  $S-B\chi^2(14, N=769) = 115.08, p < .001$ . The relative fit of Model 4 and 5 could not be directly compared because these models were not nested within each other. Model 6, in which no reciprocal effects between self-efficacy and goal progress were modeled, showed the poorest fit relative to the full model,  $S-B\chi^2(15, N=769) = 123.24, p < .001$ . Although these three models evidenced adequate fit to the data, they were all found to show significantly poorer fit than the *Full Model*, which included reciprocal effects between self-efficacy and goal progress. This finding supports hypotheses #4a (path 6) and #4b (path 8), and suggests that there is a significant and roughly symmetrical, reciprocal relationship between self-efficacy and goal progress over time.

Our approach to analyzing the direction of influence between domain satisfaction and global satisfaction was the same as that outlined above to address reciprocal effects between goal progress and self-efficacy. The four alternative conceptions of influence effects were operationalized in four models: (a) Model 7 (Figure 8): global satisfaction to domain satisfaction; (b) Model 8 (Figure 9): domain satisfaction to global satisfaction; (c) Model 9 (Figure 10): no cross-lagged effects; and (d) Model 2 (the *Full Model* ; Figure 3) including reciprocal effects between global satisfaction and domain satisfaction.

Results indicated that none of the three alternative models (7, 8, or 9) showed significantly better or worse fit than the *Full Model*. Thus, neither hypothesis #7a (path 17) nor #7b (path 18) was supported. Parsimony may, therefore, favor Model 9 because neither directional path (domain to global satisfaction or global to domain satisfaction) is necessary to achieve adequate model fit. However, the directional path (17) from domain satisfaction to subsequent global satisfaction approached or attained significance, respectively, in Model 2 and Model 8, whereas the path from global to domain satisfaction (18) was non-significant both in Model 2 and Model 7. These findings are somewhat ambiguous but may be taken to suggest that the path from domain to global satisfaction (path 17) is temporally predominant, although not dramatically so.

## Chapter. 5 Discussion

### *Summary of Findings*

In the current study, a social cognitive model of the temporal relationships between positive affect, goal cognitions (progress, social support, self-efficacy), domain satisfaction, and global satisfaction was examined. After examining the psychometrics of the survey instruments, the *Full Model*, including all hypothesized relationships among the variables in the model, was analyzed. The reciprocal effects of two sets of variables were then addressed by systematically subtracting paths from the *Full Model* and comparing the nested models with the *Full Model*.

The psychometrics of the instruments utilized in the current study suggest that they are appropriate to be used in the longitudinal model tests. Specifically, all of the measures showed appropriate internal consistency estimates at both Time 1 and Time 2. The construct validity of the survey instruments was also supported by the finding that they generally related to each other in theory-consistent ways. Furthermore, the 8-week test-retest reliability of the novel idiographic measures indicates that they were moderately stable over time.

Taken together, findings indicate that the social cognitive model tested in this study evidenced good fit to the data. Results are in keeping with previous research and theory addressing the usefulness of social cognitive variables (e.g. goal progress, self-efficacy, social supports) as predictors of satisfaction (Brunstein et al., 1998; Lent et al., 2004; Sheldon & Kasser, 1998; Singley et al., 2004). Present findings extend previous cross-sectional research by testing a longitudinal model to address (a) relationships among social cognitive variables over time, and (b) how personality and social cognitive

variables operate in concert as predictors of domain and global life satisfaction over time. A fundamental assumption of the model – that personality and context both predict satisfaction outcomes – was supported.

With a few exceptions, the variables in the *Full Model* generally related to each other in theory-consistent ways. In keeping with SCT (Bandura, 1986) principles, goal self-efficacy and goal progress were found to have reciprocal effects over time. This finding is interesting because it suggests that self-efficacy and perceiving that one is making progress with one's goals may comprise a feedback loop that can either promote or diminish performance. Also in keeping with SCT principles and previous research (Brunstein et al., 1998; Lent et al., 2004; Singley et al., 2004), goal progress was strongly related to subsequent domain satisfaction. Indeed, goal progress was the single best cross-lagged predictor of domain satisfaction across the models tested, suggesting that one's perception of making adequate progress with goals plays an important role in one's experience of domain satisfaction. Goal progress was also a significant predictor of global satisfaction, but the magnitude of this relation was smaller than the relationship between goal progress and domain satisfaction. As hypothesized, goal-oriented social supports also predicted change in domain satisfaction. Furthermore, as predicted, the Time 1 contextuelsocial cognitive variables (Self-Efficacy, Goal Supports, and Goal Progress) included in this study were shown to contribute significant variance to Time 2 variables beyond the effects of their autocorrelations and personality (Positive Affect, Domain Satisfaction, and Global Satisfaction). The amount of variance that each individual contextuelsocial cognitive predictor was able to account for in each specific criterion variable was generally small, usually less than 2%. However, evidence for a

bottom-up conceptualization was supported because, taken together, these contextual social cognitive variables did predict subsequent change in Time 2 variables including Domain Specific and Global Satisfaction.

Results of analyses assessing the temporal relationship between domain-specific and global satisfaction did not indicate the presence of reciprocal effects. This finding is somewhat puzzling in light of the plethora of previous research indicating a strong relationship between global and domain satisfaction (Heller et al., 2004; Lent et al., 2004; Singley, 2003; Singley et al., 2004). In the *Full Model*, the path from Time 1 domain satisfaction to subsequent global satisfaction approached significance, while the path from Time 1 global satisfaction to subsequent domain satisfaction was quite small and non-significant. Removing the path from global to domain satisfaction (Model 8) slightly improved model fit and made the path from domain satisfaction to global satisfaction significant. While these findings are somewhat ambiguous, they do offer weak support for the “spillover” hypothesis – that is, satisfaction in particular life domains may “spill over” into, and help promote, global satisfaction.

Previous research and theory has shown reliable, though varying relationships between positive affect and life satisfaction (Diener et al., 1999; Emmons, 1986), and findings from the current study support a link between the two constructs. Although PA and life satisfaction are often combined along with negative affect to form SWB, one of the goals of this study was to disaggregate PA and life satisfaction to assess how they are related to each other as well as the social cognitive variables over time. Positive affect (PA) was shown to be a significant predictor of global life satisfaction but not domain

satisfaction. These findings are consistent with Heller et al.'s (2004) conclusion that "life satisfaction is more proximal to personality than domain satisfactions" (592).

Several of the hypothesized relationships in the model were not supported. Most puzzling was the lack of a significant relationship between goal-oriented social supports and subsequent goal self-efficacy. According to SCT theory and empirical research on social cognitive career theory (Bandura, 1986; Lent et al., 2001), the perception that one has appropriate social supports for an important pursuit should be related to an enhanced sense of self-efficacy for that endeavor. However, results in the current study did not support this relationship. It may have been that goal progress, an indicator of personal performance accomplishments, was simply a more compelling source of self-efficacy information than was availability of social support. Social cognitive theory, and some research, does suggest that personal performance accomplishments will tend to serve as a more potent source of efficacy information than do less direct sources, like social support (e.g., Lent et al., 1994).

In sum, the process-oriented model assessed in the current study was intended to integrate several different approaches to well-being research that have traditionally been conceptually distinct (top-down personality vs. bottom-up contextual, and eudaimonic "doing" vs. hedonic "feeling"). The results of this study generally support the usefulness of this integrative model. The model produced good overall fit to the data, and particular social cognitive variables were predictive of domain and global life satisfaction, supporting the bottom-up view. The linkage of positive affect to global life satisfaction was also supportive of the top-down (personality) view of well-being. The weak or null relationships observed between domain and global life satisfaction were somewhat

surprising and contrary to hypotheses. However, the finding that goal progress was a good predictor of domain as well as global satisfaction was consistent with the notion that eudaimonic (e.g., goal) mechanisms can lead to hedonic well-being, perhaps by endowing the individual with a sense of life purpose and meaning..

### *Clinical Implications*

An important implication of findings from this study lies in the approaches they suggest for enhancing life satisfaction. Participants' perceptions that they were making progress with goals were predictive of both domain-specific and global life satisfaction. One potential approach to working with students who present with academic difficulty would be to frame academic pursuits as goals and then assist the student to consider (a) whether aspects of the goal-setting process may need attention (e.g., are the student's goals clear, attainable, or broken into proximal sub-goals? Are reasonable standards being used to assess progress?) and (b) how goal pursuit can be facilitated (e.g., does the student have adequate access to social support or other necessary resources, like tutoring or study groups? Do study skills need improvement?). This focus on assisting students to set and progress at meaningful life goals may help them to enhance their sense of academic satisfaction and global life satisfaction.

It may also be valuable to attend to the variables that appear to be temporal precursors of goal progress. The connection between social supports and subsequent goal progress and domain satisfaction indicates that encouraging students to attend to the presence or absence of supportive people in their lives has relevance for their goal progress and academic satisfaction. For students who are socially isolated and having trouble with academic goals, these results indicate that developing a support network may

be an important resource to achieve one's academic goals and experience satisfaction with academics. Finally, the finding that self-efficacy may serve as a source of goal progress suggests that self-efficacy beliefs represent a viable point of intervention. Social cognitive theory points to a variety of activities that can build self-efficacy (e.g., skill development activities, management of anxiety). All of these implications are made tentatively because this model has not been validated with a clinical sample.

#### *Study Limitations*

An important limitation of the current study is the sample bias introduced by the fact that participants were recruited online and, therefore, only those students who use email could have participated. A Chi-Square analysis showed that the sample obtained in this study was significantly different than the campus population as a whole with respect to racial/ethnic representation. This result calls into question the generalizability of these findings to the larger campus population. One reason for this discrepancy may be that students who were more likely to respond to an online methodology might differ from other students in terms of their comfort with online assessment. In this way, some findings in the current study that differ from previous findings may be attributable to method bias. It is also possible that students who chose to participate may have been different than those who declined, for example, in terms of level of domain or life satisfaction, goal orientation, or motivation to win the cash prize. The resulting sample homogeneity could have attenuated model relationships. Additionally, a monomethod bias is evident because only self-report survey measures were employed in this study.

Another important limitation to this study is that the model was tested at only two points in time 8 weeks apart, thus limiting our ability to address how the relationships

among the various constructs might change over multiple and longer time intervals. This study was also limited in that only the academic domain was assessed. It is possible that the findings might not generalize to other domains such as work, marriage, or social domains. Another consideration is that positive affect was treated only as a predictor (Time 1) variable due to the assumption that, as a personality variable, it would not be likely to change much in two months. As a result, the model tested in this study did not examine the possibility that changes in positive affect could be stimulated by social cognitive factors, such as social support, goal progress, or self-efficacy (Lent, 2004).

Finally, though a number of the cross-lagged (i.e., Time 1 to Time 2) paths were significant, it should be noted that their effect sizes were, for the most part, quite modest in magnitude. This may simply reflect the considerable stability of the study's variables over the 8-week assessment interval. In other words, there may have been relatively little additional variance in the Time 2 variables to be explained, taking into account both auto-correlation (i.e., relations among the same variables at the two testing periods) and substantial covariation among the predictors at Time 1. Given these measurement considerations, the small cross-lagged paths may still be noteworthy, pointing to processes (e.g., goal-setting, efficacy-building) over which individuals may assert some measure of personal control.

### *Future Research*

These limitations suggest several directions for future research. In order to gain a finer-grained understanding of how personality, social cognitive variables, and satisfaction relate over time, future studies should assess participants at more than two points in time. It would be interesting to know if the changes observed over a two month

period in this study would be consistent with changes over different time periods such as one week or one year. In order to more fully examine the ways in which particular variables – and the relationships among them – change over time, lengthier, multiple time-point longitudinal designs should be utilized in life satisfaction research. Furthermore, the use of advanced statistical techniques, such as latent curve growth modeling, could shed greater light on how particular variables change over time.

Future research on this model might also be conducted using different measurement approaches. Daily diary studies in which participants report daily scores using personal digital assistants is one alternative to traditional survey instruments. Such a methodology may help, for example, to assess participants “on-line” goal progress as they are actually taking part in goal-relevant activities, rather than asking them to rate such perceptions after the fact. Additionally, use of well-being outcome indicators such as medical health status would put this model into a biopsychosocial context.

Another interesting area for future research on this model would be to address goal type, and how the qualitative characteristics of goals impact the relationships among the variables. Different areas of the literature including Industrial/Organizational Psychology, and Educational Psychology have formulated various approaches to goal typologies. Level of specificity (Vollmeyer & Burns, 2002), mastery versus learning expectancies (Kristof-Brown & Stevens, 2001), and approach versus avoidance (Midgley, Kaplan, & Middleton, 2001) are just a few of the different ways that goals have been categorized in these different areas of the literature. It seems likely that a comprehensive study linking these various goal typologies may allow researchers across different disciplines to integrate and simplify the study of goals.

These findings support the need for researchers to disaggregate SWB into its component parts to study how they are differentially related to SWB predictors. As noted above, positive affect, domain satisfaction, and global satisfaction exhibited somewhat different relationships with the social cognitive variables in the model. Therefore, in order to foster continued development and integration of more complex SWB models, it is important to continue to examine positive affect, negative affect, and life satisfaction as separable components of SWB, each potentially with somewhat unique antecedents and clinical implications.

Another fertile area for future longitudinal life satisfaction research involves the development and validation of assessment instruments to further flesh out the model tested in the current study. Although the idiographic measures employed in this study evidenced adequate psychometric properties, future research might focus on replicating the results of this study employing nomothetic or alternative idiographic methods. It may be that constraining participants to a single idiographic goal statement, as was done in the current study, attenuates the relationships among the variables over time because the initial goal may subsequently lose its salience to the participant (e.g. the goal is achieved, or a change in the participant's life context renders the goal obsolete). Use of more flexible goal language might, therefore, conceivably enhance model fit. For example, rather than asking participants to address a single goal over time, they could be instructed to attend to "an important academic goal," the specifics of which could change over time.

Another potential extension of the current study would be to apply the social cognitive model of domain and life satisfaction to more diverse populations with respect to age, region of the country, or race/ethnicity. Given that many of the relationships in

the model tested in this study are similar to those in the SCCT (Lent et al., 1994), future research might address the extent to which the results in the academic domain from the current study may generalize to the work domain. There has been a great deal of research addressing the relationship between work satisfaction and overall life satisfaction (Judge & Locke, 1993; Rain et al., 1991), and the model assessed in the current study may prove useful in explicating this relationship by delineating the contribution of personality and social cognitive variables to both.

Finally, as noted, results from the current study need replication, and doing so with a clinical sample could pave the way for the use of an experimental intervention with clients. For example, conducting intervention studies in which the hypothesized precursors of domain-specific and global satisfaction are addressed as treatment elements could provide valuable insight into which of the predictors in this model are most amenable to clinical intervention. Furthermore, utilizing such a design with appropriate control groups would allow researchers and clinicians to make even more compelling inferences regarding temporal precedence or causality in the relationships among specific variables in the model.

## Appendix A.

Subject header: Win \$50 in 10 minutes- Participate in online UMD psychology research!!

Dear UMD student,

A research team in the University of Maryland's Department of Counseling and Personnel Services is conducting a project aimed at understanding the relationships between personal goals and happiness with different parts of people's lives. To participate, please go to <https://www.counseling.umd.edu/Singley/> and complete the survey. You'll need to take a short online survey twice, two months apart. **The survey takes approximately ten minutes** to complete, and if you participate, **you'll be entered into a drawing for \$50 and a second prize of \$25 cash**, and you'll be given access to some online software designed to help you with your goals! **All results are confidential**, and you must complete the survey both times to be entered in the drawing for the cash prizes. The survey website is secure and is hosted by the UMD Counseling Center. Upon clicking on the link above, you may get a message regarding the site's security certificates, but please note that there is absolutely no danger to your security or your computer- this message merely indicates that the site is using security certificates for added protection. Your email address was randomly selected from UMCP students and added to this listserv list, which will be deactivated after one more solicitation email is sent out on Monday, 3/15/04. If you would like to opt out of receiving the single follow-up reminder to take this online survey, send an email from the email account at which you received this message to [listserv@listserv.umd.edu](mailto:listserv@listserv.umd.edu) and put "unsubscribe goalshappinessstudy" (but without quotation marks) in the body of the email. If you have any questions regarding this study, please do not hesitate to contact Daniel Singley at [dsingley@wam.umd.edu](mailto:dsingley@wam.umd.edu). I really appreciate your participation, and thanks for your time!

Sincerely,

Daniel B. Singley

**Appendix B.**

*Demographic Information*

Email address:	_____
Identification #:	_____
Gender:	<input type="checkbox"/> Male <input type="checkbox"/> Female
Race or ethnic group:	<input type="checkbox"/> Black/African American <input type="checkbox"/> White/ Caucasian <input type="checkbox"/> Hispanic/ Latino/a <input type="checkbox"/> Asian/ Asian American <input type="checkbox"/> Middle Eastern descent <input type="checkbox"/> Pacific islander <input type="checkbox"/> Other (Please Describe): _____
Year in school:	<input type="checkbox"/> first year/freshman <input type="checkbox"/> second year/sophomore <input type="checkbox"/> third year/junior <input type="checkbox"/> fourth year/senior <input type="checkbox"/> fifth year or longer undergrad graduate
Approximate GPA:	_____

Proceed to next page->

### Appendix C.

#### PANAS-Positive Affect Scale

<b>Instructions:</b> This scale of a number of words that describe different feelings and emotions. Read each item and then check the appropriate response in the space next to that word. Indicate to what extent you have felt this way <b>during the past few weeks.</b>					
Enthusiastic	1 very slightly or not at all	2 a little	3 moderately	4 quite a bit	5 Extremely
Interested	1 very slightly or not at all	2 a little	3 moderately	4 quite a bit	5 extremely
Determined	1 very slightly or not at all	2 a little	3 moderately	4 quite a bit	5 extremely
Excited	1 very slightly or not at all	2 a little	3 moderately	4 quite a bit	5 extremely
Inspired	1 very slightly or not at all	2 a little	3 moderately	4 quite a bit	5 extremely
Alert	1 very slightly or not at all	2 a little	3 moderately	4 quite a bit	5 extremely
Active	1 very slightly or not at all	2 a little	3 moderately	4 quite a bit	5 extremely
Strong	1 very slightly or not at all	2 a little	3 moderately	4 quite a bit	5 extremely
Proud	1 very slightly or not at all	2 a little	3 moderately	4 quite a bit	5 extremely
Attentive	1 very slightly or not at all	2 a little	3 moderately	4 quite a bit	5 extremely

Proceed to next page->

### Appendix D.

#### *SWLS*

Please answer the following questions with this scale: (1=Strongly disagree 2=Disagree 3=Slightly disagree 4=Neither 5=Slightly agree 6=agree 7=Strongly disagree)						
	Strongly disagree	Strongly agree				
In most ways my life is close to my ideal.	1 2 3 4 5 6 7					
The conditions in my life are excellent.	1 2 3 4 5 6 7					
I am satisfied with my life.	1 2 3 4 5 6 7					
So far I have gotten the most important things I want in life	1 2 3 4 5 6 7					
If I could live my life over, I would change almost nothing.	1 2 3 4 5 6 7					

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## Appendix E.

### *Social supports*

**The following questions refer to your academic goal. Using the 1-5 scale, show how likely you believe you would be to experience each of the following situations.**

**1= Not at all likely    2=A little likely    3=Moderately likely    4=Quite likely    5=Extremely likely**

<b>How likely are you to:</b>	<span style="font-size: 1.5em;">Not at all likely</span>	<span style="font-size: 1.5em;">Extremely likely</span>
1. have access to a "role model" for this goal (i.e., someone you can look up to and learn from by observing)?	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5	
2. feel support for this goal from important people in your life?	<input type="radio"/> 1 <input checked="" type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5	
3. feel that there are people "like you" pursuing this goal?	<input type="radio"/> 1 <input type="radio"/> 2 <input checked="" type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5	
4. get helpful assistance, if you felt you needed such help?	<input type="radio"/> 1 <input type="radio"/> 2 <input checked="" type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5	
5. get encouragement from your friends for pursuing this goal?	<input type="radio"/> 1 <input type="radio"/> 2 <input checked="" type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5	
6. get helpful assistance from an expert regarding this goal?	<input type="radio"/> 1 <input checked="" type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5	
7. feel that your family members support this goal?	<input type="radio"/> 1 <input type="radio"/> 2 <input checked="" type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5	
8. feel that close friends or relatives would be proud of you for pursuing this goal?	<input type="radio"/> 1 <input type="radio"/> 2 <input checked="" type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5	
9. have access to a "mentor" who could offer you advice and encouragement for this goal?	<input checked="" type="radio"/> 1 <input checked="" type="radio"/> 2 <input checked="" type="radio"/> 3 <input checked="" type="radio"/> 4 <input checked="" type="radio"/> 5	

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## Appendix F.

### *Goal self-efficacy*

Please answer the following questions with this scale:

(1=Strongly disagree 2=Disagree 3=Neither 4=Agree 5=Strongly agree)

	Strongly disagree	4	5	Strongly agree
I possess the necessary skills to attain this goal.	1	2	3	4
I have what it takes to reach this goal.	1	2	3	4
I have the necessary knowledge to reach this goal.	1	2	3	4
I have the ability to reach this goal	1	2	3	4

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## Appendix G

### *Academic Satisfaction*

Please answer the following questions about your **academic/school life** with this scale:  
 (1=Strongly disagree 2=Disagree 3=Slightly disagree 4=Neither 5=Slightly agree  
 6=agree 7=Strongly disagree)

	Strongly disagree	1	2	3	4	5	6	7	Strongly agree
In general, I feel satisfied with this aspect of my life		1	2	3	4	5	6	7	
I am confident about my direction in this part of my life		1	2	3	4	5	6	7	
I often feel happy as a result of this part of my life		1	2	3	4	5	6	7	
I enjoy taking part in this aspect of my life		1	2	3	4	5	6	7	
I sometimes lose track of time while engaged in activities or thoughts about this area of my life		1	2	3	4	5	6	7	
I have regrets about this part of my life R		1	2	3	4	5	6	7	

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## Appendix H

### *Goal progress*

Please answer the following questions about <b><u>your academic/school goal:</u></b>		Strongly disagree	Strongly agree	
I am making good progress on this goal		1	2	3
In the past, I have made significant progress toward this goal		4	5	
My pursuit of this goal has been productive		1	2	3
I am satisfied with my efforts to reach this goal		4	5	
In general, I have not made much progress with this goal		1	2	3
R		4	5	

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## Appendix I

### *Informed Consent*

I state that I am over 18 years of age and wish to participate in a program of research being conducted by Daniel B. Singley, a doctoral student in the Counseling Psychology Program in the Department of Psychology at the University of Maryland, College Park.

The procedure involves filling out a brief online survey instrument that asks questions regarding goals and happiness in several different ways. I agree to participate two times, eight weeks apart. After completing the survey the second time, participants will be directed to a debriefing page containing additional information regarding this study. As compensation for my participation in this study, my name will be entered in a lottery to **win a first prize of \$50 or a second prize of \$25 cash.**

**All information collected in this study is confidential** and my name will not be identified at any time. The data I provide will be grouped with other participants' responses for reporting and presentation. I understand that there is no foreseeable risk to my health and well-being as a result of participating in this study. The survey is not designed to be an intervention, but rather an opportunity for the investigator to learn more about peoples' goals and happiness. I am free to ask questions or withdraw from participation at any time and without penalty. It has been explained to me that if I have any questions regarding this research, I should contact Daniel B. Singley (contact information at the bottom of this page).

**To take this quick survey, please click on any one of the "take me to the survey" buttons below. In clicking on a button, I affirm my awareness of the above information.**

<a href="#"><u>Take Me To The Survey</u></a>				
--	--	--	--	--

Daniel B. Singley  
 CAPS Department  
 Benjamin Building-UMCP  
 College Park, MD 20742  
 dsingley@wam.umd.edu  
 301 405 2858

## Appendix J

### *DEBRIEFING STATEMENT*

Dear Participant:

You have participated in a study in which you were asked a number of questions regarding your goals and life satisfaction. These surveys were developed by a research team in the Counseling Psychology program at the University of Maryland, and the purpose of this study is to see how well the items in our surveys assess what we think they do. This study attempts to look at the suitability of several new measurements and to test a model of how peoples' goals relate to their life satisfaction. Perhaps you had an idea about what the test was attempting to measure (**face validity**). In other words, the items reflected the construct being measured. We used this approach in the development of the measures you completed.

We want our new measures to be reliable, which assesses the **internal consistency** of the instruments. In general, we want our test items to relate to one another, and appear to be measuring the same construct. In other words, the test items should be fairly homogenous in their meaning, and yet different enough so as to measure just slightly different parts of the construct of interest. These measures will be further refined and probably used in upcoming research. We greatly appreciate your participation, and if you have further questions, please do not hesitate to ask. Your email address will be entered into the lottery for the two cash prizes. You will be notified if you win. Thank you very much for helping us!

Sincerely,

Daniel Singley  
CAPS Department  
Benjamin Building-UMCP  
College Park, MD 20742  
[dsingley@wam.umd.edu](mailto:dsingley@wam.umd.edu)  
301 405 2858

and

Dr. Robert Lent  
CAPS Department  
Benjamin Building-UMCP  
College Park, MD 20742  
[dsingley@wam.umd.edu](mailto:dsingley@wam.umd.edu)  
301 405 2858

Table 1. Psychometric properties of scales used: Bivariate correlations, means, standard deviations, internal consistencies, and 8-week reliability estimates

Variable	1	2	3	4	5	6	<i>M</i>	<i>SD</i>	$\alpha$
1. Goal supports	--	.30	.35	.36	.42	.39	3.75	.70	.83
2. Goal SE	.39	--	.45	.26	.42	.35	4.44	.66	.90
3. Goal progress	.44	.55	--	.40	.71	.36	3.70	.83	.84
4. Positive affect	NA	NA	NA	--	.45	.46	3.44	.71	.88
5. Domain satisf	.51	.50	.69	NA	--	.43	4.61	1.19	.83
6. Global satisf	.47	.39	.43	NA	.51	--	4.73	1.32	.89
<i>M</i>	3.78	4.33	3.70	NA	4.60	4.80			
<i>SD</i>	.75	.79	.88	NA	1.22	1.31			
$\alpha$	.88	.93	.86	NA	.86	.89			
8-week <i>r</i>	.68	.60	.62	NA	.69	.75			

Note. All of the correlations in this table are significant,  $p < .01$ , two-tailed. Values above the diagonal are for Time 1 variables; values below the diagonal are for Time 2 variables. Goal SE = Goal Self-Efficacy; Soc. Supports = Social Supports; Domain Satisf = Domain Satisfaction; Global Satisf = Global Life Satisfaction.

Table 2. Fit indices for model variations

Model	S-B X <sup>2</sup>	Df	CFI	RMSEA
1: Covariance and autocorrelations	210.9	27	.95	.094
2: Full Model	109.1	13	.97	.098
3. Full model, excluding social cognitive variables	163.91	21	.96	.094
Reciprocal effects- Progress and Self-Efficacy				
4: T1 progress-to- T2 efficacy effect	114.9	14	.97	.097
5: T1 efficacy-to- T2 progress effect	115.1	14	.97	.097
6: Neither progress nor efficacy effect	123.2	15	.97	.097
Reciprocal effects- Global Sat. and Domain Sat.				
7: T1 global sat.-to- T2 domain sat. effect	112.5	14	.97	.096
8: T1 domain sat.-to-T2 global sat. effect	109.0	14	.97	.094
9. Neither global sat. nor domain sat. effect	112.4	15	.97	.092

Note. S-B X<sup>2</sup>= Satorra-Bentler Chi Square; RMSEA= root-mean-square error of approximation; CFI=comparative fit index

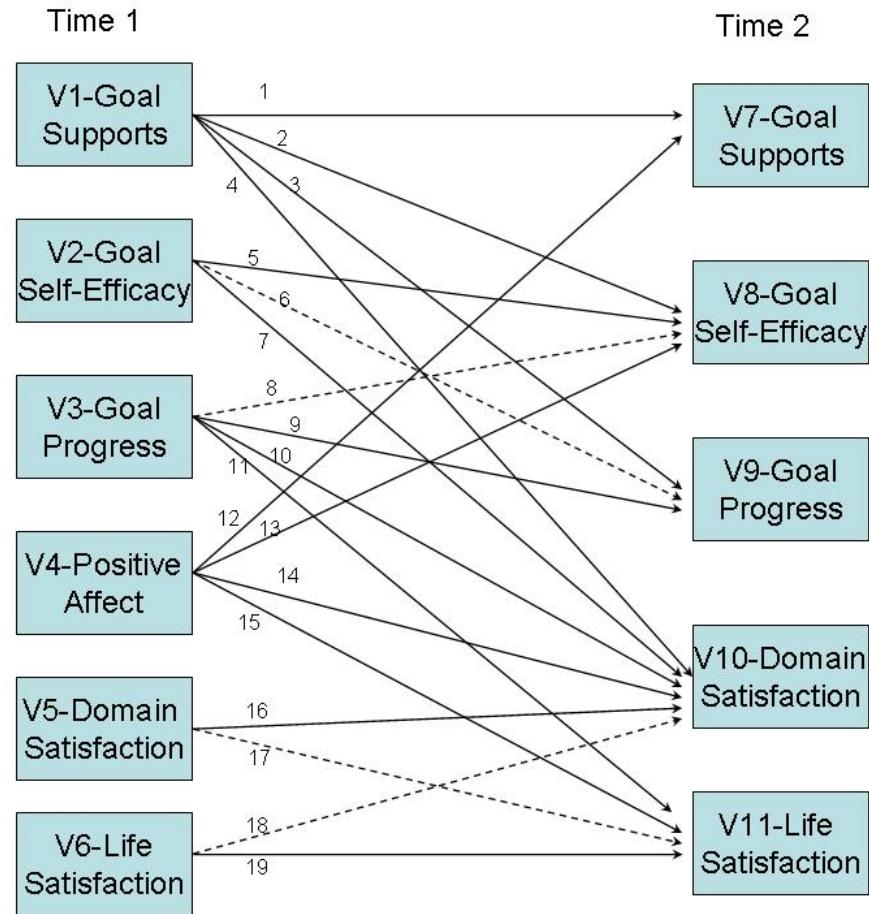
Table 3. Summary of paths and hypotheses

Hypothesis #	Predictor	DV	Path #	Path Coefficient	Variance explained in DV <sup>a</sup>
1	Pos. Affect	Soc. Supports	12	.13*	2.0%47%
2a.	Soc. Supports	Self-Efficacy	2	.04	0%
					35%
2b.	Pos. Affect	Self-Efficacy	13	.04	0.4%
4b.	Goal Progress	Self-Efficacy	8	.10*	1.1%
3	Soc. Supports	Goal Progress	3	.08*	0.5%
4a.	Self-Efficacy	Goal Progress	6	.09*	0.8%
5a.	Soc. Supports	Domain Sat.	4	.07*	0.2%
					48%
5b.	Self-Efficacy	Domain Sat.	7	.05	0.2%
5c.	Goal Progress	Domain Sat.	10	.18*	1.2%
5d.	Pos. Affect	Domain Sat.	14	.04	0.2%
7b.	Global Sat.	Domain Sat.	18	.02	0.2%
9	Soc. Supports		4	.07*	
	Self-Efficacy	Domain Sat.	7	.05	1.9%
	Goal Progress		10	.18*	
6a.	Goal Progress	Global Sat.	11	.06*	0.1%
					58%
6b.	Pos. Affect	Global Sat.	15	.06*	0.3%
7a.	Domain Sat.	Global Sat.	17	.06	0.2%

Note: \*= p<.05, single-tailed

- a. these percentages refer to the unique variance in the DV explained by each social cognitive predictor.

Figure 1. Longitudinal social cognitive well being model



Note: the direction of path arrows indicates hypothesized temporal precedence. Each outcome (time 2) variable is autocorrelated with its corresponding time 1 score. Bidirectional/reciprocal relationships are indicated by dotted lines.

Figure 2 Model 1: Covariances and Autocorrelations

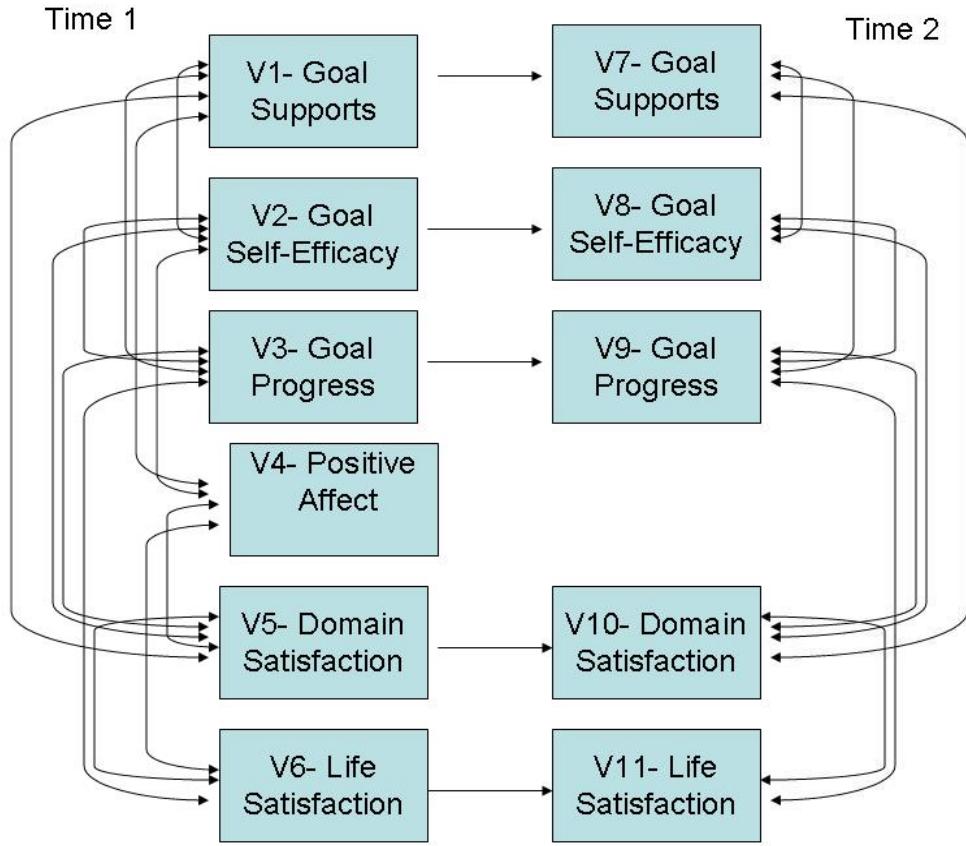
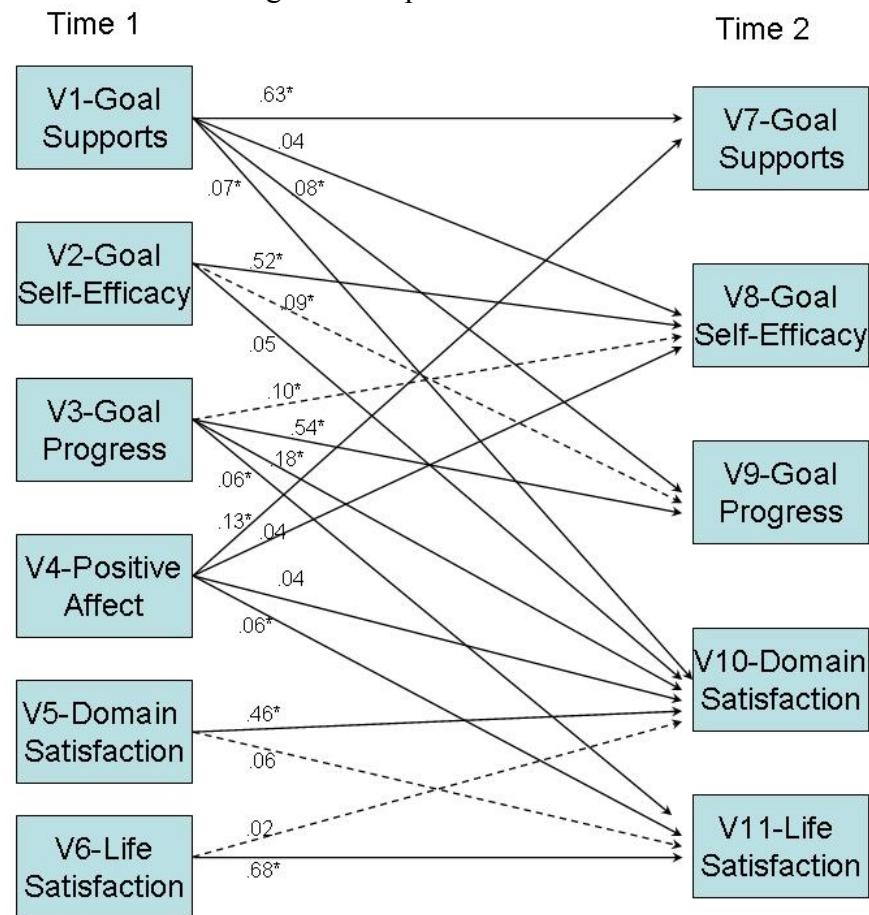


Figure 3 Model 2: Full model diagram with path values



Note: \* = p < .05, single-tailed

Figure 4.

Model 3: Autocorrelations and Personality variables (excluding social cognitive variables)

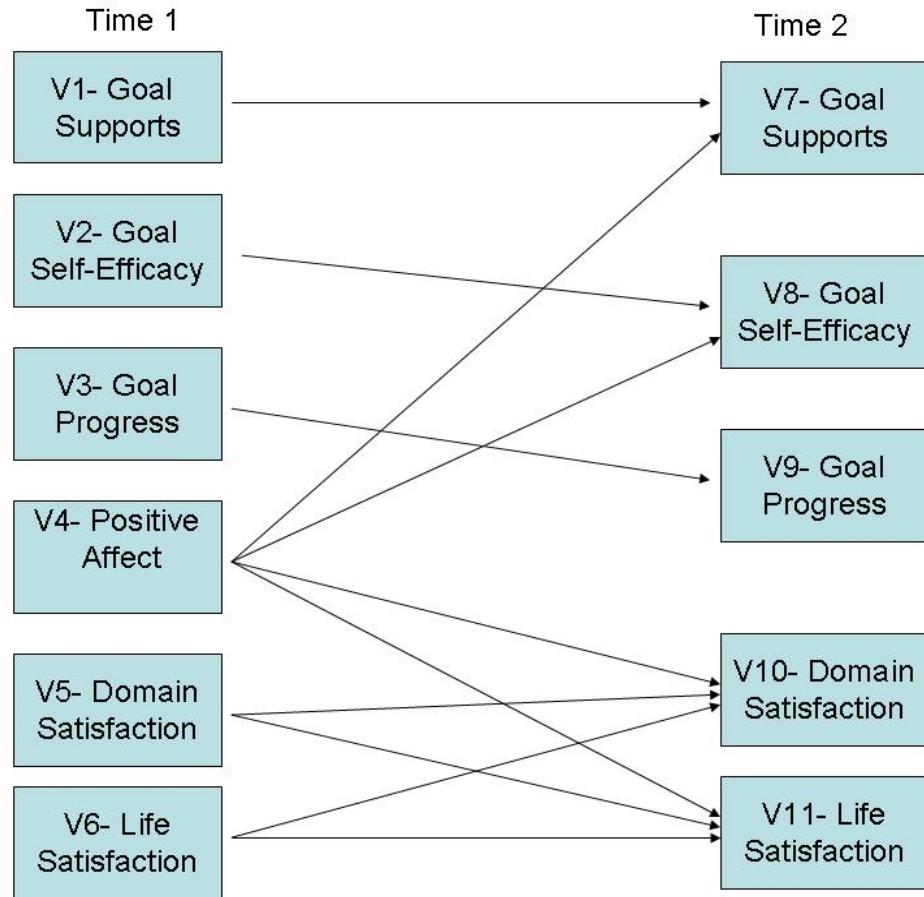
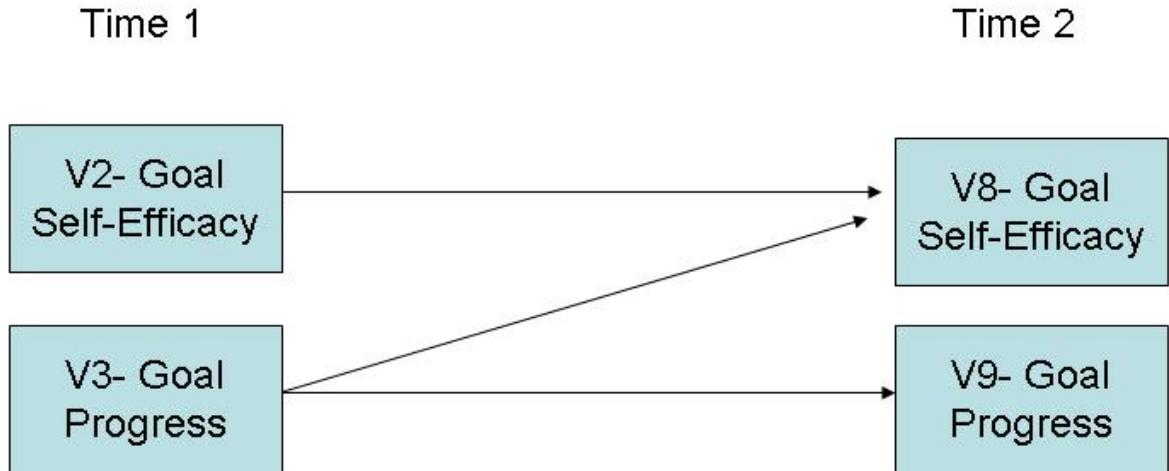
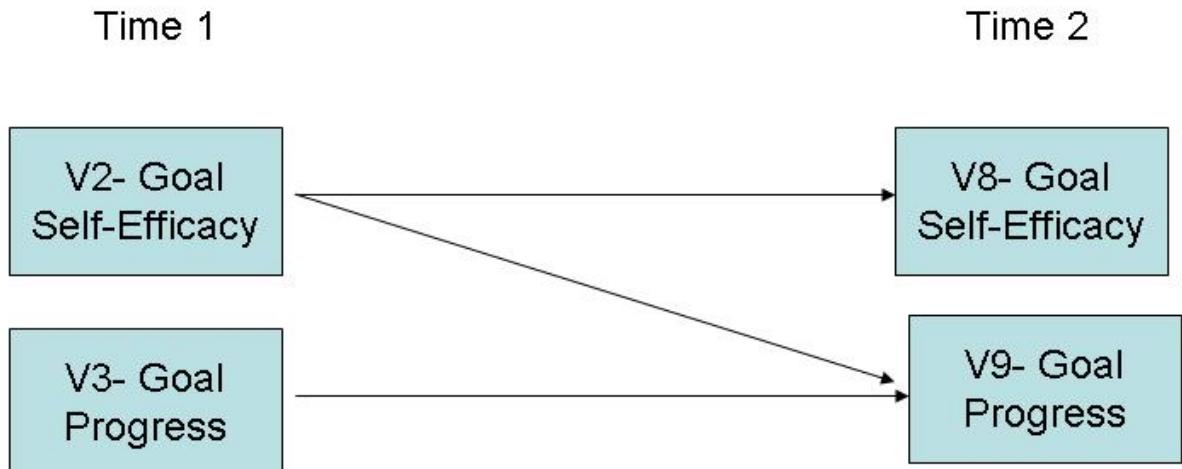


Figure 5.  
Model 4 : Progress-to-Self-Efficacy temporal effect



\*note- the other variables in the *Full Model* were not included in this figure for visual clarity. However, it should be noted that analyses testing temporal predominance included the other variables and paths in the *Full Model* not pictured here.

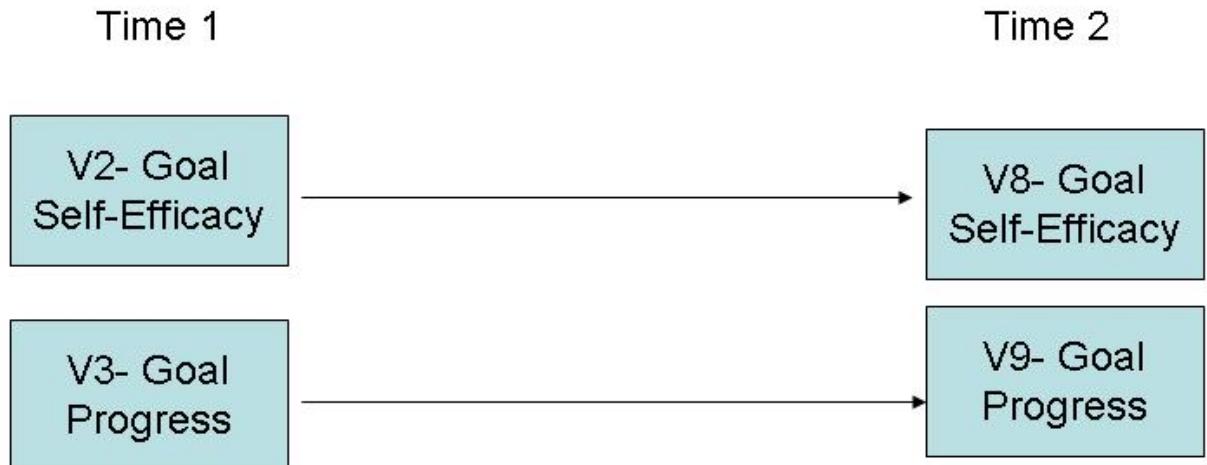
Figure 6.  
Model 5: Self-Efficacy-to-Progress temporal effect



\*note- the other variables in the *Full Model* were not included in this figure for visual clarity. However, it should be noted that analyses testing temporal predominance included the other variables and paths in the *Full Model* not pictured here.

Figure 7.

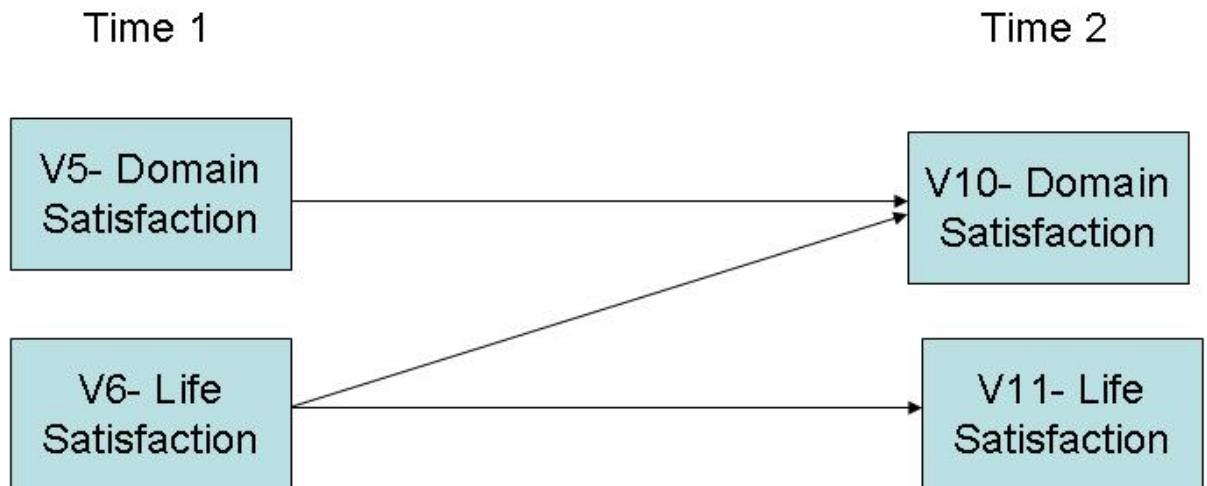
Model 6: No reciprocal effects between Self-Efficacy and Progress



\*note- the other variables in the *Full Model* were not included in this figure for visual clarity. However, it should be noted that analyses testing temporal predominance included the other variables and paths in the *Full Model* not pictured here.

Figure 8.

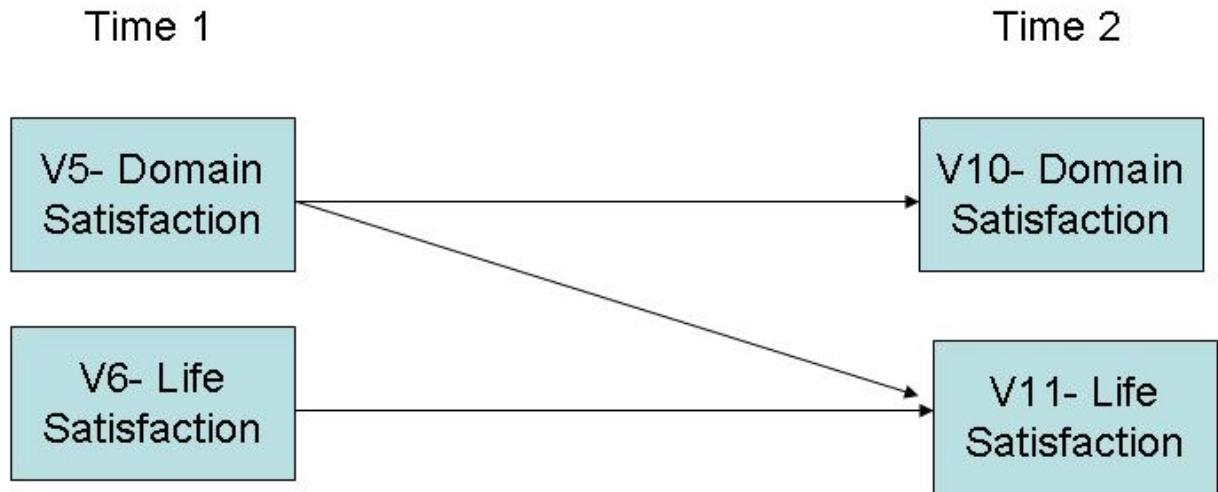
Model 7: Global Life Satisfaction-to-Domain Satisfaction temporal effects



\*note- the other variables in the *Full Model* were not included in this figure for visual clarity. However, it should be noted that analyses testing temporal predominance included the other variables and paths in the *Full Model* not pictured here.

Figure 9.

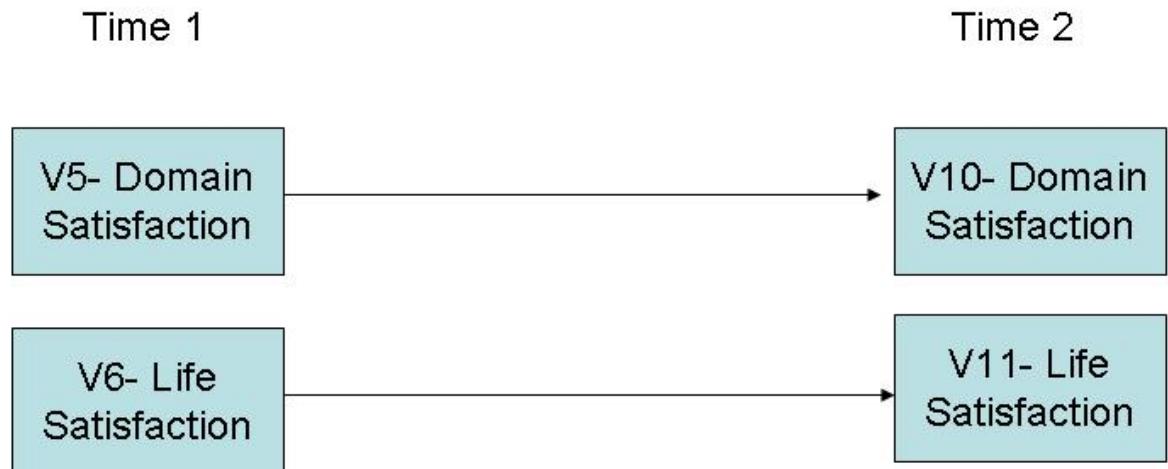
Model 8: Domain Satisfaction-to-Global Life Satisfaction temporal effects



\*note- the other variables in the *Full Model* were not included in this figure for visual clarity. However, it should be noted that analyses testing temporal predominance included the other variables and paths in the *Full Model* not pictured here.

Figure 10.

Model 9: No reciprocal effects between Domain Satisfaction and Global Life Satisfaction



\*note- the other variables in the *Full Model* were not included in this figure for visual clarity. However, it should be noted that analyses testing temporal predominance included the other variables and paths in the *Full Model* not pictured here.

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