

3-28-2014


The Relationship between Metacognition, Self-Actualization, and Well-Being among University Students: Reviving Self-Actualization as the Purpose of Education

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DOI: 10.25148/etd.FI14040889

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FLORIDA INTERNATIONAL UNIVERSITY

Miami, Florida

THE RELATIONSHIP BETWEEN METACOGNITION, SELF-ACTUALIZATION,
AND WELL-BEING AMONG UNIVERSITY STUDENTS:
REVIVING SELF-ACTUALIZATION AS THE PURPOSE OF EDUCATION

A dissertation submitted in the partial fulfillment of

the requirements for the degree of

DOCTOR OF PHILOSOPHY

in

CURRICULUM AND INSTRUCTION

by

Yalda Amir Kiaei

2014

To: Dean Delia C. Garcia
College of Education

This dissertation, written by Yalda Amir Kiaei, and entitled The Relationship between Metacognition, Self-Actualization, and Well-being among University Students: Reviving Self-Actualization as the Purpose of Education, having been approved in respect to style and intellectual content, is referred to you for judgment.

We have read this dissertation and recommend that it be approved.

Marilyn Montgomery

Laura Dinehart

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Thomas G. Reio, Jr., Major Professor

Date of Defense: March 28, 2014

The dissertation of Yalda Amir Kiaei is approved.

Dean Delia C. Garcia
College of Education

Dean Lakshmi N. Reddi
University Graduate School

Florida International University, 2014

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DEDICATION

To the love of my life, Rambod, who has always been lovingly by my side throughout this entire process and has supported me with his kind patience when I was most impatient, with his pride that he has always taken in my work and my capabilities, with his encouraging companionship, and with his words of wisdom when I needed them most. And with love to my mother and father, Akram and Mir Yahya, whose support and constant love and prayers have sustained me throughout my life.

ACKNOWLEDGMENTS

I would like to express my sincere gratitude to Dr. Thomas G. Reio, my dissertation chair. His understanding, support, and encouragement allowed me to believe in the potentials in my ideas, and his invaluable insights helped me to compose my ideas into this dissertation project. His trust in my work and my self-sufficiency provided me with a great opportunity for personal growth, for which I will always be grateful. I deeply appreciate his mentorship that has made all this possible. I would also like to thank my dissertation committee members, Dr. Sanders-Reio, Dr. Marilyn Montgomery, and Dr. Dinehart, for their precious comments on my proposal and dissertation draft and for their kind support in this project.

I am also very thankful to the Florida International University Graduate School for providing me with the Dissertation Year Fellowship and to Lennar Corporation and FIU College of Education for providing me with Lennar Corporation Scholarship, a merit-based College of Education Private Scholarship, during the last year of my doctoral study.

I am also sincerely grateful to all scholars who kindly (publicly or personally) granted me permission to use their instruments for my study and to have the questionnaires fully or partially in my dissertation: Drs. Watson, Clark, and Tellegen for the Positive and Negative Affect Schedule, Dr. E. Diener for the Satisfaction with Life Scale, Dr. A. S. Waterman for the Questionnaire for Eudaimonic Well-Being, Dr. D. L. Debats for the Life Regard Index-Revised, Drs. G. Leclerc and R. Lefrançois for the Measure of Actualization of Potentials, Dr. C. Robitschek for the Personal Growth Initiative Scale, Dr. K. M. Sheldon for the measures of Goal-Concordance and Need-

Satisfaction, Dr. R. A. Emmons for the Striving Assessment Scales, Dr. M. Milyavskaya for the measure of Goal-Inspiration, Dr. C. S. Carver for the Brief COPE, and Drs. G. Schraw and R. S. Dennison for the Metacognitive Awareness Inventory.

In addition, I would like to express special gratitude to Dr. Linda Bliss and Dr. Isadore Newman, for their invaluable support and for their influential feedback during the Dissertation Bootcamp and in reviewing my proposal and the dissertation, and to Dr. Leonard Bliss for his help with the IRB process and more. I am and always will be grateful for their mentorship throughout my doctoral studies, which made this experience that much more memorable.

There are many people, to whom I owe very special thanks. Dr. Bang, Dr. Beladi, Dr. Leonard Bliss, Dr. Linda Bliss, Dr. Iuspa, Dr. Thomas Reio, Dr. Spears-Bunton, Dr. Dinehart, Dr. Blanchard, Dr. Bleiker, Dr. Lazarus, Dr. Mesbahi, and my caring and supporting TA colleagues Daniel, Elizabeth, Jennifer, Hamid, Mohammad, Natan, Reza, Ron, and Xuan, all of whom kindly supported me in my data collection. Caprila Almeida in the COE Office of Graduate Studies is an asset for the college; she always kindly answered my numerous questions about the dissertation process. I couldn't have done this without their help. .

I would also like to gratefully and sincerely thank my friends who gave me their time by participating in my small pilot study and providing feedback about the clarity of the instructional statements and the items, especially Ali Hadji, Faraaz, Ildiko, Manny, Rira, Sadegh, and Sanaz and all who participated in my study. This project was not possible without the kindness of each and every one of them.

Many thanks to my lovely friend, Zahra, my master editor, who has always been there for me to proofread my pieces, and thanks to my lovely sister, for her warm presence beside me and her assistance in keeping me focused during my dissertation writing.

And thanks to God for the many kind and caring people around me throughout this process this far from home, who have made the entire experience all the more unforgettable.

ABSTRACT OF THE DISSERTATION
THE RELATIONSHIP BETWEEN METACOGNITION, SELF-ACTUALIZATION,
AND WELL-BEING AMONG UNIVERSITY STUDENTS:
REVIVING SELF-ACTUALIZATION AS THE PURPOSE OF EDUCATION

by

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Florida International University, 2014

Miami, Florida

Professor Thomas G. Reio, Jr., Major Professor

This non-experimental, correlational study (N = 513) examined the relationships among self-actualization, well-being, and metacognition. Need-satisfaction and non-defensiveness were also tested as mediators in the relationship between metacognition and self-actualization. A battery of paper-and-pencil self-report measures was administered to a sample of undergraduate and graduate students in a public university in South Florida. Correlational and hierarchical regression analyses and structural equation modeling for mediational analysis were used to test the hypotheses.

The results largely supported the hypotheses with only a few exceptions. Students who demonstrated higher level of self-actualization experienced higher well-being as well (the result of this hypothesized relationship was equivocal for parent students, n = 61). Moreover, need-satisfaction and non-defensiveness were found to be significantly and positively associated with self-actualization, providing preliminary supporting evidence for Maslow's (1968) and Rogers' (1951, 1961) theories of self-actualization. In addition, students with higher levels of general metacognitive

competence were more likely to demonstrate higher level of need-satisfaction, non-defensiveness, self-actualization, and well-being (the result of the third hypothesized relationship was equivocal for female immigrant education students, $n = 78$).

Further, metacognition and need-satisfaction, and metacognition and non-defensiveness shared common variance in predicting self-actualization. The relationship between metacognition and self-actualization was mediated by need-satisfaction and non-defensiveness, except for non-education students ($n = 201$), for whom no mediational effect was detected by non-defensiveness.

In sum, the findings imply that general metacognitive competence, which can be taught as a set of skills, theoretically contributes to students' self-actualization and well-being. This study provides support for a conceptual model of self-actualization, which introduces this phenomenon as a goal-oriented process that is essential to students' well-being and can be attained by exercising metacognition. The discussion of the findings highlights implications of this study for theory, research, and practice as a guide for scholars, researchers, and practitioners in the field of education and psychology.

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CHAPTER I

INTRODUCTION

The chapter begins with the background to the problem by providing a brief reintroduction to a philosophy of education which has been overlooked for long. It is followed by the problem statement, purpose of the study, and theoretical framework. Next, the significance of the study, research hypotheses, definitions of terms, assumptions, delimitations, and organization of the study are discussed.

Reviving a Philosophy of Education: Self-Actualization as the Purpose of Education

Writing in the fourth century BC, Aristotle (2004) argued that well-being or *eudaimonia* is the ultimate purpose of life for human beings, and the means to achieve it is actualizing one's potentials through education and exercise of reason. Possibly, a similar notion had led 20th century's philosophers of education to outline the purpose of education as becoming fully self-realized and self-actualized (Butler, 1966; Farmer, 1983). The following brief summary of a historical overview of educational policies (Hanlon, 1968) traces the footprints of this Aristotelian perspective in educational philosophies and policies as represented in the statement of educational objectives over the years.

In 1938, self-realization was among the objectives of American education established by Educational Policies Commission¹, the remainders being human relations, economic efficiency, and civic responsibility (Cangemi, 1987; Hanlon, 1968). It is worth noting that later Broudy (1954) considered self-realization, self-determination, and self-

¹ A reforming agency founded in 1935 by the National Education Association (NEA) and the Department of Superintendence to represent public education and develop long-range policies for American education that promote American democracy by emphasizing moral and spiritual values (Hunt, Carper, Lasley II, & Raisch, 2010)

integration as the main goals for education, and Cangemi (1987) regarded all of these as characteristics of self-actualizing personalities. Despite this mention of self-realization in the official statement of 1938, in this statement self-realization was outlined more as fulfilling societal and literacy demands and less as characteristics that reflected self-actualization. A few self-actualizing objectives were included, such as intrinsic motivation for learning, appreciation of beauty and intellectual endeavors, and directing one's own life responsibly.

In 1947, "The Imperative Needs of Youth" adopted by the National Association of Secondary School Principals (NASSP) showed some considerations of individuals' needs as well as social needs. In 1957, "Behavioral Goals of General Education in High School," another NASSP policy document, also highlighted some aspects of self-realization as it was related to individuals' interest and well-being. Over the years, policies of education moved towards slightly greater considerations of individuals' needs and flourishing and legitimized individuals' endeavors to achieve for themselves. For instance, in 1961 "The Central Purpose of American Education," issued by the Educational Policies Commission, stated that the school "seeks ... to equip the pupil to achieve for himself, ... to be free; a man must be capable of basing his choices and actions on understandings which he himself achieves and on values which he examines for himself... the development of every student's rational powers must be recognized as centrally important" (Hanlon, 1968, p. 163).

In 1965, "A Climate for Individuality," published by American Association of School Administrators, explicitly declared that schools are responsible for helping individuals achieve their self-actualization. Unfortunately, references to self-

actualization in national education policies and objectives stopped in the 1960s.

However, scholarly efforts to revive the self-actualization philosophy of education gently continued. For instance, Hanlon (1968) in his book, *Administration and Education: Toward a Theory of Self-Actualization*, envisioned self-actualization as the main function and the framework for both administration and education. While introducing socialization and education as two distinctive roles of the school system, Hanlon (1968) argued that socialization as a form of organizational self-actualization is the work of administration while individual self-actualization is the function of education. Hanlon (1968) specified that administration “is the process of the organized human group making of itself what it wishes to be, and education is the process of the individual human being making of himself what he wishes to be” (p. 133). The present study embraced Hanlon’s (1968) perspective on education that emphasized the role of the school system in helping individual human beings develop the skills to take control of their personal growth and to become what they wish to be and are capable of being.

If human well-being is the worthy goal of life and self-actualization is the way to get there, the educational system along with any other social organization should be the means for individuals to move towards self-actualization (Goldstein, 1959). Education should function as an organizer of experiences that prepares individuals for maintaining a fulfilling life, and if education does its job well enough, an educated person should possess a self-actualizing personality. Voeks (1970) emphasized this focal mission of education when he identified an educated person as being cognizant of interconnectedness in the world, having a meaningful integrated view of the world, being continuously self-motivated, having an increased appreciation for arts, being

compassionate about people, developing respect for individual differences, thinking critically, being accountable for one's action, and living up to one's values. These features are all parallel with self-actualizing characteristics outlined by Maslow (1968).

Requirements for Self-Actualization

Actualizing one's potentials or *self-actualization* has been introduced as the ultimate needs of human beings (Maslow, 1968), a life-long process (Rogers, 1961), a way of living (full of commitment; Gowan, 1972), and a challenge (Kerr, 1991). It also most frequently has been discussed in terms of actualizing tendency (Rogers, 1951), the desire, motive, or tendency to live up to the highest level of one's capabilities (Globe, 1970; Goldstein, 1939; Rogers, 1961). Maslow (1968) and Rogers (1951, 1961, 1980) speculated that there are some factors that can hinder self-actualization or actualizing tendency. For Maslow (1968), it was unsatisfied basic needs (e.g., physiological, safety, belonging, and esteem); for Rogers (1951), it was excessive activation of psychological defense mechanisms when people frequently feel threatened by being in situations which imply that they are not worthy or good enough (i.e., They have diminished unconditional self-worth or positive self-regard).

Given this, in order for individuals to move towards self-actualization effectively and efficiently there are some requirements to be met. Hanlon (1968) argued that schools can and must equip individuals with these requirements. "Without education no true self-actualization of individuals is possible" (Hanlon, 1968, p. 152). Self-actualization requirements, as detailed by Hanlon (1968), include a conceptual subsystem, a social climate subsystem, and an environmental subsystem:

A conceptual subsystem. A conceptual subsystem consists of a developed world view, a true vision of the self within the world, and a set of self-actualizing goals that provide the momentum for willing, planning, evaluation, and problem-solving.

A climate subsystem. A climate subsystem helps create a psychological environment necessary for self-actualization. It is composed of three elements: (a) an *optimum freedom* (provided by the social environment) and *self-control element* that enables individuals, themselves, to take control of their actions to accomplish the tasks at hand (i.e., self-regulation); (b) *an energizing element* that enables individuals to bring forth from inside enough energy and enthusiasm needed to accomplish the task and direct this energy to do so; (c) *a linkage element* which is a community-based relationship that provides students with social acceptance and support.

An environmental subsystem. An environmental subsystem provides individuals with material environment needed to accomplish the task of self-actualization. It includes a facilitative element and a supportive element. *A facilitating element* consists of all materials immediately needed to effectively and efficiently implement self-actualization plans. Examples are food, drink, clothing, shelter, and recreational facilities. *A supportive element* is always necessary to provide a facilitative element, for instance, money, financial aids, and public service.

Some of the climate subsystem elements such as optimum freedom and linkage element and all elements of the environmental subsystem are basic human needs outlined by Maslow (1968). The linkage element addresses Roger's (1951, 1961) concern about providing psychologically safe environment for growth. Such an environment establishes a community in which students feel less threatened by judgments of others and hopefully

less often encounter situations that trigger their psychological defense mechanisms. All these requirements of self-actualization are in the realm of education and can be taken care of to the relatively decent extent by schools and through establishing appropriate educational policies.

The task of establishing each of these subsystems and their elements should be undertaken at both social and individual levels; meaning schools as organized human groups and individual human beings are responsible for accommodating these subsystems. Individual students play important roles in acquiring and maintaining the required elements for self-actualization including the conceptual subsystem, and self-control element, and energizing element of the climate subsystem. Yet the responsibility starts from schools and at the societal level.

As Hanlon (1968) put it, self-actualization is impossible without education. Schools as the primary educational organizations are responsible to equip the conceptual subsystem by helping students to expand their worldview and envision their self-actualization goals. Schools need to maintain optimum freedom within which individuals feel free to pursue what they want to become. They also are responsible to train students in self-control to realize their optimum freedom necessary to accomplish the task of self-actualization. Schools should provide a motivating environment that emancipates the energy of individuals to accomplish the task of self-actualization and educate individuals to *motivate themselves*. Schools must provide an accepting and supporting environment which helps students feel psychologically safe, free their real selves, believe in themselves, and as a result, become less defensive and more productive in the challenges that life offers. Schools are also responsible for providing material resources to keep

students on track to accomplish their self-actualization tasks and to prepare them to recognize and take care of these needs by themselves in the future. Ultimately, schools hand the responsibility to the students by training them to be independent, effective individual beings in fulfilling their actualizing goals. Whether or not schools are taking this training task seriously is discussed in the following section.

Problem Statement

The link between psychology and education has been established long ago by pioneers such as William James (1842 – 1910), John Dewey (1859 – 1952), and E. L. Thorndike (1874 -1949). In practice though, the relationship has been very distant. At its best, schools and educational psychologists work towards theorizing and applying a variety of interventions targeting students with behavioral problems, special needs, and learning-disabilities (O'Donnell, Reeve, & Smith, 2007; Santrock, 2011). In the realm of educational research, studies have obsessively focused on students' *academic* achievement. The scholarly attempts to investigate the association of psychology-based school practices and interventions with personal growth and/or human overall well-being have been scarce.

Today's educational system seems to be shorthanded in conceptualizing and operationalizing a holistic view of education. The high pressure of good academic performance has often left students' psychological nurturing, their personal growth, and their overall well-being to themselves. Despite a long-standing self-actualization philosophies of education (e.g., Broudy, 1954; Butler, 1966; Farmer, 1983), yet this vision has not found its way into contemporary educational policies and school practices. The present study was undertaken to shed light on the possible applications of theories of

self-actualization from humanistic psychology and theories of well-being from positive psychology in the realm of education and to bring into attention a consideration of students' personal growth and well-being.

Although theories of personal-growth in humanistic psychology are assumed to be in line with theories of human well-being in positive psychology (Seligman & Csikszentmihalyi, 2000), this association has rarely been analyzed empirically. It has been limited to theoretical arguments or taken for granted. For instance, the psychological concept of self-actualization, which initially appeared in theories of personal growth in humanistic psychology (Maslow, 1968; Rogers, 1951), is frequently referred to as an indicator, rather than a predictor, of human well-being in positive psychology literature. The relationship between self-actualization as an antecedent and human well-being as an outcome has not been investigated. By this dissertation study, the researcher undertook the task of contributing to the literature in this regard. In the present study, self-actualization was viewed as a goal-oriented process and a precursor to individuals' well-being.

Moreover, it is important for our educational system, which is currently influenced by many behavioral and academic interventions, to examine interventional strategies which accommodate students' personal growth and well-being in addition to their academic and behavioral learnings. Among these instructional interventions is the development and application of general metacognitive competence. The popularity of metacognitive instructions in educational settings is for their hoped effects on training independent effective learners (Gaskins & Pressley, 2007). The concept of metacognition, however, goes beyond classroom learning. For instance, Hanlon's (1968)

perspective on self-actualizing subsystems at the individual level can be explained by theories of metacognition.

In the frame of metacognitive processes, equipping a conceptual subsystem with proper self-actualizing goals and tasks could be referred to as *goal setting*. The control element of the climate system requires a combination of *monitoring* the situation and controlling the actions or strategies being used (i.e., *metacognitive regulation*). A metacognitive experience also deals with personal variables such as believing that one can do a task, being aware of one's own interest, and/or keeping oneself motivated during the task. This feature of metacognition works as an energizing element in the climate subsystem. All these processes, needed to develop a system that fosters self-actualization, can be explained in a general metacognitive framework. Taking this holistic view of metacognition in terms of its long lasting implications in contributing to a fulfilling life, the current study investigated metacognition as a necessary factor for cultivating one's highest potentials.

Purpose of the Study

The purpose of the present study was to investigate the relationship between metacognition, self-actualization, and well-being. The present study examined the theoretical contribution of metacognition in a holistic development of human beings towards self-actualization. Theoretically, this contribution can occur either directly, or through need-satisfaction, or through being less defensive by adopting more adaptive psychological defense mechanisms (i.e., functional/adaptive coping). To fulfill this purpose, this study investigated the mediating effect of need-satisfaction and defensiveness on the association between metacognition and self-actualization. This

study also tested whether self-actualization theoretically contribute into individuals' well-being. With this, this study bridged the gulf between the literature on humanistic psychology, positive psychology, and cognitive psychology, and shed light on possible ways to enhance individuals' potentials through skills (e.g., metacognitive strategies) that are teachable at school.

Research Questions and Hypotheses

Following the argument made above, the main research questions were to what extent metacognition may contribute to self-actualization and to what extent self-actualization may contributes to individuals' well-being. More detailed research questions are listed below, all hypotheses were tested while controlling for certain demographic variables (e.g., Gender, Major, and Immigration Status):

1. Is self-actualization associated with human well-being?

H1: There is a positive relationship between self-actualization and human well-being.

2. Is the adoption of adaptive styles of psychological defense associated with self-actualization – as deduced from Rogers's (1951) theory of actualizing tendency?

H2: There is a positive relationship between the adoption of more adaptive styles of psychological defense (i.e., Non-Defensiveness) and self-actualization.

3. Is need-satisfaction associated with self-actualization – as the highest level need as deduced from Maslow's (1968) theory of self-actualization?

H3: There is a positive relationship between need-satisfaction and self-actualization.

4. Is metacognition associated with need-satisfaction?

H4: There is a positive relationship between metacognition and need-satisfaction.

5. Is metacognition associated with the style of defense mechanisms adopted by an individual?

H5: There is a positive relationship between metacognition and adaptive style of psychological defense (i.e., Non-Defensiveness).

6. Does metacognition predict self-actualization over and above need-satisfaction and styles of defense mechanism?

H6: There is a positive relationship between metacognition and self-actualization independent of need-satisfaction and styles of psychological defense.

7. Is metacognition associated positively with well-being?

H7: There is a positive relationship between metacognition and well-being.

8. Does need-satisfaction mediate the relationship between metacognition and self-actualization?

H8: Need-Satisfaction mediates the relationship between metacognition and self-actualization.

9. Does adopting more adaptive defense mechanisms mediate the relationship between metacognition and self-actualization?

H9: Non-Defensiveness mediates the relationship between metacognition and self-actualization.

Conceptual Framework

After introducing a philosophy of education that favors self-actualization as the aim of education, this section establishes the conceptual framework within which the relationships between metacognition, self-actualization, and well-being may be

explained. This study took a holistic approach to the issue of individuals' well-being by bridging the domains of cognitive psychology, humanistic psychology, and positive psychology within an educational framework. The concepts of well-being from positive psychology, self-actualization from humanistic psychology, and metacognition from cognitive psychology were of particular interest in the present study.

Well-being and Excellence

Aristotle (2004), the Greek philosopher of 4th Century BC, in his collection of lectures, *Nicomachean Ethics*, conceptualized the ultimate good of human being as being consisted of everything that a person needs or wants. He called it *eudaimonia*. “‘*eu*’ means ‘well’ and ‘*daimon*’ means ‘divinity’ or ‘spirit.’... He [Aristotle] regards ‘*eudaimon*’ as a mere substitute for *eu zên* (‘living well’)” (Kraut, 2010). Although the psychological literature predominantly has translated *eudaimonia* as happiness, the present study recognized the term “well-being” as more accurately reflecting the connotations of the original term.

Aristotle (2004) argued that well-being is achievable if a human being can grasp her/his characteristic activity (i.e., something that s/he is meant to do well in order to be who s/he should be). Therefore, who one should be and what one should do is different from individual to individual based on the social role one undertakes. But Aristotle (2004) also assumed a common essence for individuals as *human* beings, which is to perceive themselves “worthy of great things” (Aristotle, 2004, p. xvii). These “great things,” Aristotle (2004) explained, are virtues, or in more contemporary term *excellences* (Ackrill, 1973; McDowell, 1980). Virtues take different intellectual and/or character forms. Some examples of virtues or excellences as mentioned by Aristotle (2004) are

practical wisdom, judgment, generosity, and self-restraint. In modern terms, actualizing one's capacities (i.e., self-actualization) is the process that leads to the manifestation of excellences (Roger, 1951). Aristotle (2004) also introduced excellences as being attainable through training, experience, and/or personal efforts. Putting this statement in the contemporary terminology, Aristotle (2004) argued that self-actualization is attainable through education. In this study, metacognition which is a teachable skill was examined as an educational gateway to achieve self-actualization and, in turn, well-being (Aristotle, 2004).

In Aristotelian perspective, every virtue or excellence at the individual level is a pursuit that contributes to well-being. Thus, actualizing one's potential is not accepted as a component of well-being, but as a predictor of well-being. This is in contrast to the psychological literature which uses self-actualization as eudaimonia, as an indicator of well-being, or as a subscale in measuring eudaimonic well-being (e.g., Deci & Ryan, 2001, 2008; Fowers, Mollica, & Procacci, 2010; Ryff & Keyes, 1995). Self-actualization is rather an indicator of optimal human functioning that leads to human well-being. In line with Aristotle (2004), the present study investigated self-actualization as a contributor to human well-being, as opposed to an indicator or a component of well-being. Following section explains different contemporary approaches to well-being research and to the conceptualization of human well-being.

More recent conceptualization of well-being resulted in two different lines of research on this phenomenon, hedonic (e.g., Diener & Lucas, 1999) and eudaimonic well-being research (e.g., Ryff & Keyes, 1995; Vella-Brodrick, Park, & Peterson, 2009; Waterman et al., 2010). The hedonic perspective of well-being deals with subjective

happiness, which includes positive and negative emotional experiences and cognitive judgments of life-satisfaction (subjective well-being; Ryff & Keyes, 1995). Eudaimonic well-being has been discussed in well-being and positive psychology literature as personal expressiveness (Waterman, 1990, 2008) through engagement in life (i.e., engaging in life experiences that match the individual's skills and thus entails high level of cognitive and emotional absorption by the task in hand; Csikszentmihalyi, 1990); and meaning in life (e.g., pursuing goals that go beyond the self; Keyes, Shmotkin, & Ryff, 2002). Engagement and meaning were highlighted by Peterson, Park, and Seligman (2005) as two of the three routes to happiness or a full life, the third being pursuing pleasure (i.e., hedonic well-being).

To operationally define eudaimonic well-being, Waterman and his colleagues (2010) developed the Questionnaire for Eudaimonic Well-Being (QEWB) to capture the subjective experiences of expressiveness. Reviewing the content of the measure by the researcher indicated that the measure embeds engagement and meaning in life.

Expressiveness occurs when individuals engage in actions that are in the direction of developing their potential and oriented towards achieving their personal goals while adding meaning to their lives. Waterman et al. (2010) argued that these subjective experiences are “signifiers” of eudaimonia.

Self-Actualization: A Goal-Oriented Process

The term and idea of self-actualization was originated by Kurt Goldstein in his book, *The Organism* (1939): Self-actualization is “the tendency to actualize, as much as possible, [the organism's] individual capacities” (p. 46). The term, self-actualization was popularized by Maslow (1968) as the highest level needs in his hierarchy of needs

suggesting that the satisfaction of this need is the key to happiness/well-being and the ultimate life satisfaction. The term actualizing tendency introduced by Rogers (1951) is a built-in desire in every being to manifest and develop one's abilities to the fullest potential possible. Rogers (1961) discussed the fully functioning person as the one who lives with an active actualizing tendency. That is, a fully functioning person engages oneself in the process of self-actualization.

The concept of self-actualization has always been criticized for being vague and not being operationally defined (Jones & Crandall, 1991). Self-actualization or actualization of one's inner nature has been considered to imply similar connotations as do concepts such as maturation, full humanness, and ultimate being (Maslow, 1968) or full functionality (Rogers, 1951). Weiss (1991) argued that the concept of self-actualization has lacked and needed a cohesive conceptual framework that provides it with a well-established operational definition.

Rule (1991) proposed a goal-oriented framework for actualization which gives recognition to both terms *self* and *actualization*. He argued that self needs to be measured as a separate variable through self-reported Likert-scale inventories that record the relevancy of items to the person. Actualization also denotes the process of growth, change, unfolding, developing, and transcending, none of which are static, frozen in time (Rule, 1991, p. 252). Human beings are goal-oriented as much as they are growth oriented (Rule, 1991). In fact, growth or self-actualization is the goal for the self. Goals, Rule (1991) stated, are "functions of the broader concept(s) of self" (p. 252).

Similar to Rule's (1991) conceptualization of self-actualization as a goal-oriented process, Ryan, Huta, and Deci (2008) introduced a goal-oriented theoretical framework

for optimal human functioning based on self-determination theory (SDT; Deci & Ryan, 1985; Ryan & Deci, 2000). SDT is primarily a theory of human intrinsic motivation (i.e., the pursuit of and the engagement in an activity “because of its inherent interest and enjoyability;” Ryan et al., 2008, p. 146). Ryan et al. (2008) proposed a conceptualization of eudaimonia that introduced it as a *process* of living well (i.e., eudaimonic living; p. 140), rather than a personality or an end. It is “defined in terms both of pursuing goals that are intrinsically valued and of processes that are characterized by autonomy and awareness” (p. 163).

In line with Aristotle (2004)’s perspective, SDT (Ryan et al., 2008) views eudaimonia as being achievable through actualizing one’s excellences, stating that eudaimonic living “requires engaging one’s best human capacities by actively pursuing virtues and excellences....” (p. 143) and “it is *a way of living that is focused on what is intrinsically worthwhile to human beings*” [emphasis in the original] (p. 147). Ryan et al. (2008) explained eudaimonia as “*a way of living*” [emphasis in the original] (i.e., eudaimonic living), not a psychological outcome (p. 147). Nevertheless, the SDT conceptualization of eudaimonic living corresponds more closely to the concept of self-actualization.

The present study, in line with Rule (1991), considered self-actualization as a goal-oriented process. The conceptual framework set forth by the present study introduces actualizing tendency as the chief intrinsic motivation (Rogers, 1951, 1961) and presents self-actualization as the way of practicing eudaimonic living. Self-actualization involves pursuing and striving to achieve self-actualizing goals which are (a) inspired by eudaimonic and intrinsic aspirations (e.g., self-acceptance, relatedness, &

helpfulness; Kasser & Ryan, 1996); (b) *personally* valuable and bring joy and pleasure to one rather than being imposed by other people or pursued to avoid negative feelings such as guilt or shame (i.e., self-concordant goals; Ryan & Connell, 1989; Sheldon, 2004); (c) pursued because they are good by themselves not because they are the means to achieve other goals (i.e., constitutive vs. instrumental goal orientations; Fowers, Mollica, & Procacci, 2010); (d) intrinsically worthwhile to human beings (i.e., virtuous; Aristotle, 2004; Ryan et al. 2008; Seligman, 2002); and (e) personally expressive (Waterman et al., 2010).

Need-Satisfaction and Self-Actualization

For Maslow (1943), the process of self-actualization can start only when basic needs have been satisfied to a relatively acceptable extent:

The need for personal growth in its highest degree (i.e., self-actualization) would emerge due to relative satisfaction of lower-order needs, namely, the physiological, safety, love and esteem needs which make it a rare occurrence.

Because satisfied people who already met their basic needs are scarce. (p. 85)

As opposed to the first four levels of needs that are the motivation for survival, the highest-level need, self-actualization is a motivation for growth. It also is a growing need that cannot be fully gratified like the previous ones because it is to perform to one's highest potential, which is ever-expanding. Maslow (1968) emphasized that the self-actualization process does not need to wait for full satisfaction of the basic needs, but only for gratification of them to the extent that inhibit frustration (p. 199).

SDT also has satisfying basic and universal psychological needs in its conceptualization of eudaimonic living. For Ryan et al. (2008), one of the pillars of

eudaimonic living is “behaving in ways that satisfy basic psychological needs for competence, relatedness, and autonomy” (p. 139). SDT highlighted the mediating role of psychological need-satisfaction in the relationship between intrinsic goal attainments and well-being. Need-Satisfaction was however emphasized by Maslow (1968) as a *prerequisite* to get to the higher-order need of growth and self-actualization.

Accordingly, the present study examined the relationship between need-satisfaction and self-actualization while considering the satisfaction of basic psychological needs as a precursor to self-actualization.

Conditional Self-Regard, Defensiveness, and Self-Actualization

Carl Rogers’ (1951) theory of actualizing tendency or self theory was also built upon the assumption that there is a natural tendency for actualization. In Rogers’ (1961) words,

it is the urge which is evident in all organic and human life — to expand, extend, become autonomous, develop, mature — the tendency to express and activate all the capacities of the organism, to the extent that such activation enhances the organism or the self. (p. 35)

The actualizing tendency, however, may not be active in many people because of the discrepancy they experience between their real self and their ideal self. The ideal self (versus the real self) is dictated by the environment (i.e., society or culture) as who one ideally *ought to be* as opposed the real self which is who one is both capable of being and willing to be. The ideal self can deviate or differ from the real self. This paradox has the potential to put the individual in a state of identity conflict or in a constant struggle to retain his/her self-regard and his/her sense of the self, which according to Rogers (1951)

would lead to increasing incongruent, neurosis, and the shattered self. This struggle is a result of developing *conditional* self-regard. That is, one's feeling of self-regard becomes conditional to satisfy others and to meet other people's expectations. Instead of defining and pursuing one's goals, the individual protects one's self-worth and self-regard by complying with other peoples' wishes.

People react differently when their concept of the self is being threatened, but all attempts are intended to maintain and retain their self-concept and self-regard in threatening situations (DeMarree & Marrison, 2011; Rogers, 1951). They do so by activating their *defense mechanisms* (or employing coping mechanisms). Gleser and Ihilevich (1969) noted that "defense mechanisms are relatively automatic cognitive and behavioral maneuvers that function to relieve anxiety, handle conflicts, and protect the self from disorganization and perceived threats" (as cited in Berzonsky & Kinney, 2008, p. 112). For instance, *denial* is one defense strategy that keeps the situation and /or the memory of it out of one's consciousness. *Perceptual distortion* is another strategy that refers to reinterpreting the threatening situation in a way that pushes it away from the self and attributing it to everything or everyone other than the individual her/himself. An example of adaptive defense mechanism is *humor*. Humor helps people to express their feelings or ideas about some unpleasant topics in a way that gives pleasure to others and is less hurtful to them. *Planning* is another example of adaptive coping mechanism. When employing this coping mechanism, people look for solutions to their problems and think of some strategies to tackle them.

Defense mechanisms become frequently active when the person is trapped by conditional self-regard. As a result, the discrepancy between the real self (i.e., what the

person is actually able to accomplish) and the ideal self (i.e., what the person is expected to accomplish that may be beyond her/his capability) is high and the person is recurrently experiencing situations that highlight this discrepancy (i.e., threatening situations). The high-frequency activation of defense mechanisms, as Rogers (1951) theorized, could lead to neuroses which would hinder one's personal growth. Rogers (1951) regarded the emancipation of actualizing tendency as due to reducing defensiveness. Assuming that individuals at higher level of unconditional self-regard are less defensive, meaning, they employ more functional and adaptive coping mechanisms and less maladaptive defense mechanisms, the present study was undertaken to illuminate the relationship between self-actualization and non-defensiveness.

Metacognition

Flavell (1976) first introduced the term, metacognition, and explained that "in any kind of cognitive transaction with the human or non-human environment, a variety of information processing activities may go on. Metacognition refers, among other things, to the active monitoring and consequent regulation and orchestration of these processes in relation to the cognitive objects or data on which they bear, usually in service of some concrete goal or objective" (p. 232). His model of metacognition or cognitive monitoring (Flavell, 1979) included four interacting facets: Metacognitive knowledge; Metacognitive experience, Goal/Task; and Actions/Strategies. *Metacognitive knowledge* is knowledge about human beings as cognitive agents and as different from one another in their cognitive performances (i.e., the *person* variable). It is also knowledge about environmental and contextual factors (e.g., task, strategies, physical environment, resources) affecting cognitive performance (i.e., the *task* and *strategy* variables). When a

person asserts that s/he is better in performing on a task (e.g., reading comprehension) and her/his friend is better in doing the other task (e.g., arithmetic), that person is demonstrating her/his metacognitive knowledge with respect to the person variable.

Metacognitive experiences are “any conscious cognitive or affective experiences that accompany and pertain to any intellectual enterprise” (Flavell, 1979, p. 906). For instance, once a person perceives or feels that s/he is not able to understand or follow the logical argument just made on a certain subject, the person engages in a metacognitive experience. *Goals* or *tasks* are what cognitive processes are oriented to and *actions* or *strategies* are what the person needs to do to achieve the goals and accomplish the task. An example here would be the cognitive goal/task of recognizing the adequacy of some instructional statements; the actions/strategies would be using different techniques to identify the flaws, omissions, and obscurities within those instructional statements (Markman, 1977). Another example of cognitive task/goal is recalling certain items; the corresponding action would be studying those items in a way that fulfill this goal (Flavell, Friedrichs, & Hoyt, 1970).

In addition, Flavell (1979) argued that metacognition has the potential to lead people “to select, evaluate, revise, and abandon cognitive tasks, goals, and strategies in light of their relationships with one another” (p. 908) which adds the function of *control* to Flavell’s (1979) metacognitive monitoring model. Brown (1977, 1978) clearly distinguished between *metacognitive knowledge* and *metacognitive regulation*, and now there is relatively a scholarly consensus (e.g., Efklides, 2001; Flavell, Miller, & Miller, 1993; Schraw, 2001) that metacognition includes two primary facets: (a) metacognitive knowledge or awareness, which is knowledge and awareness about all different variables

involved in the process of metacognition; and (b) metacognitive regulation, which is about metacognitive monitoring and control of actions through setting goals and working with appropriate strategies to achieve goals. Metacognitive skills (Efklides, 2001) which are used for metacognitive regulation include, but not limited to, (a) interpreting the situation; (b) guiding, orchestrating, and supervising thoughts, emotions, and actions; (c) identifying and characterizing the problem; (d) predicting the limitations of one's cognitive capacity and knowledge repertoire for a given problem-solving task; (e) planning by setting and selecting goals and strategies; (f) tracking the progress; (g) evaluating the process of problem-solving; and (h) revising the plan and goals if necessary. In fact, metacognitive regulation is characterized by using a combination of these monitoring and control processes during *deliberate* problem-solving (Brown, 1978).

Nelson and Narens (1990) presented a model of metacognition which described metacognitive regulation as two metacognitive functions, *monitoring* and *control*. They defined two levels of metacognitive functioning that are related through a flow of information: meta-level (i.e., cognition) and object-level (i.e., actions/behaviors). Monitoring was defined as the process in which “the meta-level is *informed* by the object-level” [emphasis in the original] (Nelson & Narens, 1990, p. 127). This function can change the mental representation the meta-level already has of the object-level. This alteration leads to initiating a new scheme, thought, and idea (i.e., cognition) or continuing, modifying, or terminating an existing one. Control was defined as the meta-level *modifying* the object-level by producing a new state of action at the object-level (Nelson & Narens, 1990). It manifests itself in form of initiating a new action or

continuing, modifying, or terminating an existing action. Control in any form is informed by the metacognitive monitoring or monitoring judgment (Nelson & Narens, 1990), dealing with questions such as What is the problem? What is the goal? How to set the goals and sub-goals? What strategies to use?, that makes metacognitive regulation a deliberate process of problem-solving.

Integrating Flavell's (1979), Brown's (1977, 1978), and Nelson and Narens' (1990) conceptualizations of metacognition, the researcher set forth a conceptual framework in which self-actualization was regarded as a metacognitive goal/task and metacognition was discussed as another precursor to the process of self-actualization when. Setting first-level goals such as personal growth has been argued to be a way of eudaimonic living (Ryan et al. 2008). Goal setting is a metacognitive regulatory process (Tarricone, 2011) which entails the activation of both metacognitive knowledge and regulation involving person, task, and strategy variables. For instance, while setting self-actualization as the goal and using his/her monitoring judgment, the person needs to recognize her/his personal interests and pursuits (i.e. metacognitive knowledge of the person variable), know her/his habits and styles of problem-solving (i.e., metacognitive knowledge of the person variable), prioritize her/his goals and identify the possible ways to approach them by setting sub-goals to achieve the main goal (i.e., metacognitive regulation of the task variable), have knowledge of alternative strategies to approach her/his goal (i.e., metacognitive knowledge of the strategy variable), and select a strategy that is appropriate for the task and for her/him (i.e., metacognitive control of the strategy, task, and person variables).

Further, need-satisfaction or employing more adaptive defense/coping mechanisms can be considered sub-goals in the self-actualization process. Each sub-goal then is a separate metacognitive task. Assuming need-satisfaction as the task, the action is using one's knowledge and monitoring judgment to identify personal needs and to think of adaptive ways to fulfill those needs. Metacognition may help with avoiding the abundance of maladaptive defense mechanisms and, instead, selecting adaptive coping mechanisms when dealing with threatening situations (i.e., the cognitive task). In this experience, the person needs to recognize that a threatening situation has occurred (i.e., metacognitive monitoring of the task variable), identify the typical automatic reaction of his or her mind to the situation (i.e., metacognitive knowledge of his typical defense mechanism as the person variable), believe that s/he can control the situation (i.e., metacognitive control of the person variable), have knowledge of alternative strategies/adaptive defense mechanisms (i.e., metacognitive knowledge of the strategy variable), and select a strategy that is appropriate to tackle the task and works for him/her (i.e., metacognitive control of strategy, task, and person variables). The researcher hypothesized that individuals who are more developed in their metacognition are more advanced in the process of self-actualization and also more successful in need-satisfaction and adopting more adaptive defense/coping strategies.

Summary of the Conceptual Framework

The path towards self-actualization and a fulfilling life is by no means a clear path and it is plausible that it may never be clarified entirely due to its complexity. Nevertheless, given that happiness and being-the-best-one-can-be have been the greatest struggles for individuals, research into their possible components and contributors will be

enlightening. A review of seminal conceptual literature (e.g., Maslow, 1968; Rogers, 1951, 1961; Ryan et al. 2008; Seligman, 2000) suggested that a conceptual link between self-actualization and well-being is implied by the literature; however, the nature of this relationship and, in fact, whether or not they are two distinct phenomena, is rather ambiguous in the existing literature. The conceptual framework developed for and tested in the present study introduced self-actualization and well-being as two different phenomena and conceptualized well-being as the outcome of self-actualization. Furthermore Maslow's (1968) need-satisfaction and Rogers' (1961) non-defensiveness were conceptualized as precursors to self-actualization.

In addition, within this conceptual framework, the author of the present study argued that metacognition is essential for recognizing the self-actualizing needs and goals and for facilitating the regulation of personal efforts towards those goals. Metacognition needs to be oriented towards becoming who one is, identifying one's potentials, and demonstrating the most and the best of one's capacities. The author argued that metacognition can serve the purpose of self-actualization by facilitating need-satisfaction and non-defensiveness as well as by helping self-actualizing goal setting and goal-striving.

Metacognition has been recognized as a 2-component construct including metacognitive knowledge and metacognitive regulation (i.e., monitoring and control). A comprehensive metacognitive process uses metacognitive knowledge and the information obtained through metacognitive monitoring for metacognitive control. Metacognitive knowledge is the knowledge of ones' capabilities, beliefs, interests, emotions, and cognition and the knowledge of the task in hand (goal), the environment and the

appropriate strategies to tackle the task. Metacognitive monitoring is the evaluation of the situation including person, task, and strategies which, in a joint effort with metacognitive control, takes care of the regulation of thinking and emotion towards accomplishing the task and producing a new state of action. In the conceptual framework developed for and tested in the present study, metacognition was identified as a potential antecedent to the process of self-actualization and a possible precursor to need-satisfaction and non-defensiveness.

The Significance of the Study

Under the pressure of high-stake standardized testing, school curriculum and instruction are strictly focused on academic achievements that provide little, if any, opportunity for working on students' personal growth and identifying and actualizing their potentials. Practical significance of findings from the present study is to inform educational practices from early childhood through 12th-grade and to the university to adopt and promote a self-actualizing perspective in education. It was also hoped that this study would encourage educational researchers to develop further research to investigate the influence of different school practices on students' learning in the area of personal growth and their well-being, rather than focusing primarily on their academic performance.

Further, this study is intended to help develop interventions that support students to build upon their potentials throughout their academic life, which is a great deal of their everyday life for at least 12 years. The findings from this study provide support for utilizing the research variables in the development of specific curricular and instructional models. For example, the findings from the present study add to the literature on

teaching and learning that invests in the implications of metacognition in school settings. The empirical support for the model presented in this study could provide a theoretical foundation for further research to develop models of curriculum and instruction that teaches metacognitive skills specialized for need-satisfaction and reducing defensiveness and to help students develop a system of learning and living towards self-actualization.

Additionally, the present study sheds light on the empirical research on self-actualization by introducing a new approach to operationally defining this concept. The growth theories of Rogers (1951, 1961) and Maslow (1968), along with Aristotle's (2004) account of well-being share a commonality in the recognition they give to the development of personal capacities to their fullest potential for healthy personal growth. The self-determination theory of eudaimonia also provides a contemporary account of human optimal functioning and eudaimonic living by integrating all these great theories of well-being, motivation, and personal growth. Previous studies of self-actualization addressed this concept as a static construct such as a personality trait. In the present study, self-actualization was measured as a goal-oriented process according to Rule's (1991) conceptualization of self-actualization and guided by the literature on goal aspirations, goal motivations, goal orientations, and goal striving as related to full functionality, personal growth, and well-being (e.g., Fowers, et al., 2010; Kasser & Ryan, 1996; Emmons, 1999).

This study adds to the literature in humanistic psychology and positive psychology by shedding light on the relationship between self-actualization and human well-being. Self-actualization in positive psychology literature is frequently referred to as an indicator, rather than a predictor, of human well-being. However, the association

between the *process* of self-actualization and human well-being as an ultimate good has rarely been analyzed.

The present study contributes to the body of knowledge in psychology as it identifies and tests a link between cognitive psychology, humanistic psychology, and positive psychology. The conceptual framework presented for this study demonstrated a connection between metacognition, self-actualization, and well-being. Theories of metacognitive awareness and regulation (e.g., Flavell, 1979) imply that, to nurture one's potentials to its highest level, one needs to be able to handle a successful metacognitive process. Within this framework, self-actualization, need-satisfaction, relaxing defense mechanisms and adopting adaptive coping styles can be set as goals of metacognition.

Definitions of Terms and Operational Definitions

This section presents a list and brief definition of constructs of interest and how they were measured. More details on the instruments and the measurement and validation procedure are presented in Chapter 3 and Chapter 4.

Eudaimonic well-being. Eudaimonic Well-Being (EWB) refers to the quality of life that is defined by the development of a person's best potentials (Sheldon, 2002; Waterman, 1990). The present study measured this variable by using a slightly modified version of the Questionnaire for Eudaimonic Well-Being (QEWB; Waterman et al., 2010) and some adopted items from Life Regard Index-Revised (LRI-R; Debats, 1998).

Hedonic well-being. Hedonic well-being is "the belief that one is getting the important things one wants, as well as certain pleasant emotions that normally go along with this belief" (Kraut, 1979, p. 178). It is comprised of cognitive and affective components. In the present study, the Satisfaction with Life Scale (SWLS; Diener,

Emmons, Larsen, & Griffin, 1985) and the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988) were used to measure these two components respectively.

Self-Actualization. Self-actualization refers to actualizing one's best potentials (Maslow, 1968; Rogers, 1951) which is goal-oriented and involves "growth, process, change, unfolding, evolving, [and] transcending" (Rule, 1991, p. 252) while "pursuing intrinsic goals, [and] acting autonomously and volitionally" (Ryan et al., p. 163). The present study measured this construct, based on Rule's (1991) conceptualization of self-actualization, as a goal-oriented process through two different measurement components (a) Actualizing-Self and (b) Actualization-Striving. The operational definitions of these measurement components are explained in more details in Chapter 3.

Need-Satisfaction. Human beings are born each with an essential inner nature embedding a series of needs at different levels (i.e., physiological needs, safety needs, belonging needs, esteem needs, and self-actualization). Relative satisfaction of needs at each lower level is crucial to achieve self-actualization (Maslow, 1968). In the present study, need-satisfaction was measured primarily by adopting Sheldon and Elliot's (1999) approach in measuring need-satisfaction which was based on three basic psychological needs identified by Deci and Ryan (1991), namely autonomy, competence, relatedness (more details in Chapter 3).

Non-Defensiveness. Defense mechanisms refer to psychological and behavioral mechanisms people employ as a natural reaction towards every social and external force that threatens their self-regard (Vaillant, 2000). They are conceptually related to coping mechanisms, known as "cognitive and behavioral efforts to manage specific external

and/or internal demands that are appraised as taxing or exceeding the resources of the person” (Folkman & Lazarus, 1984, p. 141). Non-Defensiveness was measured as a combination of scores on two different measurement components: (a) Adaptive Coping and (b) Defensiveness, using the 28-item Brief COPE (Carver, 1997).

Metacognition. Metacognition refers to cognition about cognition which includes both knowledge and regulation of cognitive processes (Flavell, 1979). Metacognition as measured in the present study by a modified version of Metacognitive Awareness Inventory (MAI; Schraw & Dennison, 1994) encompasses the two aspects of metacognition (i.e., knowledge and regulation).

Assumptions and Delimitations of the Study

Assumptions

The study’s assumption included: (a) every human being has an inner nature with some embedded potentials as well as biological and psychological needs; (b) human beings in general follow similar higher-order (i.e., growth-oriented) values to add meaning to their lives; (c) human well-being in any form is the outcome of human functioning; (d) goal orientations presented in the measures of self-actualization are representative of all first- and second-order goals or values²; and (e) measuring basic psychological need-satisfaction based on Deci and Ryan (1991)’s work is fairly compatible with need-satisfaction suggested by Maslow (1968) assuming that physiological and safety needs are already relatively satisfied. Finally, it was also

² First-order goals/values are intrinsic goals which are not reducible to other values and their existence is not dependent to other values (Ryan et al., 2008). Pursuing them represents constitutive goal orientation that means pursuing goals which are good by themselves and intrinsically worthwhile to human beings. On the contrary, second-order goals, pursuing which represent instrumental goal orientation, are goals that are pursued as the means to achieve other goals.

assumed that participants were honest and accurate in answering to the self-report questionnaire.

Delimitations

The present study used an ex post facto research design which results in lower internal validity because the results cannot be interpreted causally due to a lack of randomization of the sample and manipulation of variables. An ex post facto design is useful however research-wise for identifying variables for future manipulation (Newman & Newman, 1994), which was one of the intended goals of this study. Future studies using experimental research designs should follow this study to illuminate the findings.

Furthermore, the sample was a convenience sample of undergraduate and graduate students in a public university in a demographically unique area with a large Hispanic population, which limited the external validity of the study's findings to be generalized to other age groups and demographically different populations. University students were chosen as participants of this study as an emerging adult population, who are age-wise perceived to be more advanced in their development in all aspects than grade school students and also are in a period of frequent change and explorations (Arnett, 1994, 2000), a characteristic that was intended to provide the study with more variability and richer data as the participants navigate their way towards self-actualization.

Organization of the Study

This chapter included the background to the problem, problem statement, purpose statement, and theoretical framework. The significance of the study, definitions of terms assumptions and delimitations were also discussed. Chapter 2 provides a review of the

literature that supported the study and the conceptual framework presented in the first chapter. Chapter 3 describes the research method used to conduct the study. Chapter 4 presents the findings of the study, and Chapter 5 concludes with a discussion of the results and implications for theory, research, and practice.

CHAPTER II

LITERATURE REVIEW

The current study was framed to examine the relationship between metacognition, self-actualization and well-being to link the world of cognitive psychology, humanistic psychology and positive psychology in an educational context. Although the present study was not an experimental design and has not tested any intervention, the more long-term intention of the present study is to provide a framework for the educational system to design interventions that help students activate their actualizing tendency, identify and actualize their potentials, and build their way towards a fulfilling life. This study investigated metacognitive development as one possible way to satisfy this purpose. Accordingly, this chapter provided an extensive review of theoretical and empirical literature on well-being, self-actualization, and metacognition and how these concepts are theoretically and empirically related.

This chapter includes theoretical and empirical literature reviews. The first two main sections are allocated to the *theoretical* literature review, and the third section presents the *empirical* literature review. The first section focuses on seminal works of scholars who pioneered the conceptualization of human well-being, self-actualization, and metacognition. The second section addresses the contemporary conceptualization of each concept and the critiques, controversies, or misconceptions around them. In the third section, the empirical literature which examined the relationship between variables of interest is reviewed. Finally, a summary is presented which puts together concluding remarks of the chapter.

Background on Research Variables

This section discusses, respectively, the seminal work of Aristotle (2004) on human well-being or eudaimonia, Maslow's (1968) and Rogers' (1951, 1961) seminal works on self-actualization, and various models of metacognition conceptualized by Flavell (1979), Brown (1978), and Nelson and Narens (1990). The organization of this section is as follows: (a) well-being is defined and conceptualized from Aristotelian perspective; (b) self-actualization is introduced from Abraham Maslow's and Carl Rogers's perspectives, pioneers of theories of self-actualization; and (c) Metacognition is characterized by merging Flavell (1979)'s, Brown (1978)'s, and Nelson and Narens (1990)'s conceptualization of metacognition. More contemporary accounts of human well-being, self-actualization, and metacognition will be discussed in the second section of this chapter.

Aristotle's Account of Well-being: Eudaimonia and Virtue

Aristotle (trans. 2004), the Greek philosopher of 4th Century BC, in his collection of lectures, *Nicomachean Ethics*, discussed the ultimate good of human beings. According to his argument, the ultimate good is "complete without qualifications" (Aristotle, 2004, p. 10). Aristotle (2004) viewed well-being as the good that consists of everything a person needs or wants (i.e., it includes all goods). It is also self-sufficient and valued for itself; it "on its own makes life worthy of choice and lacking in nothing" (p. 11). We pursue every other valued action or characteristic for the sake of that ultimate good, but we do not seek the ultimate good for the sake of anything else. Furthermore, it is "to be something of one's own that cannot easily be taken away;" (Aristotle, 2004, p. 7); thus it is independent of others' giving.

Aristotle (2004) referred to such an ultimate good as *Eudaimonia*. In Greek culture, *eu* means “well” and *daimon* means “divinity” or “spirit.” Aristotle, however, did not highlight anything about the godliness of this phenomenon and instead regarded ‘*eudaimon*’ merely as *eu zên* (i.e., living well; Kraut, 2010). Although the psychological literature predominantly has translated *eudaimonia* as “happiness,” the present study recognized the term “well-being” as more accurately reflecting the connotations of the original term. Happiness will be discussed later as being subordinate to well-being.

The question is how one can attain *eudaimonia*? Aristotle (2004) argued “it is possible that we might achieve that if we grasp the characteristic activity of a human being” (p. 11). *Ergon* or the characteristic activity of any being is an action unique to every being that makes it what it is. Therefore, the good of every being is “the doing well of” that *ergon* (p. 11). For human beings, one’s *ergon* is something that s/he is meant to do well in order to be who s/he should be. The *ergon* is different from one person to another considering the different social roles one assumes (p.12). Yet Aristotle (2004) assumed a common essence for all people as *human* beings which strive for the ultimate good. He called it *daimon* or human nature. Thus human *ergon* may take different forms for one person: (a) several forms due to the different roles one takes in one’s life and (b) one general form due to the *universality* of human nature.

Aristotle’s (2004) discussion of human nature was abstracted around the concept of the *daimon* (translated as soul) as the inner nature of human being. It is viewed as the source of human actions. His conceptualization of *daimon* corresponds to the concept of the inner self or the true self in contemporary discussions of human nature (Nagle, 1972; Norton, 1976; Rogers, 1951). Aristotle (2004) believed in “a universal account of

wellbeing, especially one grounded in human nature” (p. xviii). He argued that the greatness of the soul “consists in thinking oneself worthy of great things” (i.e., *virtues*; p. xviii). He considered well-being mainly a result of an activity of human inner nature which involves the philosophical contemplation and the exercise of reason in service of *arête* or *virtue* (i.e., “living well and acting well,” p. 13).

Virtue in the Aristotelian school of thought, or in fact in Greek culture, refers to *excellence* (Ackrill, 1973; Aristotle, trans. 2004; McDowell, 1980), the actualized capacity, or the well-performed characteristic activity (Aristotle, 2004). In human beings, virtue takes two forms: (a) intellectual virtue and (b) virtue of character. Examples of the former are practical wisdom and judgment, which mainly originate and develop from teaching or education, and examples of the latter are generosity and self-restraint which are the products of habituation or nurturing (Aristotle, 2004).

Although Aristotle did not operationalize the concept of eudaimonia and self-actualization, his conceptualization of eudaimonia implies that every virtue or excellence is a contributor to well-being, not a component of well-being and not well-being in itself. Thus, actualizing one’s potential is not accepted as a component of well-being or as well-being itself, but as a contributor to it. Contrary to the Aristotelian perspective, the psychological studies use self-actualization or personal growth as a subscale when measuring well-being (e.g., Psychological Well-Being; Ryff & Keyes, 1995), or conceptualize eudaimonia as self-actualization (e.g., Ryan & Deci, 2001; Ryan et al., 2008), or measure self-actualization as an indicator of well-being (e.g., Fowers et al., 2010).

In line with Aristotle (2004), the present study investigated self-actualization as a contributor to human well-being (Figure 1), as opposed to an indicator of well-being. That is, self-actualization and well-being were treated as separate variables. In the present study, eudaimonia has been operationally defined in accordance with the contemporary account of eudaimonia (Waterman et al., 2010) and the eudaimonic aspects of a full life: (a) engagement (Csikszentmihalyi, 1990; Peterson et al., 2005) and (b) meaning (Keyes, Shmotkin, & Ryff, 2002; Peterson et al., 2005). The present study used a combination of the Questionnaire for Eudaimonic Well-Being (QEWB; Waterman et al., 2010) and a few items from Life-Regard Index-Revised (LRI-R; Debats, 1998). The 21-item QEWB was developed to measure eudaimonic well-being, and its content involves some aspects of meaning and engagement in life. Six items from LRI-R, which was originally developed to measure meaning in life, were added to QEWB to bring additional meaning-oriented contents in measuring eudaimonic well-being.

In addition, from Aristotelian perspective, virtues develop in a person by means of education and exercise of reason as well as habituation. Aristotle (2004) viewed the actualization of capacities (i.e., self-actualization) as being teachable in part and always involving the pleasure of contemplation and deep cognitive engagement in accordance with the target capacity or excellence. Thus, developing one's excellences (i.e., self-actualization) involves contemplation and is attainable through education. The present study examined the role of contemplation in living a eudaimonic life based on the Aristotle's statement that "... virtuous activity itself involves the pleasure of contemplating one's own virtuous actions" (Aristotle, 2004, p. xxx). It investigated the relationship between metacognition (as a form of contemplation) and self-actualization

(as a way of living a eudaimonic life). The two following sections discuss the seminal works on self-actualization (Maslow, 1968; Rogers, 1951, 1961) and metacognition (Brown, 1978; Flavell, 1979; Nelson & Narens, 1990).

Self-Actualization —————> Well-being

Figure 1. Aristotle's approach to human well-being

Self-Actualization

The term and idea of self-actualization was originated by Kurt Goldstein in his famous book *The Organism* (1939). Self-actualization is “the tendency to actualize, as much as possible, [the organism's] individual capacities” (p. 46). It was also discussed by Rogers (1961) in his book *Client-Centered Therapy* and was popularized by Maslow (1968).

The term self-actualization, however, is used and defined loosely in the literature. For instance, Goble (1970) introduced it as “*the desire* [emphasis added] to become more and more what one is, to become everything that one is capable of becoming” (p. 15). Gowan (1972) described it as *a life* filled with a profound sense of commitment. Kerr (1991) viewed self-actualization as *challenging the limits of intellectual potentials* to use the intellectual gifts to the fullest. He, however, reduced its operational definition to *receiving advanced academic degrees or prestigious jobs* (Kerr, 1985). Reis and his colleagues (Reis & Callahan, 1989; Walker, Reis, & Leonard, 1992) considered it *the achievement in recognized fields of endeavor* such as in the areas of National Merit semi-finalists, patents, the United States Senate, and the Supreme Court. In another study, the term self-actualization was used “to describe a state of fully realizing one’s potentials”

(Serotkin, 2011). Although self-realization is a necessary step for actualizing one's potentials (Waterman et al., 2010), it is not synonymous with self-actualization.

In another note, literature recognized a connection between learning and self-actualization. For instance, Burlison (2005) argued that learning and creativity are essential to self-actualization as much as self-awareness, intrinsic motivation, and self-actualization are critical to learning. The link between learning and self-actualization is explained in Aristotle's (2004) conceptualization of well-being as well. He discussed self-actualization as a teachable skill and as the route towards well-being. It is not, however, clear in what way self-actualization is crucial to learning and creativity. Creativity is rather a characteristic of self-actualizing people (Maslow, 1968).

Despite different conceptions about self-actualization, Maslow (1968) and Rogers (1951, 1961) presented the most elaborate theories of this concept. They explained the concept of self-actualization as well as the factors which may precede its manifestation. Maslow (1968) introduced self-actualization as the highest-level need for human beings and argued that its achievement is due to the relative satisfaction of lower-level needs (e.g., physiological, safety, belonging, and esteem). Rogers (1951) primarily discussed *actualizing tendency* as the main motivational force in human beings that underlies all other motivations. His theory implies that self-actualization is possible only if people develop unconditional self-regard which manifests itself in the form of lower psychological defensiveness. Two following sections summarize Maslow's (1968) and Rogers' (1951, 1961) theories of self-actualization each of which introducing a precursor to the self-actualization process, respectively need-satisfaction and non-defensiveness.

Maslow, self-actualization, and need-satisfaction. Maslow's (1968) personal growth theory is driven by a notion that human beings live and act based on a hierarchy of needs. He theorized that needs prioritize human behavior (i.e., responses to environmental stimuli). Human beings respond to needs based on their hierarchical strength or urgency (i.e., the most urgent one first; e.g., thirst before hunger). Maslow's (1968) hierarchy of needs starts with physiological needs on the base and continues with safety needs, belonging needs, esteem needs, and self-actualization. This hierarchy is from stronger to weaker needs in terms of the urgency by which needs compete for a response (i.e., from the most urgent to the least urgent need).

Therefore, after the physiological needs such as hunger and thirst are taken care of, our fears and concerns about providing safety, stability, and protection are up. Then having caring and affectionate relationships comes into play as well as a sense of belonging (to groups and individuals). Next, the need for esteem comes at two levels: (a) the need for respect of others, attention, and recognition and (b) the need for self-esteem that includes, but not limited to, competence, confidence, and freedom. These four levels of needs Maslow (1968) defined as *deficit needs* – dissatisfaction of any of them results in a health deficit (mental or physiological). Maslow (1968) argued that people's philosophy of life and what they think about their future life or ideal life gives insight about their deprivations and their uncovered needs.

The highest level of need is called self-actualization (*being-needs*) and is a motivation for growth, as opposed to the first four levels that are the motivation for survival. It also is a growing need that cannot be fully gratified like the previous ones because the need for self-actualization is the need to perform to one's highest potential

which is ever-expanding. Maslow (1968) also emphasized that the self-actualization process does not need to wait for full satisfaction of the basic needs, but only for gratification of them to the extent that inhibits frustration (p. 199). Gratification of deficit-needs and being-needs happens concurrently, rather than one being the prerequisite for the other.

Maslow (1968) also listed clinically observed characteristics of healthy people – those without deficits who have devoted their time and effort to self-actualization. Self-actualizing people demonstrate (a) “superior perception of reality;” (b) “increased acceptance of self, of others and of nature;” (c) “increased spontaneity;” (d) an “increase in problem-centering;” (e) “increased detachment and desire for privacy;” (f) “increased autonomy, and resistance to enculturation;” (g) “greater freshness of appreciation, and richness of emotional reaction;” (h) “higher frequency of peak experiences;” (i) “increased identification with the human species;” (j) “changed (the clinician would say, improved) interpersonal relations;” (k) more democratic character structure; (l) “greatly increased creativeness;” and (m) “certain changes in the value system” (p. 26). These characteristics were drawn from the biographical analysis of people who, Maslow (1968) thought, were fulfilling the criteria of self-actualization. Albert Einstein, Abraham Lincoln, Eleanor Roosevelt, Thomas Jefferson, Jane Adams, and Benedict Spinoza are examples of subjects in Maslow (1968)’s research.

For Maslow (1968), self-actualization entails a process of *becoming*. Human beings are all constructed in a way that always feel the tendency or need for becoming a “fuller and fuller being and ... pressing toward what most people call good values, towards serenity, kindness, courage, honesty, love, unselfishness, and goodness” (p. 155).

It is an ultimate that “we can approximate ... more closely or less closely” (p. 82). Maslow (1968) also argued that self-actualization is not an experience for fully self-actualizing people, but *all* of us experience the self-actualizing state in our peak moments – when we are universally tolerant, amused, and accepting. He argued that these are our “healthiest moments” (p. 97) in which we are present with our “greatest maturity, individualization, [and] fulfillment” (p. 97). Self-actualizing people experience these episodes in their lives quite frequently.

In sum, Maslow (1968) regarded self-actualization as the highest-level need in his hierarchy of needs. This hierarchy is organized from stronger (more basic) to weaker (more advanced) needs in terms of the extent of their urgency for a response: physiological needs, safety needs, belonging needs, esteem needs, and the need for self-actualization. The first four basic needs are *deficit needs* dissatisfaction of which results in a psychological deficit. Self-actualization however is a *being-need* and it is the desire to grow and fulfill our potentials. All these needs can co-exist, while the lower-level needs should be gratified beyond the level of frustration in order for the higher level needs to bloom. Based on this argument, the present study investigated the relationship between need-satisfaction and self-actualization (see Figure 2).

Need-Satisfaction —————> Self-Actualization

Figure 2. An approach to self-actualization deduced from Maslow’s self-actualization theory

The contemporary literature on need-satisfaction is mainly based on self-determination theory (SDT; Deci & Ryan, 1985, 2000; Ryan & Deci, 2000), which like Maslow (1968) regards needs as being innate and motivational (Deci & Ryan, 2000).

SDT focuses on basic psychological needs, namely relatedness, competence, and autonomy. Relatedness is “the desire to feel connected to other – to love and care, and to be loved and cared for” (p. 231). Competence refers to “a propensity to have an effect on the environment as well as to attain valued outcomes within it” (p. 231). Autonomy refers to “volition-the organismic desire to self-organize experience and behavior and to have activity be concordant with one's integrated sense of self” (p. 231). Relatedness is equivalent to Maslow's (1968) belonging needs, and competence and autonomy are closely related to Maslow's (1968) esteem needs. All three basic psychological needs are considered deficit needs (i.e., failure in satisfying them results in deficits in human optimal functioning; Deci & Ryan, 2000). Thus, they are placed below self-actualization when aligned with Maslow's (1968) hierarchy of needs. The present study employed SDT's conceptualization of basic psychological needs when examining need-satisfaction, assuming that lower-level needs (i.e., physiological and safety needs) have been relatively satisfied for all participants.

Rogers, actualizing tendency, self-regard, and psychological defensiveness.

Carl Rogers' (1951, 1961) self theory is built upon one main concept which is *the actualizing tendency*. It is defined as the natural tendency or built-in-desire in every being to manifest and develop one's abilities to the fullest potential possible. Like Maslow (1968), Rogers (1961) argued that the actualizing tendency is not about survival but about flourishing. Rogers believed that all beings have the desire of doing their very best. For him, more complex creatures (e.g., human beings) and more complex organization of creatures (e.g., society) have greater potential for actualization and are more likely to recover from disasters compared to less complex creatures. The individual

human being is a potentially complex being with an ability to intellectually resolve problems that life presents. The complex organization of humans manifests itself in form of a society or a culture. Although it is not always the case, society and culture in an effort to survive as a group/organization may harm the individuals' actualization. Rogers (1961) explained this phenomenon in more detail, introducing concepts of value system, real self, and ideal self.

Rogers (1961) considered two different and reliable value systems for human beings: organismic valuing and positive regard. What we discriminate through senses and what we usually call basic needs, such as food and sleep, belong to a low-level value system, called organismic valuing, while the other feelings such as affection, love, attention, and caring are referred to as positive regard. From the latter category, of importance to personal growth and self-actualization is positive self-regard which includes, but is not limited, to self-esteem, positive self-image, and self-acceptance.

An individual human being, by her/his very own nature, strives for what s/he needs and what is good for him/her. However, society and culture make the attainment of most of these needs depend on individuals' worthiness which is usually determined by some social-cultural stereotypical values and characteristics. The result of such a judgmental system is that, instead of being led by our actualizing tendency, we have eventually become responsive to what Rogers (1951) called *conditional* positive regard. Following this pattern or learning contingency, our positive self-regard becomes conditional to meeting the expectations of others, to pleasing other people.

According to Rogers (1951), conditional self-regard causes a struggle between the *real* self (i.e., the self that would be the result of the actualization of one's potentials) and

the *ideal* self (i.e., the self that society imposes). The ideal self (versus the real self) is imposed by external influences (i.e., society or culture), while the real self is the self that one is both capable of being and willing to be. The ideal self can deviate or differ from the real self. Experiencing such a deviation can lead to a constant struggle, the purpose of which is to retain the positive self-regard and a positive sense of the self. High frequency of such a struggle jeopardizes an individual's psychological well-being by placing the individual in a state of identity conflict, which, according to Rogers (1951), leads to increasing self-incongruence and neurosis.

To cope with such incongruity, individuals develop defense systems or coping mechanisms that help them psychologically escape what is threatening to their positive regard. Such a situation is called a threatening situation. A threatening situation is a circumstance that capitalizes the incongruence between the real self and the ideal self. Frequent activation of the defense system (e.g., denial, perceptual distortion, etc.) adds to the existing incongruence. It does not help develop an unconditional self-regard; it is only a temporary remedy to pass the threatening situation. Despite all kinds of suppression, the actualizing tendency is never completely extinguished. Rogers (1961), like Maslow (1968), believed that:

This tendency may become deeply buried under layer after layer of encrusted psychological defenses; it may be hidden behind elaborate facades which deny its existence; but it is my belief that it exists in every individual, and awaits only the proper conditions to be released and expressed. (p. 35)

The author of the present study argued that “the proper conditions” which Rogers (1961, p. 35) mentioned in his statement can take place if people can manage the activation of

their defense mechanisms in a proper way, which is characterized by being less defensive (i.e., controlling their defense mechanisms by using less of maladaptive defense strategies) and adopting adaptive coping mechanisms more often. Figure 3 illustrates this approach to self-actualization which has been deduced from Rogers' (1951, 1961) self theory.

Non-Defensiveness —————> Self-Actualization

Figure 3. An approach to self-actualization deduced from Rogers' self theory

A full person. For Rogers (1961), a *fully-functioning* person who has an active actualizing tendency is described by five characteristics: (a) Openness to experience; (b) Existential living; (c) Organismic trusting; (d) Experiential freedom; and (e) Creativity. *Openness to experience* refers to embracing the whole experience of life. It includes experiencing reality as it is and experiencing oneself with all of one's flaws and merits. Developing accurate perceptions of one's feelings in relation to reality is essential in order to distinguish between our natural value system and the imposed *conditional* positive regard. *Existential living* deals with living in the present, which means being mindful and cognizant of the memory of the past and dreams of the future and being able to focus one's feelings and actions on the present. It allows the experience of the reality as it is. *Organismic trusting* is about allowing one's organismic valuing and one's true feelings (driven by one's unconditional self-worth rather than by conditional self-worth) guide our behavior. For a fully functioning person, the actualizing tendency is the motivation that leads his/her behavior, perception, and attitude. Thus, organismic valuing

can be safe to trust. Openness to experience and existential living are building blocks of organismic trusting.

Experimental freedom is the fourth characteristic of a fully functioning person. It refers to living with a sense of freedom in one's choices and taking responsibility for those choices, a characteristic which was referred to as autonomy in SDT literature and was introduced as one of the basic psychological needs (Deci & Ryan, 2000). *Creativity*, in Rogers' (1961) view, is the engagement of a person at her/his highest potential in shaping the world's reality. This involvement requires shared efforts with others in the process of actualization.

Rogersian therapy: Learning in a psychologically safe environment. Carl Rogers viewed therapy as a mode of learning. He is known for proposing a non-directive counseling approach to therapy and learning. He argued that his approach is client-centered (Rogers, 1961), rather than being non-directive (i.e. providing no direction for the therapy). The key component of client-centered therapy is mirroring the client's emotions and scaffolding self-reflection that is a metacognitive process. Self-expression and self-reflection entails a psychologically safe environment in which the client does not feel threatened. Such an environment requires the therapist's emotional presence and includes showing an understanding of the client's feelings as well as helping the client be in control of the emotional state by constantly self-reflecting on his/her expression of emotions. For Rogers (1961), a therapist needs to build a *genuine* relationship with the client, meaning, be genuinely congruent inside and out, understanding, empathic, and respectful to the client to foster the development of unconditional positive regard.

Rogers (1961), who had experience as a teacher, expanded his view of therapy to teaching and learning. In his 1961 seminal work, *On becoming a person: A therapist's view of psychotherapy*, he frequently used the term “learning” for his own life experiences as a therapist, as a teacher, and as a person. For him, learning is an ongoing process that a therapist or teacher shares with the client or learner. He believed that the learning process that occurs during a therapeutic session has implications for education as well as family and community life. One of the interesting characteristics of Rogerian learning is its independency from external motivations. In Rogers' (1961) view, actualizing tendency is the internal motivation for learning. The learning process occurs by activating that tendency and giving it room to maneuver.

Rogers (1961) argued that learning and growth demand a psychologically safe environment, a setting that minimizes threatening situations for learners. A psychologically safe classroom is a classroom that does not provoke the learners' defense systems by avoiding the situations that make learners choose between the real self and the ideal self. In order for actualizing tendency to come into play, the central focus of the teacher should be on developing a *genuine* relationship with the learner. The question that teachers ought to ask themselves is “how can I provide a relationship which this person may use for his own personal growth?” (Rogers, 1961, p. 32). To develop such a relationship the teacher needs to be genuine, understanding, and nonjudgmental (Rogers, 1961). With this, s/he can provide the learners with proper conditions for growth by giving them freedom and peace of mind to explore their fears, zeal, weaknesses, and strengths without feeling judged and threatened.

Rogers (1961) acknowledged that this approach to learning and education by no means is a conventional approach. It calls for rethinking the goal of education. He argued that there is a culture of pampering our children that keeps them away from real life issues. “Contact with problem” (Rogers, 1961, p. 286) is one of the essential components of learning which such a culture denies from our youths. Rogers (1961) was aware that this approach may be advantageous for achieving certain goals, but not others. Thus, he suggested research-based adaption of Rogerian therapy for educational purposes.

Summary. Carl Rogers’ (1951, 1961) self theory was driven by a key concept which is the actualizing tendency. It is defined as the natural tendency of every being (human or non-human) to enhance his/her performance to the fullest potential possible, to do the very best s/he can do. Humans as complex creatures have greater actualization potential, compared to other beings, and actually make more complex organizations (i.e., societies and cultures) that in turn affect their individualized actualizing power. These complex organizations of humans have the potential to bring individuals’ self-regard under the control of their conditioning power.

Such a conditioning power is a force that ties the sense of self-worth exclusively to conditional positive regard (e.g., meeting the expectation of others) instead of intrinsic positive regard. This chain of interactions tends to push people towards an ideal self that usually distances them from their real self. The incongruity imposed by the society and culture is dangerous to a human’s psychological well-being. In both therapeutic and school settings, Rogers (1961) believed, this inconsistency can be overcome if the therapist/teacher builds a *real* relationship with the clients. Such a relationship gives

learners a *safe* place to activate their actualizing tendency and to express and explore their inner selves without feeling threatened by judgmental reactions.

The purpose of Rogerian approach is to reduce defensiveness and help individuals develop unconditional self-regard, which in turn emancipates their actualizing tendency (Rogers, 1961). The focus of this approach is on providing a psychologically safe environment as a requirement for self-actualization which is external to the person. Investigating the relationship between such external requirements of self-actualization is out of scope of this study. Instead, the present study focused on metacognition, an intrapersonal element, in relation to self-actualization. As related to Rogers' (1951, 1961) theory, metacognitive skills are argued to have the potential to help the person with reducing her/his defensiveness, adopting more adaptive coping mechanisms when encountering a threatening situation, and, in turn, self-actualization.

Concluding remarks on theories of self-actualization. Maslow (1968) and Rogers (1951, 1961) elaborated on the concept of self-actualization and actualizing tendency, characterized self-actualizing or fully functioning people, and shed light on the possible pathways towards self-actualization. Rogers (1951, 1961) speculated that unconditional self-regard that manifests itself as non-defensiveness (i.e., low level of psychological defense and high level of adaptive coping) may allow the actualizing tendency to come to play. Actualizing tendency functions as the main motivational factor in human life for learning and self-actualization. Maslow (1968) also argued that the satisfaction of lower level needs may facilitate the process of self-actualization. This dissertation investigated Maslow's (1968) theory of self-actualization and Rogers' (1951)

theory of actualizing tendency to see if need-satisfaction and/or non-defensiveness contribute to self-actualization (see Figure 4).

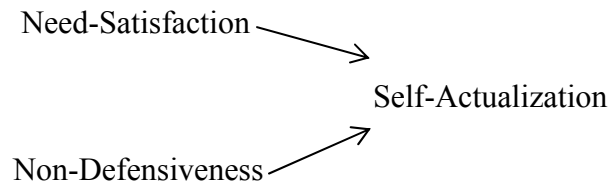


Figure 4. Maslow’s (1968) and Rogers’ (1951, 1961) approach to self-actualization

The present study also examined whether a relationship between metacognition and self-actualization is mediated by need-satisfaction and/or non-defensiveness (Figure 5). The next section provides more detail on the rationale for the relationship between metacognition and self-actualization and elaborates on self-actualization, need-satisfaction, and non-defensiveness as goals of metacognition.

Metacognition

John Flavell (1971), a Piagetian developmental psychologist who is considered the father of the field of metacognition (Papaleontiou-Louca, 2008), in his theory of metamemory, explained the ability of individuals in storing the information in the mind, searching through it, and retrieving the contents of their own mind or memory. Flavell (1976) first used the term metacognition and described it as “one’s knowledge concerning one’s own cognitive processes or anything related to them” (p. 232). Later, when he introduced his model of cognitive monitoring, he referred to metacognition as “knowledge and cognition about cognitive phenomena” (Flavell, 1979, p. 906). His account of cognitive phenomena, as it is evident in his definitions of metacognitive terms,

included all psychological aspects of a cognitive enterprise including emotions, beliefs, interests, and motivations as well as cognition (Papaleontiou-Louca, 2008).

Flavell (1979)'s model of cognitive monitoring was characterized by four interacting facets: (a) Metacognitive knowledge; (b) Goal/Task; (c) Actions/Strategies; and (d) Metacognitive experience. He argued that one's competence in every one of these areas affect one's cognitive processes and subsequently one's performance on a cognitive task. *Metacognitive knowledge* revolves around three main variables: Person, Task/Goal, and Strategy or Action (Flavell, 1979). Metacognitive knowledge of the person variable is about recognizing oneself and all human beings as cognitive agents who are different from one another in their cognitive performances and include being aware of one's beliefs, interests, emotions, and motivations. Metacognitive knowledge of the *task* and *strategy* variable is knowledge about environmental and contextual factors (e.g., task, physical environment, and resources) as well as metacognitive strategies (e.g., analyzing, evaluating, reflecting, and monitoring judgment). *Goals* or *tasks* are what guide cognitive processes, and *actions* or *strategies* are what the person needs to do to achieve the goals and accomplish the task. For instance, when one has memorizing a list of words as a cognitive goal/task, using different memory techniques, such as repeating the words, writing them down, and using mnemonics to store, retain, and retrieve the information when needed, is the corresponding action.

In addition, cognitive monitoring involves being aware of and monitoring one's metacognitive experiences which also affect cognitive performance (Flavell, 1979). *Metacognitive experiences* are "any conscious cognitive or affective experiences that accompany and pertain to any intellectual enterprise" (Flavell, 1979, p. 906). A person

involves a metacognitive experience when s/he notices that s/he is not able to follow the logical argument just made in a discussion or finds out what s/he is doing doesn't seem to work in a certain occasion. Flavell (1979) elaborated on how affective and cognitive experiences interfere with or improve metacognitive monitoring. In his conceptualization of metacognition, Flavell (1979) insightfully recognized the role of emotion as well as cognition in the performance of cognitive tasks; emotion is usually excluded from studies of cognition.

Moreover, Flavell (1979) argued that development of metacognitive ability in children makes them eventually learn to monitor and control (or regulate) their thinking processes. Brown (1978) elaborated more on regulation of cognition. Taking an information processing perspective, she highlighted the role of metacognitive skills and executive functioning of the brain, such as planning, selecting goals, and tracking progress, as the regulatory components of metacognition. Brown (1978) suggested a two-component conceptualization of metacognition by making distinction between *metacognitive knowledge* and *metacognitive regulation*. Later, Nelson and Narens (1990) elaborated on different levels of metacognitive regulation functioning (i.e., object-level and meta-level) and the processes of metacognitive monitoring and control that connect these two levels through a flow of information.

Accordingly, *Metacognitive Regulation* includes monitoring and controlling processes (Nelson & Narens, 1990) during *deliberate* problem-solving (Brown, 1978; Nelson & Narens, 1990). Metacognitive regulation includes using metacognitive skills and executive functions such as interpreting the situation; identifying and characterizing the problem; guiding, orchestrating, and supervising the emotional and cognitive

processes; predicting the limitations of one's cognitive capacity and knowledge repertoire in a problem-solving situation; planning; selecting goals and strategies; tracking the progress; and evaluating and revising strategy use if necessary (Brown, 1978).

Consequently, Nelson and Narens (1990) suggested a model of metacognition which explained metacognitive skills as two interacting sets of metacognitive processes, namely monitoring and control. They suggested two levels of functioning for metacognitive processes, object-level and meta-level, which interact through the flow of information by means of monitoring and control. They referred to the flow of information from object-level to meta-level as monitoring. Meta-level is a higher level of cognition than the object-level. Informed by monitoring, it develops a scheme of the object-level, namely the problem-solving situation. This mental simulation of the situation changes based on the on-going flow of information coming from the object-level (i.e., through monitoring). Control was defined as meta-level *modifying* the object-level. That is, based on the changes in the scheme of the situation, the meta-level modifies the cognitive processes towards achieving the goal of problem-solving. This metacognitive regulatory process produces changes at the object-level which can manifest itself in form of continuing the action, modifying the action, terminating the action, and/or initiating a new set of actions.

In sum, metacognitive regulation is about monitoring the object-level and obtaining information about all different variables involved in the process of metacognition (e.g., metacognitive knowledge, experiences, goal progress, and strategies in action). Then, controlling the process by affecting the object-level through setting goals, using strategies, and appropriately shifting between strategies to achieve goals

(Brown, 1977; Efklides, 2001; Flavell, Miller, & Miller, 1993; Schraw, 2001) informed by the executive function of monitoring. Among all metacognitive regulatory processes, goal-setting has been identified as one of the key functions of metacognition (Tarricone, 2011) which requires knowledge and regulation of all three main variables of metacognition: person, task, and strategy (Flavell, 1979).

Altogether, metacognition has been characterized as an interacting combination of knowledge and skills, that involves monitoring and control processes during a deliberate problem-solving situation. Almost any action or behavior which involves intentional and conscious cognitive processing is explainable within a metacognitive framework. For instance, self-actualization, identifying needs and ways to satisfy them, and relaxing psychological defense mechanisms or choosing and employing an adaptive defense style, each can be explained within a metacognitive framework. Developing metacognitive competence has been argued to have implications in the variety of activities such as reading, writing, communication, problem-solving, activating higher levels of thinking (e.g., analysis, synthesis, and evaluation) and personal growth (Flavell, 1979). The wide-ranging implications of metacognition in goal-setting and problem-solving and its capacity as teachable sets of skills (Borkowski & Muthukrishna, 1992; Gaskin & Pressely, 2005) guided the author of the present study to suggest that general metacognitive competence may help with the process of self-actualization, and need-satisfaction and non-defensiveness as potential precursors of self-actualization. The present study examined the extent to which metacognition may contribute to the self-actualization process, need-satisfaction, and non-defensiveness.

The recent section discussed the Aristotle's (trans. 2004) theory of eudaimonia or well-being, theories of self-actualization from Maslow (1968) and Rogers (1951), and Flavell's (1979), Brown's (1977, 1978), and Nelson and Narens' (1990) conceptualization of metacognition. This section also addressed need-satisfaction from Maslow's (1968) theory of self-actualization and non-defensiveness from Rogers' (1951) theory of actualizing tendency as antecedents of the self-actualization process. The next section will present a review of contemporary literature on variables of interest.

A Review of Contemporary Literature on Research Variables

Contemporary conceptualizations of human well-being and the ways well-being has been measured are discussed in this section. This section addresses criticisms of the theories of self-actualization and introduces the contemporary account of self-actualization which guided the measurement approach in the present study. The final topic to discuss is contemporary discussions around the theories of metacognition and how it is related to the literature on self-regulation and self-regulated learning. In this review of theoretical literature, the author has presented findings from empirical research as appropriate to further elaborate on the discussion.

Hedonic Well-Being

Eudaimonia, Aristotle's ultimate good in his *Nicomachean Ethics*, was primarily translated as *happiness*. The word happiness, however, carries several meanings both among laypeople and in scholarly literature. In a general sense, happiness may merely refer to a state of pleasure. For instance, Aristippus of Cyrene, a philosopher of the third century BC, argued that physical, positive, momentary pleasure is the only good, regardless of its cause (Tatarkiewicz, 1976, p. 317). In the happiness literature, the

concept of happiness has been mainly used and interpreted in its hedonic aspects, a subjective experience that includes “the belief that one is getting the important things one wants, as well as certain pleasant affects that normally go along with this belief” (Kraut, 1979, p. 178). Waterman (1993) also interpreted hedonic enjoyment as a by-product of the coincidence of pleasant affects and the satisfaction of physical, social, or intellectual needs. Hedonic well-being has been referred to as Subjective Well-Being (SWB) in the contemporary literature and has been operationally defined to include three different aspects: positive affect, negative affect, and judgment of life satisfaction (Andrews & Withey, 1976; Deci & Ryan, 2008; Diener, 1984; Diener, Suh, Lucas, & Smith, 1999). Several studies have used the combination of these components to assess SWB (e.g., Fowers et al., 2010; Schueller & Seligman, 2010).

Accordingly, measures of subjective well-being (SWB) are being widely used to capture the subjective aspects of human well-being, including affective components and cognitive components. The affective aspect of SWB addresses the presence of positive affect as well as the absence of negative affect while the cognitive aspect of SWB deals with the individual’s judgment about how satisfied one is with one’s life (Diener & Lucas, 1999). In the present study, hedonic well-being was measured using two measures of subjective well-being (SWB): (a) the Satisfaction with Life Scale (SWLS; Diener et al., 1985), measuring the cognitive aspect; and (b) the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988) measuring the affective aspect of subjective well-being.

Eudaimonic Well-Being

Eudaimonic well-being (EWB) is derived from Aristotle's (2004) eudaimonic philosophy that considers EWB as the ultimate good. EWB refers to the quality of life that is achieved through the actualization of a person's best potentials, which is also rewarded by subjective pleasure. Ryff (1989) was the first contemporary scholar who operationally defined well-being in a fashion that was distinct from the hedonic tradition. She challenged the traditional view of well-being as mere subjective pleasure and satisfaction with life and argued that reporting a high subjective well-being does not necessarily indicate that the person is living psychologically well. Ryff and her colleagues (Ryff, 1989; Ryff & Keyes, 1995) developed a measure of Psychological Well-Being (PWB) identifying six core dimensions necessary for a quality life: (a) Positive Relationship with Others, (b) Autonomy, (c) Purpose in Life, (d) Environmental Mastery, (e) Personal Growth, and (f) Self-Acceptance.

PWB is a broad concept that includes several constructs, some of which may be argued to be precursors or outcomes of the others. For instance, autonomy, environmental mastery, and positive relations may represent three basic psychological needs conceptualized by Deci and Ryan (1991), which in the framework of this study are considered precursors to personal growth, while purpose in life is identified as one of the underlying constructs of eudaimonic well-being. On the other hand, some studies (e.g., Keyes, Shmotkin, & Ryff, 2002; Miquelon & Vallerand, 2008) considered PWB a measure of self-realization reflecting "different challenges individuals encounter as they strive to function positively" (Miquelon & Vallerand, 2008, p. 242). Other research (e.g., Sheldon, Kasser, Smith, & Share, 2002) used it as an indicator of personal or

psychological growth. Waterman (2008) argued that PWB is viable in indicating some aspects of individual being that are crucial for psychological health and optimal functioning, but it is not necessarily in accordance with Aristotle's (2004) conceptualization of eudaimonia.

Furthermore, Waterman (1993) derived the conceptual framework of his work from Aristotle (2004). He proposed the concept of personal expressiveness as a signifier of eudaimonia. He referred to Aristotle's (2004) eudaimonia as an "activity expressing virtue" (p. 284). Consequently, Waterman et al. (2010) developed a measure of eudaimonic well-being (i.e., the Questionnaire for Eudaimonic Well-Being, QEWB), the content of which includes themes such as self-discovery, perceived development of one's best potentials, a sense of purpose and meaning in life, intense involvement in everyday activities, investment of significant effort, and enjoyment of activities as personally expressive. Their study showed that eudaimonic well-being as measured by QEWB related positively to Psychological Well-Being ($r = .23$ for the Positive Relationship with Others, $r = .40$ for Autonomy, $r = .43$ for Purpose in Life, $r = .48$ for Environmental Mastery, $r = .50$ for Personal Growth, and $r = .56$ for the Self-Acceptance) and related positively to Satisfaction with Life as an indicator of Subjective well-Being ($r = .47$). It also accounted for 9% of the variance in self-esteem and 12% of the variance in internal locus of control as two indicators of Positive Psychological Functioning.

According to Waterman et al. (2010), personal expressiveness occurs when one gets involved in activities and actions which are oriented towards developing one's potentials and achieving one's personal goals. In addition to personal expressiveness, the content of QEWB addresses meaning and engagement, which were identified by Peterson

et al. (2005) as eudaimonic aspects of well-being. Accordingly, the present study employed a modified version of the QEWB to measure eudaimonic well-being alongside some items adopted from Life Regard Index-Revised (Debats, 1998) to enrich the meaning-oriented content of QEWB. The next section will discuss meaning and engagement in more detail.

Well-Being in Positive Psychology: Pleasure, Engagement, and Meaning

Similar to proponents of the hedonic perspective of human well-being (pleasure vs. pain), positive psychology espouses both relieving suffering and increasing happiness as two distinct subjective aspects of well-being (Seligman, Steen, Park, & Peterson, 2005), yet regards them as complementary to the eudaimonic aspects of well-being. Positive psychology has taken a holistic approach to increase happiness (Seligman et al., 2005) with a consideration of both hedonic and eudaimonic perspectives of human well-being (Vella-Brodrick, Park, & Peterson, 2009). Positive psychology has integrated the scattered works and theories of researchers who attempted to identify different components of human well-being as well as precursors of optimal functioning (Seligman et al., 2005), including, but not limited to, works of Rogers (1951), Maslow (1962), Jahoda (1958), Erikson (1963, 1982), Vaillant (1977), Deci and Ryan (1985), and Ryff and Singer (1996). These works were focused, specifically, on those human characteristics and pursuits which make life most worth living (Peterson & Park, 2003). Studies of positive emotions, positive character traits, and positive institutions emerged from these efforts (Seligman & Csikszentmihalyi, 2000).

In a novel holistic approach to human well-being, Seligman (2002) proposed three different routes to happiness: (a) living a pleasant life in which one “successfully pursues

the positive emotions [pleasure] about the present, past, and future” (p. 263), (b) living a good life which is about “using your signature strengths to obtain abundant gratification in the main realms of your life” (p. 263), and (c) living a meaningful life which involves “using your signature strengths and virtues in the service of something much larger than you are” (p. 264). Seligman (2002) used the term eudaimonia to refer to living a good life (p. 112) and labeled a life containing all the three components as a *full* life. He suggested that studies of human well-being should incorporate these three orientations to happiness into their work.

Seligman’s (2002) concept of the full life was further expanded by Peterson et al. (2005) with regard to achieving life satisfaction. Peterson et al. (2005) developed a measure and offered empirical evidence on Seligman’s (2002) proposal that individuals may attain life satisfaction in three different distinguishable ways: (a) pursuing positive emotions and pleasure, (b) pursuing meaning, and (c) pursuing engagement. These three life-satisfying ways were labeled as orientations to happiness. Pleasure orientation reflects hedonic well-being; meaning orientation is considered a eudemonic approach to well-being (Keyes, Shmotkin, & Ryff, 2002); engagement orientation, which emerged from the work of Csikszentmihalyi (1990) on flow experiences, is also considered a eudaimonic approach to well-being (Vella-Brodrick et al., 2009). These orientations are compatible, and individuals can pursue all three of them simultaneously.

Pleasure. Maximizing pleasure and reducing pain is the foremost ambition of hedonic well-being. The hedonic perspective supports engaging in pleasurable activities as the way of achieving a happy life (Seligman et al., 2005; Vella-Brodrick et al., 2009). Savoring and reminiscing (Bryant & Veroff, 2007) and counting one’s blessings and

envisioning one's best possible self (Sheldon & Lyubomirsky, 2006) are examples of positive psychology interventions which are intended to provide pleasurable experiences in life. For instance, writing down three good things that happened each day (an approach to savoring) and using signature strengths each day in a new way was found to produce happiness and maintain it for at least 6 months (Seligman et al., 2005).

Although positive emotions are fundamental to human flourishing and to maintain well-being (Fredrickson, 2001), they are insufficient to fulfill these goals. Aristotle (2004) viewed the hedonic perspective of *the good* as a reductionist account of eudaimonia. According to Aristotle (2004), people, who experience eudaimonia, experience pleasure as well. But for him, pleasure is not the ultimate good; pleasure is just one aspect of the daimon or inner nature (p. 14). Telfer (1980) also argued that eudaimonia goes beyond mere pleasure and desire, and engages “what is *worth* desiring and worth having in life” (p. 37).

For life to be full and satisfying it needs to be engaging and meaningful. Pursuing meaningful engagements in life was found to support personality development and promote a satisfying life (e.g., Peterson et al., 2005; Peterson, Ruch, Beermann, Park, & Seligman, 2007). Studies have shown that engagement and meaning orientations were more strongly correlated with character strength (i.e., humor, zest, curiosity, perseverance, and religiousness) (Peterson et al., 2007) and more important in predicting life satisfaction (Peterson et al., 2005) than pleasure orientation was. Peterson et al. (2005) found that orientations to happiness individually contributed into life satisfaction (normalized scores were used; $\beta = -0.11$ for Pleasure, $p < .001$; $\beta = -0.24$ for Engagement and $\beta = -0.17$ for Meaning, $p < .05$). In addition, living a full life (i.e.,

pursuing happiness through all three routes together) significantly predict life satisfaction above and beyond the individual contributions ($\beta = - 2.50, p < .001$). Adams, Bezner, Drabbs, Zambarano, & Steinhardt (2000) also found that greater meaning in life is associated with greater positive mental health.

Although the pleasure orientation is still relevant to the overall satisfaction in life (Peterson et al., 2005), meaning and engagement in life are more under the deliberate control of individuals (Frankl, 1963; Massimini & Delle Fave, 2000). Thus, the pursuit of meaning and engagement is more likely to provide purposive and meaningful enjoyable positive experiences, which is expected to maintain long-term pleasure or happiness in life. Peterson et al. (2005) recommended that pleasure-enhancing techniques (e.g., savoring) can be incorporated into interventions that are oriented towards enhancing engagement and meaning. The following sections further explain the concepts of meaning and engagement.

Meaning in life. Meaning in life is a factor which had been conceptually linked to well-being (e.g., Frankl, 1963; Peterson et al. 2005). Frankl (1963) asserted that defining meaning in life is a psychological need, and failure to attain this need leads to psychological problems. Recent empirical evidence supported the notion that the lack of meaning in life is associated with psychological abnormality. For instance, meaning in life is negatively correlated with psychopathology (Debats, Van der Lubbe, & Wezeman, 1993). Yet it was not until recently that the importance of this concept was recognized, and it became a focus of well-being studies, as a fundamental component of psychological well-being (Ryff & Singer, 1998), as a predictor of subjective well-being (e.g., Fry, 2000), and most recently as a route to happiness (Seligman, 2002).

For Seligman (2002), only seeking the *greater good*, that transcend the self, makes the life meaningful. Aristotle (2004), Wong (1998), and Seligman (2002) all called for pursuing something in addition to and beyond personal projects, the greater good that is valued universally by human nature. For Seligman (2002), seeking the *greater good* (i.e., the meaningful life) was beyond and distinct from living a good life. Accordingly, Peterson et al.'s (2005) *Life of Meaning* (a subscale of the Orientations to Happiness measure) was primarily focused on the pursuit of a greater good. However, Peterson et al. (2005) presented an account of eudemonic well-being which involved both being all you can be and targeting a greater good (i.e., to make a difference in the life of other people).

From an existentialist perspective (e.g., Frankl, 1963), meaning in life although affected by society and culture, is fairly subjective. Daily decision-making constantly gives direction to human life and gives it its special meaning (Maddi, 1998). The decision-making may transcend the norm and, thus, make meanings that are more subjective and peculiar to the individual (Frankl, 1963). Meaning in life is inevitably bound to one's goals. Everybody has things that are important to her/him, but actively pursuing them as goals is what makes life meaningful (Klinger, 1998). Klinger (1998) argued that seeking meaning is not a concern for "people who for any reason find themselves persistently engaged in striving for valued goals" (p. 33). It seems such people are already pursuing a meaningful life. In sum, personal goals or purposes give direction to our decision-making and, thus, to our actions. Goal-setting and acting upon one's goals bring intentionality into life that, in turn, gives meaning to ones' life.

In a study (McMahan & Renkenof, 2011) of 275 adults (186 women) about their conceptions of well-being, both self-development and contribution to a greater good were rated as two eudaimonic conceptions of well-being. The study also tested the relationship of such conceptions with meaning in life (i.e., having a meaningful life) and well-being (including life satisfaction, affective well-being, and subjective vitality: feelings of mental and physical vitality, aliveness, and vigor). The findings indicated that there is a positive association between these eudaimonic conceptions of well-being and both living a meaningful life and well-being itself.

Another study (Wong, 1998) investigated 289 participants from different age groups (ranging from 18 to over 60 years old) defining an ideally meaningful life. Individuals rated the extent to which they thought a given goal pursuit represented an ideally meaningful life. Individuals' self-ratings showed that *achievement striving* accounts for 32.2 % of the variance in defining an ideally meaningful life. Achievement striving involves "what the individual has accomplished or strives to achieve" (p. 118); items include "successful in achieving one's aspirations," "seeks to achieve one's potentials," and "striving to do one's best in whatever one is doing" (p. 117). The items reflect the actualizing tendency (i.e., inherent tendency to do one's best), and the findings indicated its subjective importance in defining the ideal life. On the other hand, *self-transcendence* that involves the greater good of making a difference in the world or seeking higher values that benefit other people accounts for only 2.5% of the variance in defining a meaningful life. Religion (8.8%), relationships (4.6%), fulfillment (4.3%), fairness/respect (3.5%), self-confidence (2.7%), self-integration (2.5%), and self-acceptance (2.3%) all accounted for some portion of the variance in individuals'

perceptions of meaning. Wong (1998) argued that fulfillment is an inevitable by-product of a meaningful life.

Another phase of the same study (Wong, 1998) investigated the extent to which individuals actually pursued goals that were in line with their perceived ideally meaningful life (i.e., their orientation to a meaningful life). The findings indicated that when individuals' self-rating of goal pursuits approximated their perceived ideal meaningful life, they showed higher levels of psychological well-being. Wong (1998) found that meaning-seeking regardless of its context (i.e., whether it is focused on self-development or self-transcendent) was significantly and positively associated with PWB ($r = .34, p < .001$) and negatively relates to depression ($r = -.70, p < .001$), implying that happiness is a by-product of a meaningful life.

Human beings as meaning-seeking and meaning-making creatures have the ability to develop a meaning-oriented mind-set (Maslow, 1968; Rogers, 1961; Wong, 2011) that gives the individual the ability to live according to Purpose, Understanding, Responsibility, and Enjoyment (i.e., PURE way of living; Wong, 2010). Wong (2011) highlighted understanding as a prerequisite for developing a meaning-oriented mind-set: "Understanding refers to making sense of the self, life, and one's place in the world" (p. 409). The definition of understanding as the constructor of the individual's world view resembles the notion of developing self-knowledge (Tarricone, 2011) and Hanlon's (1986) concept of the conceptual subsystem (discussed in Chapter 1), which have been conceptualized to be prerequisites of optimal metacognitive functioning and self-actualization.

The recent section addressed the concept of meaning in the contemporary literature, as one of eudaimonic indicators of a full life which entails well-being. Its relation to indicators of well-being, growth, and metacognition was discussed. The next section discusses the concept of engagement, another eudaimonic orientation to happiness.

Engagement. Engagement is another factor recognized to be important in achieving a happy life (Csikszentmihalyi, 1990; Peterson et al., 2005). Csikszentmihalyi (1990) referred to it as *flow* or *optimal experience*, “the state in which people are so involved in an activity that nothing else seems to matter” (p. 4), the state of “being fully immersed in a specific activity” (Vella-Brodrick, et al., 2009, p. 166). Engagement or flow occurs when the activity is “optimally challenging” (Wild, Kuiken, & Schopflocher, p. 569); that is, the level of challenge matches the level of one’s skills.

Measures of flow are typically individuals’ ratings of their concentration, involvement, and enjoyment during a specific activity. The stable core of optimal experience is identified to be the (meta)cognitive activities, such as concentration and control of the situation (Delle Fave & Massimini, 2005). Active involvement and skill-use are also determinant characteristics of an optimal activity (i.e., an activity associated with optimal experience; Delle Fave & Massimini, 2005). Affective and motivational factors, such as pleasure or willing to do the activity and to accomplish goals, differ from one activity to another (Delle Fave & Massimini, 2005). Csikszentmihalyi, Abuhamdeh, and Nakamura (2005) indicated that the involvement in flow experience is beneficial in pursuing academic and sporting goals by enhancing students’ commitment, achievement,

and persistence. In contrast, disengagement showed negative consequences in relation to educational and developmental outcomes (Larson, 2000).

Csikszentmihalyi's (1990) flow experience and Maslow's (1961) peak experience, which are characterized by absorption and involvement as their main features (Privette, 1983), are both instances of experiential engagement (Wild et al., 1995). Not all scholars consider them similar phenomena. For instance, Delle Fave and Massimini (2005) made a distinction between optimal experience and peak experience (or as they referred to it, feelings of extreme happiness). They described peak experiences as being unusually fun, exciting, and amusing, which happen rarely, while optimal experience was characterized as part of daily fluctuations of experiences, which primarily involves concentration and engagement. Peak experience often involves no overt behavior and is rather a receptive orientation of "highest happiness and fulfillment" (Maslow, 1968, p. 69). Flow also leads to enjoyment and pleasure; but, during flow experience people are actively engaged in actions (Csikszentmihalyi, 1975).

Hedonic and Eudaimonic Well-Being in the Present Study

According to the contemporary literature, eudaimonia or eudaimonic well-being is conceptualized as personal expressiveness (Waterman, 2008; Waterman et al., 2010) which manifests itself in the form of meaning-seeking and engagement in life (Peterson et al, 2005). Personal expressiveness represents well-being at the personal level. Meaning in life deals with abstract aspects of well-being, which can emerge from pursuing valued goals that are either personal or transcend the self. Engagement addresses more tangible aspects of well-being that arise from involvement in both personal projects and humanely worthwhile activities. The present study employed

Waterman et al.'s (2010) QEWB, to measure eudaimonic well-being, alongside some items adopted from Life Regard Index-Revised (Debats, 1998) to enrich the meaning-oriented content of QEWB. Hedonic well-being also was measured using the Satisfaction with Life Scale (SWLS; Diener et al., 1985) and the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988). The summation of scores on hedonic and eudaimonic well-being was used as the overall well-being score.

The next section will discuss controversies around the conceptualization of self-actualization and its operational definition. It will also present a contemporary account of self-actualization which has been employed by the present study. The present study conceptualized self-actualization as goal-striving which involves pursuing both personal projects and characteristics that are valued by human nature (i.e., virtues described by both Aristotle [2004] and Seligman [2002]).

Criticisms around the Conceptualization of Self-Actualization

The concept of self-actualization has been criticized for being vague and not being operationally defined (Jones & Crandall, 1991). Whitson and Olczak (1991) attributed most of these criticisms to misconceptions about the nature and conceptualization of self-actualization. Weiss (1991) argued that the construct of self-actualization lacks and needs a cohesive conceptual framework, which essentially provides it with a well-established construct definition. Some other scholars believed that the theory of self-actualization is, at best, vague and incomplete, and the understanding of this phenomenon evolves as it reveals itself in form of a growth process (Daniel, 1988). That is, exercising self-actualization is almost always experimental, exploratory, ever changing, and, thus, incomplete (Ellis, 1991). Criticisms of self-actualization have been

clustered under two main categories: criticisms of the construct and criticisms of its measures. These two categories are discussed in detail in the following sections.

Controversies around the construct of self-actualization. Achieving self-actualization has been viewed as a set of arbitrary ideals to be met, partially based on characteristics identified by Maslow (1968) in self-actualizing people. Self-actualization, however, can be seen as a process (Rule, 1982, 1991), rather than some characteristics to achieve; Maslow (1968) argued that people rarely achieve this state of development. Self-actualization is a process of actualizing one's potentials, a virtuous striving for growth (*virtuous* in Aristotelian perspective), and dynamically exploring where one fits best in the world.

In self-actualization literature, full-functionality and self-actualization refer to the same phenomenon. However, Maddi (1973) argued that characteristics listed for self-actualizing people were in fact not normally functional in the real world. A misconception here is that Maddi (1973) assumed that Maslow's spontaneity was the opposite of planning, openness was the opposite of critical judgment, and continual change contradicted stability. He then argued that all these together ultimately produce an "unreflective sense of well-being," (Maddi, 1973, p. 27) which is anti-intellectual (Smith, 1973a).

Too individualistic and antisocial, or ignorant of subjectivity. Maslow's (1968) theory of self-actualization has been questioned to be too individualistic and ego-centered (Geller, 1982, Smith, 1973b). This critique is not relevant because Maslow (1968), in his theory of self-actualization, took into account living according to universal *values of being*, and pursuing goals that transcend the self and are oriented towards others as one of

the characteristics of self-actualizing people. Human aspirations and goals are self-motivated; but they are also socially motivated. Although Rogers (1961) emphasized the negative effect of society on individuals' perception of the self, he considered that the solution lies in the development of honest and genuine interpersonal relationships based on mutual understanding (particularly between teachers and students or therapists and clients). In fact, from both Maslow's (1968) and Rogers' (1961) perspectives, self-actualizing people have already resolved the dichotomy of individuality and social endeavors for themselves (Whitson & Olczack, 1991).

Yet some critics such as Maddi (1973) counterargued that self-actualization was antisocial, aside from being individualistic. They (mis)understood that actualization requires no socialization; that is, one can pursue self-actualization just by relying on oneself and with no need for social input, and one does it just to pursue one's personal goals with no consideration of others. Some even took the discussion further, appealing against the inclusion of self-transcendent and socially-oriented care and behavior as characteristics of self-actualizing people, and asserting that self-actualizing people do everything for their own satisfaction (e.g., White, 1973).

Morality. For ones who consider self-actualization being too subjective and individualistic (e.g., Williamson, 1965; Smith, 1973b), the following question seems pertinent: What if people actualize their evil potentials? However, within the Aristotelian framework, self-actualization refers to actualizing one's characteristic activity which manifests in form of virtue and excellence. By definition, no virtue or excellence ever harms others. Thus, the nature of self-actualization is not in line with actualizing one's evil potential, if such indeed exists.

Universal values. There are some scholars who argued that self-actualization does not allow for individuality (Patterson, 1974). It is individualistic insofar as it implies individuals' striving to actualize their potentialities and make the best of their own lives. However, it does not allow for individuality because some universal characteristics must be attained by all individuals in order for self-actualization to be achieved. Maslow's (1968) conceptualization of being values assumes that all cultures share similar humanistic values (Ellis, 1991). Maslow (1968), however, affirmed that people fulfill their self-actualization need in different ways which are unique to each individual. While self-actualization involves the pursuits of excellence and gratification, Geller (1984) argued that "only for some is the pursuit of excellence a legitimate end, and even then, which excellence ought to be pursued will depend on each individual's particular situation" (p. 106). In this sense, self-actualization is subjective and relative. This characteristic makes self-actualization to some extent individual-specific as well as culture-specific. The source of the need for self-actualization though is not person-specific, but a universal built-in desire in every human being (Rogers, 1961; Weiss, 1991). All cultures share tendencies to pursue some similar humanistic universal values (e.g., Maslow's values of being) (Ellis, 1991).

Self-Actualization: Planned or spontaneous. Daniel (1988) questioned whether or not the pursuit of self-actualization defeats the spontaneous way of living it (Ellis, 1991). This criticism is very relevant to the present study, since this study assumes that self-actualization reflects both the way of living by merely *being* (a spontaneous being) and living by pursuing a series of goals through personal experiences and educational efforts (planned). Ellis (1991) argued that spontaneity and goal-seeking do not contradict

each other and one does not hinder the other if individuals take “an ‘and/also’ and not merely an ‘either/or’ approach” (p. 2). They, in fact, complement each other in creating a self-actualizing personality. For instance, the individual intentionally plan to overcome her/his public speaking phobia by actually practicing speaking in public; then s/he starts spontaneously enjoying speaking in public (Ellis, 1991). Through a self-actualizing process, a skill can be developed and become spontaneous.

Perfectionism. Another criticism surrounding the conceptualization of self-actualization is that it is a perfectionist account of human well-being or flourishing, which puts people in jeopardy of *actualization neurosis* (Schur, 1976; Whitson & Olczak, 1991), or the constant feeling of “we aren’t changing enough, there must be something wrong with us” (Schur, 1976, p. 60). In responding to this criticism, Whitson and Olczak (1991) argued that the possibility of harmful effects of overstressing growth, awareness, and actualization is not merely the issue of actualization programs. Relative damaging effects are the inevitable part of any progression or endeavors; they can be seen in education, law, therapy, and medicine. However, potential worthwhile beneficial outcomes of self-actualizing experiences are worth taking the effort to find preventive ways to reduce the possibility of such negative effects and to assure healthy ways to pursue self-actualizing experiences.

The issue of a culturally ideal self. Maslow (1968) and Rogers (1961) both advocated the existence of a *true* self or an inner nature that individuals are able to discover and actualize. Countering the argument that this inner nature, if it exists, is genetically and biologically restricted (Daniel, 1988), Ellis and his colleagues (Ellis, 1991; Ellis & Dryden, 1990) argued that the inner self has the potential to change

remarkably with experimentation/exploration (i.e., spontaneous goal-seeking) and hard work (i.e., planned goal-seeking). In pursuing goals, individuals set some ideals to achieve.

Setting the ideal self as the goal of personal growth is partly in line with self-actualizing personality and in some parts inconsistent with such a personality (Braun & Asta, 1969). According to Braun and Asta (1969), the characteristics of a typical ideal self includes: preferring lesser (as opposed to more) flexibility in the perception and application of values, being less (as opposed to more) sensitive to their own needs and feelings, being less (as opposed to more) accepting of the weaknesses of oneself, and denying (rather than accepting) feelings of anger or aggression. These characteristics reflect more of a culturally prescribed ideal than a self-actualizing ideal. Braun and LeFaro (1969) showed that the responses for the ideal self on the items reflecting aforementioned characteristics (i.e., flexibility of their perception and application of values, sensitivity to their needs, accepting their weaknesses, and accepting their negative feelings) were the same as responses on these items when participants wanted to fake good adjustment on self-actualization inventory. The participants scored higher on all these characteristics when they asked to complete the questionnaire for a real self (Braun & Asta, 1969).

Braun and Asta's (1969) study used Shostrom's (1964) Personality Orientation Inventory (POI; the widely used measure of self-actualization). The responses varied on some items depending on whether participants completed the questionnaire from an ideal-self point of view or with their perception of their real-self in mind. They suggested that the answers of ideal self were culturally bounded. It has also been argued that if

people are sincerely holding a culturally (prescribed) ideal self as their standards or goals, it is unethical to insist on self-actualization standards as the outcome of therapy (Whitson & Olczak, 1991), counseling, or education. Accordingly, Whitson and Olczak (1991) recommended using more individualistic (idiographic) assessment techniques such as the Q-sort (Stephenson, 1953) or the Role Construct Repertory Test (Kelly, 1955) to measure self-concept and the outcomes of therapeutic settings.

Political and social-class bias. Maslow's (1968) theory of self-actualization has been criticized to be biased in the sense that it promotes the notion in which there exists humanly superior or inferior people. It may imply that "social inequity is natural," (Shaw & Colimore, 1988, p. 66) partly because Maslow (1968) considered an *inner* nature for human being that carries the tendency and motivation for growth and because he did not hold that culture creates the human being.

In addition, the awareness movement criticized the personal growth movement for excluding the poor. One simple instance of such a bias is that workshops for personal growth, awareness, and actualizing human potentials are not readily accessible for the poor, which in turn may contribute to the poor/rich gap in the society. It has been also argued that the personality traits measured by Shostrom (1964) self-actualization inventory did not take into account cultural differences which make self-actualization culture-specific (Raanan, 1973). Raanan (1973) suggested that studies take cultural differences into consideration at least when interpreting the results from the test. Generally, psychological theories and tests are criticized for being developed upon the norms of the white middle-class citizens (Tulkin & Konner, 1973).

Furthermore, Geller (1982, 1984) rejected the self-actualization theory all together as being dehumanizing by maintaining the discriminatory gap among different social classes, being very subjective, lacking the universal applicability, and holding trivial arbitrary goals as the highest end (i.e. “a value or set of values realization of which constitutes the highest end or purpose of life” (Geller, 1984, p. 102). However, Maslow (1968) argued that growth needs are innate needs which make them transcultural and universal in nature. Whitson and Olczak (1991) also declared that Maslow’s later works (1971) and more contemporary conceptualizations of self-actualization have a careful consideration of macro-level social forces (social and organizational institutions as well as political foundations). In fact, the self-actualization theories of Maslow (1968) and Rogers (1951, 1961) have clear social implications which they both actually addressed in their works.

Criticisms concerning the widely-used measures of self-actualization. The issues of internal reliability and validity of the current widely used measures of self-actualization (Weiss, 1991) highlights the importance of developing an adequate measure of self-actualization and being cautious about interpretations of the results of the existing tests. Establishing an adequate estimate of validity for a measure is vital as it determines to what extent the instrument measures what it is supposed to measure. Weiss (1991) criticized the Personality Orientation Inventory (POI; Shostrom, 1964), Personality Orientation Dimension (POD; Shostrom, Knapp & Knapp, 1976) and Short Index of Self-Actualization (SISA; Jones & Crandall, 1986) for not being adequately validated. He reported serious logical and methodological errors in validation attempts for these inventories. Examples are using mean scores instead of score ranges (Weiss, 1991);

exclusively relying on the use of correlations of self-actualization measures with some other validated measures that measure personality attributes different from self-actualization; or relatively small statistical power of validation tests for POI.

Weiss (1991) demonstrated that basic construct validity has not been adequately conducted for POI. It has not been statistically shown that the test discriminate between self-actualizing people and normal population or non-self-actualizing people especially when not using the *known-group* technique (reviewed by Hattie & Cooksey, 1984) used by Shostrom (1974) in original validation of the measure (cf. Weiss, 1987).

Unrepresentative or small samples or means of the groups should not be used with this technique, each of which has been used in different efforts to validate self-actualization measures. A reexamination of Shostrom (1974) data showed that it failed the two-tailed t-test for 8 of the 12 subscales (Weiss, 1991) to discriminate between self-actualized and normal people. All 12 POI subscales also showed overlapping membership ranging from 62 to 86% of combined members of both self-actualized group and non-self-actualized group. The same problem witnessed for unknown-groups; the meta-analysis of 107 groups (over 11000 participants) using POI indicated that POI may only measure some correlates of self-actualization, not self-actualization itself (Weiss, 1991). POD, which introduced to be a refinement and extension to POI, suffers from the same validation problems (Weiss, 1991) and its development has not been theoretically justified (Hattie, Hancock, & Brereton, 1984).

SISA (Jones & Crandall, 1986) is the short modified version of POI and POD (15-item test compared to POI's 150 item). Jones and Crandall (1986) used the same improper implementation of known-group technique to validate SISA (Weiss, 1991).

Weiss (1991) retested it, and the discriminant analysis of SISA showed about the same overlap range (61%) as POI's. Crandall and Jones (1991), accepting these flaws, justified that they chose items that provide more breadth of content. It meant that the new measure may have high content validity but it was not internally reliable. They suggested adding items and developing new subscales to fix the problem.

Weiss (1991) and Tucker and Weber (1988) indicated that although SISA reflects factors that are appropriate to self-actualization construct, the construct validity is weak and items need to be modified (strengthened or replaced). Interpretations of an exploratory discriminant analysis of SISA implied that "some weighted combination of response pattern and total score, rather than scores alone" (Weiss, 1991, p. 281) may be used to measure degrees of self-actualization. Weiss (1991) also found that an 8-item set SISA produce similar results as 15-item test.

Although both measures (i.e., POI and SISA) showed some discriminant capacity to indicate people who are near the high or near the low end of self-actualization, this is not sufficient to claim validity for these measures (Weiss, 1991). Validity of a measure can also be checked by correlating the measure with other established high-standard measures that measure other personality attributes, but important is that those attributes needs to be theoretically related to the self-actualization construct. Unfortunately, most correlational studies that may be referred to as evidence of construct validity for self-actualization do not satisfied this requirement (Weiss, 1991). They correlate self-actualization to constructs such as anxiety, optimism, self-esteem, boredom proneness, perfectionism, depression, and creativity (e.g., Richard & Jex, 1991; McLeod & Vodanovich, 1991; Flett, Hewitt, Blanksteim, & Mosher, 1991; Runco, Ebersole, &

Mraz, 1991). These sorts of problems with validity and reliability of self-actualization measures are partly due to the lack of a unified operationalized conceptualization of self-actualization. If self-actualization measures are solely validated through their correlation with other valid tests of other construct, not self-actualization and if a high correlation achieved, it only means that the test (namely self-actualization measure) measures a construct (not necessarily self-actualization) that is highly correlated with those other constructs and self-actualization. In such a case, a battery of these already accepted and validated measures can replace the new measure (i.e., there is no need to invent a new measure; Weiss, 1991).

In sum, Weiss (1991) concluded that existing measures are indirect and correlative and does not meet the requirements of a good measure which should show a high estimate of validity. Weiss (1991) recommended that, in order to overcome these issues of validity, self-actualization researchers should revise the analysis of the data using the same methods or select the new analytical methods, or incorporate major changes in overall research design and strategies. Weiss (1991) suggested designing a self-report test on participants' external or internal experiences in certain situations which is supplied by "how would you react (feel) if ...?" questions, that responses to them could be guided by participants' past or potential experience in life. Weiss (1991) also suggested the use of a continuous interval Likert-type scale (e.g., 1 to 7). The responses can take different forms such as "a decision, judgment, or selection of an outcome or action; or it may be an emotion either belonging to the respondent or perceived to be the reaction of someone in the narrative" (p. 285). In order to capture the gist of self-actualization, the questions may need to reflect some level of complexity in the situation

they narrate. The next step is expert rating of the items as being conceptually valid to measure self-actualization (Weiss, 1991).

Subscales of POI as the index of self-actualization. Some studies only use one subscale on POI as the sole index of self-actualization. For instance, Wills (1974) used only the Inner-Directedness scale of POI based on the argument made by Knapp (1965) and Damm (1969) that this subscale is the best sole indicator of the level of self-actualization among all POI subscales.

Openness to experience as self-actualization. In a study of the relationship between self-actualization and subjective well-being, Vittersø, (2004) used *openness to experience* (OE), a subscale of the Norwegian Big Five Inventory (Engvik, 1993) to measure self-actualization. Openness to experience, however, is only one of the characteristics of self-actualizing people, described by Maslow (1968). Mittelman (1991) presented an account of the relationship between self-actualization and openness. He argued that self-actualization is nothing more than a manifestation of openness and the concept of openness explained all in Maslow's (1968) list of characteristics for self-actualizing people. Thus, it can substitute the concept of self-actualization altogether. Tobacyk and Miller (1991), however, rejected this argument stating that self-actualization is a higher-order multidimensional construct. Openness although is a central characteristics of self-actualizing people, it is only one lower-order dimension of it (Tobacyk & Miller, 1991).

Psychological maturity as self-actualization. Bauer, Schwab, and McAdams (2011) used Loevinger's (1976) theory of ego development as the model of psychosocial maturity. Loevinger (1976) in his model considered the higher stage of ego development

(i.e., the integrated stage) conceptually equal to Maslow's (1968) self-actualization.

They reanalyzed three studies of autobiographical memories and personality development including 320 participants in total. The study revealed that people at the highest stage of Loevinger's ego development (i.e., self-actualizing people) showed higher levels of well-being and reported a more growth-focused self-identity than people at all other stages.

Self-actualization in Emotional Intelligence (EI) framework. Bar-On (1997) had self-actualization as a subscale on the Bar-on Emotional Quotient Inventory (EQ-I; 1997), and defined it as “the ability and drive to achieve goals and actualize out potential” (Bar-on, 2001, p. 87). Later in the book chapter, “Emotional Intelligence and Self-Actualization,” Bar-on (2001) viewed self-actualization as an independent construct and tried to indicate how emotional intelligence influences self-actualization. He argued that the position of self-actualization in Maslow's (1968) hierarchy of need implies that self-actualization is achievable “only after you are socially and emotionally effective in meeting your needs and dealing with life in general” (p. 85). He argued that these needs include the development of emotional intelligence (EI) as well. He explained that EI is to be effective in managing one's life, and that self-actualization is a higher level of effectiveness. His definition of self-actualization has relied on earlier conceptualization of self-actualization:

Self-actualization is the process of striving to actualize one's potential capacity, abilities, and talents. It requires the ability and drive to set and achieve goals. It is characterized by being involved in and feeling committed to various interests and pursuits. Self-actualization is a life-long effort leading to the enrichment of life.
(p.89)

Bar-on (2001) used this definition to develop the EQ-i self-actualization scale. This scale consists of nine items that captures the four main themes of self-actualization including (1) “the ability and drive to set and achieve goals;” (2) “being committed to and involved with our interests;” (3) “actualizing our potential;” and (4) “enriching our life” (p. 88). Bar-on cited these works as evidence of validity and reliability estimate of the measure: Bar-on (1997, 2000), Dawda and Hart (2000), Plake and Impara (1999). Studies investigating the association of EQ-I and EQ-i self-actualization scale indicated that EI differentiates between people who score high or low on EQ-i self-actualization scale (the scores on the self-actualization subscale of EQ-i was not used in these studies to avoid any artificial correlation).

Unfortunately, there are not many strong points to be noted about aforementioned measures and approaches to operationally define self-actualization. Despite all the controversies surrounding the concept of self-actualization and limitations of self-actualization movement, implications, applied values, and potential positive impacts of theories of self-actualization in therapy, counseling, education, and business have been acknowledged (Burger, 1990). Theories of self-actualization as conceptualized by Maslow (1968) and Rogers (1961) has been identified as possessing great heuristic values (Ryckman, 1989; Whitson & Olczak, 1991); focusing on positive aspects of human behavior and personality (Feshbach & Weiner, 1986); and dramatically influencing the field of psychology (Peterson, 1988), as well as social arena of human life (Whitson & Olczak, 1991) and has been expanding our understanding of human nature. All the previous efforts to operationally define self-actualization view this phenomenon merely as a set of personality traits. The present study took a new approach to self-actualization,

guided by Rule (1991), which conceptualizes this phenomenon as a goal-oriented process. This approach guided the present study to operationally define self-actualization as a combination of actualizing-self (i.e., self) and actualization-striving (i.e., the actualization process).

Goal-Oriented Actualization: Self-Actualization as a Process

Researchers (Rule, 1991; Weiss, 1991) acknowledged that self-actualization is a complex concept to be investigated and evaluated. To add insight to studies of self-actualization and in rejecting the mere personality view of self-actualization, Rule (1991) proposed a goal-oriented framework for the conceptualization of self-actualization. With this framework, he presented a more holistic view of the concept than other personality-focused research on self-actualization has ever offered. Rule (1991) argued that the concepts, *self* and *actualization* need to be recognized as entirely as possible in measuring self-actualization. From this viewpoint, self-actualization research needs to work with three variables: the concepts of the self (X; e.g., self-awareness, self-image); goals or purposes that are not represented in self-awareness (Y); and a third variable that deals with behavior or emotion that precedes, follows or accompanies either first or second variable (Z). These variables can be viewed in the contexts of present, past or future, allowing for capturing the dynamic nature of actualization.

Rule (1991) took a holistic view of the self by proposing that the *concept* of the self can include several self-factors (e.g., self-awareness, self-regards, self-acceptance, etc.). In his view of the self, X is basically measured by self-reported Likert-scale inventories that record the relevancy of items to the person. Rule (1991) suggested the

Strong-Campbell Interest Inventory (Hansen, & Campbell, 1985) to measure the self variable.

Furthermore, actualization denotes the process of growth, change, unfolding, developing, and transcending, none of which are static, frozen in time (Rule, 1991). Human beings as much as they are growth-oriented, they are also goal-oriented (Rule, 1991). In fact, growth or self-actualization is the goal for the self. Rule (1991) stated that goals are “functions of the broader concept(s) of self” (p. 252). Rule (1991) recommended the Adlerian Lifestyle approach (Mosak, 1989) which combines observational and individual narrative methods to assess individuals’ goals. Among more general and objective indices of goal pursuits, he suggested, a more developed version of Time Competence scale of Personal Orientation Inventory (Shorstrom, 1964). Rule (1991) however argued that to capture the growth-nature of actualization cross-sectional methods, longitudinal methods, or sequential methods need to be employed in studies of self-actualization. Determining how to measure goals and what to measure as goals of self-actualization is not an easy decision. Some questions to be asked are, Should “only those goals that the subject is aware of, i.e. operational ones, be investigated? Should consciousness of the striving or the quest be assessed?” (Rule, 1991, p. 259).

The self-determination theory account of eudaimonia provides a reliable working ground for measuring self-concordance in goal pursuits (i.e., autonomous pursuits of intrinsic goals) and can be employed to partially capture the goal-oriented aspect of self-actualization. The concepts of goal aspirations presented by Kasser and Ryan (1996) and constitutive or instrumental goal orientations proposed by Fowers et al. (2010) have been also guided the conceptualization of self-actualization in the present study. The present

study operationally defined self-actualization primarily based on Rule's (1991) goal-oriented conceptualization of self-actualization employing all aforementioned studies to frame the actualization striving (i.e., a goal-oriented striving towards actualizing one's individual and humane potentials).

Eudaimonic living: A self-determination theory account of eudaimonia. Self-determination theory (SDT; Deci & Ryan, 1985; Ryan & Deci, 2000) is one theoretical framework that nicely integrates all the different orientations of happiness presented by positive psychologists (i.e., pleasure, engagement and meaning) and partially intersects with both Aristotelian eudaimonia and the motivational account of actualizing tendency set forth by both Rogers (1961) and Maslow (1968). SDT has satisfying basic universal psychological needs in its conceptualization of eudaimonic living, which was also theorized by Maslow (1968) as a precursor to self-actualization. SDT is primarily a theory of human intrinsic motivation (i.e., the pursuit and engagement in an activity "because of its inherent interest and enjoyability" (Ryan et al., 2008, p. 146). This characteristic gives this theory a great potential to explain Rogers's (1951, 1961) conceptualization of the actualizing tendency as an intrinsic motivational force. It also integrated the new approaches to well-being through engagement and meaning-seeking.

Eudaimonic living. Ryan et al. (2008) proposed a model of eudaimonia based on self-determination theory by an emphasis on eudaimonia as a *process* of living well (i.e., eudaimonic living; p. 140), rather than an end as proposed by Aristotle (trans. 2004). The four pillars of eudaimonic living were introduced as (1) pursuing intrinsic goals/values such as personal growth, relationships, community, and health for their own sake; (2) acting autonomously, willingly, and intentionally; (3) acting with a sense of awareness

and mindfulness; (4) acting in a way that satisfies basic psychological needs (as identified by SDT: competence, relatedness, and autonomy). The model was intended to provide a working ground for empirical research on eudaimonic living which, they stated, “requires engaging one’s best human capacities by actively pursuing virtues and excellences” (p. 143).

Ryan and his colleagues (Ryan & Deci, 2001; Ryan et al., 2008) referred to eudaimonia as “living a complete human life” (Ryan et al., 2008, p. 140). They elaborated on it by specifying that ‘it is *a way of living that is focused on what is intrinsically worthwhile to human beings*’ [emphasis in the original] (p. 147). Aristotle’s eudaimonia, however, is the ultimate good; that is, it is *what is intrinsically worthwhile to human being* and people may achieve it through *living a life that is focused on it*. Therefore, within the framework of the present study eudaimonic living outlined by SDT is more consistent with the self-actualization process which is hypothesized to lead people to eudaimonia or well-being.

Autonomous pursuits of intrinsic goals for a eudaimonic end. In line with Maslow (1968) and Rogers (1961), Ryan and his colleagues (Deci & Ryan, 2000; Ryan et al., 2008) believed in an inner human nature that appreciates certain intrinsic universal values. Intrinsic values are “*first-order values*” (Ryan et al., 2008, p. 148) which are not reducible to other values and their existence is not dependent to other values. Eudaimonia, from SDT’s perspective, is focused on pursuing intrinsic goals and acting according to first-order values.

According to this premise, the extent to which people live a eudaimonic living partly depends on the degree to which they pursue these first-order values or intrinsic

goals such as personal growth (Ryan et al., 2008). Higher level of well-being is associated with achieving intrinsic goals rather than extrinsic goals (Kasser & Ryan, 2001; Sheldon & Kasser, 1998; Ryan, et al., 1999). SDT explains that in addition to the content of the goal (being intrinsic or extrinsic) why the goal is being pursued is also important in determining a eudaimonic living. That is, some extrinsic goals may be pursued for a right end or a *eudaimonic end*, especially when the value of them is integrated into one's value system (i.e., integrated regulation), and thus they may be pursued more autonomously (Ryan et al., 2008). This implies that personal growth and anything that indirectly may lead to it or pave the way to make it happen (e.g., need-satisfaction and reducing defensiveness) can be pursued intrinsically and autonomously if the person is cognizant of its eudaimonic end.

Goal orientations. Fowers et al. (2010) introduced the construct of goal orientation within the Aristotelian tradition. From their perspective, there are two types of orientation toward goals, each corresponds to one of the hedonic or eudaimonic tradition of well-being: (1) Constitutive orientation, which is a eudaimonic orientation and (2) Instrumental orientation which is a hedonic orientation. Constitutive orientation is when people's way of goal pursuit is by itself worthwhile. Instrumental orientation is when the means people use or the key activity they get involved in does not have value by itself and are only to pursue other goals. One example they presented is that travel can be a mean for achieving a goal or it can be a goal by itself. Fowers et al.'s (2010) description of these two orientations was focused on the relationship between individuals' activities or actions and their goals. While in the constitutive orientation means are inseparable from the goals and enacting them "directly constitute[s] the goal"

(Fowers et al., 2010, p. 140), the instrumental orientation makes people strive “for goals that are means to other goals” (Fowers et al., 2010, p. 140).

Goal aspirations. Kasser and Ryan (1996) studied intrinsic and extrinsic goal aspirations in relation to several indices of well-being (e.g., self-actualization, depression, positive and negative moods, etc.). Kasser and Ryan (1996) conceptualized intrinsic goals as those that are congruent “with growth and actualizing tendencies and thus those that provide satisfaction of inherent psychological needs” (p. 285). Their set of intrinsic goals included self-acceptance or growth, affiliation or relatedness, community feelings or helpfulness and physical fitness or health. They also conceptualized extrinsic goals as “typically means to some other end and ... focused on obtaining external rewards or praise from some other person” (p. 285). Their category of extrinsic goals consists of financial success or money, social recognition or fame and appealing appearance or image.

Kasser and Ryan’s (1996) definition of extrinsic goals is closely related to Fowers et al.’s (2010) conceptualization of instrumental goals. Fowers et al. (2010) argued that intrinsic goals may be pursued constitutively, and extrinsic goals are most likely to be pursued instrumentally. Kasser and Ryan (1996) found that intrinsic aspirations (i.e., both the importance and likelihood of pursuing the intrinsic goal) and guiding principles (i.e., how important each goal is or how much it is a guiding principle of one’s life) were positively associated with self-actualization ($\beta_{importance} = .40, \beta_{likelihood} = .59, \beta_{guiding\ principles} = .34, p < .01$) and vitality (aliveness) ($\beta_{importance} = .46, \beta_{likelihood} = .64, p < .01$) and negatively related to depression ($\beta_{importance} = -.35, \beta_{likelihood} = -.45, p < .01; \beta_{guiding\ principles} = -.19, p < .10$), physical symptoms ($\beta_{importance} = -.35, \beta_{likelihood} = -.37, p < .05; \beta_{guiding\ principles}$

= -.27, $p < .01$), and anxiety ($\beta_{\text{guiding principles}} = -.17, p < .10$). Conversely, extrinsic aspirations and guiding principles of goal-pursuit were negatively associated with indices of well-being (Self-Actualization: $\beta_{\text{importance}} = -.52, \beta_{\text{likelihood}} = -.57, \beta_{\text{guiding principles}} = -.34, p < .01$; Vitality: $\beta_{\text{importance}} = -.60, \beta_{\text{likelihood}} = -.62, p < .01$) and positively related to indices of distress (Depression: $\beta_{\text{likelihood}} = .44, p < .05; \beta_{\text{guiding principles}} = .18, p < .10$; Physical symptoms: $\beta_{\text{importance}} = .46, p < .01, \beta_{\text{likelihood}} = .36, p < .10, \beta_{\text{guiding principles}} = .26, p < .01$).

Self-Actualization according with SDT: Outcomes and precursors. Seeking goals and engagement in activities with eudaimonic motives (i.e., “seeking to use or develop the best in oneself, whether or not these aims are achieved;” Huta & Ryan, 2010, p. 736) were found to be positively related to several measures of meaning in life (Huta & Ryan, 2010). A sense of meaning and purpose in life is considered one of the outcomes of eudaimonic living (McGregor & Little, 1998). Engagement also follows such autonomous pursuits of goals and meaning by getting involved in the integration of motivational forces and goal-relevance activities. Thus, an engaged and meaningful life can be considered as outcomes of eudaimonic living or self-actualization. Because both of these criteria are emerged from the eudaimonic perspective, they may be credited as indices of eudaimonic well-being. Waterman’s (2010) QEWB embeds these two indices of eudaimonic well-being.

Developing a sense of meaning in life and living an engaged life involve pursuits of intrinsic goals and an exercise of reflectiveness and awareness (Ryan & Deci, 2004). The present study considered the pursuits of intrinsic goals part of the process of self-actualization. It also regards metacognition as an exercise of awareness, reflectiveness,

and integrated regulation and as a prerequisite to the process of self-actualization and, in turn, to developing a sense of meaning and engagement (i.e., eudaimonic well-being).

The present study regarded the two first characteristics of eudaimonic living (i.e., *autonomously* pursuing *intrinsic* goals or pursuing self-concordant goals) as one of the indices of self-actualization. The third characteristic (i.e., acting with a sense of awareness and mindfulness) was represented by the construct of metacognition as a possible precursor to the process of self-actualization. The fourth characteristic (i.e., acting in a way that satisfies basic psychological needs) was used as another precursor to self-actualization as implied by Maslow's (1968) hierarchy of needs.

Maslow's (1968) and Rogers's (1961) accounts of self-actualization provided researchers with a vast amount of new concepts to entertain. Their theories have conceptualized self-actualization and actualizing tendency as a need or a source of motivation (in Rogers' (1961) view, it is *the* source of motivation for learning and growth). Maslow (1968) listed some characteristics for self-actualized people, which current measures of self-actualization have all relied on. Maslow (1968) and Rogers (1961) also discussed some conditions and requirements, such as receiving positive social support, developing a sense of belonging, need-satisfaction, and less defensiveness, for making this motivating force readily accessible for individuals. They suggested ways to emancipate the tendency or motivation for growth. Nevertheless, they did not explain what may help with achieving these requirements and conditions.

To fill this conceptual gap, the present study identified metacognition, which is an underlying factor in developing awareness and self-regulatory behaviors, as a pillar of individuals' striving towards emancipating self-actualizing tendency, and tested it as a

precursor to the process of self-actualization and, also, in relation to need-satisfaction and non-defensiveness. The next section provides a review of contemporary literature on metacognition and its similarities and differences with self-regulation and self-regulated learning.

Metacognition, Self-Regulation and Self-Regulated Learning

After Flavell (1976) first introduced the concept of metacognition, the theory of metacognition evolved over the years, that followed, while researchers taking many different approaches to studying this concept. A variety of terms and ideas have emerged in reference to different aspects or activities of metacognition, such as metamemory, metacognitive knowledge, metacognitive awareness, and metacognitive judgments (Schraw, 2009). Some new terms such as self-regulated learning or self-regulation, which emerged in the late 80s (Zimmerman & Schunk, 1989), address phenomena and goals similar to those addressed by metacognition. They both primarily pursue the development of effective independent learners as their goal. These new concepts rapidly developed into independent lines of research.

With the developing research perspective on cognitive and metacognitive phenomena, terms such as metacognition, metacognitive regulation, self-regulation, and self-regulated learning have often been used interchangeably in the literature. However, Dinsmore, Alexander, and Loughlin (2008) have recommended that researchers be cautious about using such terms interchangeably and be aware of the conceptual and operational definitions of constructs under study. In agreement with Dinsmore et al. (2008) and to clarify why the use of the term metacognition is more appropriate for the

present study, the concepts of metacognition and self-regulation/self-regulated learning are explained through the lens of the scholars and researchers of both fields.

Metacognition: A contemporary overview. Tarricone's (2011) book, *The Taxonomy of Metacognition*, covered a broad range of works on metacognition and related concepts, starting with the pioneering works of Flavell (1976, 1979) on metamemory and metacognition and continuing to the contemporary expansion of research on metacognition and related concepts by contemporary scholars. Aggregating, analyzing and synthesizing extensive amounts of literature in the field, Tarricone (2011) was convinced that an integration of Flavell's (1979, 1981a) model of metacognition and cognitive monitoring, Brown's (1978, 1981) conceptualization of metacognition, Kuhn's (1999) metaknowing, and the Good Information Processing model which emerged from the works of Borkowski, Pressley, and their colleagues during mid and late-80s, 1990s, and 2000s would provide a well-defined conceptual framework and well-organized taxonomy of metacognition (Tarricone, 2011, pp. 142-147).

Despite the evolving nature of the field, metacognition is still generally referred to as thinking about thinking, or cognition about cognition and cognitive processes (Flavell, 1979; Lin & Zabucky, 1998; McCromick, 2003). Kuhn (2000) presented the concept of meta-knowing as "any cognition that has cognition (either one's own or others') as its object" (p. 302), which is fairly in line with Flavell's (1979) definition of metacognition: "knowledge and cognition about cognitive phenomena" (p. 906). It is also generally agreed upon that metacognition includes two primary facets: metacognitive awareness and metacognitive regulation (Brown, 1978; Efklides, 2001; Flavell, Miller, & Miller, 1993; Schraw 2001; Tarricone, 2011). Metacognitive knowledge is knowledge and

awareness about all different variables involved in the process of metacognition, and metacognitive regulation is about monitoring, controlling, and regulation of metacognitive actions through setting goals and selecting and using appropriate strategies to achieve those goals (Tarricone, 2011).

The following sections on metacognition will focus on these two main components of metacognition (i.e., metacognitive knowledge and regulation), originally derived from Brown (1978, 1981), and discuss Flavell's (1979) person, goals/tasks, and actions/strategies variables interacting with each other. The person deals with her/his own metacognitive knowledge and metacognitive experiences to select and refine cognitive goals or tasks and choose and modify metacognitive actions or strategies (Flavell, 1979). Metacognitive experience (introduced by Favell, 1979) will also be discussed as an interacting factor with metacognitive knowledge and regulation.

Knowledge of cognition or metacognitive knowledge. Metacognitive knowledge is the knowledge, understanding, and beliefs about oneself and others as cognitive agents and about situations, environments, tasks, and strategies and their interactions, knowing that these all can affect one's metacognitive knowledge and experiences (Flavell, 1979, 1981a, 1981b). Brown (1977) labeled metacognitive knowledge as *knowledge of cognition* and described it as a form of self-awareness (Brown, 1977; Brown & Smiley, 1977) which informs the regulatory process (Tarricone, 2011). Knowledge of cognition is about "when, how, and why to engage in various cognitive activities" (Baker, 1991, p. 2) based on one's declarative and procedural knowledge of person as a cognitive agent (including the individual and others), tasks/goals (including the context), and strategies (Efklides, 2003; Flavell, 1979).

Like Flavell (1979) and Borkowski and his colleagues (e.g., Borkowski, 1996; Borkowski, Chan, & Muthukrishna, 2000), Kuhn (2000) took into account the person factor discussing variables such as one's personal beliefs about one's cognitive capacity, knowing capacity, and dispositions. However, Kuhn's (2000) account of meta-knowing considers two distinct components for meta-knowing: metacognitive knowing/operations (as declarative knowledge) and metastrategic knowing/operations (as procedural knowledge) (Kuhn, 2000; Kuhn & Udell, 2001). Metacognitive knowing involves knowledge about objects of knowing, beliefs about knowing, and reflections on knowing. Objects of knowing, for Kuhn (2000), go beyond Flavell's (1979) person, task, and strategy variables and include "epistemological metaknowing" (Kuhn, 2000, p. 302), which is the "individual's broader understanding of knowledge and knowing" (Kuhn, 1999, p. 18). Metastrategic knowing refers to awareness of, understanding of, and monitoring one's strategic performance (Kuhn, 2001) and includes procedural knowledge about tasks and their objectives (i.e., "metatask") and strategies (i.e., "metastrategic") (p. 6). This component is the equivalent of specific and general metacognitive knowledge of strategies in the Good Information Processing Model introduced by Borkowski and his colleagues (e.g., Borkowski, 1996; Borkowski, Chan, & Muthukrishna, 2000).

Nevertheless, metacognitive knowledge is not always consciously and explicitly retrieved and intentionally employed. It may be evoked implicitly by the task and the influences of the present situation. Intentional or unintentional activation of metacognitive knowledge results in a metacognitive experience (explained in the next section) which brings the metacognitive process to a level of consciousness (Flavell, 1979). Self-knowledge then develops through the conscious purposeful reflection of the

self which involves self-awareness and a reflective consciousness (Wheeler, Stuss, & Tulving, 1997). Metacognitive knowledge represents the core of metacognition (Tarricone, 2011).

Metacognitive experience. Metacognitive experience was introduced by Flavell's (1979) model of cognitive monitoring and refers to any affective and cognitive experiences that emerge during a problem-solving situation. It informs metacognitive knowledge and influences the regulation of cognition. Metacognitive experiences, in Tarricone's (2011) words, are "conscious affective or cognitive states which involve awareness, unexpected awareness, thoughts, intuitions, perceptions, feelings and self-judgments of oneself as a cognisor during problem solving and task completion" (p. 130). The process of cognitive monitoring as presented by Flavell (1979) involves such a "reflective awareness" (Tarricone, 2011, p. 128), which informs and influences metacognitive knowledge.

Regulation of cognition, metacognitive regulation or metacognitive skills.

Regulation of cognition is the secondary process of metacognition (Brown, 1978) which involves the "evaluation and control of ones' own cognitive processes" (Brown, 1977, p. 79). It includes all metacognitive activities and regulatory processes that facilitate monitoring, evaluating, and controlling cognitive processes in a deliberate problem-solving situation. Brown (1987) drew his conceptualization of regulation of cognition from information processing models and attributed the process to the executive functioning of the brain. The functions which are considered executive functions include: interpreting, guiding, orchestrating, supervising, predicting the limitations of one's cognitive capacity, knowledge repertoire in problem-solving situation, identifying

and characterizing the problem, planning, selecting goals and strategies, tracking, evaluating, revising, and in general monitoring and controlling processes *during deliberate problem-solving*. Brown (1987) labeled executive functions as *metacognitive skills*.

Further, Nelson and Narens (1990) presented a model of metacognition by focusing on monitoring and control as two overarching metacognitive regulatory processes. In their model, monitoring and control functions through the flow of information between two levels of cognition, the object-level and the meta-level. Monitoring is when the meta-level observes the object-level and when the flow of information is from the object-level to the meta-level. Control occurs when this observation changes the scheme of the object-level (i.e., the representation of the task/goal in progress) within the meta-level and, consequently, influences the action or strategy at the object-level. Metacognitive control refers to “any instance of cognitive control that is informed by metacognitive knowledge and monitoring” (Serra & Metcalfe, 2009, p. 290). Metacognitive knowledge and metacognitive experience both may be used as sources of information and judgment for metacognitive monitoring and control and help in modifying goals and strategies or even setting new goals to accomplish the cognitive enterprise (Flavel, 1979; Tarricone, 2011).

Metacognition and self-regulated learning: Differences. In the literature of self-regulated learning, metacognition is considered a vital subprocess of self-regulation (Zimmerman, 1989). Self-regulated learning (SRL) refers to “self-generated thoughts, feelings and actions for attaining one’s learning goals” when learning by one’s own, and is best manifested in the form of using “key metacognitive processes such as strategy use

and self-monitoring” (Zimmerman & Moylan, 2009, p. 299). It has been argued that self-regulated learners are independent active learners who are metacognitively, motivationally, and behaviorally committed to learning (Wolters, 2003). In other words, the self-regulation literature has viewed motivation and behavioral change as phenomena outside the realm of metacognition. They view metacognition only as “decision-making processes that regulate the selection and the use of various forms of knowledge” (Zimmerman, 1989, p. 329) and as subordinate to self-regulation.

However, similar to the self-regulated learning model (Zimmerman, 2011; Zimmerman & Maylon, 2009), the models of metacognition (Flavell, 1979; Brown, 1978, 1981) have taken into account self-factors (i.e., personal beliefs and feelings) such as self-efficacy, motivation, and locus of control. They highlighted the interaction of these factors in influencing metacognitive knowledge, metacognitive experience, and metacognitive regulation. They discussed these interacting person variables as important underlying facets of metacognitive processes in problem-solving situations. The SRL literature considered self-factors as motivational factors, rather than metacognitive variables.

Tarricone (2011) asserted that the logical argument that “metacognitive aspects of self-regulation are a subprocess of metacognition” (p. 168) and that metacognition is subordinate to self-regulation is open to discussion. The researcher argue that motivating oneself, boosting self-efficacy, or volition control can be set as a metacognitive goal and followed by a metacognitive process. Taking this mindset, one of the assumptions of the present study was that need-satisfaction and reducing defensiveness can be set as

metacognitive goals and that the metacognitive process can be arranged to achieve those goals.

Self-Regulated learning and metacognition: Intersections. Zimmerman (2011) and Zimmerman and Moylan (2009) viewed the intersection of SRL and metacognition in the *performance phase* when “a self-regulation event” (Zimmerman & Moylan, 2009, p. 305) occurs; any incident of strategy use is referred to as a self-regulation event. Self-regulation, like metacognition, involves all kinds of regulatory processes, such as planning, organizing, controlling, and monitoring, and specifically regulation of *learning* processes as well as self-monitoring, self-evaluation, and self-instruction (Baumeister & Vohs, 2004; Zimmerman & Schunk, 2001).

However, there are more commonalities between SRL models (Zimmerman, 2011; Zimmerman & Moylan, 2009) and models of metacognition. For instance, the *forethought phase* of SRL includes goal setting, strategy planning, and self-motivation beliefs (e.g., self-efficacy, task interest, etc.). This phase evidently requires metacognitive knowledge and a reflective awareness of one’s beliefs about one’s ability and interest, task complexity, and applicability of the strategies. With the inclusion of goal setting and strategy planning, this phase also involves some aspects of metacognitive regulation (executive monitoring and control).

Another commonality is Zimmerman and Moylan’s (2009) self-control. Although their self-control is limited to regulating social and environmental resources for boosting one’s control over the situation, task or strategies, it is not deniable that self-control requires metacognitive knowledge and regulation to intentionally seek and control these social and environmental resources. Some scholars of metacognition (e.g., Gaskin &

Pressley, 2007) explicitly considered self-control of social and environmental resources as metacognitive strategies required to accomplish the goal or task in hand.

Another intersection of metacognition and SRL is evident in the *self-reflection phase* of SRL that includes self-judgments (i.e., self-evaluation and causal attribution) and self-reaction (e.g., self-satisfaction/affect and adaptive or defensive decision-making). This phase echoes Flavell's (1979) concept of metacognitive experience. Flavell (1979) explained that metacognitive experience occurs during the metacognitive process in a problem-solving situation and informs metacognitive knowledge, and consequently metacognitive regulation, during the process. The operation of metacognition is based on monitoring the metacognitive process and continuous conscious reflection on each component of the process; such a reflection then informs regulatory processes towards accomplishing the task. This is in line with the "personal feedback loop" (p. 300) in Zimmerman and Moylan's (2009) model of self-regulated learning.

Advantages of developing metacognition. There are metacognition scholars who assume that it is through the development of metacognition that we will have independent effective learners (Gaskin & Pressley, 2007); the same promise is held for self-regulated learners by the SRL literature (Zimmerman & Maylon, 2009). For Gaskin and Pressley (2007), keeping oneself interested in the task in hand and motivated to accomplish the task is a metacognitive skill. Also, behavior change is supposed to follow if metacognitive strategies are being used effectively. Being goal oriented and being aware of one's beliefs and volitions (Butler & Winne, 1995; Zimmerman, 1989), strategy initiation (Wolters, 1998), and having a strong sense of self (e.g., self-efficacy, self-

esteem, self-control; Zimmerman, 2000), which are qualities listed for self-regulated learners, have been claimed for metacognitive individuals as well (Gaskin & Pressley, 2007).

Metacognitive research has primarily been interested in students' academic learning as the object of cognition or metacognition. Nevertheless, the target of metacognition could be any cognitive enterprise, even metacognition itself (Dunlosky, Serra, Matvey & Rawson, 2005) or psychological and behavioral self-regulation. Self-beliefs about one's competence, one's perception of her/his regulatory learning abilities, and internal and external comparisons and evaluations are all person variables influencing ones' regulatory processes (Miller, 2000; Winne, 1995). Volitional control and internal verbalization, which are effective for self-control or control of strategies, are regulatory processes or metacognitive skills that aid the development of self-regulation (Pintrich, Wolters, & Baxter, 2000; Schunk, 1986).

Nevertheless, metacognition is not always effective and adequately performed. Metacognition is prone to error (Serra & Metcalfe, 2009). The metacognitive process can be successful or unsuccessful in solving problems due to the accuracy level of metacognitive knowledge and the interactional effects of all internal and external factors involved in the process. However, such errors can be reduced and controlled if the individual is aware of them and knows how to deal with them (Serra & Metcalfe, 2009). Optimizing the accuracy of metacognitive knowledge and monitoring enhances the performance of the cognitive enterprise and the effectiveness of metacognitive regulatory processes that follow (Azevedo & Cromey, 2004).

Goal setting as a metacognitive process. A study of students' writing (Zimmerman & Kitsantas, 1999) indicated that the use of high quality SRL produces satisfactory results in problem-solving situations and enhances motivation. The key high quality feature in self-regulation processes is being a *proactive* self-regulator as opposed to a reactive one (Zimmerman & Moylan, 2009). Reactive self-regulators are those who engage in the problem-solving situation *during* the performance phase, and their reflectivity is directed by the outcome of this phase. In contrast, proactive self-regulators are productively involved in the forethought phase (i.e., planning). They analyze the problem, set the goals, and plan an effective strategy schedule (Zimmerman & Moylan, 2009). That is, proactive self-regulators are initially focused on the problem-solving process instead of the outcome of the process (Zimmerman & Kitsantas, 1996). Setting goals and subgoals and planning strategy use in a way that eventually leads to the desired outcome are required regulatory processes for an effective problem-solving approach (Annacone, 2008). These are especially important in complex problem-solving situations (Zimmerman & Kitsantas, 1997).

Similar to SRL, an effective metacognitive process involves setting and performing cognitive goals. Tarricone (2011) highlighted *goal setting* as a regulatory process. Goal setting refers to “specifying the outcomes that one expects to attain” (p. 301) which is a dynamic process and may be modified based on one's metacognitive knowledge and one's monitoring of the clarity and the accuracy of the process of goal specification (Marzano, 2001). Goal setting skills include the ability to clarify unclear or explicit goals, set and adopt goals intentionally, deliberately pursue goals whether they are self-selected or not, and pursue multiple goals at once (Flavell, 1979, 1981a, 1981b).

The processes of goal setting and goal-pursuit are influenced by the accuracy of metacognitive knowledge, deliberate activation of metacognitive knowledge and regulation, and continuous evaluation and regulation of person, goal, and strategy variables.

Problem identification. The possibility of setting personal behavioral and psychological goals (e.g., self-actualization, need-satisfaction, and defensiveness) as objects of cognition was one of the leading arguments of the present study. Research studies on real-life problem-solving situations are scarce. The focus of metacognition research and self-regulation research has been on problem-solving in the domain of *academic* learning. Furthermore, in the metacognitive literature, it is commonly assumed that the problem is identified beforehand and the task of metacognition begins with setting goals/tasks to solve the problem. As such, empirical research usually provides participants with a set of problems to solve to assess their metacognition.

However, in a real-world situation, problems are neither merely academic nor explicitly defined and recognized. This reality suggests that the accurate recognition of the problem may need to be addressed metacognitively by the individual, and thus introduces *problem identification* as an additional metacognitive skill. Flavell (1981a) discussed the cognitive problem or problem setting as another component of his cognitive monitoring model. This addition brings into play knowledge of the situation (i.e., the context of the problem) and the monitoring skills that lead one to ask the right question and identify the problem solving which help the situation.

Tarricone (2011) did not consider identifying and situating the problem as one of the metacognitive processes; rather, she counted it as a process that precedes the task of

metacognition (p. 132). However, when discussing Flavell's (1979) model of metacognition, she explained that cognitive goals and subgoals "aim to facilitate the *initiation* [italics added], progression and completion of the problem or 'cognitive enterprise' [emphasis in the original]" (pp. 128-129). This statement implies that recognizing, situating, and selecting the problem, which facilitate the initiation of the cognitive enterprise, are cognitive goals themselves. Addressing whether identifying, situating, and setting the problem are parts of the metacognitive process or if they only precede the process is beyond the scope of the present study. Future research should be oriented toward investigating the operation of metacognition in more realistic situations, in which accurate recognition of the problem is included as a necessary step towards making appropriate actions to solve the problem.

Given this, the present study drew its interpretations and implications from the assumption that recognizing the problem can intentionally be set as a goal in a metacognitive process and then subgoals can be set to solve the identified problem. Individuals can engage in a metacognitive process to identify a problem and in a metacognitive process to effectively solve a problem. Being actively cognizant of the situation, people are more likely to accurately recognize the problem they have to address at the moment.

Examples of the problems of interest for the present study are individuals being in a situation that is threatening to their self-regard which activates their defense mechanisms, or having unsatisfied needs that distract them from striving towards self-actualization or limit their motivation for personal growth. Recognizing these sorts of problems begins with a metacognitive experience; then solving that specific problem is

set as the goal of a metacognitive process. The individual then proceeds to monitor and evaluate her/his knowledge of the person and the situation and purposefully defines and sets goals and subgoals that are oriented toward solving the problem at hand. The metacognitive process continues by monitoring and regulating the strategies being used and the goal-striving process until one accomplishes the goal and solves the problem.

Metacognition and Self-Actualization: Concluding Remarks

The present study was not intended to focus on the metacognitive strategies which are related to self-regulatory behaviors. Therefore, acknowledging the close conceptual relationship between self-regulation and metacognition, the researcher came to this conclusion that for the purposes of the present study it was more prudent to use the term metacognition. The present study measured general metacognitive competence as a combination of metacognitive knowledge and regulation in a general problem-solving situation.

The task of metacognition has generally been defined as to make purposeful use of the metacognitive knowledge and the two main executive function processes of the brain, monitoring and control of cognitive processes (Efklides, 2008; Tobias & Everson, 2009). Metacognitive skills such as self-reflection, goal setting or goal selection, and self-regulation strategies come to play to fulfill these tasks. Nevertheless, the conjunction between concepts of agency, self-aware agent, and metacognition, emerging from both self-concept research and research on metacognition, has given a richer and broader perspective of the intended task of metacognition as:

comprehending the world and knowing that we [human beings] comprehend, self-regulating and monitoring our thoughts, evaluating our current cognitive status in

pursuit of self-imposed goals, revising our goals in light of developing cognitive and affective states, motivating ourselves, developing strategies and heuristics to make ourselves more capable of adapting to changing situations, and understanding others to gain understanding of ourselves. (Hacker, Dunlosky, & Graesser, 2009; p. 2)

This quote insightfully portrays metacognition as a required factor for sustainable growth and self-actualization. Metacognition help develop the system (consisting of conceptual, climate and environmental subsystems) which Hanlon (1968) conceptualized as being required for self-actualization. Comprehending the world provides the individual with a worldview required for equipping the conceptual subsystem for selecting goals and planning. The climate and environmental subsystem is also fueled by being evaluative of cognitive and affective states of oneself and others, motivating oneself, and changing strategies upon reflective understanding of the situation while maintaining control and motivation.

Setting self-actualization as the goal, the person needs to (a) recognize her/his personally-expressive interests and pursuits (knowledge of the person variable); (b) know her/his habits and styles of problem-solving (knowledge of the person variable); (c) prioritize her/his goals and identify the possible ways to approach them by setting subgoals to achieve the main goal (regulation of the task variable); (d) have knowledge of alternative strategies to approach her/his goal (knowledge of the strategy variable); and (e) select and switch between strategies that are appropriate for the task and for her/him (regulation of strategy, task, and person variables).

Need-Satisfaction or employing more adaptive defense mechanisms can be considered subgoals in the self-actualization process. Each subgoal then is a separate metacognitive task. Assuming need-satisfaction as the task, the action is to identify personal needs and to think of adaptive ways to fulfill those needs. Furthermore, metacognition may help prevent the abundance of defensiveness and select the adaptive coping mechanisms when dealing with threatening situations (i.e., the cognitive task). In this experience, the person needs to recognize that a threatening situation has occurred (the task variable), identify the typical automatic reaction of his or her mind to the situation (his typical defense mechanism as the person variable), believe that s/he can control the situation (person variable), have knowledge of alternative strategies/adaptive defense/coping mechanisms (strategy variable), and select a strategy that is appropriate to tackle the task and works for her/him (strategy, task, and person variables). The present study hypothesized that individuals who are more developed in their metacognition are more advanced in the process of self-actualization, they also may appear to be more successful in need-satisfaction and in adopting more adaptive defense/coping strategies (see Figure 5).

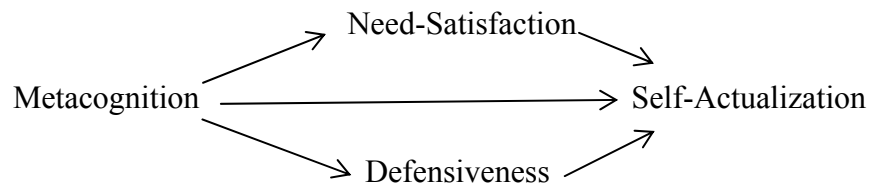


Figure 5. The hypothesized mediations in predicting self-actualization

The previous sections discussed mainly conceptual and theoretical literature on variables of interest, namely human well-being, self-actualization, and metacognition. Controversies around the conceptualization of self-actualization and similarities and differences between metacognition and self-regulated learning were addressed. Previous sections also highlighted the approach taken by the present study in conceptualizing and operationally defining each research variable. The next section will provide a review of empirical literature which investigated the variables involved in the present study in relation to each other.

Empirical Review of Literature

The literature search resulted in finding empirical research that addressed the relationship between some, not all, constructs of interests, including the relationships between well-being and self-actualization, well-being and need-satisfaction, self-actualization and goal pursuits, and defense mechanisms and self-regard related constructs. Thus, the following literature review provides empirical evidence to further support the arguments made by the researcher for the present study and highlights the gaps in the literature.

Well-Being and Self-Actualization

Bauer et al. (2011) argued that in the frame of developmental theories the highest stage of human development (e.g., Loevinger's [1976] integrated stage, Kegan's [1982] interindividual self-understanding, or Erikson's [1959] ego integrity) is paralleled with Maslow's (1968) self-actualization. He argued that the highest stage in these theories is descriptive of psychologically mature individuals whose lives may be best examples of well-being.

However, previous studies investigating the relationship between an individuals' maturity level and their level of well-being did not find any significant increase in well-being as the maturity level increased (e.g., Bauer & McAdams, 2004a, 2004b). One explanation is that well-being measures may not capture the difference in people's quality of life as they mature (from lower level to higher level of psychological maturity). Research on well-being represented well-being as a personality characteristic that is relatively stable within a person, rather than a characteristic that changes incrementally as a person matures (Diener et al., 2006).

Nevertheless, the highest stage of human development in developmental theories may be qualitatively different from the other lower stages. For instance, Bauer et al. (2011) examined if people who are in the *highest* stage of ego development (Loevinger, 1976) score higher on well-being compared to people in lower stages of development. They found that the highest stage of ego development might involve higher levels of well-being (PWB and SWB) and the development of a more growth-oriented self-identity (demonstrated through personal narratives) than other stages of ego-development. The study was able to preliminarily portray an optimal development that is comprised of the capacities to involve in a complex contemplation about one's life, to feel good about one's life, and to identify closely with processes of both intellectual and experiential growth, characteristics that according to Aristotle (2004) are indicators of an activity of daimon (i.e., inner nature) towards eudaimonia.

Goal variables, Self-Actualization, and Well-Being

Kasser and Ryan (1996) found that self-actualization (as measured by SISA; Jones & Crandall, 1986) and well-being variables (i.e., vitality: feelings of physical and

mental vigor and aliveness, low depression, low anxiety, and physical health) are positively related to personal importance and individuals' attainment efficacy of intrinsic aspirations. Intrinsic aspirations included growth/self-acceptance (i.e., "achieve psychological growth, autonomy and self-regard"), affiliation/relatedness (i.e., "have satisfying relationships with family and friends"), and community feeling/helpfulness (i.e., "improve the world through activism or generativity") (Kasser & Ryan, 1996, p. 281). Carver and Baird (1998) also found that helpfulness aspiration was positively predicted self-actualization while financial success as an extrinsic aspiration negatively predicted self-actualization. The finding was supported across cultures, for working population, and for college students (Ryan et al., 1999; Vansteenkiste et al., 2004).

Comparing intrinsic and extrinsic goal attainment, Kasser and Ryan (2001) found that the relationship between goal attainment and well-being is positive for intrinsic goals. No relationship was found between attaining extrinsic goals and well-being. In other words, *attaining* extrinsic goals did not add to the psychological well-being of individuals. However, an increase in well-being and self-actualization was observed by *progressing* on either intrinsic or extrinsic goals (Sheldon & Kasser, 1998).

Pursuit of autonomous (vs. controlled) goals or autonomous goal motives significantly predicted self-realization measured by PWB (Miquelon & Vallerand, 2008). It was also positively and significantly associated with happiness/SWB (Sheldon, Ryan, Deci, & Kasser, 2004). Sheldon et al. (2002) found that pursuing self-concordant (intrinsic and autonomous) goals was positively associated with vitality, PWB and positive/negative affect (measured by PANAS; Watson et al., 1988). General goal progress also was associated with higher level of self-actualization (measured by SISA;

Sheldon et al., 2002). In general, (academic) goal motives (autonomous vs. controlled) found to possess a predictive validity with regard to well-being (measured by SWB and PWB) while the reverse case did not hold (i.e., well-being did not predict goal pursuits; Miquelon & Vallerand, 2008).

Goals, Well-being, and Need-Satisfaction

There are limited studies which explored the relationship between need-satisfaction and well-being. The satisfaction of each basic psychological need (i.e., needs for competence, autonomy, and relatedness; Deci & Ryan, 1991) was found to uniquely contribute to well-being measured on a daily basis (e.g., Sheldon, Ryan, & Reis, 1996; Reis, Sheldon, Ryan, Gable, & Rosco, 2000). Sheldon and Elliot (1999) studied need-satisfaction as a moderator of the relationship between goal attainment and well-being, arguing that for goals which are congruent with basic psychological needs, goal attainment leads to positive change in well-being. The study showed that need-satisfaction contributes uniquely to increase concurrent subjective well-being. Need-satisfaction was also associated with changes in well-being; this association was more likely to appear when individuals pursue more self-representative or self-concordant goals.

However, Sheldon & Elliot (1999) argued that a direct path between goal attainment and well-being better predict changes in well-being than having need-satisfaction as the moderator. Yet, this finding does not allow one to confidently argue that goal attainment leads to well-being independent from the satisfaction of self-congruent needs. For instance, Niemeic, Ryan, and Deci's (2006) findings in one-year longitudinal study of college graduates supported SDT's hypothesis on the mediational

effect of need-satisfaction on the relationship between intrinsic goal attainment and well-being.

Some studies used indices of mental distress and psychological malfunctioning as (reverse) indicators of well-being. For instance, Baard, Deci, and Ryan (2004), who focused their research on the workplace, expected that the satisfaction of intrinsic needs on the job will predict psychological well-being of employees. To measure well-being the study used the General Health Questionnaire (GHQ; Goldberg & Hillier, 1979; as cited in Baard et al., 2004) that unravels four types of psychiatric symptoms: depression, anxiety, somatic symptoms, and social dysfunction. Depression and anxiety were found to be negatively correlated with intrinsic need-satisfaction. Another study (Wei, Shaffer, Young, & Zakalik, 2005) indicated that basic psychological need-satisfaction is negatively correlated with distress (i.e., shame, depression, and loneliness) predicting 21% of variance in shame, 41% in depression, and 56 % in loneliness. Again, distress is an indicator of psychological health which itself is only one dimension of psychological well-being. This reverse one-dimension approach to measure well-being is not usually used in psychological research on well-being but in mental health research. Well-being rather is measured by combining scores from psychological health, the absence of negative affect, the presence of positive affect, and usually one or more other components such as life-satisfaction.

Self-Actualization and Self-Awareness

Culbert, Clark, and Bobele (1968) used Shostom's (1963, 1964) Personal Orientation Inventory (POI) to capture self-actualizing personalities in typically developing university students (they called the variable, self-actualizing perceptions).

The POI scales reflect constructs such as Time Competence, Inner Directedness, Self - Actualizing Value, Existentiality, Feeling Reactivity, Spontaneity, Self-Regard, Self-Acceptance, Nature of Man, Synergy, Acceptance of Aggression, Capacity for Intimate Contact. Participants were receiving self-actualizing treatments such as sensitivity training which focuses on authentic interactions and self-awareness. The study showed that the self-awareness interventions increased student's perception of their self-actualization. A few recent studies (e.g., Bar-On, 2001, 2006) also provided support for the relationship between self-awareness – understanding of who one is, what one is willing and wishing to do, is able to do, and enjoys doing – and self-actualization.

Furthermore, Culbert et al. (1968) investigated whether an increase in self-actualizing perceptions was associated with an increase in self-aware verbal behaviors measured by the Problem Expression Scale (PES) of Van Der Veen and Tomlinson (1967). The result showed no increase in self-aware verbal expressiveness about increased self-actualizing perceptions. This finding implies that although treatments, such as sensitivity training, increase individuals' self-actualizing perceptions (i.e., primary cognition), this change in perceptions does not necessarily lead individuals to gain or employ the metacognitive knowledge (i.e., self-awareness) of their self-actualization (i.e., secondary cognition). One can argue that, in order to manifest themselves in individuals' behavior, established self-actualizing values need to be brought into consciousness.

In other words, knowledge about the self to be effective in guiding and regulating one's responses and behaviors needs to be dealt with in consciousness (i.e., it is only then that knowledge of the self becomes *self-awareness*). Self-awareness (i.e., understanding

oneself in terms of motives and forming an adequate dynamic self-concept that constantly portrays the self in progress) is also crucial for achieving psychological well-being (Wilson, 2009). Taking into account the intentionality and consciousness that metacognition offers in problem-solving situations, in the present study the researcher hypothesized that metacognition is positively correlated with self-actualization and well-being.

Except for a few studies that investigated the relationship between self-awareness (which is closely related to metacognition) and self-actualization, none of the previous studies focused on the role of metacognition in self-actualization or in need-satisfaction and controlling psychological defensiveness as precursors to self-actualization. The question here is that if individuals who are better in metacognitive knowledge and regulation are better in identifying and satisfying their needs and interests, if they are better in regulating their defense mechanisms when encountering psychologically threatening situations, and if they are better in their self-actualization. The present study undertook the task of addressing these research questions.

High Self-Regard and Low Defensiveness

Reducing defensiveness or employing more mature and adaptive coping mechanisms are expected to be precursors to emancipate self-actualizing tendency (Rogers, 1951, 1961). These relationships have been rarely investigated in self-actualization literature. However, low defensiveness is argued to be conceptually related to unconditional positive self-regard (Rogers, 1951, 1961). Thus, a review from self-regard literature is presented here.

Traditionally, coping and defense has been considered similar concepts. Berzonsky and Kinney's (2008) study, which was based on Gleser and Ihilevich's (1969) conceptualization of psychological defense, considered coping strategies as defense mechanisms. Some coping strategies or emotion regulation strategies such as the use of distraction, denial, suppression, rumination, and cognitive reappraisal or positive reframing (Strain, D'Mello, & Graesser, 2011) could be fairly considered synonymous with Rogers' (1951) concept of defense mechanisms. People activate different defenses to maintain and retain their self-concept and self-regard in threatening situations (Rogers, 1951; DeMarree & Marrison, 2011). Individuals' efforts to develop, maintain, or enhance self-regard or a positive self-view have been acknowledged by different studies (Baumeister & Jones, 1978; Blaine & Crocker, 1993; Diener & Diener, 1996).

However, there is a debate about universality of the need for self-regard. For instance, Heine, Lehman, Markus, and Kitayama (1999) argued that the mainstream research on positive self-regard has been used samples of North American populations. They presented that seeking positive self-regard is not valued by, for instance, Japanese culture. Japanese seeks self-affirmation through chronic self-criticism as opposed to seeking self-regard. In their review of some cross-cultural studies they found that Japanese participants were inclined towards more effort and self-improvement after a negative feedback (criticism) while North Americans were not.

Findings of this sort, however, do not necessarily contradict the universal need for self-regard and can fairly be interpreted in line with the paradigm of coping and maintaining self-regard. Japanese response to criticism and negative feedback can be considered a completely different type of coping which is guided by cultural preferences.

Another interpretation is that Japanese may culturally possess higher level of unconditional self-acceptance; meaning, their self-acceptance may be independent of criticisms they receive, thus negative feedback does not threaten their self-regard. Rather, it is used as a source of information to enhance their abilities and qualities.

Unconditional self-acceptance as an indicator of positive self-regard found to be negatively correlated with depression and anxiety and positively correlated with state mood (Chamberlain & Haaga, 2001). It, however, showed no relationship with life satisfaction (Chamberlain & Haaga, 2001). Carson and Langer (2006) argued that unconditional self-acceptance is achievable true exercise of mindfulness. Mindfulness was shown to be positively correlated with unconditional self-acceptance (Thompson & Waltz, 2008). Carson and Langer (2006) emphasized that their reference to mindfulness is according to the cognitive theories rather than the Buddhist tradition, and it includes “the ability to view both objects [of cognition] and situations from multiple perspectives” and “the ability to shift perspectives depending upon context” (p. 30). They emphasized the importance of mindful self-evaluation for developing self-acceptance. Self-evaluation is one of the key processes in metacognition. This description of mindfulness is closely related to theories that conceptualize the task of metacognition.

Defensiveness and Well-being

Research (Kling, Seltzer, & Ryff, 1997; Park & Adler, 2003) provided empirical evidence for a positive relationship between adaptive style of defense (i.e., vigilant coping) and both subjective and psychological well-being and a negative relationship for less adaptive ones (i.e., avoidant coping). Miquelon and Vallerand (2008) found that self-realization (measured by PWB) was a significant predictor of vigilant (academic)

coping strategy use and significantly and negatively predicted avoidant (academic) coping strategy use. They suggested that feelings of self-realization (PWB) may provide individuals with “sufficient psychological resources” to adopt more adaptive coping strategies (p. 247).

Defensiveness and Metacognitive Processes

Defense mechanisms in some people involve high cognitive processes while in others are mostly an emotional process (Berzonsky & Kinney, 2008). Although psychological defenses mainly occur naturally and unconsciously, bringing them to one’s consciousness – by identifying them and understanding them – would help the conscious use of effective strategies and discarding ineffective defense mechanisms, the frequent activation of which, according to Rogers (1951), would lead to the increasing incongruence, neurosis, and the shattered self. The process of self-reflection and bringing psychological experiences to the consciousness allows individuals to become aware of the limitations and remain open to alternatives (Ihilevich & Gleser, 1986).

Therefore, ways people respond to the potential psychological threats can partly be explained by metacognitive constructs and processes (DeMarree & Marrison, 2011). For instance, contingent individuals, by definition, are those who “have metacognitive knowledge about how success or failure in a domain will impact their self-evaluation” (DeMarree & Marrison, 2011; p. 111) and, in turn, their self-concept. Contingent individuals attribute their self-worth to their competence in certain domains, to possessing certain characteristics, or to their success in certain tasks (i.e., their “contingencies of worth”; DeMarree & Marrison, 2011; p. 111). Consequently, threatening these attributions (e.g. repeated failure) is most likely to trigger their defense

mechanisms (Crocker & Knight, 2005; Crocker & Wolfe, 2001). Being aware of what are one's important contingencies of self-worth and by what sort of negative affection or psychological state the individual may respond to them is critical to regulate and relax the defense mechanism.

Furthermore, individuals with different identity processing styles employ different defense mechanisms. For instance, individuals with informational identity style rely on problem-focused strategies and search for different but relevant options (Berzonsky, 1992; Soenens, Durie, & Goossens, 2005). In tough situations, they also try cognitive reappraisal to cognitively reinterpret the stressful events in a way that reduces the psychological pressure on them (Berzonsky, 1990). Their style is mainly associated with cognitive processes, self-awareness of internal states (both cognitive and emotional states), self-reflection, and the control of emotional pressures such as anxiety (Berzonsky & Kinney, 2008).

On the other hand, individuals with normative identity style seek social support and reaffirmation from others to maintain their positive self-views in threatening situations. Their style demands working in a structured environment that reduces ambiguity. They also lack openness to information or situations that may threat core areas of the self (e.g., belief systems) (Berzonsky, 1990, 1992; Soenens et al., 2005). Consequently, normative individuals' defense mechanism is to distort, negate, or deny reality (Berzonsky & Kinney, 2008). This lack of openness is evidently not in line with the characteristics of self-actualizing people.

However, individuals with diffuse-avoidance identity style are very impulsive in their decision-making because of their high level of negative emotional reactions; they

defend themselves by shirking the responsibility from themselves and blame others or circumstances. They try withdrawing or distracting themselves from the stressful situation (Berzonsky, 1990, 1992; Soenens et al., 2005). Most important to the purpose of this literature review, they are identified as those who possess limited self-awareness (Berzonsky, 1990, 1992; Soenens et al., 2005)

Berzonsky and Kinney (2008) studied patterns of defense mechanisms as measured by the Defense Mechanism Inventory (Ihilevich & Gleser, 1986). They concluded that both normative and diffuse-avoidance identity styles employ maladaptive defense mechanisms that limit their self-awareness and consciousness by having them involve in distracting and irrelevant, sometimes aggressive behaviors, denying, or distorting the reality. Empirical research (Hussain & Langer, 2003) indicated that when individuals use deceptive pretenses in order to avoid threatening situations (e.g., receiving criticisms from others) they experience lower self-esteem afterward, although they did so to *maintain* their self-regard.

Psychological Threats, Self-Regard, and Goal Pursuits

Some experimental studies suggested a causal relationship between psychological threats and extrinsic goal selection. Examples of psychological threats in these studies included reminding people of their death (Kasser & Sheldon, 2000; Sheldon & Kasser, 2008); triggering their self-uncertainty (Chang & Arkin, 2002); and making them imagine financial or professional insecurity or a relationship which only conditionally support or accept them (Sheldon & Kasser, 2008). These studies indicated that psychological threats affect goal-selection by increasing the likelihood of extrinsic goal motives compared to intrinsic goal motives.

This finding suggests that people with high level of experiencing psychological threats, who feel disregarded or negatively regarded by the external world, tend to pursue extrinsic goals such as appealing appearance, popularity/status seeking, or financial success/consumerism in order to maintain their self-regard. In other words, exposing people to psychologically threatening situations that activate their defense mechanisms may lead them to select less self-actualizing goals. This finding supports the thesis set forth by the present study that effective management of threatening situations through reducing defensiveness may provide individuals with a psychological security to be inclined towards selecting growth-oriented goals.

Other examples of psychological threats include a sense of social isolation or inclusion (Twenge & Baumeister, 2005), threats to self-esteem (Crocker & knight, 2005), or a sense of being controlled (Kofta, Weary, & Sedek, 1998). Individuals who live with controlling parents (Williams, Cox, Hedberg, & Deci, 2000), live in a divorced family (Rindfleisch et al., 1997), or spend their days in a highly controlling school environment (Sheldon & Krieger, 2004) were found to be more interested in pursuing extrinsically motivated goals such as an attractive appearance or more materialistic goals.

Summary

In accordance with the purpose of this dissertation, the review of theoretical and empirical literature reported and analyzed existing theories and research on topics related to constructs involved in the present study. The review of literature indicated that there is a lack of theoretical conceptualization as well as empirical research that links Maslow's (1968) and Rogers's (1961) theories of self-actualization to metacognition and to well-being. No theoretical or empirical literature directly and comprehensively conceptualized

or examined possible relationships of metacognition with need-satisfaction, defensiveness, self-actualization, or human well-being. No previous studies explored self-actualization as a process and as conceptualized by the present study. The review of empirical literature found no research investigating need-satisfaction and defense mechanisms in relation with the self-actualization process. There was also a scarcity of research in exploring the relationship between self-actualization and individuals' well-being as separate constructs and in relation to each other.

Furthermore, the empirical literature discussed self-awareness as being essential in developing an adequate self-concept and recognizing person, task, and strategy variables that hinder one's personal growth (e.g., maladaptive defense mechanisms; Berzonsky, 1990, 1992; Berzonsky & Kinney, 2008; Soenens et al., 2005). However, the effort put into self-awareness would be more worthwhile if its intent is not limited to just knowing oneself, but to enhancing and actualizing one's excellence. In order to fulfill this purpose, a comprehensive metacognitive experience needs to be made that pairs self-awareness with self-regulation. Metacognition needs to be oriented towards becoming who you are, identifying your true potential, and demonstrating the most and the best of your capacities. Yet the empirical research did not address metacognitive regulation which is complementary to self-awareness and metacognitive knowledge in forming a comprehensive metacognitive process. The present study used a measure of metacognition, Metacognitive Awareness Inventory (MAI; Schraw & Dennison, 1994), which encompasses both aspects of metacognition (e.g., knowledge and regulation).

The path towards self-actualization and a fulfilling life is by no mean a clear path and it is plausible that it may not be ever clarified entirely due to its complexity. Yet,

because historically it has been the greatest struggle for individuals, research into its possible components and contributors will be enlightening. In order to bridge the gap in the literature, the present study examined theoretical antecedents and outcomes of self-actualization. Metacognition (including both awareness and regulation) was also argued to be essential for recognizing the person's psychological defense mechanisms, and consequently for facilitating the regulation of defense mechanisms. It was also argued to be a precursor for identifying unsatisfied needs and weaknesses – which may hinder personal growth and self-actualization. The next chapter will discuss the research design and the measures used in the present study.

CHAPTER III

METHOD

This study examined the relationship between metacognition, self-actualization and individuals' well-being. The purpose of this chapter is to discuss the methodology that was employed in the present study. This chapter begins by highlighting the study's purpose. The next section describes the population that was examined in this study. The last section explains the instruments that were used and the statistical analyses that were employed in this study.

Figure 6 summarizes the conceptual framework proposed in this study for antecedents and outcomes of self-actualization. Metacognition, need-satisfaction, and non-defensiveness were identified as antecedents to the process of self-actualization, and well-being as the outcome of self-actualization, noting that for this study all relationships were interpreted as correlational rather than causal because it was not an experimental study:

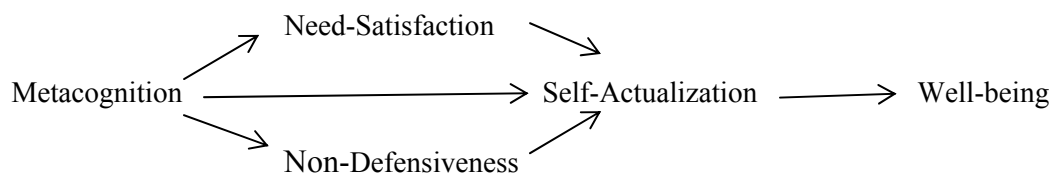


Figure 6. A conceptual model presenting possible antecedents and outcomes of self-actualization

Purpose of the Study

The purpose of the present study was to investigate the relationship between metacognition, self-actualization, and well-being. This study also investigated the

mediating effect of need-satisfaction and non-defensiveness on the association between metacognition and self-actualization. The present study examined ways general metacognitive competence may facilitate a holistic development of human beings towards self-actualization (either directly, or through need-satisfaction, or through reducing their defensiveness) and whether self-actualization may contribute to individuals' well-being. With this it is hoped that this study will bridge the gulf between the literature on positive psychology, humanistic psychology, and cognitive psychology, as well as shed light on possible ways to enhance individuals' potentials through skills (e.g., metacognitive skills) which are teachable at school.

Research Questions and Hypotheses

Following the statement of purpose, the main questions are to what extent metacognition may contribute to a holistic development of human beings towards self-actualization and to what extent self-actualization contributes to individuals' well-being. More detailed research questions are listed below, all hypotheses were tested while controlling for some demographic variables (e.g., gender and age):

1. Is self-actualization associated with human well-being?

H1: There is a positive relationship between self-actualization and human well-being.

2. Is an adaptive style of psychological defense associated with self-actualization?

H2: There is a positive relationship between adoption of more adaptive styles of psychological defense (i.e., non-defensiveness) and self-actualization.

3. Is need-satisfaction associated with self-actualization?

H3: There is a positive relationship between need-satisfaction and self-actualization.

4. Is metacognition associated with need-satisfaction?

H4: There is a positive relationship between metacognition and need-satisfaction.

5. Is metacognition associated with the style of defense mechanisms adopted by an individual?

H5: There is a positive relationship between metacognition and adaptive style of psychological defense (i.e., non-defensiveness).

6. Does metacognition predict self-actualization over and above need-satisfaction and styles of defense mechanism?

H6: There is a positive relationship between metacognition and self-actualization independent of need-satisfaction and styles of psychological defense.

7. Is metacognition associated positively with well-being?

H7: There is a positive relationship between metacognition and well-being.

8. Does need-satisfaction mediate the relationship between metacognition and self-actualization?

H8: Need-Satisfaction mediates the relationship between metacognition and self-actualization?

9. Does adopting more adaptive defense mechanisms mediate the relationship between metacognition and self-actualization?

H9: Non-Defensiveness mediates the relationship between metacognition and self-actualization.

Research Design and Methodology

The design of this research was non-experimental or ex post facto. In such a research design, there is no manipulation of variables or randomization of samples (Pedhazur & Schmelkin, 1991). In this type of research design, the researcher approaches the phenomenon as it exists. In other words, “inferences about relations among variables are made, without direct intervention, from concomitant variation of independent and dependent variables” (Kerlinger, 1973, p. 379). Thus, a causal relationship may not be inferred when doing an ex-post facto design:

When one does correlational (ex post facto) research, causation cannot be inferred. . . . Some people have the propensity for assuming that one variable is likely to be the cause of another because it precedes it in occurrence, or because one variable is highly correlated with another. . . . However, while a correlated and preceding relationship is necessary, it is not sufficient for inferring causal relationship. (Newman & Newman, 1994, p. 122)

Although, ex post facto design has low internal validity, it is useful to identify variables related to the dependent variable or variable of interest for future experimental manipulation (Newman & Newman, 1994, p. 124).

Population and Sample Size

The target population for this study was undergraduate and graduate levels university students who are considered emerging adults (Arnett, 2000). This choice was made because emerging adults are assumed to be more advanced in different aspects of their development (e.g., cognitive [Reio & Sanders-Reio, 2009] and metacognitive [Pressley, Levin, Ghatala, 1984] development) than grade school students. Self-

actualization is a process that involves change and growth, dynamic goal selection (Rule, 1999), and discovering oneself (Waterman et al., 2010). Emerging adults are in a period of frequent change and explorations (Arnett, 1994; 2000), which demands targeting different goals and exploring a variety of strivings. The present study was an exploratory study which employed a convenience sample of undergraduate and graduate classes in a public university in South Florida. Participants were mainly-education-major students.

There are very different recommendations and approaches to determine the sample size, concerning with the stability of the findings and power and effect size of the analysis. Some approaches rely on the number of variables and use that as the criterion to determine the number of participants. Green (1991) recommended a sample size of at least five participants per variable for analytical methods such as correlational analysis. Given that this study deals with five research variables (i.e., metacognition, need-satisfaction, non-defensiveness, self-actualization, and well-being) and, at least, four demographic control variables (i.e., age, gender, immigration status, and academic major), a minimum total sample size of 45 was recommended (Green, 1991). Stevens (2002) suggested a minimum of 15 subjects per predictor variable for regression analysis in social science. This study deals with well-being, as the criterion variable, and with four research variables, as predictors (i.e., metacognition, need-satisfaction, non-defensiveness, and self-actualization) and four demographic variables as control variables, which make a total of eight independent variables. Stevens' (2002) recommendation suggests recruiting at least 90 participants.

Further, Tabachnick and Fidell (2007) highlighted that sample size should be determined with several considerations such as desired power, alpha level, expected

effect size, and the number of predictors. They, however, introduced two rules of thumb for calculating the sample size. To test individual predictors, Tabachnick and Fidell (2007) suggested $N \geq 104 + m$, where m is the number of independent variables. With eight independent variables in this study, Tabachnick and Fidell's (2001) recommendation entails a minimum of 112 participants. Another formulation by Tabachnick and Fidell (2007) recommended $N \geq 50 + 8m$ responses to test regression with multiple predictor variables. This approach suggests a sample size of at least 114 responses. They recommended calculating both and choosing the one that is larger.

From a power analysis perspective, Hinkle, Wiersma, and Jurs' (2006) recommendations for a power analysis of .80 with an effect size of .15 and an alpha of .05 is a sample size of 120. The average undergraduate class size was 30 and the graduate class size was at least 10. To recruit participants, this research targeted 14 undergraduate and 8 graduate classes in the university. The number of participants who completed, both, Part I and Part II questionnaires was 513, which is greater than the recommended sample sizes.

Procedure

An Internal Review Board (IRB) approval was obtained prior to recruiting participants. The researcher followed the approved research protocol. The study involved no treatment or intervention. The data collection was through self-ratings of a battery of questionnaires and the participation was on a voluntary basis. In the data collection sessions, the researcher briefly explained the purpose of the study for the students, stated that the participation was voluntarily, and asked them to respond to the questions honestly and accurately, if they were participating.

The survey battery contained questions on background information and five different questionnaires to measure participants' general metacognitive competence, well-being, self-actualization, need-satisfaction, and non-defensiveness. The battery of questionnaires was piloted with a small number of graduate students to estimate the completion time of the questionnaire and to fix any ambiguity within the survey statements before the main data collection. As a result, a few modifications were made to the statements, and to manage the length of the response time, the researcher decided that participants respond to the survey battery in two separate 30-minute sittings, Part I and Part II, within 2- to 4-week intervals.

Ethical standards in regards to privacy, confidentiality, and data preservation were followed. To ensure confidentiality, random numbers were assigned to students' names, and a file with the name of participants and their numbers remained with only the principal investigator to match the answers in Parts I and II. After pairing the data, this file was deleted from the record to assure that participants would remain unidentifiable.

Procedural Considerations to Avoid Common Method Biases

Common method variance is the variance that can be attributed to the measurement method, instead of the constructs being measured (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003), which is not desirable. It produces biased parameter estimates that weaken the validity of the study (Podsakoff et al., 2003; Reio, 2010). In the present study, some procedural considerations were taken to avoid systematic measurement errors and common method biases as much as possible.

For instance, the ambiguity of instructional statements, questions, and scales were detected and resolved using the comments from the small pilot study which took place

before the main data collection. In addition, in this study, the researcher guaranteed the confidentiality of the participants, asked participants for their honest response, used different scaling and endpoints for criterion and predictor variables, avoided the use of bipolar numerical scale (e.g., -5 to +5), and provided verbal labels for different scale points, which all are considered procedural remedies for common method biases (Podsakoff et al., 2003; Reio, 2010).

Moreover, well-being, general metacognitive competence, the global sense of need-satisfaction, non-defensiveness, and demographics were measured in Part I, while self-actualization and goal-related need-satisfaction were measured in Part II, within 2- to 4-week intervals. In this study, self-actualization was the main direct predictor of well-being and the criterion variable for five out of nine hypotheses. Thus, measuring it separately from other variables would control the common contextual bias on criterion and predictor variables if they would be measured in the same time or context (Podsakoff et al., 2003). Well-Being as the main criterion variable was placed before all other measures in the Part I battery of questionnaires to reduce the effect of responses to measures of predictor variables on responses to measures of well-being. Measures for other predictor variables were presented in different order to different participants to counterbalance the response set bias (Hinkle et al., 2006; Ruble & Stout, 1990, 1991).

Instrumentations

This section introduces the original measures which were adopted, modified, developed, and used for data collection in this study. The details of total scores computation for each construct under the study is explained in Chapter 4 because as a result of exploratory factor analysis (EFA), which was conducted to provide estimates of

validity for these measures (reported in Chapter 4), items which did not load on any factors were eliminated from the subsequent calculations. Thus, when calculating the total scores in Chapter 4, the number of items in each measure was different from what is presented in this chapter. Subscales were also changed based on identified factor structures. The details of EFA and total scores computations for each measure are presented in Chapter 4.

Demographic Measure

Socio-Demographic information was collected including age, gender, ethnicity, parenthood, participants' country of origin, years of living in U.S., their educational level (freshman, sophomore, junior, senior, graduate), and their academic major. The demographic information was collected to identify characteristics of the sample and to allow for controlling the effects of these factors on the main variables. Their possible differentiating effects on variables of interest (i.e., metacognition, need-satisfaction, non-defensiveness, self-actualization, and well-being) were analyzed using linear regression analyses. Accordingly, demographic variables with significant regression weights were used as control variables (or covariates) and grouping variables, as appropriate, in testing the hypotheses.

Measures of Well-Being

To measure well-being, measures of eudaimonic and hedonic well-being were used (Table 1). The details on the measures of eudaimonic well-being and hedonic well-being are presented in Appendix A. The overall well-being scores were calculated summing the standardized scores on eudaimonic well-being and hedonic well-being. Higher total score represent experiencing higher level of overall well-being.

Eudemonic well-being. Eudaimonic well-being, as discussed in Chapter 1 and 2, involves personal expressiveness (Waterman et al. 2010) which manifests itself in form of meaning and engagement in life (Peterson et al., 2005). A questionnaire consisting of a slightly modified version of 21-item Questionnaire for Eudaimonic Well-Being (QEWB; Waterman et al., 2010) and seven items borrowed from Life Regard Index-Revised (LRI-R; Debats, 1998) was used to measure eudaimonic well-being.

Table 1
Measures of Well-Being

Research variable	Original measures	#of Items used ^a	Modifications to items
Well-Being		52*	
(1) Eudaimonic		27*	
	Questionnaire for Eudaimonic Well-Being (QEWB; Waterman et al., 2010)	20 out of 21	Slightly modified
	Life Regard Index-Revised (LRI-R; Debats, 1998)	7 out of 28	No modification
(2) Hedonic/		25*	
Subjective	Positive Affect and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988)	20 out of 20	No modification
	Satisfaction With Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985)	5 out of 5	No modification

^a # of items that was originally used for the data collection. After exploratory factor analysis for validation study, some items were eliminated and the total scores were computed excluding those items.

*Total number of items in each scale or subscale

LRI was developed by Battista and Almond (1973) and was modified by Debats (1998) as a measure of personal meaning. Only seven items from a pool of 28 were used as part of the measure of eudaimonic well-being. Thus, the reliability and validity of the measure is not reported here. They were added to the QEWB to enrich the meaning-

oriented content of the measure of eudaimonic well-being. The items on LRI-R were rated on a 3-point scale 1 being *Do not Agree*, 2 being *No Opinion*, and 3 being *Strongly Agree*. Example items are “*I have real passion in my life*” or “*I feel that I’m really going to attain what I want in life*” (Debats, 1998, p.250). The scale points for these items were changed to match the QEWB scale points.

The QEWB was developed by Waterman et al. (2010) and claimed to measure well-being in a manner consistent with Aristotelian conceptualization of eudaimonia. Aspects of eudaimonic well-being assessed by the QEWB include self-discovery, perceived development of one’s best potentials, a sense of purpose and meaning in life, intense involvement in activities, investment of significant effort, and enjoyment of activities as personally expressive (Waterman et al., 2010). The measure was a 5-point Likert scale, 0 being *Strongly Disagree* and 4 being *Strongly Agree*. Example items are “*my life is centered around a set of core beliefs that give meaning to my life*” or “*I believe I know what my best potentials are and I try to develop them whenever possible.*”

Waterman et al. (2010) reported reliability and validity estimates for the QEWB. Confirmatory factor analysis supported the unifactorial structure of the QEWB (factor loadings ranged from .60 to .87 in two samples). The internal consistency of the scale was high; Cronbach’s alpha was approximately .86 in two samples. Convergent validity, discriminant validity, construct validity, and incremental validity of the QEWB were supported by Waterman et al. (2010) across two samples. The convergent validity of the scale was strongly supported by testing the relationship between QEWB and identity commitment (r ranging from .41 to .69 in magnitude for different subscales), with Psychological Well-Being (r ranging from .23 for the Positive Relationship with Others

Subscale to .56 for the Self-Acceptance Subscale) and with Satisfaction with Life ($r = .47$). To support the discriminant validity of the measure, they relied on the modest relationship of QEWB with identity exploration (in breadth and depth; r ranging from .14 to .27) compared to its strong relationship with identity commitment, and the modest relationship of QEWB with personality traits (r ranging from .20 to .29 in magnitude on Big Five Personality Traits; $r = .05$ on sensation seeking) compared to its strong relationship with PWB and SWB (i.e., Subjective Well-Being). The construct validity of QEWB was supported demonstrating on average a moderate correlation with different variables representing positive or negative psychological well-being (i.e., self-esteem [$r = .64$], internal locus of control [$r = .38$], anxiety [$r = -.41$], and depression [$r = -.33$]).

Further, incremental validity was supported by examining how much of the unique variance EWB accounted for over and above SWB and PWB in predicting identity commitment, positive psychological functioning (e.g., self-esteem) and negative psychological functioning (e.g., anxiety). All correlations were significant at $p < .001$. Waterman et al.'s (2010) study showed SWB was better predictor of negative psychological functioning than EWB while EWB was better than SWB and PWB in predicting positive psychological functioning and identity commitment. The unique variance explained by EWB in predicting identity commitment and positive psychological functioning exceeded (at least 3 times above) the amount of variance accounted for by SWB and PWB (except for one subscale of identity commitment in which it was equal to the variance accounted for by SWB).

Modifications. The QEWB was slightly modified in terms of wordings of two items to enhance clarity. Item 14 was eliminated because its content reflects actualizing

attitude, one component which was intended to be measured in the present study when measuring self-actualization. To enhance clarity of the content, items 13 and 17 were modified in terms of their wordings. Item 13, “*I believe it is important to know how what I’m doing fits with purposes worth pursuing*” was changed to “*I believe it is important to know what I’m doing is something worth pursuing.*” Item 17, “*I find a lot of the things I do are personally expressive for me*” was changed to “*I find a lot of the things I do are aligned to who I really am.*”

From LRI-R, only seven items from a pool of 28 were identified by the researcher as statements that possibly account for variance in eudaimonic well-being in addition to the variance accounted for by the QEWB. Thus, those items interspersed among the QEWB’s items to measure eudaimonic well-being. The same instruction as presented in Waterman et al. (2010) was used for rating these statements. The measure of eudaimonic well-being (i.e., a combination of the QEWB and LRI-R) with the full instructional guide to answer the questionnaire has been provided in Appendix A.

Scoring. Items were rated on a 5-point Likert scale, 0 being *Strongly Disagree* and 4 being *Strongly Agree*. Items labeled (R) were reversed coded. Thus, higher scores reflect higher level of eudaimonic well-being. Scores for all items on the validated measure were added to create a total score for eudaimonic well-being.

Hedonic well-being. Hedonic well-being or subjective well-being (SWB) has been known by three general components: (a) Positive Affect, (b) Negative Affect, and (c) Judgment of Life Satisfaction (Andrews & Withey, 1976; Deci & Ryan, 2008; Diener, 1984; Diener, Suh, Lucas, & Smith, 1999). Several studies have used the combination of these components to assess SWB (e.g., Fowers et al., 2010; Sheldon & Elliot, 1991).

Accordingly in the present study, hedonic well-being was measured (total of 25 items) using two measures of subjective well-being (SWB), The Satisfaction with Life Scale (SWLS; Diener et al., 1985) measuring the cognitive aspects of SWB (5 items) and the Positive and Negative Affect Schedule (PANAS; Watson et al., 1988) measuring the affective aspects of SWB (20 items).

Scoring. Taking the approach used in Sheldon and Elliot's (1991) study, the total scores on each measure were standardized. Then, scores on negative affect were subtracted from the sum of scores on life-satisfaction and positive affect to create total scores for hedonic well-being. Higher total scores reflect higher level of subjective well-being.

The Satisfaction with Life Scale. The Satisfaction with Life Scale (SWLS; Diener et al., 1985) was used to measure the cognitive component of subjective well-being. Several studies used this scale as a measure of SWB (e.g., Waterman et al., 2010). The SWLS consists of five statements reflecting contentment and life satisfaction to be answered on 7-point Likert-type scale ranging from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*). One example of items is "In most ways my life is close to my ideal." Cronbach's alpha reported for SWLS scores was around 0.87 (Diener et al., 1985; Waterman, et al., 2010). Test-retest reliability coefficients obtained over a 2-month period (Diener et al., 1985) and over a 4-year period (Magnus, Diener, Fujita, & Pavot, 1993) were .82 and .54 respectively. Pavot and Diener (1993) reported its convergent validity with regard to other measures of life satisfaction and SWB. Its discriminant validity was also supported when tested in relation to anxiety, depression and general psychological distress (Arrindell, Meeuwesen & Huyse, 1991).

Positive and Negative Affect Schedule. The affective component of subjective well-being was measured with the Positive and Negative Affect Schedule (PANAS; Watson et al., 1988), a well-validated measure of the intensity of positive and negative emotional experiences. Several studies used this measure or other measures of positive/negative affect as an indicator of SWB (e.g., Sheldon et al., 2002). PANAS includes 20-item, 10 items representing positive affect (PA) and the other 10 items representing negative affect (NA). Examples are *interested, upset, distressed, and excited*. Participants were asked to answer “to what extent you generally feel this way” on a 5-point Likert scale ranging from 1 (*very slightly or not at all*) to 5 (*extremely*). The internal consistency of this scale was reported ranging from .86 to .90 for positive affect and from .84 to .87 for negative affect (Watson et al., 1988). The test-retest reliability over an 8-week period showed that when the participants were instructed to rate their affects for a longer period (e.g., year or general) the responses were more stable ($r = .68$ for PA; $r = .71$ for NA) compared to shorter period (e.g., today; $r = .47$ for PA; $r = .39$ for NA; Watson et al., 1988). Strong convergent and discriminant validity was reported for the PANAS. NA showed moderate positive correlations with other measures of negative affect (e.g., The Beck Depression Inventory; $r = .58$), and PA showed moderate negative correlation ($r = -.36$).

Measures of Self-Actualization

Rule (1999) challenged the mere personality-oriented view of self-actualization suggested by Shostrom (1964) and Jones and Crandall (1986). In the present study, self-actualization was measured taking Rule’s (1999) goal-oriented approach and with a consideration of self-actualization as a *process* that takes into account the concept of

actualization, as a goal-oriented process, as well as the concept of *self*, as a personality trait. For measuring self as a construct, two concepts were measured: (a) Actualizing Disposition and (b) Actualizing Initiation. For measuring the *process* of actualization, three concepts were measured: (a) Goal Attribution/ Goal Self-Concordance (4 items per goal), (b) Goal Aspiration (11 items per goal), and (c) Goal Striving (6 items per goal). Table 2 presents measures and supporting literature used to make up the measures of self-actualization. The details for the measures of self-actualization are presented in Appendix B. The total scores for actualizing-self and actualizing-striving were standardized and summed to construct a single score for self-actualization.

Measure of Actualizing-Self. Self or *Actualizing-Self* was measured by 29 items as two components: (a) Actualizing Disposition (27 items) and (b) Actualizing Initiation (2 items). A total score for Actualizing-Self was obtained summing the item scores of validated Measure of Actualizing-Self (MASelf; see Chapter 4).

Actualizing Disposition. The present study approached *self* in self-actualization by measuring *Actualizing Disposition* using the Measure of Actualization of Potentials (MAP; Leclerc, Lefrançois, Dubé, Hébert, & Gaulin, 2002). MAP includes 27 sentence-completion items that intended to capture typical traits of self-actualizing individuals. Participants use 5-point Likert scale (worded differently for different set of items. For example, for the item “*I am a person who values him/herself _____,*” responses are ranging from 1 (*very little*), to 5 (*enormously*); for another item, for instance, “*I _____ give my life meaning by the way I look at things,*” responses are ranging from 1 (*very rarely*) to 5 (*very often*). Some details for MAP are presented in Appendix B.

Content validity of the measure was established using “Delphi technique involving an international panel of 28 scientific and clinical experts” (Lefrançois, Leclerc, Dubé, Hébert, & Gaulin, 1998, p. 875). An initial factor analysis (Lefrançois et al., 1997) yielded two main dimensions for MAP, Openness to Experience (17 items) and Self-Reference (10 items). Openness to Experience is comprised of three subdimensions: Openness to Others, Openness to Life, Openness to Self. Leclerc, Lefrançois, Dubé, Hébert, and Gaulin (1999) recommended using the overall score or score on two main dimensions (which was calculated by averaging item scores), rather than subdimensions. They advised that the validity of subdimensions needs to be supported by further research before they can be confidently used in interpreting the data (Leclerc et al., 1999).

The measure also showed acceptable reliability. Test-retest reliability showed an acceptable stability of the results (the Pearson correlation coefficient ranging from .67 to .88). Cronbach’s alpha for the overall-scale was .90 and the intraclass coefficient was .87. For criterion validity, moderate correlations were found between clinical psychologists' ratings and self-report rankings of participants (.62 for the overall-scale and between .61 and .53 respectively for Openness to Experience and Reference to Self subscales).

Actualizing Initiation. Actualizing Initiation was measured using two statements adopted from the 9-item Personal Growth Initiative Scale (PGIS; Robitschek, 1998): “*If I want to change something in my life, I initiate the transition process,*” rated on a 5-point scale ranging from 1 (*not me at all*) to 5 (*definitely me*) and “*I have a plan for making my life more balanced,*” rated on a 5-point scale ranging from 1 (*not at all*) to 5 (*very much*).

Scoring. Higher scores on actualizing disposition items indicate higher level of actualizing disposition, except for items 6, 11, and 21 which were reverse coded for the purpose of scoring. Higher rating scores on actualizing initiation items indicate higher level of actualizing initiation. Detailed scoring for the Measure of Actualizing-Self (MASelf) is presented in Chapter 4.

Measure of Actualizing-Striving (MAStriving). The process of actualization was labeled as *Actualizing-Striving* and measured by 20 items per goal as three-component construct: (a) Goal Self-Concordance or Goal Attribution (4 items per goal); (b) Goal Aspiration (11 items per goal), and (c) Goal-Striving (6 items per goal). Table 2 presents the measures and supporting literature that made up the Measure of Actualizing-Striving. Participants were asked to list five personal goals (the number five was chosen according with Sheldon (2004) stating that self-concordance studies ask participants to list 5 to 15 goals). Participants were asked: *Please think of your personal projects you want to accomplish, your goals you are concerned about when planning for your future, and goals that inspire you in your everyday life. Personal goals might involve various life areas, as for example study, family, friends, your own personal growth, leisure time, health, jobs, housing conditions, etc. Focus on long-term goals (e.g., to improve the relationship with a friend) rather than on single behavioral acts or short-term pursuits (e.g., to buy a present for a friend next week).* Then they were asked to rate some statements and answer some questions for each goal about their goal striving and why they are pursuing these goals. Questions and statements are presented in Appendix B.

Goal Self-Concordance/Goal Attribution. Statements 1 to 4 in the Measure of Actualizing-Striving (MAStriving) are based on Ryan and Connell's (1989) studies of

Table 2
Measures of Self-Actualization

Research variable	Original measures	# of Items used ^a	Modifications to items
Self-Actualization		29 + (21 per goal)*	
(a) Measure of Actualizing-Self		29*	
(1) Actualizing Disposition	The Measure of Actualization of Potentials (MAP; Leclerc et al., 2002)	27 out of 27	No modification
(2) Actualizing Initiation	Personal Growth Initiative Scale (PGIS; Robitschek, 1998)	2 out of 9	No modification
(b) Measure of Actualizing-Striving		21 per goal*	
List of 5 Personal Goals	An instructional guide was developed		
(1) Goal Self-Concordance	Sheldon (2004)/Ryan and Connell (1989)	4 out of 4	No modification
(2) Goal Aspiration	Developed guided by the concepts of: constitutive versus instrumental goal orientations (Fowers et al., 2010) Intrinsic and extrinsic goal aspirations (Grouzet et al., 2005; Kasser & Ryan, 1996) Virtue and strength (Seligman, 2002) Personal expressiveness (Waterman et al., 2010)	11*	
(3) Goal Striving		6*	
	Importance & Effort (Emmons, 1999)	2 out of 2	Slightly modification
	Clarity (PGIS; Robitschek, 1998)	2 out of 9	No modification
	Inspiration (Milyavskaya, Ianakieva, Foxen-Craft, Colantuoni, & Koestner, 2012)	2 out of 2	Slightly Modified

^a # of items that was originally used for the data collection. After exploratory factor analysis for validation study, some items were eliminated and the total scores were computed excluding those items.

*Total number of items in each scale or subscale

perceived locus of causality and internalization and were used or referred to by Sheldon and his colleagues (Sheldon, 2002; Sheldon & Elliot, 1999; Sheldon & Houser-Marko, 2001) to measure goal self-concordance and used by Emmons (1999) to measure attribution in his Striving Assessment Scale. These statements ask participants: To what extent you pursue the goal: “*because you endorse it freely and value it wholeheartedly*” (identified motivation), “*because of the enjoyment or stimulation which that goal provides you*” (intrinsic motivation), “*because somebody else wants you to or because the situation seems to compel it*” (external motivation), and “*because you compel yourself because you would feel ashamed, guilty, or anxious if you didn’t*” (introjected motivation). The rating was made on a 7-point Likert scale ranging from 1 (*not at all for this reason*) to 7 (*very much for this reason*). The two last statements were reverse coded because they represent goal pursuits that are not self-concordant. Scores were summed for each goal and were averaged across five goals.

Goal Aspiration. Statements 5 to 15, developed for this study, are primarily in accordance with three conceptualizations of goal pursuits: (a) An Aristotelian view of constitutive versus instrumental goal orientations proposed by Fowers et al. (2010), (b) Intrinsic and extrinsic goal aspirations (Grouzet et al., 2005; Kasser & Ryan, 1996), (c) Seligman’s (2002) conceptualization of virtue and strength (which is partially based on Aristotelian perspective of eudaimonia), and (d) personal expressiveness (Waterman et al., 2010). Constitutive orientation of goal pursuits is when one pursues a goal for its own sake and its own value. Instrumental orientation of goal pursuit is about pursuing the goal as a means in order to gain some other goals. The items also represent different intrinsic (e.g., growth, helpfulness, meaning-seeking) and extrinsic (e.g., image, fame,

popularity, or money) aspirations consistent with Kasser and Ryan (1996) and Grouzet et al. (2005). Although this latter concept was discussed in the literature (Grouzet et al., 2005; Kasser & Ryan, 1996) as goal content or “what” of the goals (Ryan et al., 2008), aspirations may reflect *why* of the instrumental goals. There is also one statement which represents personal expressiveness conceptualized by Waterman (1993). It was categorized as intrinsic aspiration in this study. These statements were designed to assess whether pursuing a goal is guided by a constitutive or instrumental orientation, and if the goal orientation is instrumental, whether or not it is directed by intrinsic or extrinsic aspirations. Statements are presented below.

Participants were asked to what extent they pursue each goal: “*because it is good by itself*” (constitutive orientation); “*because it makes you a better person*” (growth/character); “*because it makes you look better among your friends, family, or other people in general*” (image aspiration); “*because it makes other people’s lives better*” (helpfulness); “*because it makes you well-known*” (fame); “*because it helps you with financial success*” (money); “*because people will like you more*” (popularity); “*because it makes your life more meaningful*” (meaning-seeking); “*because it makes you use and build upon your potentials*” (growth); “*because it reflects who you are*” (personal expressiveness); and “*because it makes you learn new things about yourself and/or the world.*” The same scale as goal self-concordance was used to rate these statements. The rating was made on a 7-point Likert scale ranging from 1 (*not at all for this reason*) to 7 (*very much for this reason*). The statements reflecting instrumental orientations (i.e., image, fame, popularity, and money) were reverse coded. Scores were summed for each goal and were averaged across five goals.

Goal Striving. Goal striving was measured by six items measuring three dimensions: Importance, Effort, Inspiration, and Clarity. Two questions (items 18 and 21) were borrowed from Emmons' (1999) Striving Assessment Scales (SAS) which is part of the Personal Striving Assessment Packet (PSAP). The one addressing Importance asks participants about the importance of the goal and how committed they are to their goal pursuit. Participants answered this question on a scale of 1 (*not at all important*) to 6 (*extremely important*). The other one addressing Effort asks participants about their time and effort they usually invested in attaining each goal. Participants answered to this question on a scale of 1 (*not at all*) to 6 (*very much*). Although Emmons (1999) was interested in how much effort or energy is required to accomplish a goal, the present study was interested in how much effort and energy one generally invests in pursuing one's goal. The present study used the theme of the questions presented for Importance and Effort in Emmons (1999; pp. 184-185).

Inspiration was measured (items 19 and 20) using a 2-item goal inspiration measure developed by Milyavskaya, Ianakieva, Foxen-Craft, Colantuoni, and Koestner (2012): "*How inspiring is this goal to you?*" and "*How inspired are you to pursue and reach this goal?*" Participants were asked to answer to these questions on a 7-point Likert scale (1 = *not at all* to 7 = *extremely*). Milyavskaya et al. (2012) reported that inter-item correlation was equal or greater than .75 for $p < .001$. Cronbach's alpha was .80 at baseline and .78 at the follow-up.

Also two statements (items 16 and 17) were borrowed from PGIS to find how clear one is about how to pursue one's goal (i.e., Clarity; the idea of clarity however has been taken from Emmons, 1999): "*I know what I need to do to get started toward*

reaching my goals,” and *“I have a specific action plan to help me reach my goals.”*

These statements were used instead of Emmons’ (1999) question about clarity because they are more concrete and specific. Following Emmons’ (1999) rating scale, four items were rated on a 6-point scale ranging from 1 (*not at all*) to 7 (*very much*). The questions and their full instructions are presented in Appendix B.

Scoring. For goal self-concordance and goal aspirations, the items (1, 3, 5, 6, 8, 10, 12, 14, 15; see Appendix B) representing more eudaimonic aspects of goal pursuits (i.e., identified motivation, intrinsic motivation, constitutive orientation, growth, helpfulness, meaning-seeking, and personal expressiveness) were coded as they were rated. The other items that reflect instrumental orientations, extrinsic aspirations (i.e., image, fame, popularity, and money), and controlled motivations (i.e., external motivation and introjected motivation) were reverse coded. For obtaining a total score on Actualization-Striving, item scores were averaged across five goals and summed.

Measures of Need-Satisfaction

Need-Satisfaction was measured taking two approaches used in Sheldon and Elliot (1999). Table 3 presents measures and supporting literature that were used to compose the measures of need-satisfaction.

General Need-Satisfaction. The first approach was to measure need-satisfaction in general sense (3 items) asking participants to rate “the extent to which you are having each of these three types of experience in your life, at present” (p. 488). Then the three types of experience were presented based on conceptual definition of basic psychological needs (i.e., competence, autonomy, and relatedness) by Deci and Ryan (1991): “feeling generally competent and able in what I attempt” (Competence); “feeling generally

autonomous and choiceful in what I do” (Autonomy); “feeling generally related and connected to people I spend time with” (Relatedness). Participant were asked to rate their experience on a 7-point Likert scale ranging from 1 (very little) to 7 (very much).

Goal-Related Need-Satisfaction. The second approach asked participants (6 items per goal) about their need-satisfaction experience in relation to each goal, which

Table 3
Measures of Need-Satisfaction

Research variable	Original measures	# of Items used ^a	Modifications to items
Need-Satisfaction	Sheldon and Elliot’s (1999) approach	33*	
(a) General Need-Satisfaction	Competence, Autonomy, Relatedness	3 out of 3	No modification
(b) Goal-Related Need-Satisfaction		6 per goal*	
Competence	Goal-related Competence	1 out of 1	No modification
Autonomy	Self-concordant goals	4 out of 4	No modification
Relatedness	Support in SAS (Emmons, 1999)	1 out of 1	Slightly modified

^a # of items that was originally used for the data collection. After exploratory factor analysis for validation study, some items were eliminated and the total scores were computed excluding those items.
*Total number of items in each scale or subscale

they had already listed on the questionnaire (Sheldon & Elliot, 1999). For *competence* (1 item), participants rated how competent they feel while striving for each goal. The same rating as general need-satisfaction ratings were used for competence. *Autonomy* score was obtained from 4-item measure of goal self-concordance. This measure is mainly known as the measure of goal self-concordance. Self-concordance is referred to “the feeling that one’s goals are internally caused” (Sheldon, 2004, p. 105), which is also congruent with more autonomy in goal pursuits. In accordance with Sheldon and Elliot’s

(1999) approach, the score on each autonomy item was calculated by averaging ratings for external motivation, introjected motivation, identified motivation, and intrinsic motivation across five goals (no reverse coding; all ratings were coded from 1 to 7 for all statements). Then external and introjected motivation scores were subtracted from the sum of identified and intrinsic motivation scores.

Relatedness during actualization striving was measured using support dimension (1 item) of Emmons' (1999) SAS asking "what impact do the important people in your life have on each striving?" (p. 188), Keeping in mind the person who has the most impact on their goal striving (either positive, negative, or both), participants rate this question on a 7-point Likert scale ranging from 7 (extremely supportive of my efforts at achieving this goal) to 1 (an extremely hindrance to my efforts at achieving this goal). The question was adopted from Emmons (1999) and slightly modified to fit the intent of the present study (Appendix C).

Scoring. Scores for each need (i.e., competence, autonomy, and relatedness) in general and across five goals were averaged. A total score for need-satisfaction then obtained summing all these average scores across three basic needs. All items used in measuring need-satisfaction are presented in Appendix C.

Measures of Non-Defensiveness

Non-Defensiveness was measured using the 28-item Brief COPE (Carver, 1997). The Brief COPE was formed by reducing the size of the COPE inventory (Carver, Scheier, & Weintraub, 1989) in an attempt to make a feasible scale in terms of length and completion time. There are 14 subscales (i.e., Active Coping, Planning, Positive Reframing, Acceptance, Humor, Religion, Using Emotional Support, Using Instrumental

Support, Self-Distraction, Denial, Venting, Substance Use, Behavioral Disengagement, Self-Blame) each consists of two items. To develop the Brief COPE, the selection of items for each subscale was based on their high loadings on that subscale in the original version of COPE inventory and their clarity and ease of communication (Carver, 1997). The items for each subscale are presented in Appendix D. A small modification was made to Substance Use items by substituting the verb *use* by *think about using*.

For the purpose of the present study, items on Substance Use, Behavioral Disengagement, Venting, Self-Distraction, Denial, and Self-Blame were formed the Measure of Defensiveness; and items on Humor, Religion, Use of Emotional Support, Use of Instrumental Support, Planning, Active Coping, and Positive Reframing were used as the Measure of Adaptive Coping. Participants rated each items on a 4-point Likert scale using a dispositional response format, 1 (*I usually don't do this at all*), 2 (*I usually do this a little bit*), 3 (*I usually do this a medium amount*), and 4 (*I usually do this a lot*). Participants were instructed as follows:

We are interested in how people respond when they confront difficult or stressful events in their lives. There are lots of ways to try to deal with stress. This questionnaire asks you to indicate what you generally do and feel, when you experience stressful events. Obviously, different events bring out somewhat different responses, but think about what you usually do when you are under a lot of stress (Adopted from Carver et al., 1989, p. 271). Think about what you do, not what most people do.

Scoring. Item scores on Defensiveness were reverse coded. Total scores for Non-Defensiveness then were calculated summing all item scores on Measures of

Defensiveness and Adaptive Coping. Higher scores indicate use of more functional or adaptive defense/coping mechanisms (lower defensiveness) and lower scores reflect higher defensiveness or more use of dysfunctional/ maladaptive defense/coping mechanisms.

The Measure of General Metacognitive Competence (MGMC)

General metacognitive competence was measured using a modified version of the Metacognitive Awareness Inventory (MAI; Schraw & Dennison, 1994). MAI is a 52-item instrument developed to measure metacognition. Schraw and Dennison's (1994) confirmatory factor analysis of the instrument supported the two-component model of metacognition including metacognitive knowledge and metacognitive regulation (Brown, 1987, Flavell, 1987, Jacobs & Paris, 1987). Schraw and Dennison (1994) investigated the reliability and validity of MAI. Internal consistency for two subscales of this inventory, knowledge of cognition and regulation of cognition, was ranged from .88 to .93 and a high coefficient alpha for the entire instrument was reported ranging from .93 to .95.

Examples of items in each subscale respectively are "*I understand my intellectual strength and weaknesses,*" or "*I ask myself if there was an easier way to do things after I finish a task.*" The factors appeared to be strongly intercorelated, ($r = .45$ and $r = .54$, from two different studies). However, this relationship was not compensatory as each subscale made a unique contribution to cognitive performance (Schraw & Dennison, 1994). Convergent validity of MAI was tested investigating the predictive validity of MAI with regard to other measures of metacognitive awareness and performance (e.g., judgment of monitoring ability and test performance; Schraw & Dennison, 1994). The

average completion time reported for this instrument was approximately 10 min (Schraw & Dennison, 1994).

Modifications. The questionnaire starts with a guiding statement (added to the original instrument) and followed by actual statements for participants to rate them: “*When problem-solving, whether I am in an academic setting (e.g., learning, studying, taking a test, etc.) or in a real-world situation (e.g., planning, finding my way in a new town, looking for a job, giving advice to a friend on a personal problem, dealing with an emotional distress, etc.)*.” Items 4, 15, 16, 41, and 46 were eliminated due to their specificity to the academic setting. As a result the modified version of this instrument consists of 47 items, 34 of them represent metacognitive regulation and the rest (13 items) represent metacognitive knowledge. Some modifications on how the statements are worded were made to make them suitable for assessing metacognition in a more general sense. The original items of MAI and the modified version of them are presented in Appendix E. The Measure of General Metacognitive Competence, used in this study, is presented in Appendix F.

Scoring. In the original instrument, the scores on each item is obtained from rating marks made on a 100-mm, bi-polar scale adapted from the multidimensional scaling literature, the right end indicated that the statement is completely false about the participant and the left end indicating it is completely true. To make the utilization of the scale more feasible, the modified version used an 11-point Likert scale 0 being *not at all* and 10 being *all of the time*, 5 is a middle point indicating *half of the time*. Previous studies (e.g., Kleitman & Stankov, 2007) also used Likert scales instead of bi-polar scale. Kleitman and Stankov (2007) used a 6-point Likert scale. This study uses an 11-point

Likert scale which better resembles the bi-polar 100-mm scale of Schraw and Dennison (1994).

Although the two-factor solution on MAI supported the two-component model of metacognition (metacognitive knowledge and metacognitive regulation; Brown, 1987), the analysis showed some overlaps on loadings of items between the two subscales (Schraw & Dennison, 1994). Accordingly, the present study used Schraw and Dennison's (1994) approach in scoring and obtained scores on each subscale (i.e., factor) based on the results of a forced oblique two-factor solution for the construct. That is, items with factor coefficients above the cut-off point (.30) on each factor (i.e., Knowledge of Cognition or Regulation of Cognition) were summed to create scores on each subscale. A total score for General Metacognitive Competence was constructed by summing up the scores on all items loaded on Factor I and II.

Analytical Procedures

The research variables in this study were General Metacognitive Competence, Non-Defensiveness, Need-Satisfaction, Self-Actualization, and Well-Being. All data were entered into the SPSS database (version 18.0 for Windows). The data were assessed to find the flaws at the entry level. The values which were out of range and the missing data were checked against and were corrected according to the hard data. Prior to starting the analyses, missing values within each scale/subscale for each subject were replaced using mean imputation technique for the given scale/subscale (Osborne, 2013).

Statistical analyses started with a frequency analysis for sample demographics. Next, preliminary evidence for construct validity of each measure was provided using exploratory factor analysis. Accordingly, some items were eliminated from the measures

to enhance the stability of the identified factor structures. Then, total scores for each construct were calculated using the remaining items in the validated measures. In the next step, demographic variables were tested for their possible differential effect on the constructs of interest and used accordingly as control variables or grouping variables in the main analyses for hypothesis testing.

The hypotheses were tested for statistically significant relationships between constructs under the study using correlational and hierarchical regression analyses (Aiken & West, 1991; Hinkle et al., 2006). An alpha level of .05 (one-tailed) was used to test all nine directional hypotheses. Correlational analysis produces a correlation coefficient that indicates both strength and direction of relationships between variables of interest simultaneously (Hinkle et al., 2006). Hierarchical Linear Regression analysis was used to test Hypotheses 1 to 7. Hierarchical Linear Regression Analysis is an advanced form of linear regression and is used for assessing the unique variance contributed by different independent variables (Aiken & West, 1991; Hinkle et al., 2006).

To test mediations in Hypotheses 8 and 9, Shrout and Bolger's (2002) Bootstrap procedure (using Structural Equation Modeling by AMOS 18.0) was employed as an alternative to Baron and Kenney's (1986) and to MacKinnon, Lockwood, Hoffman, West, and Sheets' (2002) mediation methods. The limitations of Baron and Kenney's (1968) and of MacKinnon et al.'s (2002) methods is that they assume a normal distribution of sample and they both are applied in the case of a single independent, single dependent, and single mediator variables, which does not allow for instance the inclusion of covariates in the study. Structural equation modeling allows for any number of mediators, dependent, and independent variables (Jaccard, Guilamo-Ramos, &

Blanton, 2006). Of interest in this study was the inclusion of covariates in the model in predicting human well-being.

CHAPTER IV

RESULTS

This chapter presents the result of analyses for the study in five parts: demographics of the sample, preliminary validation of the measures and computation of total scores for constructs of interest, testing the assumptions of parametric statistics, demographic differences in constructs of interest, hypothesis testing, and summary of the chapter. Following the first section on demographic characteristics of the sample, measures were validated using exploratory factor analysis. Measures used in this study (except for the measures of Subjective Well-Being) are considered new measures due to the modifications applied to them. The Measure of Actualizing-Striving, in particular, was first developed for this study by adopting some items from different measures of goal pursuits and forming some new items guided by literature. Thus, the construct validity of the measures was investigated prior to computation of total scores and some items were eliminated as a result of the exploratory factor analysis. Total scores for constructs of interest then were calculated based on remaining items. Then, assumptions of parametric testing (i.e., multicollinearity, normality, linearity and homoscedasticity) were tested to make sure that the data were appropriate for regression analysis. Next, sample demographics were explored to determine its relationship with the constructs under study. Finally the hypotheses were examined to answer the research questions of the study.

Demographics of the Sample

Five hundreds and thirteen university students participated in this study. Demographics measure was taken on age, gender, marital status, parenthood, ethnicity,

level of education, and immigration status (immigrant or U.S. citizen). Table 4 provides a frequency table of all demographic variables.

Age. Age was measured as a continuous variable. The mean age for the sample was 25.07 with a minimum of 17 and maximum of 60 years of age ($SD = 7.21$). A frequency analysis indicated that 83.4% of participants ($n = 428$) were aged between 17 and 29. It is the age range which is typically regarded as *emerging adulthood* (Arnett, 2000). The remaining 16.6% of participants whose ages were between 30 to 60 years of age ($n = 85$) were referred to as *adults* in this study.

Table 4
Frequency Table of Demographic Variables (N= 513)

Variables	Frequency	Percent
Age		
Emerging-Adult (17- 29)	428	83.4
Adults (30- 60)	85	16.6
Gender		
Male	183	35.7
Female	330	64.3
Marital Status		
Married	89	17.3
Single	424	82.7
Level of Education		
Graduate	143	27.9
Undergraduate	370	72.1
Parenthood		
Parent	61	11.9
Non-Parent	356	69.4
Non-Respondent	96	18.7
Major		
Education	312	60.8
Non-Education	201	39.2
Ethnicity		
Hispanic	330	64.3
Non-Hispanic	183	35.7
Immigration status		
Immigrant	171	33.4
Non-Immigrant	270	52.6
Non-Respondent	72	14.0

Gender. All participants reported their gender. Out of 513 participants, 330 of them were female (64.3%) and 183 of them were male (35.7%) (dummy coded: Male = 1.0, Female = 0.0).

Marital status. A frequency analysis indicated that 17.3% of participants ($n = 89$) were married and 82.7% ($n = 424$) were single (dummy coded: Married = 1.0, Single = 0.0).

The level of education. A frequency analysis revealed that 27.9% of participants ($n = 143$) were graduate students while 72.1% were undergraduate students (dummy coded: Undergraduate = 1.0, Graduate = 0.0).

Parenthood. While 18.7% of data ($n = 96$) were missing for this demographic, 11.9% of participants ($n = 61$) reported being a parent and 69.4% of them ($n = 356$) had not experienced parenthood yet (Parenthood included three groups: Parent; Non-Parent; Non-Respondent, each of which were dummy coded, 1.0 representing membership to the group and 0.0 representing membership to the other two groups).

Major. Roughly 61% of participants ($n = 312$; 60.8%) were education majors while 39.2 % ($n = 201$) were studying in other majors (science and engineering or international relations, etc.; dummy coded: Education = 1.0, Non-Education = 0.0).

Ethnicity. Approximately 64.3% of participants ($n = 330$) identified with Hispanic ethnicity while 35.7% ($n = 183$) reported being Non-Hispanic (dummy coded: Hispanic = 1.0, Non-Hispanic = 0.0).

Immigration status. Whether the participants were immigrant was determined based on their country of origin and comparing their age with the duration they were living in the United States. Participants whose country of origin was not the United

States of America were coded as immigrants. In addition, participants who were born in U.S., but whose reported time of living in U.S. was less than their age were considered immigrants as well. A frequency analysis indicated that 14% of participants did not respond to this question while 33.3% of participants ($n = 171$) were immigrants and 52.6% of them ($n = 270$) were non-immigrants (Immigration status included three groups: Immigrant; Non-Immigrant; Non-Respondent, each of which were dummy coded, 1.0 representing membership to the group and 0.0 representing membership to the other two groups).

Preliminary Validation of the Measures and

Computing Total Scores for the Constructs of Interest

Before computing the final scores on constructs of interest, Exploratory Factor Analysis (EFA) was conducted on the different measures. This approach was taken because the measures, except for measures of SWB and Need-Satisfaction, all included modified or newly presented items or were combinations of some new and some adopted items from other measures. Exploratory Factor Analysis (EFA) using the maximum likelihood extraction technique with Promax oblique rotation was performed to identify redundant items which contribute poorly into the variance of the construct being measured (factor coefficients $< .30$) and can be excluded from the measures. To find supporting evidence for the accuracy of analyses (i.e., cross-validation), the same factor analyses was run on a random split-half sample extracted out of the original sample using SPSS Select (Random Sample of) Cases function.

The researcher also ran factor analyses before and after replacing the missing values to check for consistency of the EFA results. A few items shifted loadings on

factors but no significant discrepancy was observed between results of EFA before and after missing data replacement. That is, items which loaded on none of the components in incomplete dataset did not load on any of components in the complete dataset (factor coefficients $\geq .30$ was used as cut-off point). As a result, the items which were subject to exclusion for total score computation were the same before and after the replacement of missing data. The procedural details of EFA for each measure are presented in the following sections.

EFA on the Measures of Well-Being

Measures of subjective well-being (i.e., PANAS and SWLS) and the Measure of Eudaimonic Well-Being (MEWB) were used to measure overall human well-being in this study (see Appendix A).

Measures of Subjective Well-Being. As it was expected, EFA on the measures of subjective well-being (PANAS and SWLS) confirmed the three-component structure of the construct: Negative Affects, Positive Affects, and Life Satisfaction (minimum factor coefficient was .46). Because the exact original measure was used with no modification and the measure was already well-validated, no further analyses were deemed necessary to provide evidence of validity. Internal consistency of the scales was good ($.70 < \alpha < .80$ is a respectable range and $.80 < \alpha < .90$ is considered very good range of internal consistency; DeVellis, 2012): $\alpha = .84$ for Satisfaction with Life; $\alpha = .86$ for Positive Affect; and $\alpha = .82$ for Negative Affect. Considering Subjective Well-Being as the composite of all three measures, Cronbach's alpha for the overall measure was .87.

Computation of total score for Subjective Well-Being. Item-ratings on each measure were summed up to calculate the total score for (10-item) Positive Affect ($M =$

38.41, $SD = 6.21$), (10-item) Negative Affect ($M = 19.83$, $SD = 6.04$), and (5-item) Life Satisfaction ($M = 24.76$, $SD = 6.31$). To compute the total score for SWB, according to Sheldon and Elliot (1999), scores on each variable were standardized and a composite score was computed adding the standardized scores for Positive Affect and Life Satisfaction and subtracting standardized scores on Negative Affect from them,³ $M = 0.0$, $SD = 1.61$.

The Measure of Eudaimonic Well-Being (MEWB). For the measure of eudaimonic well-being, this study used 20 items from QEWB (Waterman et al., 2010) plus seven items from LRI-R (Debats, 1998) (see Appendix A).

Data screening on MEWB prior to the factor analysis. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO test) showed an excellent sample adequacy for factor analysis (.914). Bartlett's Test of Sphericity also was significant ($p < .001$) indicating that factor analysis was appropriate for this sample. To check for normality in large samples ($n > 200$), the absolute values of skewness and kurtosis should be examined rather than relying on significant test for normality (Field, 2009; Tabachnick & Fidell, 2007). For large samples, extreme non-normality is commonly detected by absolute value of skewness and kurtosis larger than 3.0 and 10.0 respectively (Kline, 2009) while moderate non-normality is evident if $|skewness| > 2.0$ and $|kurtosis| > 7.0$ respectively (West, Finch, & Curran, 1995). For 27 variables (items) in MEWB, maximum skewness value was 1.895 and maximum kurtosis value was 4.815, both less than the critical values.

³ To be consistent throughout the study, the standardization of scores for each measure was continued where the total score on the construct of interest was a combination of scores on different measures.

Moreover, linearity was tested using random pairwise scatterplots of the variables. Although the plots departed from linearity, there was no evidence of curvilinearity. Thus, the linearity assumption was not a problem (Tabachnick & Fidell, 2007). Furthermore, because the number of outliers for none of the variables exceeded 2% of the cases, it was decided not to exclude outliers from the subsequent analyses (Cohen & Cohen, 1983). Multicollinearity was examined between the 27 items in MEWB and no multicollinearity was detected (all VIFs < 3.0).

Identifying item-candidates for elimination. In the EFA output, the Kaiser's rule of eigenvalues above 1.0 identified six components. However, the scree test highlights two to three components. In addition, an a priori criterion based on theory (Peterson et al., 2005) implies two eudaimonic routes to happiness: Engagement and Meaning. Using the maximum likelihood extraction, EFA was run for both two and three-factor solutions. The two-factor solution accounted for a greater amount of variance in the construct (37.41%) with fewer numbers of items (21 items) compared to the three-factor solution (26 items; 36.31%).⁴ The pattern matrices resulted from Promax oblique rotation for both the full sample and the random split-half sample identified 6 items (5, 8, 10, 13, 14, and 17) that did not load on any of the factors. Item 8 which loaded only in the split-half sample on Factor I by the lowest factor coefficient (.32) was eliminated because its elimination improved the amount of variance accounted for by 1.14%.

Preliminary evidence of validity and reliability. The maximum likelihood extraction with a Promax oblique rotation was used to provide evidence for the construct

⁴ The variance accounted for by the two-factor solution for MEWB was 10.23% greater than the variance accounted for by the two-factor solution for QEWB (27.18%), the original measure of eudaimonic well-being. It implies that items from LRI-R can be considered meaningful additions to the measure.

validity of the measure. After eliminating items 5, 8, 10, 13, 14, and 17, the factor solution matched the hypothesized factor structure for the construct of Eudaimonic Well-Being. Items 9, 20, 24, 2, 25, 11, 26, 6, 16, 21, 27, 15, 4, and 1 (14 items) formed Factor I, Meaning in Life and items 19, 18, 12, 22, 7, 3, and 23 (7 items) formed Factor II, Pleasure of Engagement. The total variance in the construct accounted for by the two factors before rotation was 37.41%. The result of EFA for the MEWB is presented in Table 5.

Reliability. Internal consistency of the scale was examined by calculating the Cronbach's alpha. Cronbach's alpha for the new 21-item MEWB was .89, for Meaning in Life $\alpha = .90$, for Pleasure of Engagement $\alpha = .70$. All Cronbach's alphas were at or above .70 which is evidence of acceptable internal consistency ($.60 < \alpha < .70$ is considered the minimal level of acceptability; Hair et al., 1998).

Discriminant validity. As preliminary evidence of discriminant validity, the correlation coefficient between the factors equals .53 which did not reach the critical value of .8 or .85 (i.e., indicators of poor discriminant validity; Cabrera-Nguyen, 2010; Kline, 1998). There was also no cross-loading of items (except for item 15 in the split-half sample/validation sample). These results indicated that the factors were not considered highly correlated and discriminated among items.

Convergent validity. All items were correlated to the factors with factor coefficients above .30, which is high enough for a sample size over 350 as the preliminary evidence of convergent validity (Hair, Anderson, Tatham, & Black, 1998).

Computation of total score for Eudaimonic Well-Being. The total score for

MEWB was computed summing the item-ratings on 21 remaining items ($M = 61.52$, $SD = 12.24$). Table 6 presents descriptive statistics for MEWB.

Table 5
Factor Coefficient Based on a Maximum Likelihood Extraction with Promax Oblique Rotation for the Measure of Eudaimonic Well-Being (MEWB) ($N = 513$)

Scale	Meaning in Life		Pleasure of Engagement	
9	.884	(.866)		
20	.872	(.808)		
24	.828	(.834)		
2	.718	(.710)		
25	.666	(.700)		
11	-.638	(-.557)		
26	.601	(.646)		
6	.598	(.622)		
16	.558	(.561)		
21	.543	(.443)		
27	.468	(.476)		
15	-.415	(-.353)		(.303)
4	.409	(.459)		
1	.349	(.364)		
19			.635	(.588)
18			.617	(.635)
12			.491	(.535)
22			.429	(.465)
7			.419	(.457)
3			.385	(.436)
23			.330	(.444)
Extraction SSL ^a	6.615	(6.484)	1.241	(1.344)
Rotation SSL ^a	6.465	(6.279)	3.671	(3.828)
Percent of Variance explained ^b				
	31.498	(30.874)	5.911	(6.401)
Cumulative percent of variance explained ^b	31.498	(30.874)	37.409	(37.275)

Note. Factor coefficients for Split-half sample are presented in parentheses. Factor coefficients below .30 were suppressed.

^a Sum of Square loadings ^b Only values

before rotation were reported here because variance explained after an oblique rotation are not accurate due to correlated factors.

Table 6
Descriptive Statistics for the Measure of Eudaimonic Well-Being (N = 513)

(Sub)Scales	No. of items	Minimum	Maximum	<i>M (SD)</i>	Cronbach's alpha
Subjective Well-Being					
Positive Affect	10	17.00	50.00	38.41 (6.21)	.86
Negative affect	10	10.00	46.00	19.83 (6.04)	.82
Life Satisfaction	5	7.00	35.00	24.76 (6.31)	.84
Total	25	-4.68	4.55	0.0 (1.61)	.87
Eudaimonic Well-Being					
Meaning in Life	14	7.00	56.00	40.83 (9.42)	.90
Pleasure of Engagement	7	3.00	28.00	20.70 (4.43)	.70
Total	21	18.00	84.00	61.52 (12.24)	.89
Overall Well-being	46	-6.03	4.32	0.0 (1.74)	.92

Computation of the overall score for Well-being. Total scores on SWB and EWB were standardized and summed to form a composite score for overall Well-Being (Ranging from -6.03 to 4.32, $M = 0.0$, $SD = 1.74$).

EFA on the Measures of Self-Actualization

This section has two parts. The first part is focused on the Measure of Actualizing-Self (MASelf) and the second part is on the Measure of Actualizing-Striving (MAStriving) (see Appendix B).

Measures of Actualizing-Self (MASelf). Actualizing-Self was measured by the Measure of Actualization of Potentials (MAP; Leclerc et al., 2002) plus two items adopted from Personal Growth Initiative Scale. The first measure was used with the intention of measuring Actualizing-Disposition, and the two items were added to bring the concept of Actualizing-Initiation (intentionality and purposefulness) to the construct of Actualizing-Self. MAP (measuring Actualizing Disposition) has been already validated and identified with a two-factor structure with five subscales (Leclerc et al., 2002; Lefrançois et al., 1997). The initial EFA ran on MAP for the sample of this study

did not conform to either the initial two-factor or five-factor model for MAP; the fifth factor included only one item; five items did not load on any of the factors and the ones that did were not in accordance with already identified factors. Therefore, all 29 items (Actualizing-Disposition and Actualizing-Initiation; see Appendix B) were entered together for EFA.

Data screening on MASelf prior to the factor analysis. The KMO test in the EFA output indicated a good sampling adequacy for factor analysis (.884). Bartlett's Test of Sphericity was significant ($p < .001$) indicating that factor analysis was appropriate for this sample. Most variables were skewed negatively, but none of the skewness exceeded the absolute value of 1.0 (maximum skewness value = .905). Maximum kurtosis value was 1.065. Therefore, the researcher can be confident that the sampling distribution did not reach the critical values of skewness and kurtosis for moderate non-normality (absolute values larger than 2.0 and 7.0 respectively; West et al., 1995, p. 68). Linearity was tested using random pairwise scatterplots of the variables. Although the plots departed from linearity, there was no evidence of curvilinearity. Thus, the linearity assumption was not a problem (Tabachnick & Fidell, 2007). No substantial number of outliers was observed for any items in MASelf (i.e., no more than 2%). Multicollinearity was examined between the items and no multicollinearity was detected (all VIFs < 3.0).

Identifying item-candidates for elimination. The Kaiser's rule of eigenvalues above 1.0 identified seven components. The scree test suggested between three to five underlying components. Using The Maximum Likelihood technique, EFA was run for forced three-, four- and five-factor structure. In the three-factor model, items 3 and 7 did

not load on any factors and no problematic complex (i.e., cross-loaded) variable was observed; the model accounted for the 28.89% of variance in the construct. In the four-factor model, items 3, 7, 9, 14, and 15 did not load on any factors and there were two complex variable involved (item 21); the model accounted for 31.07 % of variance in the construct. In the five-factor model, items 3, 9, and 14 did not load on any factors and there were only one problematic complex variable (item 24) involved; the model accounted for 33.79% of variance in the construct. The EFA on a random half sample of the original dataset indicated that the four-factor solution was steady across samples. After eliminating items 3, 7, 9, 14, and 15, there was an improvement in the amount of variance accounted for by the factors from 31.07% to 33.57% in the full sample and 31.85% to 34.29% in the split-half sample (before rotation). In the split-half sample, item 25 did not load on any factor by factor coefficient above .30, and item 1 was loaded on Factor II (.31) rather than on Factor III (.34). Like in the full sample, item 21 cross-loaded on Factors III and IV but loaded more highly on Factor IV. The result of EFA for the MAself is presented in Table 7.

Preliminary evidence of validity and reliability. The results for the full sample are reported here. After eliminating items 3, 7, 9, 14, and 15, items 13, 19, 29, 24, 18, 28, 23, 25, 8, 27, 10, and 16 (12 items) formed Factor I. Items 2, 26, 17, 12, and 22 (5 items) formed Factor II. Items 20, 5, 4, 1 (4 items) formed Factor III, and Factor VI was formed by items 11, 6, and 21 (3 items). The tentative labels for extracted factors are as follows: Factor I, Meaning-Making Mindset; Factor II, Openness to Self; Factor III, Self-Assurance; and Factor VI, Independent Mindset. The total variance in the construct accounted for by the four factors before rotation was 33.57%.

Reliability. Internal consistency of the scale was examined by calculating Cronbach's alpha. Cronbach's alpha for the new 24-item Measure of Actualizing-Self (MASelf) was .85, for Meaning-Making Mindset $\alpha = .80$, for Openness to Self $\alpha = .69$, for Self-Assurance $\alpha = .64$, and for Independent Mindset $\alpha = .66$. All Cronbach's alphas are above .60 indicating low yet acceptable internal consistency ($.60 < \alpha < .70$ is considered the minimal level of acceptability; Hair et al., 1998).

Discriminant validity. As preliminary evidence of discriminant validity, the correlation coefficients between the factors (i.e., the correlations between Factors I and II = .59, between factors II and III = .57, and between Factors I and III = .67) were below .70 and did not reach the critical value of .8 or .85 (i.e., indicators of poor discriminant validity; Cabrera-Nguyen, 2010; Kline, 1998). There was only one cross-loading of items; item 21 loaded on both Factor III (.38) and Factor VI (.54). The difference between loadings was larger than .10 (i.e., .16) which is acceptable to keep the item in an exploratory factor analysis (Gefen & Straub, 2005). The factors were not considered highly correlated and fairly discriminated among items.

Convergent validity. All items were correlated to the factors with loading coefficients above .30, which is high enough for a sample size over 350 as the preliminary evidence of convergent validity (Hair et al., 1998).

Computation of total score for Actualizing-Self. The total Score for MASelf was computed summing the item-ratings on 24 items ($M = 91.79$, $SD = 10.01$). Descriptive statistics for MASelf are presented in Table 9.

Table 7
Factor Coefficients Based on a Maximum Likelihood Extraction with Promax Oblique Rotation for the Measure of Actualizing-Self (MASelf) (N = 513)

Scale	Meaning-Making Mindset	Openness to Self	Self-Assurance	Independent Mindset
13 try to understand others	.704 (.614)			
19 make meaning by the way I look at things	.601 (.680)			
29 plan to make my life balanced	.529 (.516)			
24 succeed at giving meaning to life	.521 (.514)			
18 make sense of past experiences	.447 (.531)			
28 initiate the changes I want in life	.438 (.456)			
23 get involved in important causes	.428 (.439)			
25 remain true to myself	.406 (--)			
8 responsible for my life	.389 (.373)			
27 genuinely care about people's problem	.386 (.396)			
10 know my strength and limitations	.345 (.517)			
16 make my own decisions	.339 (.343)			
2 express emotions		.799 (.717)		
26 express my opinion		.665 (.721)		
17 share emotions with a confident		.481 (.429)		
12 listen to my emotions		.477 (.530)		
22 show the real me		.346 (.521)		
20 get over major setbacks			.814 (.848)	
5 adapt to change			.557 (.520)	
4 believe life is good			.398 (.311)	
1 value myself		(.305)	.339	
11 am inclined to follow others				.660 (.701)
6 have conditional self-worth				.608 (.665)
21 negatively impacted by criticism			.379(.346)	.536 (.589)
Extraction SSL ^a	5.289 (5.170)	1.342 (1.578)	.838 (.924)	.588 (.716)
Rotation SSL ^a	4.597 (4.381)	3.597 (3.734)	4.000 (3.372)	1.760 (1.994)
% of variance explained ^b	22.036 (21.541)	5.590 (6.577)	3.493 (3.852)	2.450 (2.983)
Cumulative % of variance explained ^b	22.036 (21.541)	27.626 (28.118)	31.119 (31.970)	33.569(34.953)

Note. Factor coefficients for the split-half sample ($n = 257$) are presented in parentheses. Factor coefficients below .30 were suppressed.

^a Sum of Square Loadings ^b Only values before rotation were reported here because variance explained after an oblique rotation are not accurate due to correlated factors.

The Measure of Actualizing-Striving (MAStriving). The Measure of Actualizing-Striving, partially developed by the researcher, consisted of a list of five personal (self-reported) goals and 21 statements which should be rated for each goal. Item ratings for each statement were averaged across five goals and these mean scores were used in the subsequent exploratory factor analyses. As proposed earlier, items for this questionnaire were developed based on an in-depth review of literature on self-actualization, optimal functioning, goal pursuits, and goal motivation (Table 2). It was expected that three components underlies the construct, Actualizing-Striving: Actualizing Aspirations; Non-Actualizing/Extrinsic Aspirations; and Goal Striving.

Data screening on MASTriving prior to the factor analysis. There is a good sampling adequacy according to the KMO test (.887) and Bartlett's Test of Sphericity ($p < .001$). Because examining all pairwise scatterplots were impractical, linearity was tested using random pairwise scatterplots of the variables (Tabachnick & Fidell, 2007). Although some plots depart from linearity, there was no evidence of curvilinearity. Thus, the linearity assumption was not a problem (Tabachnick & Fidell, 2007). Some of the variables were negatively skewed, but none of the skewness values were above the cut-off points for moderate (2.0; West et al., 1995) or extreme non-normality (3.0; Kline, 2009). Therefore, non-normality was not a problem. Moreover, multicollinearity was examined between the items in Actualizing-Striving. No Variance Inflation Factors (VIFs) were detected to be higher than 10.0 (all VIFs < 5.0), which means no problematic multicollinearity among items (Green, 1991). Subsequently, the correlation matrix was checked for any high correlations. There were five correlation coefficients above .70 but none above .90 (i.e., critical r value to detect multicollinearity; Green 1991). Therefore,

no multicollinearity was detected. Furthermore, data was screened for possible outliers. The number of outliers for one of the variables (item 5) exceeded 2% of the cases and some extreme outliers were detected. Thus, after screening the data, 21 cases were selected for elimination to lower the number of outliers to 9 (i.e., 2% of the cases which is an acceptable percentage of outliers; Cohen & Cohen, 1983). Exploratory factor analysis was conducted on both the new dataset and the original dataset and no difference was observed in identifying underlying factors.

Identifying item-candidates for elimination. The Kaiser's rule of eigenvalues above 1.0 identifies four components while three factors were identified by the scree test. Because an a priori criterion also suggests a three-factor solution, EFA was run for this solution. All items (Appendix B) loaded above the cut-off point (.30) on each factor and there was no candidate for elimination.

Preliminary evidence of validity and reliability. The maximum likelihood extraction with an oblique rotation was used in searching for the evidence of construct validity for MASTriving. The result confirmed a three-factor structure of Actualizing-Striving and showed that three factors accounted for 56.24% of the variance before rotation. Despite one close cross-loading in the full sample (item 1) and a close one in the random split-half sample (item 10), the results of factor analysis on both aforementioned datasets and on the dataset excluding outliers confirmed the same three-factor structure of the construct. Factor I, Actualizing Aspirations, was formed by items 1, 3, 5, 6, 8, 10, 12, 14, 15 (9 items); Factor II, Goal Striving, was formed by items 16 to 21 (6 items); and Factor III, Extrinsic Aspirations, was formed by items 2, 4, 7, 9, 11, 13

(6 items). To be adequate, the EFA results for the sample excluding outliers were reported in Table 8.

Table 8
Factor Coefficients Based on a Maximum Likelihood Extraction with Promax Oblique Rotation for the Measure of Actualizing-Striving (MAStriving) (Sample Excluding Outliers: n = 492)

Scale	Actualizing Aspirations	Goal Striving	Extrinsic Aspirations
12	.815 (.765)		
15	.741 (.763)		
8	.740 (.741)		
6	.718 (.734)		
14	.658 (.702)		
3	.651 (.608)		
5	.605 (.496)		
1	.528(.474)		
10	.418 (.343)		(-.313)
17		.843 (.777)	
20		.842 (.905)	
21		.816 (.778)	
16		.807 (.788)	
18		.765 (.823)	
19	.323	.662 (.738)	
9			.895 (.887)
7			.862 (.868)
11			.776 (.835)
2			.716 (.710)
4			.610 (.656)
13			.485 (.558)
Extraction SSL ^a	6.700 (6.443)	3.697 (3.992)	1.413 (1.499)
Rotation SSL ^a	6.020 (5.647)	5.664 (5.639)	3.622 (3.893)
% of variance explained ^b	31.903 (30.681)	17.607 (19.010)	6.731 (7.139)
Cumulative % of variance explained ^b	31.903 (30.681)	49.509 (49.690)	56.240 (56.829)

Note. Factor coefficients for the split-half sample ($n = 246$) are presented in parentheses. Factor coefficients below .30 were suppressed.

^a Sum of Square loadings ^b Only values before rotation were reported here because variance explained after an oblique rotation are not accurate due to correlated factors.

Reliability. Internal consistency of the scale was examined by calculating the Cronbach's alpha on the full sample. Cronbach's alpha for the Measure of Actualizing-

Strivings (21-item scale) was .79, for Actualizing Aspiration $\alpha = .87$, for Goal Striving $\alpha = .91$, and for Extrinsic Aspiration $\alpha = .88$. All Cronbach's alphas being above .70, the internal consistency of the scale is acceptable (DeVellis, 2012; Hair et al., 1998).

Discriminant validity. As preliminary evidence of discriminant validity, the correlation coefficient between the factors were very low (.10 and -.18), the highest correlation exist between Factors II and III (.61) which was yet lower than .80 (Cabrera-Nguyen, 2010) or .85 (Kline, 1998) which are indicators of poor discriminant validity. There was one cross-loading of items (item 19) on Factors I and II; however, it was not problematic as the difference between loading was above .10 (Gefen & Straub, 2005). The results showed that the factors were not highly correlated and discriminated among items.

Convergent validity. All items loaded on the factors by factor coefficients above .30, which is high enough for a sample size over 350 as the preliminary evidence of convergent validity (Hair et al., 1998).

Computation of total score for Actualizing-Striving. All the items were retained in the measure. After reverse coding the items in Factor III (Extrinsic Aspirations), the total score for Actualizing-Striving was computed summing the item-ratings on all 21 items ($M = 112.01$, $SD = 11.54$). Descriptive statistics for MA Striving are presented in Table 9.

Computation of the Overall Score for Self-Actualization. Standardized total scores on Actualizing-Self and Actualizing-Striving was summed to form the overall score for Self-Actualization ($M = 0.0$, $SD = 1.73$; see Table 9).

Table 9
Descriptive Statistics for the Measures of Self-Actualization (N = 513)

(Sub)Scales	No. of items	Minimum	Maximum	<i>M (SD)</i>	Cronbach's alpha
Actualizing-Self					
Meaning-Making Mindset	12	27.00	60.00	47.78 (5.52)	.80
Openness to Self	5	6.00	25.00	18.63 (3.22)	.69
Self-Assurance	4	8.00	20.00	15.16 (2.33)	.64
Independent Mindset	3	3.00	15.00	10.22 (2.24)	.66
Total	24	63.00	120.00	91.79 (10.01)	.85
Actualizing-Striving					
Actualizing Aspiration	9	28.00	83.00	50.84 (7.28)	.87
Goal-Striving	6	20.00	40.00	33.65 (4.20)	.91
Extrinsic Aspiration	6	6.00	42.00	27.52 (7.68)	.88
Total	21	77.00	144.00	112.01 (11.54)	.79
Self-Actualization	45	-5.23	5.54	0.0 (1.73)	.87

EFA on the Measure of General Metacognitive Competence (MGMC)

The Measure of General Metacognitive Competence consists of 47 statements about different personal approaches taken in problem-solving situations. The statements were rated from 0 to 10 on an 11-point Likert-Scale (Appendix F). Using the Maximum Likelihood technique, EFA was conducted to obtain evidence of validity of the scale.

Data screening on MGMC prior to the factor analysis. There was an acceptable sampling adequacy (greater than .50; Hutcheson & Sofroniou, 1999) according to the KMO test (.954) and significant test of Bartlett's Test of Sphericity a ($p < .001$).

Multicollinearity was examined between the variables; none of the items demonstrated evidence of multicollinearity (all VIFs < 10.0). Examining the correlation matrix also did not show any correlation above .90 (all less than .70). Linearity was tested using random pairwise scatterplots of variables. Although the plots did not indicate a clear linearity, there was no evidence of curvilinearity either. Thus, the linearity assumption was not a

problem (Tabachnick & Fidell, 2007). No absolute value of skewness greater than 2.0 and no absolute value of kurtosis greater than 7.0 was identified. Therefore, no problematic non-normality was detected (West et al. 1995). Using outlier labeling rule, five cases which showed to be outliers on more than two items were eliminated to keep the number of outliers under 2%. EFA was run on this new dataset as well as on the full sample and on the random split-half sample.

Identifying item-candidates for elimination. The Kaiser's rule of eigenvalues above 1.0 identified nine components. The scree test, however, suggested a 2- or 3-factor solution. EFA for three-factor solution did not match across different samples (the full and the random split-half samples). The two-factor solution, however, showed consistency across samples. EFA on all samples identified item 34 as unrelated to any of the factors. Thus, this item was taken out of the measure when calculating the total score.

Preliminary evidence of validity and reliability. EFA on different samples confirmed the two-factor solution. The results on the sample excluding outliers are reported here. Factor I included items which were considered Regulation of Cognition in MAI (26 items: 45, 44, 33, 18, 21, 35, 19, 31, 16, 25, 1, 39, 5, 20, 27, 36, 43, 10, 40, 2, 47, 46, 7, 8, 28, 22) and Factor II included mostly the items which were considered Knowledge of Cognition in MAI (20 items: 29, 4, 6, 30, 12, 9, 24, 32, 11, 13, 17, 15, 26, 14, 23, 41, 37, 3, 42, 38). The two factors accounted for 38.09% of the variance before rotation. The result of EFA for MGMC is presented in Table 10.

Reliability. Reliability is reported on the full sample. Internal consistency of the MGMC was examined by calculating the Cronbach's alpha. Cronbach's alpha for the

Table 10
Factor Coefficients Based on a Maximum Likelihood Extraction with Promax Oblique Rotation for the Measure of General Metacognitive Competence (MGMC) (Sample Excluding Outliers; n = 508)

Scale	Regulation of Cognition	Knowledge of Cognition	Scale	Regulation of Cognition	Knowledge of Cognition
45	.872	(.813)	29		.843 (.712)
44	.812	(.679)	4		.728 (.734)
33	.738	(.784)	6		.714 (.750)
18	.709	(.652)	30		.698 (.625)
21	.680	(.762)	12		.659 (.827)
35	.676	(.775)	9		.638 (.736)
19	.662	(.694)	24		.627 (.564)
31	.578	(.582)	32		.619 (.544)
16	.571	(.585)	11	(-.331)	.616 (.821)
25	.556	(.578)	13		.611 (.578)
1	.547	(.545)	17		.610 (.528)
39	.544	(.619)	15		.609 (.607)
5	.528	(.380)	26		.572 (.548)
20	.515	(.596)	14		.529 (.526)
27	.490	(.545)	23		.480 (.587)
36	.467	(.547)	41		.431 (.529)
43	.463	(.605)	37		.389 (.348)
10	.454	(.509)	3		.370 (.463)
40	.433	(.427)	42		.326 (.441)
2	.424	(.387)	38		.300 (.312)
47	.390	(.381)			
46	.359	(.389)			
7	.347	(.478)			
8	.340	(.425)			
28	.338	(.434)			
22	.331	(.336)			
Extraction SSL ^a				15.739 (16.220)	1.782 (2.094)
Rotation SSL ^a				14.098 (14.331)	13.755 (14.283)
% of variance explained ^b				34.215 (35.260)	3.873 (4.552)
Cumulative % of variance explained ^b				34.215 (35.260)	38.088 (39.812)

Note. Factor coefficients for the split-half sample ($n = 254$) are presented in parentheses. Factor coefficients below .30 were suppressed.

^a Sum of Square loadings ^b Only values before rotation were reported here because variance explained after an oblique rotation are not accurate due to correlated factors.

overall measure (46 items) was .96, for 26-item Regulation of Cognition was 0.94, and for 20-item Knowledge of Cognition was .92.

Discriminant validity. There were a few items which loaded on different factors for different datasets such as items 2, 7, 8, and 46 which loaded on Factor II instead of Factor I in split-half sample. Although there was one cross-loading in the split-half sample (item 11), no cross-loading was observed for the sample excluding outliers. The results provided some support for the discriminant validity of the measure as a 2-component measure. The factor correlation matrix showed a correlation above .70 ($r = .74$) by which factors were considered highly correlated.

Convergent validity. As the evidence of convergent validity, all items loaded above the cut-off point (.30) on each factor. The factor coefficient for item 38 was .281 in the sample excluding outliers; this item was retained in the subsequent analyses because its factor coefficients were marginally above .30 in other samples.

Computation of total score for General Metacognitive Competence. The total score for General Metacognitive Competence (i.e., Metacognition) was computed summing the item-ratings on the remaining 46 items ($M = 339.14$, $SD = 5.49$).

Descriptive statistics for Metacognition are presented in Table 11.

Table 11
Descriptive Statistics for the Measure of Eudaimonic Well-Being (N = 513)

(Sub)Scales	No. of items	Minimum	Maximum	$M (SD)$	Cronbach's alpha
Metacognition					
Knowledge of Cognition	26	68.00	200.00	149.30 (24.72)	.92
Regulation of Cognition	20	75.00	258.00	189.83 (34.01)	.94
Total	46	143.00	456.00	339.14 (55.49)	.96

EFA on the Measures of Need-Satisfaction

Need-Satisfaction was measured through two sets of items, three items which were intended to measure General Need-Satisfaction (GNS) and six items which were intended to measure Goal-Related Need-Satisfaction (GRNS).

The Measure of General Need-Satisfaction (MGNS). Three items each of which was a statement about one type of needs (i.e., competence, autonomy, and relatedness) were rated on a 7-point Likert scale.

Data screening on MGNS prior to the factor analysis. There was an acceptable sampling adequacy according to the KMO test (.68) and Bartlett's Test of Sphericity ($p < .001$). No multicollinearity was detected among the variables (VIFs < 3.0). Linearity was tested using pairwise scatterplots of variables. Although the plots did not indicate a clear linearity, there was no evidence of curvilinearity either. Thus, the linearity assumption was not violated (Tabachnick & Fidell, 2007). The number of outliers was less than the critical number (less than 2% of cases; Cohen & Cohen, 1983). Some of the variables were negatively skewed. However, all absolute values of skewness were less than 2.0 and all absolute values of kurtosis were less than 7.0 (i.e., less than critical values for moderate non-normality; West et al., 1995), which is considered tolerable for the Maximum Likelihood approach to EFA (Fabrigar, Wegener, MacCallum, & Strahan, 1999). Therefore, subsequent analysis was continued with the original dataset. Due to the small number of items in the scale, the Kaiser's rule identified one component with eigenvalues above 1.0. No item was a candidate for elimination. EFA on the full samples and random split-half sample also verified this extraction with all three items loaded on only one factor.

Preliminary evidence of validity and reliability. The one-factor solution accounted for 58.11% of variance in the construct.

Reliability. Cronbach's alpha for the overall measure (three items) was .76.

Computation of total score for General Need-Satisfaction. The total score for the General Need-Satisfaction was computed summing the item-ratings on the three items ($M = 16.61$, $SD = 3.14$). Descriptive statistics for GNS are presented in Table 13.

EFA on the Measure of Goal-Related Need-Satisfaction (MGRNS). MGRNS consisted of 6 items, one concerning the need for competence (Goal-Competence), one concerning the need for relatedness (Goal-Support), and four addressing autonomy (Goal-Identified, Goal-Intrinsic, Goal-External, Goal-Introjected). Each item was rated on a 7-point Likert scale for each five personal goals listed by participants (Appendix C). The ratings were averaged across five goals and those scores were used for EFA.

Data screening on MGNS prior to the factor analysis. There was an acceptable sampling adequacy according to the KMO test (.62) and Bartlett's Test of Sphericity ($p < .001$). No multicollinearity was detected among the variables (VIFs < 3.0). Linearity was tested using pairwise scatterplots of variables. Although the plots did not indicate a clear linearity, there was no evidence of curvilinearity either. Thus, the linearity assumption was not violated (Tabachnick & Fidell, 2007). The number of outliers was less than the critical number (less than 2% of cases; Cohen & Cohen, 1983). Some of the variables were negatively skewed. However, nonnormality was not extreme (i.e., all $|\text{skewness}| < 2.0$ and all $|\text{kurtosis}| < 7.0$; West et al., 1995) and was considered acceptable for the maximum likelihood approach to EFA (Fabrigar et al., 1999). Therefore, subsequent analysis was continued with the original dataset.

Identifying item-candidates for elimination. The Kaiser's rule as well as scree plot identified two components with eigenvalues above 1.0. All items were loaded above the cut-off point (.30) on either one of the factors. Thus, there was no candidate for elimination.

Preliminary evidence of validity and reliability. EFA on the full samples and random split-half sample also verified the two-factor solution. Factor I, named Need-Satisfying Goal Pursuit included four items, Goal-Competence, Goal-Support, Identified Motivation, and Intrinsic Motivation, and Factor II, labeled Controlled Goal Pursuit included two items, Introjected Motivation and External Motivation. The two factors accounted for 47.99% of the variance before rotation and after a Promax oblique rotation the variance accounted for by the two factors was 48.63%. The result of EFA is presented in Table 12.

Convergent validity. As the evidence of convergent validity, all items loaded above the cut-off point (.30) on each factor (Hair et al., 1998).

Discriminant validity. The factor correlation matrix showed a negative low correlation between the factors ($r = -.17$) and there was no cross-loading of items on factors in neither the full sample nor the random split-half sample. Both results provided the preliminary evidence for discriminant validity.

Reliability. Reliability is reported on the full sample. Cronbach's alpha for the overall measure (6 items) was .57 (Because Factor II was negatively related to Factor I, Introjected Motivation and External Motivation were reverse coded to calculate α), for Need-Satisfying Goal Pursuit $\alpha = .70$, and for Controlled Goal Pursuit $\alpha = .72$.

Table 12

Factor Coefficients Based on a Maximum Likelihood Extraction with Promax Oblique Rotation for the Measure of Goal-Related Need-Satisfaction (MGRNS) (N = 513)

Scale	Controlled Goal Pursuit	Need-Satisfying Goal Pursuit
2- External Motivation	.961 (.898)	
4- Introjected Motivation	.578 (.630)	
3- Intrinsic Motivation		.784 (.811)
1- Identified Motivation		.681 (.663)
4- Goal-Competence		.585 (.627)
5-Goal-Support		.326 (.315)
Extraction SSL ^a	1.331 (1.443)	1.548 (1.361)
Rotation SSL ^a	1.626 (1.629)	1.292 (1.255)
% of Variance explained ^b	22.187 (24.042)	25.800 (22.687)
Cumulative %of variance explained ^b	22.187 (24.042)	47.986 (46.729)

Note. Factor coefficients for the split-half sample ($n = 257$) are presented in parentheses. Factor coefficients below .30 were suppressed.

^a Sum of Square loadings ^b Only values before rotation were reported here because variance explained after an oblique rotation are not accurate due to correlated factors.

Computation of total score for Goal-Related Need-Satisfaction. The total scores for the Goal-Related Need-Satisfaction was computed subtracting the sum of item-ratings on Factor II from the sum of item-ratings on Factor I ($M = 16.78$, $SD = 4.07$).

Descriptive statistics for Goal-Related Need-Satisfaction are presented in Table 13.

Table 13

Descriptive Statistics for the Measures of Need-Satisfaction (N = 513)

(Sub)Scales	No. of items	Minimum	Maximum	M (SD)	Cronbach's alpha
General Need-Satisfaction	3	4.00	21.00	16.61 (3.14)	.76
Goal-Related Need-Satisfaction					
Need-Satisfying Goal Pursuit	4	14.00	28.00	24.01 (2.61)	.70
Controlled Goal Pursuit	2	2.00	14.00	8.76 (2.93)	.72
Total	6	5.00	26.00	16.78 (4.07)	.57
Overall Need-Satisfaction	9	-5.22	3.66	0.0 (1.64)	.59

Computation of the Overall Score for Need-Satisfaction. Standardized total scores on General Need-Satisfaction and Goal-Related Need-Satisfaction were summed

to calculate the overall score of Need-Satisfaction, $M = 0.0$, $SD = 1.64$. Descriptive statistics for Need-Satisfaction are presented in Table 13.

EFA on the Measures of Non-Defensiveness

In this study, Non-Defensiveness was measured by combining scores on two measures derived from the Brief COPE (Carver, 1997) (see Appendix D): The Measure of Adaptive Coping (MAC) and the Measure of Defensiveness (MD). The subscales in the Brief COPE were used to make up these measures of defensiveness based on the following a priori criterion. Items from Active Coping (1 and 10), Planning (4 and 19), Positive Reframing (8 and 16), Acceptance (9 and 2), Using Emotional Support (7 and 13), Using Instrumental Support (5 and 17), Religion (15 and 23), and Humor (12 and 26) subscales of Brief COPE formed MAC in which higher scores indicate more use of functional coping and lower defensiveness. MD included Denial (14 and 20), Self-Distraction (18 and 25), Behavioral Disengagement (22 and 27), Self-Blame (6 and 28), and Venting (3 and 21), in which higher scores indicate more use of dysfunctional coping and higher defensiveness. Exploratory factor analysis was conducted on the item-ratings from these two separate measures.

The Measure of Adaptive Coping (MAC). From the categories indicated in Brief COPE, items under Active Coping, Planning, Positive Reframing, Acceptance, Emotional Support, Instrumental Support, Religion, and Humor were considered to be included in the Measure of Adaptive Coping (MAC).

Data screening on MAC prior to the factor analysis. There was an acceptable sampling adequacy according to the KMO test (.77) and Bartlett's Test of Sphericity ($p < .001$). No multicollinearity was detected among the variables (all VIFs < 10.0 ; Green,

1991). Linearity was tested using pairwise scatterplots of variables. Although the plots did not indicate a clear linearity, there was no evidence of curvilinearity either. Thus, the linearity assumption was not violated (Tabachnick & Fidell, 2007). The number of outliers was less than the critical number (less than 2% of cases; Cohen & Cohen, 1983). Thus, no outlier was a candidate for elimination. Some of the variables were negatively skewed. However, skewness did not reach even the moderate level of non-normality (i.e., $|\text{skew}| > 2.0$ or $|\text{kurtosis}| > 7.0$ indicate moderate non-normality; West et al., 1995). Therefore, there was no concern for non-normality for the Maximum Likelihood approach to EFA (Fabrigar et al., 1999). Subsequent analysis was continued with the original dataset.

Identifying item-candidates for elimination. The Kaiser's rule as well as scree plot identified five components with eigenvalues above 1.0. All items were loaded above the cut-off point (.30) on either one of the factors. The factor coefficient for item 15 was above 1.0⁵ that indicated a possibility of multicollinearity (Babakus, Ferguson, & Joreskog, 1987). In addition, VIF for this item was greater than 5.0 which indicated a potential multicollinearity issue (Field, 2009). To avoid multicollinearity, item 15 was eliminated and EFA was run again on the remaining items. Kaiser's rule, scree plot, and EFA on the full samples and random split-half sample (excluding item 15) verified the four-factor solution. The only difference was that in the split-half sample item 23 did not load on any factor. After eliminating item 23 for the full sample EFA, the amount of

⁵ Factor coefficients greater than 1.0 are possible for oblique rotation because in the case of oblique rotation, factor coefficients are equivalents of regression coefficients. On the other hand, in orthogonal rotation factor coefficients are correlation coefficients and can only take values between -1.0 and +1.0.

variance accounted for improved by 3% (from 52.97% to 55.98%). Thus, items 15 and 23 (religion component of Brief COPE) both were excluded for the final EFA.

Preliminary evidence of validity and reliability. The results for the full sample are reported here. Factor I, Seeking Social Support, included four items of instrumental support and emotional support (items 5, 7, 13, and 17). Factor II, Solution-Orientation, included four items from active coping and planning (items 1, 4, 10, and 19). Factor III, Humor, included items for humor (items 12, and 26) and Factor VI, Acceptance, included two items from acceptance and two items from positive reframing (items 2, 8, 9, and 16). Before rotation, the four factors accounted for 55.98% of variance in the construct. The result of EFA is presented in Table 14.

Convergent validity. As the evidence of convergent validity, all items loaded above the cut-off point (.30) on each factor (Hair et al., 1998).

Discriminant validity. The factor correlation matrix showed low correlations among the factors (all less than .85; Kline, 1998). The maximum value for correlations between factors was .43 (Factor I and II: $r = .24$, Factor I and III: $r = .04$, Factor I and IV: $r = .17$, Factor II and III: $r = .04$, Factor II and IV: $r = .43$, Factor III and IV: $r = .22$). There was no cross-loading of items on factors.

Reliability. Cronbach's alpha for the overall measure (14 items) was .75: for 4-item Seeking Social Support $\alpha = .89$; for Solution-Orientation $\alpha = .78$, for Humor $\alpha = .87$, and for Acceptance $\alpha = .65$.

Computation of total score for Adaptive Coping. Total scores for Adaptive Coping were computed summing the item-ratings on all four factors (ranging from 21.00

to 56.00, $M = 42.43$, $SD = 6.11$). Descriptive statistics for Adaptive Coping are presented in Table 16.

Table 14
Factor Coefficients Based on a Maximum Likelihood Extraction with Promax Oblique Rotation for the Measure of Adaptive Coping (MAC) (N = 513)

Scale	Seeking Social Support	Solution-Orientation	Humor	Acceptance
17	.889 (.881)			
7	.795 (.816)			
5	.794 (.811)			
13	.793 (.746)			
19		.729 (.747)		
4		.718 (.738)		
1		.666 (.727)		
10		.657 (.686)		
12			.690 (.893)	
26			.796 (.837)	
8				.794 (.783)
16				.724 (.746)
9				.403 (.421)
2				.383 (.385)
Extraction SSL ^a	1.924 (3.452)	2.934 (1.573)	2.042 (2.163)	.937 (.826)
Rotation SSL ^a	2.888 (2.976)	2.455 (2.809)	1.680 (1.606)	2.032 (2.178)
% of Variance explained ^b	13.744 (24.654)	20.958 (11.237)	14.585 (15.453)	6.690 (5.897)
Cumulative % of variance explained ^b	13.744 (24.654)	34.702 (35.890)	49.286 (51.343)	55.976 (57.240)

Note. Factor coefficients for the split-half sample ($n = 257$) are presented in parentheses. Factor coefficients below .30 were suppressed.

^a Sum of Square loadings ^b Only values before rotation were reported here because variance explained after an oblique rotation are not accurate due to correlated factors.

EFA on the Measure of Defensiveness (MD). From subscales in the Brief COPE, items under Denial, Self-Distraction, Behavioral Disengagement, Self-Blame, and Venting were formed the Measure of Defensiveness (MD)

Data screening on MD prior to the factor analysis. There was an acceptable sampling adequacy according to the KMO test (.68) and Bartlett's Test of Sphericity ($p < .001$). All VIFs were lower than 10.0. Thus, multicollinearity was not a problem (Green, 1991). Linearity was tested using random pairwise scatterplots of variables. Although the plots did not indicate a clear linearity, there was no evidence of curvilinearity either. Therefore, it was concluded that the linearity assumption was not violated (Tabachnick & Fidell, 2007). The number of outliers was less than the critical number (less than 2% of cases; Cohen & Cohen, 1983) except for item 24. Item 24 was also negatively skewed, with skewness value of 2.11 which indicated moderate non-normality ($|\text{skew}| > 2$; West et al., 1995). Thus, item 24 was eliminated and subsequent analysis was continued with the original dataset excluding item 24.

Identifying item-candidates for elimination. The Kaiser's rule as well as scree plot identified four components with eigenvalues above 1.0. All items were loaded above the cut-off point on either one of the factors, except for item 11 which did not load on any of the factors. Also item 25 loaded by factor coefficient above 1.00 on one factor suggesting an issue of multicollinearity. After eliminating items 11 and 25 (item 24 was already out) and rerunning EFA, item 18 also did not load on any factor either. Eliminating all three items 11, 18, and 25 improved the amount of variance accounted for by the factors by 10.60% from 47.05% to 57.65%. EFA on the split-half sample verifies the four factor structure.

Preliminary evidence of validity and reliability. The results for the full sample are reported here. EFA retained the same subscales as presented by Brief COPE: Denial as Factor I, Behavioral Disengagement as Factor II, Venting as Factor III, Self-Blame as

Factor IV (Self-Distracted and Substance Use) were excluded as the result of EFA). The four factors accounted for 57.65% of variance before rotation. The result of EFA on the Measure of defensiveness is presented in Table 15.

Table 15
Factor Coefficients Based on a Maximum Likelihood Extraction with Promax Oblique Rotation for the Measure of Defensiveness (MD) (N = 513)

Scale	Denial	Behavioral Disengagement	Venting	Self-Blame
20	.880 (1.009)			
14	.650 (.500)			
27		.973 (.726)		
22		.465 (.704)		
3			.854 (.904)	
21			.588 (.475)	
6				.733 (.736)
28				.690 (.602)
Extraction SSL ^a	2.241 (1.567)	.977 (1.257)	.750 (.984)	.644 (.590)
Rotation SSL ^a	1.776 (1.596)	1.787 (1.528)	1.308 (1.214)	1.566 (1.289)
% of Variance explained ^b	28.013 (19.593)	12.215 (15.708)	9.376 (12.302)	8.047 (7.373)
Cumulative % of variance explained ^b	28.013 (19.593)	40.229 (35.301)	49.605 (47.604)	57.652 (54.977)

Note. Factor coefficients for the split-half sample ($n = 257$) are presented in parentheses. Factor coefficients below .30 were suppressed.

^a Sum of Square loadings ^b Only values before rotation were reported here because variance explained after an oblique rotation are not accurate due to correlated factors.

Convergent validity. As the evidence of convergent validity, all items loaded above the cut-off point (.30) on each factor (Hair, et al. 1998). Minimum factor coefficient was .47.

Discriminant validity. The factor correlation matrix showed low correlations among the factors, Factor I and II: $r = .50$, Factor I and III: $r = .21$, Factor I and IV: $r =$

.36, Factor II and III: $r = .21$, Factor II and IV: $r = .45$, Factor III and IV: $r = .32$ (critical value being .85; Kline, 1998) and there was no cross-loading of items on factors.

Reliability. Cronbach's alpha for the overall measure (8 items) was .70: for Denial $\alpha = .72$; for Venting $\alpha = .68$; for Behavioral Disengagement $\alpha = .70$; for Self-Blame $\alpha = .67$.

Computation of total score for Defensiveness. The total scores for Defensiveness was computed summing the item-ratings on all four factors ($M = 16.26$, $SD = 4.09$). Descriptive statistics for Defensiveness are presented in Table 16.

Table 16
Descriptive Statistics for the Measures of Non-Defensiveness (N = 513)

(Sub)Scales	No. of items	Minimum	Maximum	$M(SD)$	Cronbach's alpha
Adaptive Coping					
Seeking Social Support	4	4.00	16.00	11.64 (3.38)	.89
Solution-Orientation	4	4.00	16.00	13.45 (2.28)	.78
Humor	2	2.00	8.00	5.02 (1.97)	.87
Acceptance	4	5.00	16.00	12.33 (2.41)	.65
Total	14	21.00	56.00	42.43 (6.11)	.75
Defensiveness					
Denial	2	1.00	4.00	3.55 (.67)	.72
Behavioral Disengagement	2	1.00	4.00	3.43 (.67)	.70
Venting	2	1.00	4.00	2.45 (.87)	.68
Self-Blame	2	1.00	4.00	2.43 (.84)	.67
Total	8	8.00	32.00	16.26 (4.09)	.70
Non-Defensiveness		-4.74	4.08	0.0 (1.39)	

Computation of the overall score of Non-Defensiveness. Standardized total scores on Adaptive Coping and reverse coded standardized total scores on Defensiveness were summed to obtain the overall score of Non-Defensiveness, $M = 0.0$, $SD = 1.39$. Higher scores show more non-defensive approach to stressful situations and lower

defensiveness and lower scores show use of more defensive coping approaches and, thus, higher defensiveness. Descriptive statistics for Non-Defensiveness are presented in Table 16.

Examination of Underlying Assumptions for Parametric Statistics

The hypotheses were tested using correlational and General Linear Regression analyses techniques. Thus, it was substantial to test the underlying assumptions of these parametric statistical approaches, namely, multicollinearity, normality, linearity, and homoscedasticity (Hinkle et al., 2005). Severe violation of these assumptions leads to biased parameter estimates.

Multicollinearity

Multicollinearity is defined as “the existence of substantial correlation among a set of IV’s [Independent Variables]” (Cohen & Cohen, 1983, p.115), which inflates the standard error of the regression coefficient estimates and makes the parameter estimates inaccurate and unstable and difficult to interpret (Cohen & Cohen, 1983; Green & Salkind, 2005; Tabachnick & Fidell, 2007). High intercorrelations between the variables indicate that those variables are measuring the same construct. Green (1991) suggested that variables which show an intercorrelation greater than .90 should be removed from the analyses or should be combined to make one variable. Bivariate correlation analysis indicated that all variables were significantly and positively correlated. However, their correlations did not exceed the critical value of .90. The correlation coefficients ranged between .43 (between Overall-Well-being and Defensiveness) and .77 (between Self-Actualization and Need-Satisfaction).

Another approach to test for multicollinearity is to test IVs in a multiple linear regression analysis for the variance inflation factor ($VIF = 1 / (1 - R^2)$) as an indicator of multicollinearity. This approach uses all independent variables in a set of multiple linear regression analyses while each time taking one of them as the dependent variable and the remaining variables as predictors (Hair et al., 1998). Thus, this approach was taken using all IVs (Metacognition, Need-Satisfaction, Defensiveness, and Self-Actualization). Different literature recommended different cut-off points for VIF as tolerable. For instance, Tabachnick and Fidell (2007) suggested a maximum level of 10 while some recommended a maximum level of 5 (Rogerson, 2001) or 4 (Pan & Jackson, 2008). Thus, because all VIFs appeared to be lower than 3, it was concluded that there is no multicollinearity among independent variables.

Linearity

The linearity assumption assumes that independent and dependent variables in a regression analysis have linear relationships (Cohen & Cohen, 1983). The failure of this assumption rather weakens an analysis than invalidates it (Tabachnick & Fidell, 2007). Linearity was tested using pairwise scatterplots of variables of interest (Green 1991, Tabachnick & Fidell, 2007). All pairwise scatterplots were examined. The variables showed a relatively linear relationship. No violation of linearity was observed.

Normality

The assumption of normality assumes that the sampling distribution is normally distributed. To test the normality, histograms as well as skewness and kurtosis are examined (Field, 2009; Tabachnick & Fidell, 2007). Histograms show relatively normal distribution for all variables. Skewness and kurtosis scores were standardized (i.e.,

divided by their Standard Error) and compared against critical values for normal distribution. According to skewness scores, Defensiveness, Metacognition and Well-Being showed significant negative skewness. Skewness of Self-Actualization was not significant at $p < .05$ and skewness of Need-Satisfaction was not significant at $p < .001$. None of the kurtosis values were significant. Field (2009) and Tabachnick and Fidell (2007) recommended that for the sample size above 200 the normality of the sample be investigated by relying on a histogram and the absolute value of the skewness rather than the significant test; because even trivial deviations from normality would be significant for large samples. The closer the value is to zero, the closer the distribution is to a normal distribution. For large samples ($n > 200$), extreme non-normality are commonly detected by absolute values of skewness larger than 3.0 (Kline, 2009; $|\text{skewness}| > 2.0$ indicates moderate non-normality; West et al., 1995). In the case of this study, none of the skewness scores were greater than .51. The histograms also illustrated approximately normal distributions for all variables.

Overall, the researcher concluded that the sampling distribution is approximately normal for all variables. Furthermore, there was no univariate outlier (“cases with standardized scores in excess of 3.29”; Tabachnick & Fidell, 2007, p.73). The number of multivariate outliers (Mahalanobis distance > 25 for sample sizes ≥ 500 ; Field, 2009, p. 247) did not exceed 2% of the cases (i.e., 11 cases) for any of the variables; thus, the cases were retained for the analysis (Cohen & Cohen, 1983).

Homoscedasticity

The assumption of homoscedasticity assumes that “the residuals at each level of the predictor variable(s) have similar variances” (Field, 2009, p. 787). In other words,

the variance for the dependent variable or predicted values is the same across different values of the independent variable. Meeting the assumption of normality (in residual distribution) is necessary for homoscedasticity to occur (Cohen & Cohen, 1983; Green, 1991). This assumption was tested using plots of the standardized residuals and the Studentized residuals against the standardized predicted values, histograms, and normal probability plot of residuals. As an evidence of homoscedasticity, the first sets of plots should be a random array of dots evenly scattered around zero (Field, 2009). As other evidence, residuals should be normally distributed by showing a bell-shaped curve on the histogram, and observed residuals should lie on a straight line representing a normal distribution on the normal probability plot. All plots were examined for all variables regressed on one another. No evidence of heteroscedasticity was observed.

Demographic Differences in Constructs of Interest

For the main hypothesis testing, the researcher needs to deal with the variances accounted for by demographic variables. For this purpose, the predictive quality of demographic variables was tested in relation to each construct of interest and the variables that significantly accounted for the variance in the constructs under study were identified. Two-way interactions between demographic variables were also analyzed to detect possible interaction effects. Two-way interaction terms were created by multiplying the dummy coded demographic variables (to keep the study feasible, other orders of interactions were not examined in this study). Non-respondents for parents and for immigrants also were dummy coded and used in the analyses as separate demographic groups.

To identify significant demographic differences for each construct of interest, hierarchical regression analysis was used to test the interaction effects over and above the additive effects of demographic variables. In the first step of the hierarchical regression model, all the demographic variables were entered in the first block and all the two-way interactions of these variables were entered in the second block. Following the rationale for Step-Down or Backwards Regression (Cohen & Cohen, 1983; Stockburger, 1996), variables and interactions which demonstrated insignificant predictive qualities in regard to the DV were identified and eliminated from the model. Remaining variables were entered in a new hierarchical regression model in the same order as the first analyses (i.e., demographic variables at the first step and interactions at the second step).

To test for meaningful interaction effects, all variables involved in the significant interactions were also included at the first step even if they did not show statistical significance in predicting the DV. This step-by-step elimination of variables in the hierarchical regression analysis continued until there remained the least possible variables in the overall model which altogether significantly explained the variance in the DV. Alpha levels were reported by their exact amount when they indicated non-significance or they were very close to significant level of .05 (e.g., .047 or so).

This technique was used to identify demographic variables and the interactions which were significantly predicting the outcome variables. Identified demographic variables were used in the main hypothesis analyses for grouping the sample when the constructs of interest were used as IVs or as control variables when the constructs of interest were considered DVs.

Demographic Variables and Well-Being

Well-Being was entered as the DV in a 2-step hierarchical regression model, demographic variables in the first step and their two-way interactions in the second step. The result indicated that Block 1 was significant ($F(10,502) = 2.651, p < .01$) and Block 2 was not significant ($F(42,460) = 1.112, p = .297$) in predicting Well-Being. In the overall model, none of the demographic variables had significant alpha level and among interaction terms, Parent X Non-immigrants, Emerging Adults X Immigrants, Gender X Ethnicity, and Major X Immigrants significantly predicted Well-Being ($p < .05$). From Block I, only Gender was significant ($p < .05$).

Gender, significant interaction terms and their corresponding variables were entered into another hierarchical regression model. Both blocks significantly predicted Well-Being. From Block I ($F(7,505) = 3.683, p = .001$), Emerging Adults, Gender, and Major significantly predicted Well-Being ($p < .05$), while in the overall model ($F(4,501) = 3.846, p < .01$), only Emerging Adult (i.e., participants aged between 17 to 29), Major, and Major X Immigrants significantly predicted Well-Being ($p \leq .01$). Thus, Emerging Adult, Gender, Major, Immigrant, and Major X Immigrant were entered into the third 2-Step hierarchical regression model. The results showed that in this hierarchical regression model both blocks were significant and all variables in the overall model significantly predicted Well-Being, $F(1,507) = 8.904, R^2 = .065, adjusted R^2 = .055, p < .01$.

In other words, Block 1 including demographic variables of Emerging Adults, Gender, Major, and Immigrant significantly predicted Well-being, $F(4,508) = 6.444, R^2 = .048, adjusted R^2 = .041, p < .001$. Furthermore, Major by Immigrant interaction was

significant over and above all aforementioned demographic variables, $B = -.963, p < .01$. Emerging Adults ($B = -.590, p < .01$), Gender ($B = -.341, p < .05$), Major ($B = .716, p < .01$), and Immigrant ($B = .645, p < .01$) also significantly predicted Well-Being in the overall model. Table 17 presents the final hierarchical regression analysis. Thus, these demographic variables and Major by Immigrant interaction were used in the main hypothesis testing as the control variable when Well-being was a Dependent Variable.

Table 17
Summary of Hierarchical Regression Analysis Predicting overall Well-being from Demographic Variables (N = 513)

Variable	Well-Being					
	B^a	R^2	$Adjusted R^2$	F Change	$df1$	$df2$
Age Group	-.590**					
Gender	-.341*					
Major	.716**					
Immigrant	.645**					
Block 1		.048	.041	6.444***	4	508
Major X Immigrant	-.963**					
Block 2		.065	.055	8.904**	1	507

^a The regression coefficients for the overall model are reported here.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Demographic Variables and Self-Actualization

Self-Actualization was entered as the DV in a 2-step hierarchical regression model, demographic variables in the first step and their two-way interactions in the second step. The result indicated that Block 1 was significant ($F(10,502) = 4.393, p < .001$) and Block 2 was not significant ($F(42,460) = 1.183, p = .207$) in predicting Self-Actualization. In the overall model, the regression weights for none of demographic variables were significant while among interaction terms, Marital-Status X Parent ($p = .046$), Major X Immigrant ($p = .046$), and Gender X Missing-Parent ($p < .05$) were significant and were included in the next hierarchical regression analysis along with their

corresponding variables. From Block 1, Parent ($p < .05$), Gender ($p = .001$) and Education ($p = .051$) were included in the next hierarchical regression analysis.

In the second hierarchical regression analysis, both blocks significantly predicted Self-Actualization. From Block I ($F(6,506) = 6.808, p < .001$), Parent and Gender significantly predicted Self-Actualization ($p < .01$), while from the overall model ($F(3,503) = 2.303, p = .076$), only Gender, and Major had alpha levels below .05. None of the interactions were significant. Thus, Parent, Gender, and Major were entered into a multiple regression model. The model was significant, $F(3,509) = 13.146, R^2 = .072$, *adjusted* $R^2 = .066, p < .001$.

In the last multiple regression analysis, all demographic variables significantly predicted Self-Actualization. For Parent: $B = .650 (p < .01)$, for Gender: $B = -.634 (p < .001)$, for Major: $B = .327 (p = .047)$. Table 18 presents the final multiple regression model for predicting Self-Actualization. Thus, these demographic variables were used in the main hypothesis testing as the control variable when Self-Actualization was a Dependent Variable and each was used to group the sample when Self-Actualization was an IV.

Table 18
Summary of Multiple Regression Model Predicting Self-Actualization from Demographic Variables (N = 513)

Variable	Self-Actualization					
	B^a	R^2	<i>Adjusted</i> R^2	F Change	$df1$	$df2$
Parent	.650**					
Gender	-.634***					
Major	.327*					
Overall Model		.072	.066	13.146***	3	509

^a The regression coefficients for the overall model are reported here.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Demographic Variables and Need-Satisfaction

Need-Satisfaction (NS) was entered as the DV in a hierarchical regression model, demographic variables in the first step and their two-way interactions in the second step. The result indicated that Block I and II were not significant (respectively, $F(10,502) = 1.849, p = .050$ and $F(42,460) = 1.068, p = .362$) in predicting Need-Satisfaction. None of the demographic variables, in the overall model or Block I, significantly predicted NS. Among interaction terms, Major X Immigrant ($p = .010$) and their corresponding variables were identified to be included in the next hierarchical regression analysis.

In the second hierarchical regression analysis, from Block I ($F(2,510) = 5.017, p < .01$) only Major significantly predicted NS ($p < .01$). The overall model was not significant ($F(1,509) = 3.492, p = .062$), indicating no interaction effect. Entering Major alone in a regression analysis, the model predicted NS at the alpha level of .002, $F(1,511) = 9.847, R^2 = .019, adjusted R^2 = .017, B = .460, p < .01$. Table 19 presents the final regression model for Need-Satisfaction. [*not included yet*] Thus, Major was used in the main hypothesis testing as the control variable when NS was a Dependent Variable and to group the sample when NS was an Independent Variable.

Table 19
Summary of Linear Regression Analysis Predicting Need-Satisfaction from Demographic Variables (N = 513)

Variable	Need-Satisfaction					
	B^a	R^2	$Adjusted R^2$	F Change	$df1$	$df2$
Major						
Overall Model	.460**	.019	.017	9.847	1	511

^a The regression coefficients for the overall model are reported here.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Demographic Variables and Non-Defensiveness

Non-Defensiveness (ND) was entered as the DV in a hierarchical regression model, demographic variables in the first step and their two-way interactions in the second step. The result indicated that neither Block I nor the overall model was significant in predicting Non-Defensiveness (respectively, $F(10,502) = 1.464, p = .149$ and $F(42,460) = .952, p = .560$). In the overall model, only the regression weight for Emerging Adult was significant in predicting ND ($p = .047$). None of the interactions were significant. In Block I, only Gender significantly predicted ND ($p < .05$). Thus, Gender and Emerging Adult and their interaction were entered in the next hierarchical regression analysis.

In the second hierarchical regression analysis, only the overall model was significant indicating a significant interaction effect. Age Group X Gender significantly predicted ND, $F(1,509) = 5.716, R^2 = .022, adjusted R^2 = .016, B = .812, p < .05$. The regression weights for Age Group and Gender were also significant (respectively, $B = -.553, p < .01$ and $B = -.909, p < .01$). Table 20 presents the final hierarchical regression analysis for Non-Defensiveness.

Table 20
Summary of Hierarchical Regression Analysis Predicting Non-Defensiveness from Demographic Variables (N = 513)

Variable	Non-Defensiveness					
	B^a	R^2	$Adjusted R^2$	F Change	$df1$	$df2$
Age Group	-.553**					
Gender	-.909**					
Block 1		.011	.007	6.444***	4	508
Age Group X Gender	.812*					
Block 2		.022	.016	5.716*	1	509

^a The regression coefficients for the overall model are reported here.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Age Group, Gender, and their interaction were used in the main hypothesis testing as the control variable when ND was a Dependent Variable and the interaction term was used to group the sample when ND was an IV.

Demographic Variables and Metacognition

Metacognition was entered as the DV in a hierarchical regression model, where demographic variables were entered in the first step and their two-way interactions were included in the second step. The result indicated that Block I and II were not significant in predicting Metacognition (respectively, $F(10,502) = 1.758, p = .066$ and $F(42,460) = 1.120, p = .285$). Within the Blocks, none of the demographic variables were significant in predicting Metacognition; only the regression weights for interaction term, Major X Immigrant ($p < .01$) was significant. Thus, this interaction and its corresponding variables (i.e., Major and Immigrant) were included in the next hierarchical regression analysis.

In this second hierarchical regression analysis, only the overall model was significant, $F(1,509) = 6.097, R^2 = .018, adjusted R^2 = .013, p < .05$, indicating that the interaction between Major and Immigrant significantly predicted Metacognition ($B = -25.937$). The regression weights were also significant for Major ($B = 18.355, p < .01$) and non-significant for Immigrant ($B = 15.730, p = .050$) in the overall model. Table 21 presents the final hierarchical regression analysis for Metacognition. Major by Immigrant interaction was used to group the sample when Metacognition was an IV.

Table 21
Summary of Hierarchical Regression Analysis Predicting Metacognition from Demographic Variables (N = 513)

Variable	Metacognition					
	<i>B</i> ^a	<i>R</i> ²	<i>Adjusted R</i> ²	<i>F</i> Change	<i>df</i> 1	<i>df</i> 2
Major	18.355**					
Immigrant	15.730					
Block 1		.007	.003	1.728	2	510
Major X Immigrant	-25.937*					
Block 2		.018	.013	6.097	1	509

^a The regression coefficients for the overall model are reported here.

p* < .05. *p* < .01. ****p* < .001.

Hypothesis Testing

Hypotheses 1 through 7 were examined using hierarchical regression analysis and Hypotheses 8 and 9 were tested using Structural Equation Modeling (SEM). Control variables and grouping variables identified in section “Demographic Differences in Constructs of Interest” were used accordingly in each analysis. Accordingly, a demographic variable would be used to group the sample if in the previous section it was found to have a differentiating effect on the dependent variable involved in hypothesis testing. A demographic variable would be used as the control variable if it was found to significantly predict the independent variable in the previous section. If the variable was already in use to group the sample, it would be excluded from the list of control variables. Grouping the sample and testing the hypotheses across demographically different samples also help to check the robustness of the finding from the full sample.

Prior to hypothesis testing, the relationship between the constructs of interest was examined doing one-tailed significant test of bivariate correlational analysis (Table 22). According to Cohen’s (1988) criterion for evaluating effect sizes, correlational coefficients between .10 and .30 are small effects; correlational coefficients ranging from

Table 22

Zero-Order Correlation Coefficients for Well-being, Self-Actualization, Non-Defensiveness, Need-Satisfaction, and Metacognition and Their Underlying Factor Structure (N = 513)

Variables	WB	SWB	EWB	SA	AcSt	AcSf	ND	Cpg	Dfns	NS	GNS	GRNS	MC	KC	RC
WB	1.00														
SWB	.87**	1.00													
EWB	.87**	.51**	1.00												
SA	.54**	.36**	.58**	1.00											
AcSt	.36**	.22**	.42**	.87**	1.00										
AcSf	.57**	.40**	.60**	.87**	.50**	1.00									
ND	.43**	.25**	.49**	.44**	.28**	.49**	1.00								
Cpg	.42**	.35**	.38**	.34**	.16**	.42**	.69**	1.00							
Dfns	-.17**	.01	-.30**	-.28**	-.22**	-.26**	-.69**	.04	1.00						
NS	.56**	.38**	.60**	.77**	.68**	.66**	.45**	.31**	-.32**	1.00					
GNS	.58**	.43**	.57**	.54**	.32**	.62**	.50**	.42**	-.28**	.82**	1.00				
GLNS	.34**	.19**	.41**	.72**	.79**	.46**	.24**	.08*	-.25**	.82**	.34**	1.00			
MC	.51**	.32**	.56**	.52**	.34**	.56**	.51**	.53**	-.17**	.48**	.52**	.27**	1.00		
KC	.50**	.31**	.55**	.50**	.30**	.57**	.50**	.46**	-.24**	.49**	.57**	.25**	.93**	1.00	
RC	.47**	.30**	.51**	.48**	.34**	.50**	.46**	.53**	-.11*	.42**	.44**	.25**	.96**	.78**	1.00

Note. WB = overall Well-Being. SWB = Subjective Well-Being. EWB = Eudaimonic Well-Being. SA = Self-Actualization. AcSt = Actualizing-Striving. AcSf = Actualizing-Self. ND = Non-Defensiveness. Cpg = Adaptive Coping. Dfns = Defensiveness. NS is Need-Satisfaction. GNS = General Need-Satisfaction. GRNS = Goal-Related Need-Satisfaction. MC = Metacognition. KC = Knowledge of Cognition. RC = Regulation of Cognition.

** $p < .001$, one-tailed. * $p < .05$, one-tailed

.30 to .50 are medium effects; and, large effects are determined by correlation coefficients greater than .50. Table 22 presents zero-order correlations between constructs of interest and between their underlying factor structures.

All constructs under study were significantly and positively correlated ($p < .001$) to each other by effect sizes ranging from very small to large ($.04 \leq r \leq .79$), except for Defensiveness which was not related to Subjective Well-Being ($p = .441$) and to Adaptive Coping ($p = .199$) and, as expected, was significantly but negatively correlated to all other variables ($p < .001$). The zero-order correlations were reported for each hypothesis testing for the variables involved.

Testing Hypothesis 1: There Is a Positive Relationship Between Self-Actualization and Overall Well-Being.

The bivariate correlational analysis showed that Well-Being was significantly and positively correlated with Self-Actualization ($r = .54, p < .001$), Actualizing-Self ($r = .57, p < .001$), and Actualizing-Striving ($r = .36, p < .001$). SWB was also significantly and positively correlated with Self-Actualization ($r = .36, p < .001$), Actualizing-Self ($r = .40, p < .001$), and with Actualizing-Striving ($r = .22, p < .001$). EWB was significantly and positively correlated with Self-Actualization ($r = .58, p < .001$), Actualizing-Self ($r = .60, p < .001$), and with Actualizing-Striving ($r = .42, p < .001$). The results support the positive relationship of Self-Actualization and its components with Well-Being and its components.

The hierarchical linear regression analysis was used to examine the unique contribution of Self-Actualization to overall Well-Being. The analysis was conducted four times, once for the whole sample and three times comparing two demographic

groups in the sample, grouped by either Gender or Parenthood, or Major each time. Age Group, Gender, Major, and Major X Immigrants were entered as control variables in the first block where was appropriate. The possibility of interactions between covariates and independent variable was checked and none of the interactions were significant in predicting Well-Being (for Gender X SA, $p = .154$; for Major X SA, $p = .565$; Immigrant X SA, $p = .100$; Age Group X SA, $p = .157$), neither for SWB nor for EWB (all $p > .05$).

Self-Actualization and Well-Being in the full sample. In the full sample, Self-Actualization predicted 24.8% of variance in Well-Being over and above demographic control variables, $F(1,506) = 182.109$, $\Delta R^2 = .248$, $p < .001$, Total $R^2 = .312$, Total *adjusted* $R^2 = .304$. On average, for every 1 *SD* change in Self-Actualization, Well-Being changed by .515 *SD* (or for every 1 unit change in SA score, WB score changed by .517 units.). The results support *HI* for the full sample. Table 23 demonstrates the summary of hierarchical linear regression analysis with overall Well-Being as DV.

Self-Actualization and Well-Being in the split sample by Gender. When splitting the sample by Gender, again Self-Actualization predicted Well-Being over and above the remaining control variables (excluding Gender); for females, $F(1,324) = 89.097$, $\Delta R^2 = .205$, $R^2 = .256$, *adjusted* $R^2 = .245$, $p < .001$; for males, $F(1,177) = 97.771$, $\Delta R^2 = .338$, $R^2 = .388$, *adjusted* $R^2 = .371$, $p < .001$. On average, by every 1 *SD* change in Self-Actualization, Well-Being changed by .459 *SD* for females and by .590 *SD* for males (or for every 1 unit change in SA, WB changed by .479 for females and by .578 for males.). The results support *HI* for males and females with the greater amount of variance accounted for, for males (34.3%) compared to females (20.5%; see Table 23).

Table 23
 Summary of Hierarchical Regression Analysis Predicting overall Well-being from Self-Actualization

Variable	Well-Being					
	β^a	ΔR^2	Adjusted ΔR^2	F Change	df1	df2
<i>Full Sample (N = 513)</i>						
Age Group	-.084*					
Gender	.001					
Major	.129**					
Immigrant	.146*					
Major X Immigrant	-.156*					
Block 1	--	.065	.055	7.016***	5	507
Self-Actualization	.515***					
Block 2	--	.248	.249	182.109***	1	506
Total R^2	.312					
Adjusted R^2	.304					
<i>Female (n = 330)</i>						
Age Group	-.085					
Major	.151*					
Immigrant	.164					
Major X Immigrant	-.170					
Block 1	--	.052	.040	4.432**	4	325
Self-Actualization	.459***					
Block 2	--	.205	.205	89.097***	1	324
Total R^2	.256					
Adjusted R^2	.245					
<i>Male (n = 183)</i>						
Age Group	-.095					
Major	.089					
Immigrant	.140					
Major X Immigrant	-.171*					
Block 1	--	.050	.028	2.327	4	178
Self-Actualization	.590***					
Block 2	--	.338	.343	97.771***	1	177
Total R^2	.388					
Adjusted R^2	.371					
<i>Parent = 0.0 (n = 452)</i>						
Age Group	-.091*					
Gender	-.013					
Major	.135**					
Immigrant	.158**					
Major X Immigrant	-.188**					
Block 1	--	.063	.053	6.020***	5	446
Self-Actualization	.555***					
Block 2	--	.292	.294	201.517***	1	445
Total R^2	.355					
Adjusted R^2	.347					

(continued)

Table 23 (continued)
Summary of Hierarchical Regression Analysis Predicting overall Well-being from Self-Actualization

Variable	Well-Being					
	β^a	ΔR^2	Adjusted ΔR^2	F Change	df1	df2
<i>Education Students</i>						
<i>(n = 312)</i>						
Age Group	-.129*					
Gender	-.040					
Immigrant	-.055					
Block 1	--	.046	.036	4.911**	3	308
Self-Actualization	.508***					
Block 2	--	.250	.250	108.825***	1	307
Total R^2	.295					
Adjusted R^2	.286					
<i>Non-Education Students</i>						
<i>(n = 201)</i>						
Age Group	-.001					
Gender	.055					
Immigrant	.156*					
Block 1	--	.043	.028	2.922*	3	197
Self-Actualization	.522***					
Block 2	--	.256	.256	71.383***	1	196
Total R^2	.298					
Adjusted R^2	.284					

^a The standardized regression coefficients are reported only for the overall model.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Self-Actualization and Well-Being in the split sample by Parenthood. When splitting the sample by Parenthood, Self-Actualization predicted Well-Being over and above all control variables for Parenthood = 0.0 (i.e., the combination of non-parents and non-respondents to parenthood question), $F(1,445) = 201.517$, $\Delta R^2 = .292$, $R^2 = .355$, *adjusted* $R^2 = .347$, $p < .001$ (see Table 23). For this group, on average, by every 1 *SD* change in Self-Actualization, Well-Being changed by .555 *SD* (or for every 1 unit change in SA, WB changed by .557). For parents (Parenthood = 1.0), however, contribution of Self-Actualization did not turned out significant, $F(1,54) = 1.881$, $p = .176$. The results

support *H1* for the sample of Parenthood = 0.0 (i.e., including non-parents and non-respondents), but not for parents.

Self-Actualization and Well-Being in the split sample by Major. When split the sample by Major, again Self-Actualization significantly contributed to the variance in Well-Being over and above Gender, Age Group, and Immigration Status for both education students, $F(1,307) = 108.825$, $\Delta R^2 = .250$, $R^2 = .295$, *adjusted R*² = .286, $p < .001$ and non-education students, $F(1,196) = 71.383$, $\Delta R^2 = .256$, $R^2 = .298$, *adjusted R*² = .284, $p < .001$. On average, by every 1 *SD* change in Self-Actualization, Well-Being changed by .508 *SD* for education students and by .522 *SD* for non-education students (or for every 1 unit change in SA scores, WB score changed by .496 unit for education students and by .548 unit for non-education students.). The results support *H1* for both education and non-education students with almost similar amount of variance explained (about 25%) for both groups (see Table 23).

Self-Actualization and EWB/SWB in the full sample. Similar results were obtained when conducting hierarchical regression analysis with Eudaimonic Well-being (EWB) or Subjective Well-Being (SWB) as the dependent variables. Independent from all control variables, Self-Actualization significantly predicted EWB, $F(1,506) = 234.731$, $\Delta R^2 = .292$, $R^2 = .371$, *adjusted R*² = .364, $p < .001$ and SWB, $F(1,506) = 62.575$, $\Delta R^2 = .106$, $R^2 = .145$, *adjusted R*² = .134, $p < .001$. The regression coefficient for Self-Actualization was 3.952 ($\beta = .559$) for EWB and .313 ($\beta = .337$) for SWB. Given the results of the analysis, Hypothesis 1 was supported for the full sample when having EWB or SWB as indicators of well-being. SA accounted for much higher unique variance in EWB (29.2%) than did in SWB (10.6%).

Self-Actualization and EWB/SWB in the split sample by Gender. When splitting the sample by Gender, again Self-Actualization predicted EWB over and above the remaining control variables (excluding Gender); for females, $F(1,324) = 124.383$, $\Delta R^2 = .255$, $R^2 = .336$, *adjusted* $R^2 = .326$, $p < .001$; for males, $F(1,177) = 111.826$, $\Delta R^2 = .363$, $R^2 = .425$, *adjusted* $R^2 = .408$, $p < .001$. For EWB, the regression coefficient for Self-Actualization was 3.765 ($\beta = .512$) for females and 4.260 ($\beta = .612$) for males. Furthermore, Self-Actualization predicted SWB over and above the demographic control variables; for females, $F(1,324) = 28.391$, $\Delta R^2 = .079$, $R^2 = .103$, *adjusted* $R^2 = .090$, $p < .001$; for males, $F(1,177) = 35.831$, $\Delta R^2 = .164$, $R^2 = .190$, *adjusted* $R^2 = .167$, $p < .001$. For SWB, the regression coefficient for Self-Actualization was .276 ($\beta = .284$) for females and .371 ($\beta = .411$) for males.

In sum, the shared variance between SA and either EWB or SWB was approximately 10% higher for males than for females and about 17% (females) to 20% (males) higher for EWB than for SWB. Altogether, the results support *H1* for males and females when having EWB or SWB as indicators of well-being.

Self-Actualization and EWB/SWB in the split sample by Parenthood. When splitting the sample by Parenthood, Self-Actualization predicted EWB over and above all demographic control variables for the combination of non-parents and non-respondents to parenthood question (Parenthood = 0.0), $F(1,445) = 257.487$, $\Delta R^2 = .341$, $R^2 = .411$, *adjusted* $R^2 = .403$, $p < .001$. For EWB in this group, the regression coefficient for Self-Actualization was 4.288 ($\beta = .600$). However, similar to overall Well-Being, the contribution of Self-Actualization to EWB was not significant for parents (Parent coded as 1.0), $F(1,54) = 1.435$, $p = .236$. Similarly, Self-Actualization predicted SWB over and

above all control variables for the combination of non-parents and non-respondents to parenthood question (Parenthood = 0.0), $F(1,445) = 67.112$, $\Delta R^2 = .125$, $R^2 = .171$, *adjusted R*² = .159, $p < .001$. For SWB in this group, the regression coefficient for Self-Actualization was .334 ($\beta = .363$). Again, similar to overall Well-Being, the contribution of Self-Actualization to SWB was not significant for parents (Parenthood = 1.0), $F(1,54) = 1.482$, $p = .229$.

Overall, SA accounted for 34.1% of variance in EWB which is more than twice of the variance accounted for in SWB (15.9%). The results support *H1* for the sample of Parenthood = 0.0 (i.e., including non-parents and non-respondents), but not for parents when having EWB or SWB as indicators of well-being.

Self-Actualization and EWB/SWB in the split sample by Major. When splitting the sample by Major, again Self-Actualization significantly contributed to the variance in EWB over and above Gender, Age Group, and Immigration Status for both education students, $F(1,307) = 142.384$, $\Delta R^2 = .296$, $R^2 = .362$, *adjusted R*² = .354, $p < .001$ and non-education students, $F(1,196) = 89.692$, $\Delta R^2 = .309$, $R^2 = .325$, *adjusted R*² = .312, $p < .001$. For EWB, the regression coefficient for Self-Actualization was 3.897 ($\beta = .553$) for education students and 4.002 ($\beta = .573$) for non-education students. Similarly for SWB, Self-Actualization significantly contributed to the variance in EWB over and above Gender, Age Group, and Immigration Status for both education students, $F(1,307) = 33.159$, $\Delta R^2 = .096$, $R^2 = .113$, *adjusted R*² = .102, $p < .001$ and non-education students, $F(1,196) = 20.005$, $\Delta R^2 = .122$, $R^2 = .178$, *adjusted R*² = .161, $p < .001$. For SWB, the regression coefficient for Self-Actualization was .286 ($\beta = .315$) for education students and .355 ($\beta = .360$) for non-education students.

Altogether, SA accounted for almost the same amount of variance in EWB/SWB for education and non-education major students (i.e., about 30% for EWB and about 10% for SWB). The explained variance was again two to three times higher in EWB than in SWB. The results support *H1* for education and non-education students when using EWB or SWB as indicators of well-being.

Summary of results for Hypothesis 1. Hypothesis 1, which stated that there is a positive relationship between self-actualization and human well-being, was supported by the results obtained from both bivariate correlational analysis and hierarchical regression analyses across samples. Among all samples, including samples of males, females, education students, non-education students, and parent and non-parent students and the full sample, only the result for parents was not statistically significant at $\alpha = .05$. Thus, the researcher did not have enough evidence to reject the null hypothesis for parents (i.e., *H0*: there is no or negative relationship between self-actualization and well-being.). However, a non-significant result was expected due to the small sample size for parents ($n = 61$). The non-significant result for the small sample leaves the researcher inconclusive about this population. In sum, students (except for parent students) who reported higher level of self-actualization also experienced higher level of well-being (both subjective and eudaimonic well-being). This suggests that the more self-actualizing one is, most probably the higher level of subjective and eudaimonic well-being one experiences.

Testing Hypothesis 2: There Is a Positive Relationship Between the Adoption of More Adaptive Styles of Psychological Defense and Self-Actualization.

In this analysis, Non-Defensiveness scores were used as the indicator of the adoption of more adaptive styles of psychological defense/coping. The bivariate correlational analysis showed that Non-Defensiveness was significantly and positively correlated with Self-Actualization ($r = .44, p < .001$) and all its components (Actualizing-Self, $r = .49, p < .001$; and Actualizing-Striving, $r = .28, p < .001$). Adaptive Coping was also significantly and positively correlated with Self-Actualization ($r = .34, p < .001$), Actualizing-Self ($r = .42, p < .001$), and with Actualizing-Striving ($r = .16, p < .001$). Defensiveness was significantly and negatively correlated with Self-Actualization ($r = -.28, p < .001$), Actualizing-Self ($r = -.26, p < .001$), and with Actualizing-Striving ($r = -.22, p < .001$). The results support the positive relationship between Self-Actualization and Non-Defensiveness, indicating that higher self-actualization is associated with adopting more adaptive style of psychological defense.

The hierarchical regression analysis was used to examine the unique contribution of Non-Defensiveness (ND) to Self-Actualization (SA). The analysis was conducted two times, once for the full sample and once comparing four demographic groups in the sample, grouped by Age Group X Gender (due to the differentiating effect of Age Group X Gender on ND). Gender, Parenthood, and Major were entered as control variables in the first block for the full sample, and after grouping only Parenthood and Major were used as control variables. The possibility of interactions between covariates and independent variable was checked and none of the interactions were significant in predicting Self-Actualization.

Non-Defensiveness and Self-Actualization in the full sample. In the full sample, Non-Defensiveness predicted 17.6% of variance in Self-Actualization over and above all control variables, $F(1,508) = 118.625$, $R^2 = .248$, $adjusted\ R^2 = .242$, $p < .001$. On average, by every 1 *SD* change in ND, Self-Actualization changed by .421 *SD* (or for every 1 unit change in ND, SA changed by .526.). The results support *H2* for the full sample (see Table 24).

Non-Defensiveness and Self-actualization in the split sample by Age Group X Gender. When splitting the sample by four factorial groups formed between Gender and Age Group, again Non-Defensiveness predicted Self-Actualization over and above the remaining control variables (excluding Gender); for adult females, $F(1,50) = 13.237$, $\Delta R^2 = .195$, $R^2 = .265$, $adjusted\ R^2 = .221$, $p = .001$; for adult males, $F(1,27) = 15.099$, $\Delta R^2 = .298$, $R^2 = .468$, $adjusted\ R^2 = .409$, $p = .001$; for emerging-adult females, $F(1,272) = 53.321$, $\Delta R^2 = .163$, $R^2 = .171$, $adjusted\ R^2 = .162$, $p < .001$; for emerging-adult males, $F(1,148) = 35.702$, $\Delta R^2 = .191$, $R^2 = .207$, $adjusted\ R^2 = .191$, $p < .001$. The regression coefficient for ND is .567 ($\beta = .447$) for adult females, .673 ($\beta = .571$) for adult males, .473 ($\beta = .403$) for emerging-adult females, and .585 ($\beta = .441$) for emerging-adult males (see Table 24). These results support *H2* (i.e., the positive relationship between non-defensiveness and self-actualization) across different demographic groups.

Summary of Results for Hypothesis 2. The result of bivariate correlational analysis indicated small- to medium-range effect sizes (Pearson *r*; Cohen, 1988), ranging from .16 to .49, for the relationship of Non-Defensiveness and its components with Self-Actualization and its components. The results of hierarchical regression analysis also indicated medium to large effect sizes ($adjusted\ R^2$, the coefficient of determination;

Table 24
Summary of Hierarchical Regression Analysis Predicting Self-Actualization from Non-Defensiveness

Variable	Self-Actualization					
	β^a	ΔR^2	Adjusted ΔR^2	F Change	df1	df2
<i>Full Sample (N = 513)</i>						
Gender	-.146***					
Major Parents	.085*					
Block 1	--	.072	.066	13.146***	3	509
Non-Defensiveness	.421***					
Block 2	--	.176	.176	118.625***	1	508
Total R^2	.248					
Adjusted R^2	.242					
<i>Adult Female (n = 54)</i>						
Major Parents	-.163					
Block 1	--	.071	.034	1.935	2	51
Non-Defensiveness	.447 ^a ***					
Block 2	--	.195	.187	13.237 ^a ***	1	50
Total R^2	.265					
Adjusted R^2	.221					
<i>Adult Male (n = 31)</i>						
Education Parents	.252					
Block 1	--	.170	.111	2.872	2	28
Non-Defensiveness	.571 ^a ***					
Block 2	--	.298	.298	15.099 ^a ***	1	27
Total R^2	.468					
Adjusted R^2	.409					
<i>Emerging-Adult Female (n = 276)</i>						
Education Parents	.060					
Block 1	--	.008	.001	1.169	2	273
Non-Defensiveness	.403***					
Block 2	--	.163	.161	53.321***	1	272
Total R^2	.171					
Adjusted R^2	.162					
<i>Emerging-Adult Male (n = 152)</i>						
Education Parents	.111					
Block 1	--	.016	.003	1.199	2	149
Non-Defensiveness	.441***					
Block 2	--	.191	.188	35.702***	1	148
Total R^2	.207					
Adjusted R^2	.191					

^a The standardized regression coefficients are reported only for the overall model.

* $p < .05$ ** $p < .01$ *** $p < .001$ ^a*** $p = .001$

Cohen, 1988) for this relationship ranging from .161 to .298. For adult males, Non-Defensiveness accounted for the greatest amount of unique variance (29.8%) in Self-Actualization compared to adult females (18.7%), emerging-adult males (18.8%) and emerging-adult females (16.1%). These results altogether, support *H2* which stated that there is a positive relationship between non-defensiveness and self-actualization. That is, the more non-defensive people behave in stressful situations, the more self-actualizing they are in life, and the more defensive people behave, the less self-actualizing people are.

Testing Hypothesis 3: There Is a Positive Relationship Between Need-Satisfaction and Self-Actualization.

The bivariate correlational analysis showed that Need-Satisfaction was significantly and positively correlated with Self-Actualization ($r = .77, p < .001$) and with all its components (Actualizing-Self, $r = .66, p < .001$; and Actualizing-Striving, $r = .68, p < .001$). General Need-Satisfaction was significantly and positively correlated with Self-Actualization ($r = .54, p < .001$), Actualizing-Self ($r = .62, p < .001$), and with Actualizing-Striving ($r = .32, p < .001$). Goal-Related Need-Satisfaction was significantly and positively correlated with Self-Actualization ($r = .72, p < .001$), Actualizing-Self ($r = .79, p < .001$) and with Actualizing-Striving ($r = .46, p < .001$). The results support the positive relationship between Need-Satisfaction (NS) and Self-Actualization (SA) as stated in Hypothesis 3.

Hierarchical regression analysis was used to examine the unique contribution of need-satisfaction to the process of self-actualization. The analysis was conducted two times, once for the full sample and once comparing two demographic groups in the

sample, grouped by Major (due to the differentiating effect of Major on NS). Gender, Parenthood, and Major that showed significant mean differences for Self-Actualization were identified to be used as control variables in the full sample. Only Gender and Parenthood were used as control variables in split samples by Major.

Prior to starting the hypothesis testing, the possibility of interactions between covariates and independent variable was checked using hierarchical regression analysis. Demographic control variables and Need-Satisfaction was entered in Block 1 and interactions were included in Block 2. For the full sample, only the interaction between Gender and NS was significant in predicting Self-Actualization ($\beta = .139, p < .001$). The other two interactions were not significant (for Major X NS, $p = .073$; for Parenthood X NS, $p = .619$). The result was the same for the sample of non-education students while for education students none of the interactions were significant. Therefore, Gender X NS formed the third block in subsequent hierarchical regression analysis.

Need-Satisfaction and Self-Actualization in the full sample. In the hierarchical regression analysis for the full sample, Parenthood and Major were entered as covariates at Block 1, Gender and Need-Satisfaction as independent variables at Block 2 and Gender X NS at Block 3 to test the interaction effect over and above the additive effect of independent variables. In the full sample, Block 1 (i.e. covariates) predicted 4.5% of variance in Self-Actualization ($p < .001$). Adding Need-Satisfaction and Gender together accounted for 57% more variance in Self-Actualization ($p < .001$). The interaction also accounted for .7% more variance ($F(1,507) = 9.957, p < .01$) over and above the additive effect of IVs. R^2 for the overall model was .623 (*adjusted* $R^2 = .619$). Table 25 presents the details of this analysis, and Figure 7 illustrates the existing interaction effect.

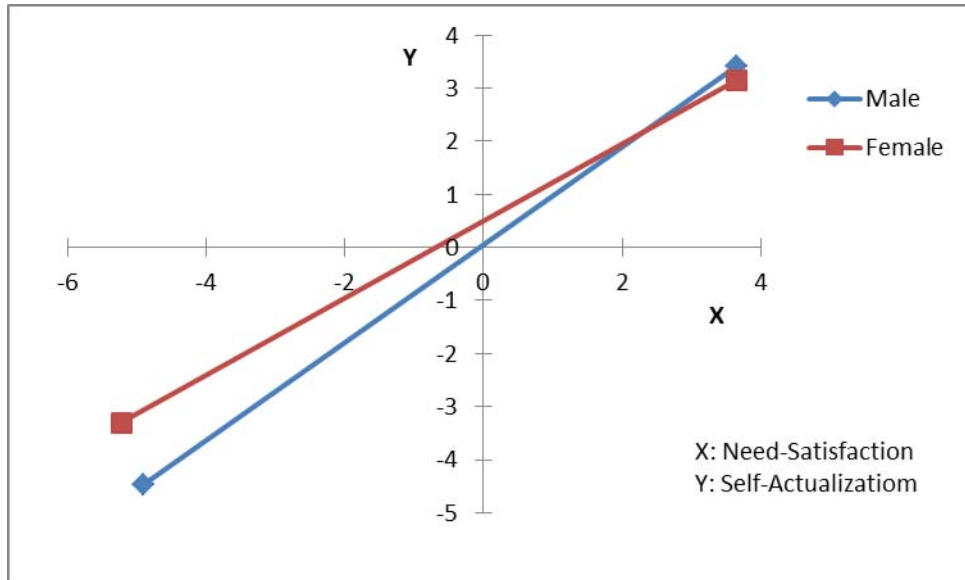


Figure 7. The Gender by Need-Satisfaction interaction in predicting Self-Actualization for the full sample

Because the interaction effect exists, the main effect of Need-Satisfaction on Self-Actualization is not interpretable. Thus, the regression coefficients for all variables in the overall model are reported here. In the overall model, the regression coefficient for Major was .052 ($\beta = .015, p = .624$), for Parenthood was .335 ($\beta = .063, p < .05$), for Gender was -.437 ($\beta = -.121, p < .001$), for Need-Satisfaction was .727 ($\beta = .687, p < .001$), and for Gender X Need-Satisfaction was .194 ($\beta = .106, p < .01$). On average, by every 1 *SD* change in NS, Self-Actualization changed by .687 *SD* for females and changed by .793 (i.e., .687 + .106) *SD* for males; or for every 1 unit change in NS, SA changed by .727 unit for females and by .921 (i.e., .727 + .194) unit for males. The result supports the positive relationship between need-satisfaction and self-actualization (*H3*).

Need-Satisfaction and Self-actualization in the split sample by Major. When splitting the sample to education ($n = 312$) and non-education ($n = 201$) students, only Parenthood was used as the covariate and Gender and NS were entered as IVs at the next

step. The results of a preliminary hierarchical regression analysis showed that there was not an interaction effect For education students, $F(1,307) = 1.876, p = .172$. Thus, for this split sample Parenthood and Gender were treated as covariates and NS was treated as IV. Need-satisfaction significantly predicted Self-Actualization over and above the effect of covariates (i.e., Parent and Gender), $F(1,308) = 497.026, \Delta R^2 = .593, p < .001$. For education students, the regression coefficient for NS in predicting SA was $.793 (\beta = .775)$. That is, on average, for every 1 *SD* change in NS of education students, Self-Actualization changed by $.775$ *SD*; or by every 1 unit change in NS, Self-Actualization changed by $.793$ unit on average. The effect size for the overall model was large, $R^2 = .632$ (*adjusted R*² = $.629$) (see Table 25).

For non-education students, there was an interaction between Gender and NS, $F(1,196) = 13.201, \Delta R^2 = .028, R^2 = .591, \text{adjusted } R^2 = .583, p < .001$. Thus, a hierarchical regression analysis similar to the full sample was conducted for this split sample. For non-education students, the main effect of Need-Satisfaction on Self-Actualization is not interpretable due to the interaction effect. Thus, the regression coefficients for all variables in the overall model were reported here. In the overall model, the regression coefficient for Parent was $-.041 (\beta = -.005, p = .905)$, for Gender was $-.523 (\beta = -.152, p = .001)$, for Need-Satisfaction was $.545 (\beta = .494, p < .001)$, and for Gender X NS was $.383 (\beta = .280, p < .001)$. On average, by every 1 *SD* change in NS, Self-Actualization changed by $.494$ *SD* for female non-education students and changed by $.774$ (i.e., $.280 + .494$) *SD* for male non-education students; or for every 1 unit change in NS, SA changed by $.545$ unit for female non-education students and by $.928$ (i.e., $.545 + .383$) unit for male non-education students. The effect size for the

overall model was also large, $R^2 = .591$ (*adjusted* $R^2 = .583$). Table 25 presents the details of this analysis, and Figure 8 illustrates the interaction effect.

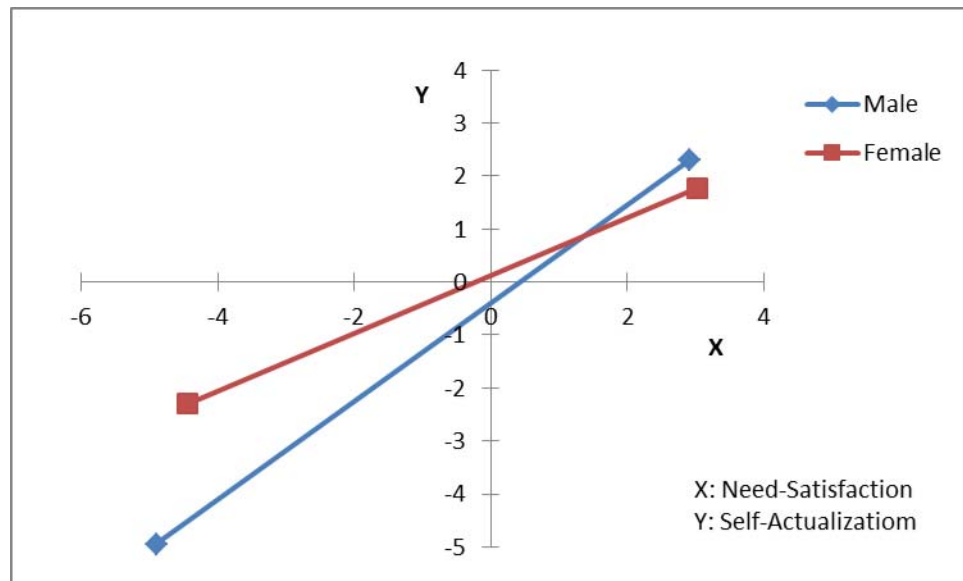


Figure 8. The Gender by Need-Satisfaction interaction in predicting Self-Actualization for non-education students

In line with the result of correlational analysis, the results of hierarchical regression analysis across samples support the positive relationship between need-satisfaction and self-actualization (*H3*). The shared variance accounted for is slightly higher for education students (62.9%) than for non-education students (58.3%) yet both indicating large effect sizes (Cohen, 1988) at the direction of the hypothesized relationship.

Summary of results for Hypothesis 3. The results of bivariate correlational analysis indicated medium to large effect sizes (Cohen, 1988) for the relationship of Need-Satisfaction and its components with Self-Actualization and its components, with r ranging from .32 to .79. Moreover, the results from the hierarchical regression analysis support this hypothesis across samples of education and non-education students as well as

for the full sample. Large effect sizes ranging from .583 to .629 indicates the overall variance accounted for by different models from which only zero to 4.1% of variance in SA was explained by demographic control variables. In sum, the results support *H3* across samples indicating that students who have their psychological needs relatively taken care of are more likely to demonstrate higher level of self-actualization than students who reported lower extent of need satisfaction.

Table 25
Summary of Hierarchical Regression Analysis Predicting Self-Actualization from Need-Satisfaction

Variable	Self-Actualization					
	β^a	ΔR^2	Adjusted ΔR^2	F Change	df1	df2
<i>Full Sample (N = 513)</i>						
Parent	.063*					
Major	.015					
Block 1	--	.045	.041	12.048***	2	510
Gender	-.121***					
NS	.687***					
Block 2	--	.570	.571	376.493***	2	508
Gender X NS	.106**					
Block 3	--	.007	.007	9.957**	1	507
Total R^2	.623					
Adjusted R^2	.619					
<i>Non-Education (n = 201)</i>						
Parent	-.005					
Block 1	--	.001	-.004	.226	1	199
Gender	-.152****					
NS	.494***					
Block 2	--	.562	.561	126.806***	2	197
Gender X NS	.280***					
Block 3	--	.028	.026	13.201***	1	196
Total R^2	.591					
Adjusted R^2	.583					
<i>Education (n = 312)</i>						
Parent	.089*					
Gender	-.074*					
Block 1	--	.039	.033	6.230**	2	309
NS	.775***					
Block 2	--	.593	.596	497.026***	1	308
Total R^2	.632					
Adjusted R^2	.629					

^a The standardized regression coefficients are reported only for the overall model.

* $p < .05$ ** $p < .01$ *** $p < .001$ **** $p = .001$.

Testing Hypothesis 4: There Is a Positive Relationship Between Metacognition and Need-Satisfaction.

The bivariate correlational analysis showed that Metacognition was significantly and positively correlated with Need-Satisfaction ($r = .48, p < .001$), General NS ($r = .52, p < .001$), and Goal-Related NS ($r = .27, p < .001$). Knowledge of Cognition was also significantly and positively correlated with Need-Satisfaction ($r = .49, p < .001$), General NS ($r = .57, p < .001$), and with Goal-Related NS ($r = .25, p < .001$). Regulation of Cognition was also significantly and positively correlated with Need-Satisfaction ($r = .42, p < .001$), General NS ($r = .44, p < .001$), and with Goal-Related NS ($r = .25, p < .001$). The results support the positive relationship between general metacognitive competence and need-satisfaction as hypothesized in *H4*.

The hierarchical regression analysis was used to examine the unique contribution of Metacognition to Need-Satisfaction. The analysis was conducted two times, once for the full sample and once comparing four demographic groups in the sample, grouped by Major X Immigrant interaction (due to the differentiating effect of this interaction on Metacognition scores). Major that showed significant mean difference for Need-Satisfaction was identified to be used as the control variable only when analyzing the full sample.

The possibility of interactions between covariates and independent variable was checked for the full sample using the hierarchical regression analysis. Major as the control variable and Metacognition as IV were entered in the first block. Major X Metacognition was included in Block 2. The interaction was not significant in predicting Need-Satisfaction ($F(1, 509) = .149, p = .700$).

Metacognition and Need-Satisfaction in the full sample. Major was entered as the covariate in Block 1 for the full sample, and Metacognition in Block 2 as the independent variable. Metacognition explained 21.8% of variance in Need Satisfaction ($F(1,510) = 145.850, p < .001$) over and above 1.9% variance accounted for by Major ($F(1,511) = 9.847, p < .01$). R^2 for the overall model was .237 (*adjusted* $R^2 = .234$). The regression coefficients in the overall model were .332 ($\beta = .099, p < .05$) for Major and .014 ($\beta = .469, p < .001$) for Metacognition. That is, on average by every 1 *SD* change in Metacognition, Need-Satisfaction changed by .469 *SD*; or for every 1 unit change in NS, SA changed by .332. This result supports *H4* for the full sample (see Table 26)

Metacognition and Need-Satisfaction in the split sample by Major X Immigrant.

When splitting the sample by Major X Immigrant to four groups, Metacognition was significant in predicting Need-Satisfaction ($p < .001$). For non-immigrant non-education students, $F(1,123) = 33.198, R^2 = .213, \textit{adjusted } R^2 = .206, p < .001$. For non-immigrant education students, $F(1,215) = 42.380, R^2 = .165, \textit{adjusted } R^2 = .161, p < .001$. For immigrant non-education students, $F(1,74) = 20.877, R^2 = .220, \textit{adjusted } R^2 = .210, p < .001$. For immigrant education students, $F(1,93) = 49.725, R^2 = .348, \textit{adjusted } R^2 = .341, p < .001$. Table 26 presents the details of these analyses.

The regression coefficient for Metacognition in predicting Need-Satisfaction was .013 ($\beta = .461$) for non-immigrant non-education students, .012 ($\beta = .406$) for non-immigrant education students, .013 ($\beta = .469$) for immigrant non-education students, and .017 ($\beta = .590$) for immigrant education students. That is, on average for every 1 *SD* change in Metacognition, Need-Satisfaction changed by .461 *SD* for non-immigrant non-education students, by .406 *SD* for non-immigrant education students, by .469 *SD* for immigrant

non-education students, and by .590 *SD* for immigrant education students. The results support the positive relationship of metacognition with need-satisfaction (i.e., *H4*) across all split samples.

Table 26
Summary of Hierarchical Regression Analysis Predicting Need-Satisfaction from Metacognition

Variable	Need-Satisfaction					
	β^a	ΔR^2	Adjusted ΔR^2	F Change	df1	df2
<i>Full Sample (N = 513)</i>						
Major	.099**					
Block 1	--	.019	.017	9.847**	1	511
Metacognition	.469***					
Block 2	--	.218	.217	145.850***	1	510
Total R ²	.237					
Adjusted R ²	.234					
<i>Non-Immigrant Non-Education Students (n = 125)</i>						
Metacognition	.461***					
Block 1	--	--	--	33.198***	1	123
Total R ²	.213					
Adjusted R ²	.206					
<i>Non-Immigrant Education Students (n = 217)</i>						
Metacognition	.406***					
Block 1	--	--	--	42.380***	1	215
Total R ²	.165					
Adjusted R ²	.161					
<i>Immigrant Non-Education Students (n = 76)</i>						
Metacognition	.469***					
Block 1	--	--	--	20.877***	1	74
Total R ²	.220					
Adjusted R ²	.210					
<i>Immigrant Education Students (n = 95)</i>						
Metacognition	.590***					
Block 1	--	--	--	49.725***	1	93
Total R ²	.348					
Adjusted R ²	.341					

^a The standardized regression coefficients are reported only for the overall model.
 ** $p < .01$ *** $p < .001$.

Summary of results for Hypothesis 4. The results of bivariate correlational analysis indicated small to large effect sizes (r ranging from .25 to .57; Cohen, 1988) for the relationship of Metacognition and its components with Need-Satisfaction and its components. The result of hierarchical regression analyses also confirmed this positive relationship across samples indicating medium to large effect sizes (Cohen, 1988) with the greatest amount of variance explained for immigrant education students (34.1%) and the least amount of variance explained for non-immigrant education students (16.1%). For immigrant (education & non-education) students the amount of variance explained was about 21%. The results of the analyses all together provide strong support for $H4$ indicating apposite relationship between metacognition and need-satisfaction. This suggests that students with higher level of general metacognitive competence are more likely to have higher level of need-satisfaction.

Testing Hypothesis 5: There Is a Positive Relationship Between Metacognition and Adopting Adaptive Styles of Psychological Defense.

In this analysis, Non-Defensiveness scores were used as the indicator of the adoption of more adaptive styles of psychological defense. The bivariate correlational analysis showed that Metacognition was significantly and positively correlated with Non-Defensiveness ($r = .51, p < .001$) and Adaptive Coping ($r = .53, p < .001$) and negatively and significantly with Defensiveness ($r = -.17, p < .001$). Knowledge of Cognition was also significantly and positively correlated with Non-Defensiveness ($r = .50, p < .001$) and Adaptive Coping ($r = .46, p < .001$), while it was negatively and significantly correlated with Defensiveness ($r = -.24, p < .001$). Further, Regulation of Cognition was significantly and positively correlated with Non-Defensiveness ($r = .46, p < .001$) and

with Adaptive Coping ($r = .53, p < .001$), while it was negatively and significantly associated with Defensiveness ($r = -.11, p < .05$). The results support the positive relationship between Metacognition and Non-Defensiveness (i.e., adopting more adaptive style of psychological defense) as hypothesized in Hypothesis 5.

The hierarchical regression analysis was used to examine the unique contribution of Metacognition to Non-Defensiveness. Similar to hypothesis 4, the analysis was conducted two times, once for the full sample and once comparing four demographic groups in the sample, grouped by Major X Immigrant interaction (due to the differentiating effect of this interaction on Metacognition scores). Age Group X Gender, that showed significant mean difference for Non-Defensiveness, was identified to be used as the control variable accompanied with its constituting variables (i.e., Gender and Age Group).

The possibility of interactions between covariates and independent variable was checked for the full sample and for each split sample using hierarchical regression analysis. Covariates and Metacognition were entered in the first block and the two-way interactions between covariates and Metacognition were included in Block 2. None of the interactions were significant in predicting Non-Defensiveness.

Metacognition and Non-Defensiveness in the full sample. Age group, Gender, and their interaction were entered as covariates in Block 1 and Metacognition as the independent variable in Block 2. Block 1 including covariates predicted 2.2% of variance in Non-Defensiveness, $F(3, 509) = 3.847, R^2 = .022, adjusted R^2 = .016, p = .010$. Metacognition accounted for 24.5% more variance in Non-Defensiveness over and above the variance accounted for by covariates, $F(1, 508) = 170.292, \Delta R^2 = .245, p < .001$.

R^2 for the overall model was .268 (*adjusted* $R^2 = .262$). In the overall model, the regression coefficient for Metacognition in predicting Non-Defensiveness was .013 ($\beta = .501, p < .001$). That is, on average by every 1 *SD* change in Metacognition, Non-Defensiveness positively changed by .501 *SD*; or for every 1 unit positive change in Metacognition, ND positively changed by .013 units. The results support Hypothesis 5 for the full sample (see Table 27).

Metacognition and Non-Defensiveness in the split sample by Major X

Immigrant. When splitting the sample by Major X Immigrant to four groups, Block 1 (covariates) was only significant for immigrant education students ($F(3, 91) = 4.706, p < .01$). Like the full sample Metacognition significantly predicted Non-Defensiveness for all split samples. For non-immigrant non-education students, $F(1,120) = 54.329, \Delta R^2 = .311, p < .001$. For non-immigrant education students, $F(1,212) = 56.143, \Delta R^2 = .202, p < .001$. For immigrant non-education students, $F(1,71) = 9.571, \Delta R^2 = .112, p < .001$. For immigrant education students, $F(1,90) = 56.107, \Delta R^2 = .332, p < .001$. The regression coefficient for Metacognition in predicting Need-Satisfaction was .013 ($\beta = .563$) for non-immigrant non-education students, .012 ($\beta = .460$) for non-immigrant education students, .009 ($\beta = .336$) for immigrant non-education students, and .015 ($\beta = .610$) for immigrant education students. That is, on average for every 1 *SD* change in Metacognition, Need-Satisfaction changed by .563 *SD* for non-immigrant non-education students, by .460 *SD* for non-immigrant education students, by .336 *SD* for immigrant non-education students, and by .610 *SD* for immigrant education students. Therefore, Hypothesis 5 was supported for all split samples (see Table 27).

Table 27
Summary of Hierarchical Regression Analyses Predicting Non-Defensiveness from Metacognition

Variable	Non-Defensiveness					
	β^a	ΔR^2	Adjusted ΔR^2	F Change	df1	df2
<i>Full Sample (N = 513)</i>						
Age Group	-.061					
Gender	-.249**					
Age Group X Gender	.208*					
Block 1	--	.022	.016	3.847 ^a **	3	509
Metacognition	.501***					
Block 2	--	.245	.246	170.292***	1	508
Total R ²	.268					
Adjusted R ²	.262					
<i>Non-Immigrant Non-Education Students (n = 125)</i>						
Age Group	-.098					
Gender	-.331					
Age Group X Gender	.352					
Block 1	--	.003	-.021	.133	3	121
Metacognition	.563***					
Block 2	--	.311	.312	54.329***	1	120
Total R ²	.314					
Adjusted R ²	.291					
<i>Non-Immigrant Education Students (n = 217)</i>						
Age Group	-.047					
Gender	-.087					
Age Group X Gender	-.054					
Block 1	--	.034	.021	2.515	3	213
Metacognition	.460***					
Block 2	--	.202	.201	56.143***	1	212
Total R ²	.236					
Adjusted R ²	.222					
<i>Immigrant Non-Education Students (n = 76)</i>						
Age Group	-.059					
Gender	-.479					
Age Group X Gender	.428					
Block 1	--	.059	.019	1.494	3	72
Metacognition	.336**					
Block 2	--	.112	.105	9.571**	1	71
Total R ²	.170					
Adjusted R ²	.124					
<i>Immigrant Education Students (n = 95)</i>						
Age Group	-.088					
Gender	-.300*					
Age Group X Gender	.336*					
Block 1	--	.134	.106	4.706**	3	91
Metacognition	.610***					
Block 2	--	.332	.337	56.107***	1	90
Total R ²	.467					
Adjusted R ²	.443					

^aThe standardized regression coefficients are reported only for the overall model.

* $p < .05$ ** $p < .01$ *** $p = .01$ **** $p < .001$ ***** $p = .001$.

Summary of results for Hypothesis 5. The results of bivariate correlational analysis indicated small to large effect sizes ($|r|$ ranging from .11 to .53; Cohen, 1988) for the relationship of Metacognition and its components with Non-Defensiveness and its components. The results of hierarchical regression analysis confirmed this relationship indicating small to large effect sizes (*adjusted* ΔR^2 ranging from .105 to .312; Cohen, 1988). The shared variance in this relationship was the strongest for immigrant education students (33.7%) and the weakest for immigrant non-education students (10.5%).

Testing Hypothesis 6: There Is a Positive Relationship Between Metacognition and Self-Actualization Independent of Need-Satisfaction and Styles of Psychological Defense.

In this analysis, Non-Defensiveness scores were used as the indicator of the adoption of more adaptive styles of psychological defense. The bivariate correlational analysis showed that Metacognition was significantly and positively correlated with Self-Actualization ($r = .52, p < .001$), Actualizing-Self ($r = .56, p < .001$), and Actualizing-Striving ($r = .34, p < .001$). Knowledge of Cognition (KC) was significantly and positively correlated with Self-Actualization ($r = .50, p < .001$), Actualizing-Self ($r = .57, p < .001$), and Actualizing-Striving ($r = .30, p < .001$). Further, Regulation of Cognition (RC) was significantly and positively correlated with Self-Actualization ($r = .48, p < .001$), Actualizing-Striving ($r = .34, p < .001$), and with Actualizing-Self ($r = .50, p < .001$).

After controlling for Need-Satisfaction and Non-Defensiveness, partial correlational analysis indicated that Self-Actualization was positively and significantly correlated with Metacognition ($r = .23, p < .001$), RC ($r = .23, p < .001$), and KC ($r = .18,$

$p < .001$). Actualizing-Self showed statistically significant positive relationship with Metacognition ($r = .29, p < .001$), KC ($r = .31, p < .001$), and RC ($r = .25, p < .001$). Actualizing-Striving was only correlated with RC ($r = .10, p < .05$). The relationships of Actualizing-Striving with Metacognition ($p = .142$) and with Knowledge of Cognition ($p = .186$) were not significant. The results support the positive relationship between Metacognition and Self-Actualization over and above Need-Satisfaction and Non-Defensiveness as hypothesized in Hypothesis 6.

The hierarchical regression analysis was used to examine the unique contribution of Metacognition to Self-Actualization over and above demographic covariates and NS and ND. Similar to hypothesis 4 and 5, the analysis was conducted two times, once for the full sample and once comparing four demographic groups in the sample, grouped by Major X Immigrant (due to the differentiating effect of this interaction on Metacognition scores). Gender, Parent, and Major that showed significant mean difference for Self-Actualization were identified to be used as the control variable.

The possibility of interactions between covariates and independent variable, Metacognition, was checked for the full sample and for each split sample using the hierarchical regression analysis. Covariates and Metacognition were entered in the first block and the two-way interactions between covariates and Metacognition were included in Block 2. None of the interactions were significant in predicting Self-Actualization neither in the full sample nor in the split samples, except for Gender by Metacognition interaction which was significant only for immigrant education students ($p < .05$). This interaction was entered in the third block when analyzing the hypothesis for immigrant education students.

Metacognition and Self-Actualization in the full sample. Gender, Parent, and Major were entered as covariates in Block 1, Need-Satisfaction (NS) and Non-Defensiveness (ND) as the second set of covariates were entered in Block 2 and Metacognition in Block 3 as the independent variable. Block 1 accounted for 7.2% of variance in Self-Actualization (SA), $F(3, 509) = 13.146$, $adjusted R^2 = .066$, $p < .001$. NS and ND explained 55.4% more variance in SA over and above demographic covariates, $F(2, 507) = 374.719$, $adjusted \Delta R^2 = .556$, $p < .001$, and Metacognition accounted for 2.1% more variance in SA over and above the variance accounted for by all covariates, $F(1, 506) = 29.822$, $adjusted \Delta R^2 = .020$, $p < .001$. R^2 for the overall model was .646 ($adjusted R^2 = .642$). In the overall model, the regression coefficient for Metacognition in predicting Self-Actualization was .006 ($\beta = .177$, $p < .001$). That is, on average by every 1 *SD* change in Metacognition, Self-Actualization changed by .177 *SD*; or for every 1 unit change in Metacognition, SA changed by .006 unit over and above changes associated with all covariates (including NS and ND). The result supports *H6* for the full sample. Table 28 demonstrates the details of this analysis.

Metacognition and Self-Actualization in the split sample by Major X

Immigrant. When splitting the sample by Major X Immigrant to four groups, similar hierarchical regression was run for all groups except for Immigrant education students. In the analysis for the latter group, according to preliminary analysis of homogeneity of slopes, the interaction term, Gender X Metacognition was entered as the fourth block. Block 1 (demographic covariates excluding Major) was only significant for non-immigrant education students ($F(2, 214) = 7.009$, $R^2 = .061$, $adjusted R^2 = .053$, $p = .001$) and for immigrant non-education students, ($F(2, 73) = 5.482$, $R^2 = .131$, $adjusted R^2 =$

.107, $p < .01$). Block 2, including NS and ND, was significant for all groups. For non-immigrant non-education students, $F(2,120) = 63.438$, $\Delta R^2 = .500$, $p < .001$. For non-immigrant education students, $F(2,212) = 177.862$, $\Delta R^2 = .588$, $p < .001$. For immigrant non-education students, $F(2,71) = 52.320$, $\Delta R^2 = .518$, $p < .001$. For immigrant education students, $F(2,91) = 92.919$, $\Delta R^2 = .666$, $p < .001$ (see Table 28).

Similar to the full sample, Metacognition significantly predicted Self-Actualization over and above all covariates for the first three groups. For non-immigrant non-education students, $F(1,119) = 10.816$, $\Delta R^2 = .039$, $p = .001$. For non-immigrant education students, $F(1,211) = 13.066$, $\Delta R^2 = .020$, $p < .001$. For immigrant non-education students, $F(1,70) = 5.091$, $\Delta R^2 = .024$, $p < .05$. The regression coefficient for Metacognition in predicting Self-Actualization was .008 ($\beta = .248$) for non-immigrant non-education students, .005 ($\beta = .169$) for non-immigrant education students, .006 ($\beta = .180$) for immigrant non-education students. That is, on average for every 1 *SD* change in Metacognition, Self-Actualization changed by .248 *SD* for non-immigrant non-education students, by .169 *SD* for non-immigrant education students, by .180 *SD* for immigrant non-education students.

For immigrant education students, the interaction (Gender X Metacognition) was significant, $F(1,88) = 4.635$, $\Delta R^2 = .015$, $p < .05$ (Figure 9). Thus, the main effect of Metacognition on SA was not interpretable. To examine the simple effect, the regression coefficients for Gender and Metacognition as well as for Gender X Metacognition were reported here. The regression weight for Gender was -4.531 ($\beta = -1.046$, $p < .05$), for Metacognition was .002 ($\beta = .058$, $p = .500$), and for the interaction was .012 ($\beta = .934$, $p < .05$).

Table 28
Summary of Hierarchical Regression Analyses Predicting Self-Actualization from Metacognition Over and Above Need-Satisfaction and Non-Defensiveness

Variable	Self-Actualization					
	β^a	ΔR^2	Adjusted ΔR^2	F Change	df1	df2
<i>Full Sample (N = 513)</i>						
Gender	-.131***					
Parent	.054*					
Major	.014					
Block 1	--	.072	.066	13.146***	3	509
Need-Satisfaction	.642***					
Non-Defensiveness	.048					
Block 2	--	.554	.556	374.719***	2	507
Metacognition	.177***					
Block 3	--	.021	.020	29.822***	1	506
Total R ²	.646					
Adjusted R ²	.642					
<i>Non-Immigrant Non-Education Students (n = 125)</i>						
Gender	-.120					
Parent	-.036					
Block 1	--	.027	.011	1.720	2	122
Need-Satisfaction	.628***					
Non-Defensiveness	-.065					
Block 2	--	.500	.500	63.438***	2	120
Metacognition	.248 ^a ***					
Block 3	--	.039	.037	10.816 ^a ***	1	119
Total R ²	.567					
Adjusted R ²	.548					
<i>Non-Immigrant Education Students (n = 217)</i>						
Gender	-.073					
Parent	.126**					
Block 1	--	.061	.053	7.009 ^a ***	2	214
Need-Satisfaction	.643***					
Non-Defensiveness	.107*					
Block 2	--	.588	.590	177.862***	2	212
Metacognition	.169***					
Block 3	--	.020	.019	13.066***	1	211
Total R ²	.670					
Adjusted R ²	.662					

(continued)

Table 28 (continued)
Summary of Hierarchical Regression Analyses Predicting Self-Actualization from Metacognition Over and Above Need-Satisfaction and Non-Defensiveness

Variable	Self-Actualization					
	β^a	ΔR^2	Adjusted ΔR^2	F Change	df1	df2
<i>Immigrant Non-Education Students (n = 76)</i>						
Gender	-					
Parent	.261***					
Block 1	.044					
Need-Satisfaction	--	.131	.107	5.482**	2	73
Non-Defensiveness	.649***					
Block 2	-.022					
Metacognition	--	.518	.522	52.320***	2	71
Block 3	.180*					
	--	.024	.020	5.091*	1	70
Total R ²	.672					
Adjusted R ²	.649					
<i>Immigrant Education Students (n = 95)</i>						
Parent	.002					
Block 1	--	.007	-.003	.693	1	93
Need-Satisfaction	.684***					
Non-Defensiveness	.120					
Block 2	--	.666	.666	92.919***	2	91
Gender	-1.046*					
Metacognition	.058					
Block 3	--	.019	.012	2.720	2	89
Gender X Metacognition	.934*					
Block 4	--	.015	.013	4.635*	1	88
Total R ²	.708					
Adjusted R ²	.688					

^aThe standardized regression coefficients are reported only for the overall model.

* $p < .05$ ** $p < .01$ *** $p < .001$ **** $p = .001$.

That is, on average for every 1 unit change in Metacognition, SA changed by .002 unit for female immigrant education students (which was not statistically significant; $p = .500$) and by .014 unit for male immigrant education students. Overall, the results of hierarchical regression analyses supported the positive relationship between metacognition and self-actualization over and above the contribution of need-satisfaction

and non-defensiveness across all demographically different samples except for *female* immigrant education students.

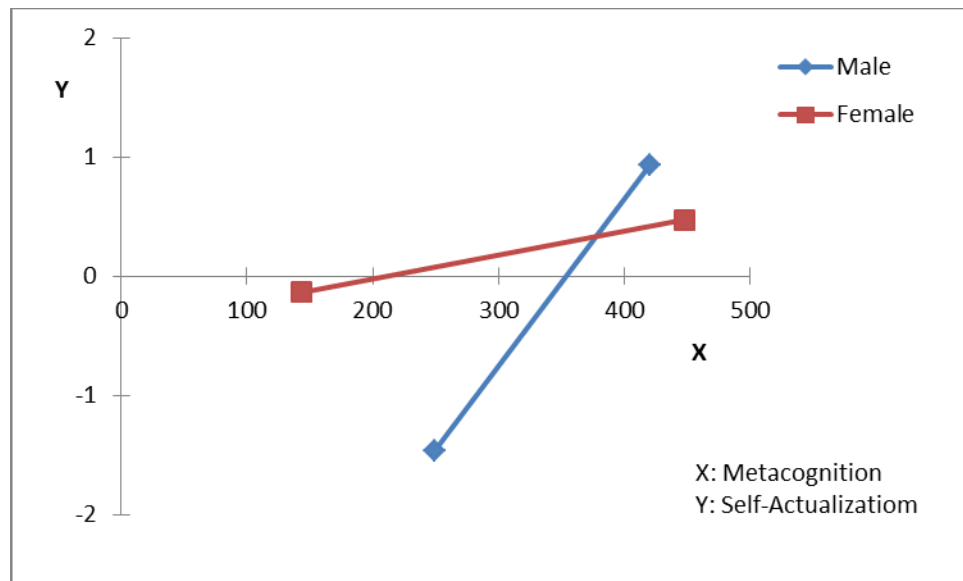


Figure 9. The Gender by Metacognition interaction in predicting Self-Actualization for the immigrant education students

Summary of results for Hypothesis 6. The results of bivariate correlational analysis indicated medium to large effect sizes (r ranging from .30 to .57; Cohen, 1988) for the relationship of Metacognition with Self-Actualization while holding Need-Satisfaction and Non-Defensiveness constant. In addition, the results of hierarchical regression analysis support Hypothesis 6 indicating a very small to small effect sizes (*adjusted* ΔR^2 ranging from .013 to .020; Cohen, 1988). However, no statistically significant relationship for female immigrant education students was detected. A non-significant result was expected for this group due to the small sample size for female immigrant education students ($n = 78$). The non-significant result for this small sample leaves the researcher inconclusive about this population.

In sum, among all the split samples, hierarchical regression model for this hypothesis accounted for the highest percentage of variance in SA for immigrant education students (68.8%) while it explained the least amount of variance in SA for non-immigrant non-education students (54.8%). The unique contribution of Metacognition to Self-Actualization was the highest for non-immigrant non-education students (3.7%) and was the least for non-immigrant education students (2.0%). In interaction by Gender, Metacognition accounted for 3.4% of variance in Self-Actualization. Students who reported higher level of general metacognitive competence are more likely to report higher level of self-actualization. This implies that the more competent people are in their general metacognitive knowledge and regulation the more self-actualizing they are.

Testing Hypothesis 7: There Is a Positive Relationship Between Metacognition and Well-Being.

The bivariate correlational analysis showed that Metacognition (MC) was significantly and positively correlated with overall Well-Being ($r = .51, p < .001$), EWB ($r = .56, p < .001$), and SWB ($r = .32, p < .001$). Knowledge of Cognition (KC) was significantly and positively correlated with Well-Being ($r = .50, p < .001$), EWB ($r = .55, p < .001$), and SWB ($r = .31, p < .001$). Further, Regulation of Cognition (RC) was significantly and positively correlated with Well-Being ($r = .47, p < .001$), SWB ($r = .30, p < .001$), and with EWB ($r = .51, p < .001$). The results support the positive relationship between Metacognition and Well-Being as hypothesized in Hypothesis 6.

The hierarchical regression analysis was used to examine the unique contribution of Metacognition to Well-Being. Similar to hypothesis 4 and 5, the analysis was conducted two times, once for the full sample and once comparing four demographic

groups in the sample, grouped by Major X Immigrant (due to the differentiating effect of this interaction on Metacognition scores). Age Group, Gender, Major, and Major X Immigrant which showed significant mean differences for Well-Being were identified to be used as the control variable when analyzing the full sample. Immigrant was also added to this list as one of the constituting variables in the interaction term. For the split samples, Major, Immigrant and their interaction were excluded from the analysis since they were used as the grouping variable.

The possibility of interactions between covariates and Metacognition (i.e., independent variable) was checked for the full sample and for each split sample using hierarchical regression analyses. Covariates and Metacognition were entered in the first block and the 2-way interactions between covariates and Metacognition were included at step 2. None of the interactions were significant in predicting Well-Being neither in the full sample nor in the split samples. When predicting SWB, Age Group by Metacognition interaction was only significant for the full sample and non-immigrant education students ($p < .05$). Thus, the interaction was entered as the last step in hierarchical regression analysis when testing the hypothesis for SWB.

Metacognition and Well-Being in the full sample. Age Group, Gender, Major, Immigrant and Major X Immigrant were entered as covariates in Block 1 for the full sample and Metacognition as the independent variable in Block 2. Block 1 accounted for 6.5% of variance in Well-Being (WB), $F(5, 507) = 7.016$, *adjusted* $R^2 = .055$, $p < .001$. Metacognition accounted for 22.4% more variance in WB over and above the variance accounted for by the covariates, $F(1, 506) = 159.239$, *adjusted* $\Delta R^2 = .225$, $p < .001$. R^2 for the overall model was .289 (*adjusted* $R^2 = .280$). In the overall model, the regression

coefficient for Metacognition in predicting Well-Being was .015 ($\beta = .482, p < .001$). That is, on average by every 1 *SD* change in Metacognition, Well-Being changed by .482 *SD*; or for every 1 unit change in Metacognition, WB changed by .015 unit over and above changes associated with all demographic covariates. Table 29 demonstrates the details of this analysis. This result supports Hypothesis 7 indicating a positive relationship between metacognition and well-being.

EWB as DV in the full sample. Similar results were obtained when conducting hierarchical regression analysis with EWB as the dependent variable. Independent from all demographic control variables, Metacognition significantly predicted EWB, $F(1,506) = 212.281, \Delta R^2 = .272, R^2 = .352, adjusted R^2 = .344, p < .001$. Covariates in Block 1 also significantly predicted EWB, $F(5,507) = 8.809, R^2 = .080, adjusted R^2 = .071, p < .001$. In the full model, the regression coefficients were as follows: for Gender $B = -1.135, \beta = -.044, p = .251$; for Age Group $B = -3.306, \beta = -.100, p < .01$; for Major $B = 3.860, \beta = .154, p = .001$; for Immigrant $B = .960, \beta = .037, p = .509$; for Major X Immigrant $B = -1.973, \beta = -.063, p = .301$; and for Metacognition $B = .117, \beta = .531, p < .001$. That is, on average by every 1 *SD* change in Metacognition, EWB changed by .531 *SD*; or for every 1 unit change in Metacognition, EWB changed by .117 unit over and above changes associated with all demographic covariates. This result provided evidence to support Hypothesis 7 for the full sample when EWB was used as an indicator of human well-being.

SWB as DV in the full sample. According to preliminary analysis of homogeneity of slopes, Age Group X Metacognition was significant in predicting SWB. Thus to predict SWB, Age Group X Metacognition interaction was entered as an additional step

in hierarchical regression analysis. The result showed that the interaction was significant ($F(1,505) = 6.794, \Delta R^2 = .012, R^2 = .141, \text{adjusted } R^2 = .129, p < .01$) over and above control variables ($F(4,508) = 4.875, R^2 = .037, \text{adjusted } R^2 = .029, p = .001$) and the additive effect of Metacognition and Age Group ($F(2,506) = 26.928, \Delta R^2 = .093, R^2 = .130, \text{adjusted } R^2 = .119, p < .001$). Figure 10 illustrate this interaction effect.

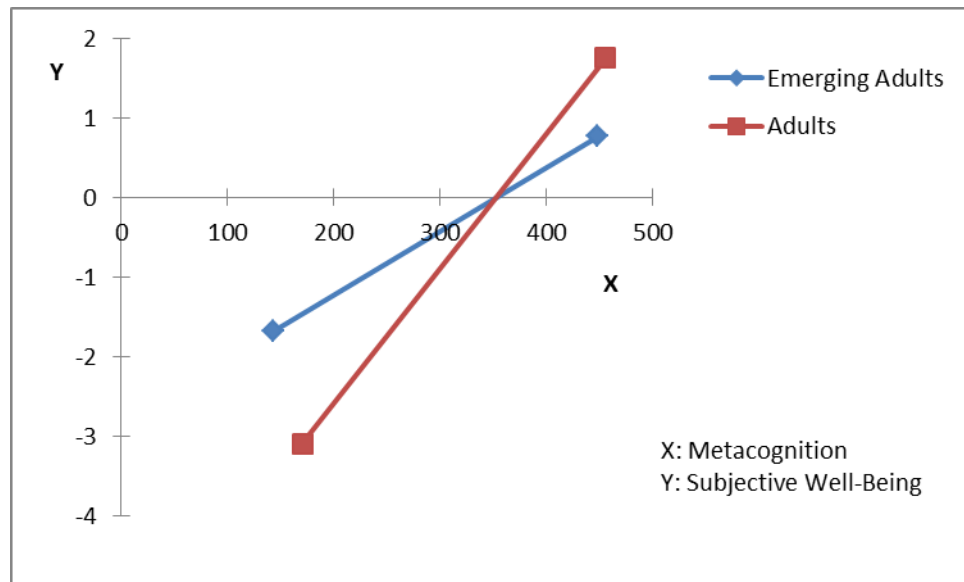


Figure 10. The Age Group by Metacognition interaction in predicting Subjective Well-Being for the full sample

The regression coefficients in the full model were as follows: for Gender $B = -.366, \beta = -.109, p < .05$; for Major $B = .258, \beta = .078, p = .154$; for Immigrant $B = .596, \beta = .175, p < .01$; for Major X Immigrant $B = -.620, \beta = -.150, p < .05$; for Age Group $B = 3.175, \beta = .734, p = .01$; for Metacognition $B = .017, \beta = .573, p < .001$; and for Age Group X Metacognition $B = -.009, \beta = -.754, p < .01$. That is, for every 1 unit change in Metacognition of adults, their SWB changed by .017 unit, over and above changes associated with all demographic covariates. For emerging adults, for every 1 unit change

in Metacognition, their SWB changed by .008 (i.e., .017 - .009) unit, over and above changes associated with all demographic variables. The results indicated a positive relationship between metacognition and subjective well-being (as an indicator of human well-being) and, thus, support Hypothesis 7 for the full sample when having SWB as DV.

Metacognition and Well-Being in the split sample by Major X Immigrant.

When splitting the sample to four groups by Major X Immigrant, Gender and Age Group were entered as covariates in Block 1 and Metacognition as independent variable in Block 2. Block 1 (demographic covariates) was only significant for non-immigrant education students ($F(2, 214) = 6.655, R^2 = .059, adjusted R^2 = .050, p < .01$).

Metacognition, however, significantly predicted WB for all four groups over and above the control variables. For non-immigrant non-education students, $F(1, 121) = 41.844, \Delta R^2 = .256, Total R^2 = .259, adjusted R^2 = .240, p < .001$. For non-immigrant education students, $F(1, 213) = 68.049, \Delta R^2 = .228, Total R^2 = .287, adjusted R^2 = .276, p < .001$. For immigrant non-education students, $F(1, 72) = 16.641, \Delta R^2 = .185, Total R^2 = .200, adjusted R^2 = .167, p < .001$. For immigrant education students, $F(1, 91) = 29.509, \Delta R^2 = .235, Total R^2 = .274, adjusted R^2 = .250, p < .001$ (see Table 29).

The regression coefficient for Metacognition in predicting Well-Being was .016 ($\beta = .508$) for non-immigrant non-education students, .015 ($\beta = .489$) for non-immigrant education students, .015 ($\beta = .432$) for immigrant non-education students, and .015 ($\beta = .499$) for immigrant education students. That is, on average for every 1 *SD* change in Metacognition, Well-Being changed by .508 *SD* for non-immigrant non-education students, by .489 *SD* for non-immigrant education students, by .432 *SD* for immigrant non-education students and by .499 *SD* for immigrant education students. The results of

hierarchical regression analysis support Hypothesis 7 across split samples when WB was used as the indicator of overall human well-being.

EWB as DV in the split sample by Major X Immigrant. The result of hierarchical regression analysis in predicting EWB indicated that Block 1 consisted of Gender and Age Group was only significant for non-immigrant education students ($F(2, 214) = 7.649, R^2 = .067, adjusted R^2 = .058, p = .001$) and for immigrant education students, ($F(2,92) = 3.350, R^2 = .068, adjusted R^2 = .048, p < .05$). Metacognition was significant for all groups over and above covariates. For non-immigrant non-education students, $F(1,121) = 56.316, \Delta R^2 = .317, R^2 = .318, adjusted R^2 = .301, p < .001$. For non-immigrant education students, $F(1,213) = 68.843, \Delta R^2 = .228, R^2 = .295, adjusted R^2 = .285, p < .001$. For immigrant non-education students, $F(1,72) = 27.333, \Delta R^2 = .274, R^2 = .278, adjusted R^2 = .248, p < .001$. For immigrant education students, $F(1,91) = 58.385, \Delta R^2 = .364, R^2 = .432, adjusted R^2 = .413, p < .001$.

The regression coefficient for Metacognition in predicting EWB was .119 ($\beta = .566$) for non-immigrant non-education students, .109 ($\beta = .489$) for non-immigrant education students, .120 ($\beta = .526$) for immigrant non-education students, and .127 ($\beta = .621$) for immigrant education students. That is, on average for every 1 *SD* change in Metacognition, EWB changed by .566 *SD* for non-immigrant non-education students, by .489 *SD* for non-immigrant education students, by .526 *SD* for immigrant non-education students, and by .621 *SD* for immigrant education students. Again the results of hierarchical regression analyses support Hypothesis 7 for EWB across split samples.

SWB as DV in the split sample by Major X Immigrant. According to preliminary analysis of homogeneity of slopes, Age Group X Metacognition was significant in

Table 29
Summary of Hierarchical Regression Analysis Predicting Well-Being from Metacognition

Variable	Well-Being					
	β^a	ΔR^2	Adjusted ΔR^2	F Change	df1	df2
<i>Full Sample (N = 513)</i>						
Gender	-.090*					
Age Group	-.059					
Major	.136**					
Immigrant	.117*					
Major X Immigrant	-.120					
Block 1	--	.065	.055	7.016***	5	507
Metacognition	.482***					
Block 2	--	.224	.225	159.239***	1	506
Total R ²	.289					
Adjusted R ²	.280					
<i>Non-Immigrant Non-Education Students (n = 125)</i>						
Gender	-.002					
Age Group	.002					
Block 1	--	.002	-.014	.141	2	122
Metacognition	.508***					
Block 2	--	.256	.254	41.844***	1	121
Total R ²	.259					
Adjusted R ²	.240					
<i>Non-Immigrant Education Students (n = 217)</i>						
Gender	-.106					
Age Group	-.140*					
Block 1	--	.059	.050	6.655**	2	214
Metacognition	.489***					
Block 2	--	.228	.226	68.049***	1	213
Total R ²	.287					
Adjusted R ²	.276					
<i>Immigrant Non-Education Students (n = 76)</i>						
Gender	-.101					
Age Group	-.026					
Block 1	--	.016	-.011	.578	2	73
Metacognition	.432***					
Block 2	--	.185	.178	16.641***	1	72
Total R ²	.200					
Adjusted R ²	.167					
<i>Immigrant Education Students (n = 95)</i>						
Gender	-.183*					
Age Group	.007					
Block 1	--	.039	.018	1.867	2	92
Metacognition	.499***					
Block 2	--	.235	.232	29.509***	1	91
Total R ²	.274					
Adjusted R ²	.250					

^a The standardized regression coefficients are reported only for the overall model.

* $p < .05$ ** $p < .01$ *** $p < .001$

predicting SWB only for non-immigrant education students. Thus, this interaction was entered as an additional step in hierarchical regression analysis for this group. All other groups were analyzed using the same hierarchical regression model as for WB and EWB in split samples. Block 1, consisting of Gender for non-immigrant education students and Gender and Age Group for all other groups, was not significant for any of the split samples.

Metacognition significantly predicted SWB for non-immigrant non-education students $F(1,121) = 16.084$, $\Delta R^2 = .116$, $R^2 = .127$, *adjusted R*² = .105, $p < .001$, for immigrant non-education student $F(1,72) = 4.605$, $\Delta R^2 = .058$, $R^2 = .095$, *adjusted R*² = .057, $p < .05$, for immigrant education students $F(1,91) = 5.154$, $\Delta R^2 = .052$, $R^2 = .077$, *adjusted R*² = .047, $p < .05$. The regression coefficient for Metacognition in predicting SWB was .010 ($\beta = .342$) for non-immigrant non-education students, .008 ($\beta = .242$) for immigrant non-education students, and .007 ($\beta = .235$) for immigrant education students. That is, on average for every 1 *SD* change in Metacognition, SWB changed by .342 *SD* for non-immigrant non-education students, by .242 *SD* for immigrant non-education students, and by .235 *SD* for immigrant education students.

For non-immigrant education students, the main effect of Metacognition is not interpretable because there was a significant interaction between MC and Age Group. Block 2 in this hierarchical regression analysis included Age Group and Metacognition. These two variables together accounted for 14.0% of variance in SWB in non-immigrant education students, $F(2,213) = 17.523$, $\Delta R^2 = .140$, $R^2 = .147$, *adjusted R*² = .135, $p < .001$. Age Group X Metacognition also explained 2.4% more variance in SWB of this group over and above all covariates and the additive effect of Age and Metacognition, $F(1,212)$

= 6.082, $\Delta R^2 = .024$, $R^2 = .171$, *adjusted R*² = .156, $p < .05$. The regression coefficients in the full model were as follows: for Gender $B = -.417$, $\beta = -.122$, $p = .055$; for Age Group $B = 4.579$, $\beta = 1.192$, $p < .05$; for Metacognition $B = .021$, $\beta = .785$, $p < .001$; and for Age Group X Metacognition $B = -.013$, $\beta = -1.261$, $p < .05$. That is, for every 1 unit change in Metacognition of adults, their SWB changed by .021 unit over and above changes associated with all demographic covariates. For emerging adults, for every 1 unit change in Metacognition, their SWB changed by .008 (i.e., .021-.013) unit, over and above changes associated with all demographic variables. Figure 11 illustrates this interaction effect. Overall, the relationship between metacognition and subjective well-being was positive and significant. Therefore, the results support Hypothesis 7 for SWB across all split samples.

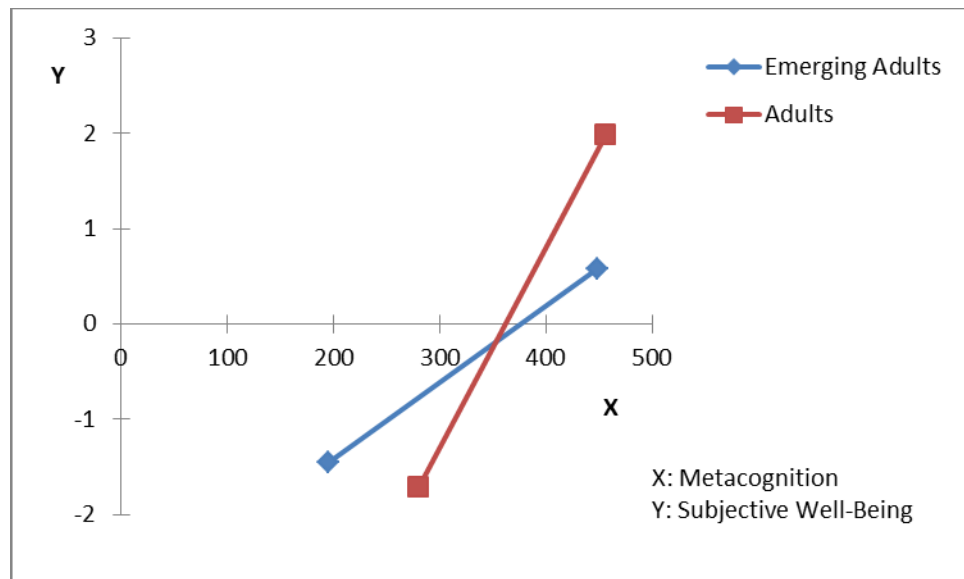


Figure 11. The Age Group by Metacognition interaction in predicting Subjective Well-Being for non-immigrant education students

Summary of results for Hypothesis 7. The results of bivariate correlational analysis support H7 indicating medium to large effect sizes (r ranging from .30 to .56;

Cohen, 1988) for the association of Metacognition with overall Well-Being and its composite. Moreover, the results of hierarchical regression analyses support H7 for the full sample and across split samples for WB, EWB and SWB as indicators of human well-being by effect sizes in small- to medium-range (*adjusted* ΔR^2 ranging from .043 to .365; Cohen, 1988). In the relationship between Metacognition and overall Well-Being, the shared variances was the largest for non-immigrant non-education students (25.4%) and was the smallest for non-immigrant education students (17.8%). Overall, the results of the analyses provide support for Hypothesis 7 across samples indicating that students who reported higher metacognition were more likely to score higher on well-being. This suggests that students who possess higher general metacognitive competence are more likely to experience higher level of well-being than students who are less metacognitive.

Testing Hypotheses 8 and 9

To test the mediational effect in Hypotheses 8 and 9, Shrout and Bolger's (2002) Bootstrap procedure were employed using Structural Equation Modeling (SEM) by AMOS 18.0. Figures in the following sections demonstrate the simplified model for the SEM analysis only for the full sample. SEM diagrams for split samples are presented in Appendices G and H. For the purpose of presentation, the correlation paths between exogenous variables which were added to improve the fit of the model were not presented in the path diagrams. The parameter estimates for the structural coefficients for each analysis are presented in figures with unstandardized coefficients presented on each path and standardized coefficients in parentheses. The residuals in circles indicate the proportion of unexplained variance by the model (error terms) and are calculated by subtracting squared multiple correlation (R^2) for each variable (the mediator and the

dependent variable) from 1. Tables in the following sections present the point estimates, the lower bounds and upper bounds for the 95% confidence intervals for the path ways between constructs of interest and for the indirect effect (i.e., the mediational effect).

Testing Hypothesis 8: Need-Satisfaction Mediates the Relationship between Metacognition and Self-Actualization.

Similar to all previous analyses, where Metacognition was involved as IV, Major X Immigrant was used as grouping variable and a similar model was tested for the full sample as well as for each split sample. Again similar to all previous analyses where Self-Actualization (SA) was used as DV, Gender, Major and Parent were included in SEM as covariates in predicting SA. To improve the model fit, non-significant demographic variables were excluded from the model after the initial analysis. That is, Education was excluded from all models and Parent from the sample of immigrant education student. In addition, according to the result of the analyses for Hypothesis 3, Gender X Need-Satisfaction was significant in predicting SA for the full sample and for non-education students. Thus, this interaction term was included in SEM as covariate only when analyzing the full sample or immigrant and non-immigrant non-education students.

Finally, to illustrate the unique mediational contribution of Metacognition (MC) to Self-Actualization (SA), a set of hierarchical regression analyses was conducted to calculate R-Square Change for the unique contribution of MC to SA before and after controlling for NS and its interaction with Gender (i.e., before and after inclusion of the mediator). The results then were subtracted from each other to obtain the proportion of variance in SA, accounted for by mediation ($\Delta R^2_{without\ mediator} - \Delta R^2_{with\ mediator}$).

Model fit. First, the fit of the model was evaluated with AMOS 18.0 using a maximum likelihood algorithm. The model was statistically over-identified (i.e., positive *df*). A variety of indices of model fit was examined, the overall chi-square test of model fit was not statistically significant neither for the full sample nor for any of split samples (for the full sample: $\chi^2 = 4.73, p = .32$; for non-immigrant non-education students: $\chi^2 = 5.00, p = .29$; for non-immigrant education students: $\chi^2 = 2.72, p = .61$; for immigrant non-education students: $\chi^2 = 2.75, p = .61$; and for immigrant education students: $\chi^2 = .13, p = .72$). A non-significant chi-square ($p > .05$) along with other global/absolute and focused/relative fit indices indicates a good fitting model. The Root Mean Square Error of Approximation ($RMSEA \leq .08$) was .019 for the full sample, .045 for non-immigrant non-education students, $< .001$ for non-immigrant education students, $< .001$ for immigrant non-education students, and $< .001$ for immigrant education students. The *p* value for the close fit (PCLOSE) was greater than .05 for all cases which indicates a good fitting model. The Comparative Fit Index ($CFI \geq .095$) was .999 for the full sample, .996 for non-immigrant non-education students, 1.000 for non-immigrant education students, 1.000 for immigrant non-education students, and 1.000 for immigrant education students. The Standardized Root Mean Residual ($SRMR < .05$) was .029 for the full sample, .047 for non-immigrant non-education students, .028 for non-immigrant education students, .033 for immigrant non-education students, and .015 for immigrant education students. The indices indicated a good model fit. There was no standardized residual covariance with absolute value greater than 2 and Modification indices highlighted no point of ill fit in the model.

Mediation Analysis. The results of SEM analysis showed that indirect effects for the full sample and for the split samples all were significant (see Table 30). That is, metacognition significantly predicted self-actualization through its contribution to need-satisfaction. Indirect regression weights/mediational effects for the full sample: $\beta = .2850, B = .2835, p < .001$ (Figure 12); for non-immigrant non-education students: $\beta = .1689, B = .1682, p < .001$; for non-immigrant education students: $\beta = .2779, B = .2881, p < .001$; for immigrant non-education students: $\beta = .2263, B = .2238, p < .001$; and for immigrant education students: $\beta = .4180, B = .3742, p < .001$.

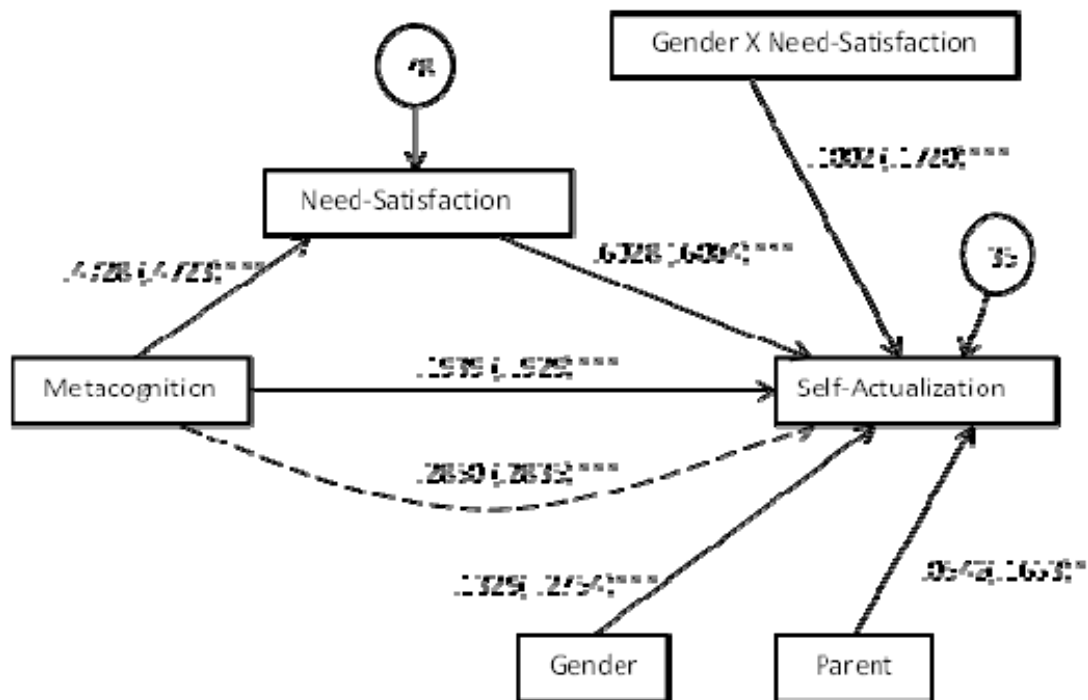


Figure 12. Path coefficients for the mediation model tested for Hypothesis 8 (The dashed line represents the indirect/mediational path)

The (standardized) regression weights were all positive and significant ranging from .1689 to .4180 across samples. This suggests that there is a mediational effect in the relationship between metacognition and self-actualization by need-satisfaction. Thus, the result supports H8 for the full sample and across split samples.

Over and above this contribution, metacognition still accounted for a significant proportion of variance in self-actualization through its direct effect (see Table 30). For the full sample: $\beta = .1939$, $B = .1929$, $p < .001$ (Figure 12); for non-immigrant non-education students: $\beta = .1934$, $B = .1926$, $p < .01$; for non-immigrant education students: $\beta = .2060$, $B = .2136$, $p < .001$; for immigrant non-education students: $\beta = .1887$, $B = .1866$, $p < .05$; and for immigrant education students: $\beta = .1625$, $B = .1455$, $p < .05$. The (standardized) regression weights were all positive and significant ranging from .1625 to .2060 across samples. This result in addition to the previous findings suggests partial mediational effect for need-satisfaction in the relationship between metacognition and self-actualization.

The effect sizes for the overall models across samples were large ranging from .5911 to .6881. The overall model accounted for 64.65% of variance in self-actualization for the full sample; 95% CI [.5911, .6907], $p < .01$. The total variance accounted for by the overall models was .5920 (95% CI [.4509, .6830], $p < .01$) for non-immigrant non-education students, .6619 (95% CI [.5757, .7275], $p < .01$) for non-immigrant education students, .6879 (95% CI [.5370, .7741], $p < .01$) for immigrant non-education students, and .6881 (95% CI [.5596, .7726], $p < .01$) for immigrant education students.

Table 30
Summary of Mediation analyses Predicting Self-Actualization from Metacognition (MC) with Need-Satisfaction (NS) as the Mediator

Path	Point of Estimate	Lower Bound to Upper Bound (95% Confidence Interval)
<i>Full Sample (N = 513)</i>		
Direct Effect of MC on NS	.4728 (.4723)***	4024 to .5354 (.3937 to .5461)
Direct Effect of NS on SA	.6028 (.6004)***	5369 to .6629 (.5313 to .6672)
Direct Effect of Gender X NS on SA	.1002 (.1720)***	.0366 to .1637 (.0631 to .2828)
Direct Effect of MC on SA	.1939 (.1929)***	.1325 to .2510 (.1339 to .2514)
Indirect Effect of MC on SA	.2850 (.2835)***	.2356 to .3388 (.2300 to .3450)
<i>Non-Immigrant Non-Education Students (n = 125)</i>		
Direct Effect of MC on NS	.4579 (.4385)***	.2962 to .5863 (.2808 to .5894)
Direct Effect of NS on SA	.3689 (.3836)***	.1611 to .5679 (.1642 to .5994)
Direct Effect of Gender X NS on SA	.3125 (.3901)**	.3125 to .1022 (.1281 to .6502)
Direct Effect of MC on SA	.1934 (.1926)**	.1934 to .0598 (.1926 to .0605)
Indirect Effect of MC on SA	.1689 (.1682)***	.0724 to .2901 (.0706 to .2977)
<i>Non-Immigrant Education Students (n = 217)</i>		
Direct Effect of MC on NS	.4107 (.4266)***	.2878 to .5111 (.2995 to .5502)
Direct Effect of NS on SA	.6766 (.6753)***	.5992 to .7437 (.5899 to .7591)
Direct Effect of MC on SA	.2060 (.2136)***	.1220 to .2943 (.1245 to .3045)
Indirect Effect of MC on SA	.2779 (.2881)***	.1961 to .3549 (.1989 to .3855)
<i>Immigrant Non-Education Students (n = 76)</i>		
Direct Effect of MC on NS	.4728 (.4438)***	.2507 to .6305 (.2338 to .6302)
Direct Effect of NS on SA	.4788 (.5043)***	.2589 to .6812 (.2740 to .7311)
Direct Effect of Gender X NS on SA	.2187 (.3092)*	.0201 to .4247 (.0242 to .6014)
Direct Effect of MC on SA	.1887 (.1866)*	.0296 to .3356 (.0290 to .3307)
Indirect Effect of MC on SA	.2263 (.2238)***	.1063 to .3846 (.1020 to .3965)

(continued)

Table 30 (continued)
Summary of Mediation analyses Predicting Self-Actualization from Metacognition (MC) with Need-Satisfaction (NS) as the Mediator

Path	Point of Estimate	Lower Bound to Upper Bound (95% Confidence Interval)
<i>Immigrant Education Students (n = 95)</i>		
Direct Effect of MC on NS	.5917 (.5905)***	.4361 to .7090 (.4246 to .7590)
Direct Effect of NS on SA	.7065 (.6337)***	.5740 to .8177 (.5067 to .7590)
Direct Effect of MC on SA	.1625 (.1455)*	.0229 to .3108 (.0204 to .2789)
Indirect Effect of MC on SA	.4180 (.3742)***	.2982 to .5450 (.2574 to .5165)

Note. Significant levels are considered based on *p* values estimated by Bias-Corrected confidence intervals.

Variance accounted for by Metacognition through mediation. To illustrate an approximation of the unique mediational contribution of Metacognition (MC) to Self-Actualization (SA), a set of hierarchical regression was conducted to calculate R-Square Change for the unique contribution of MC to SA before and after controlling for NS and its interaction with Gender (i.e., before and after inclusion of mediator). The results then were subtracted from each other to obtain the proportion of variance in SA accounted for by mediation ($\Delta R^2_{without\ mediator} - \Delta R^2_{with\ mediator}$).

R Square Change obtained through the hierarchical regression analysis (employing the same covariates as in SEM) showed that before controlling for Need-Satisfaction and its interaction with Gender, MC accounted for 25.2% of variance in SA ($p < .001$) for the full sample over and above the variance accounted for by demographic covariates, 24.5% for non-immigrant non-education students ($p < .001$), 22.5% for non-immigrant education students ($p < .001$), 22.3% for immigrant non-education students ($p < .001$); and 33.9% for immigrant education students ($p < .001$). After controlling for NS

and Gender X NS, the unique proportion of variance accounted for by metacognition was 2.9% for the full model ($p < .001$), 2.9% for non-immigrant non-education students ($p < .01$), 3.5% for non-immigrant education students ($p < .001$), 2.7% for immigrant non-education students ($p < .05$); and 1.7% for immigrant education students ($p < .05$).

The calculation indicated that for the full sample MC accounted for 22.3% of variance in SA through its contribution to NS while another 2.9% of variance was independent from NS. For non-immigrant non-education students, this proportion of variance was 21.6% and another 2.9% of variance was independent from NS. For non-immigrant education students, 19% of variance in SA was accounted for by MC through its contribution to NS and another 3.5% of variance was independent from NS. Similarly for immigrant non-education students, 19.6% of variance in SA was accounted for by the association of MC with NS and another 2.7% was independent from NS. For immigrant education students, the mediational contribution of MC to SA was 32.2% and another 1.7% of variance accounted for by MC was independent from mediational effect.

Summary of results for Hypothesis 8. The results of Shrout and Bolger's (2002) bootstrap procedure to test the mediation effect indicated that there was partial mediation effect for the contribution of metacognition to self-actualization with need-satisfaction as the mediator. The model was accounted for large percentage of variance in Self-actualization across samples, the highest being 68.81% for immigrant non-education students and the lowest being 59.20% for non-immigrant non-education students. The confirmation of this mediational effect across different demographic samples is an evidence for the robustness of the results.

Testing Hypothesis 9: Non-Defensiveness Mediates the Relationship between Metacognition and Self-Actualization.

Similar to previous analyses, where Metacognition was involved as IV, Major X Immigrant was used as grouping variable and a similar model was tested for the full sample as well as for each split sample. Again similar to previous analyses, where Self-Actualization (SA) was used as DV, Gender, Major and Parenthood were included in SEM as covariates in predicting SA. To improve the model fit, non-significant demographic variables were excluded from the model after the initial analysis. That is, Major was excluded from all models and Parenthood was excluded from the sample of immigrant education student.

Finally, to illustrate the unique mediational contribution of Metacognition (MC) to Self-Actualization (SA), a set of hierarchical regression analyses was conducted to calculate R-Square Change for the unique contribution of MC to SA before and after controlling for ND (i.e., before and after inclusion of mediator). The results then subtracted from each other to obtain the proportion of variance in SA accounted for by mediation ($\Delta R^2_{without\ mediator} - \Delta R^2_{with\ mediator}$).

Model fit. First, the fit of the model was evaluated with AMOS 18.0 using a maximum likelihood algorithm. The model is statistically overidentified (i.e., positive *df*). A variety of indices of model fit was examined, the overall chi-square test of model fit was not statistically significant neither for the full sample nor for any of split samples (for the full sample: $\chi^2 = 5.20, p = .27$; for non-immigrant non-education students: $\chi^2 = 3.70, p = .30$; for non-immigrant education students: $\chi^2 = 5.55, p = .24$; for immigrant non-education students: $\chi^2 = .93, p = .82$; and for immigrant education students: $\chi^2 = .68, p =$

.88). A non-significant chi-square ($p > .05$) along with other global/absolute and focused/relative fit indices indicates a good fitting model. The Root Mean Square Error of Approximation ($RMSEA \leq .08$) was .024 for the full sample, .043 for non-immigrant non-education students, .042 for non-immigrant education students, $< .001$ for immigrant non-education students, and $< .001$ for immigrant education students. The p value for the Close fit (PCLOSE) was greater than .05 for all cases which indicate a good fitting model. The Comparative Fit Index ($CFI \geq .95$) was .997 for the full sample, .992 for non-immigrant non-education students, .990 for non-immigrant education students, 1.000 for immigrant non-education students, and 1.000 for immigrant education students. The Standardized Root Mean Residual ($SRMR < .05$) was .028 for the full sample, .044 for non-immigrant non-education students, .031 for non-immigrant education students, .029 for immigrant non-education students, and .023 for immigrant education students. The indices indicated a good model fit. There was no standardized residual covariance with absolute value greater than 2 and Modification indices highlighted no point of ill fit in the model.

Mediation Analysis. The results of SEM analysis indicate indirect regression weights/mediational effects for the full sample: $\beta = .1150$, $B = .0036$, $p < .001$ (Figure 13); for non-immigrant education students: $\beta = .1460$, $B = .0047$, $p < .001$; and for immigrant education students: $\beta = .1771$, $B = .0049$, $p < .01$. The (standardized) regression weights were all positive and significant for the full sample and for immigrant and non-immigrant education students ranging from .1150 to .1771 across samples. This suggests that there is a mediational effect in the relationship between metacognition and self-actualization by non-defensiveness for these samples. However, for immigrant non-

education students: $\beta = .0305$, $B = .0009$, $p = .42$; and for non-immigrant non-education students: $\beta = .0778$, $B = .0024$, $p = .12$. Overall, these results support the research hypothesis for education students but did not support the mediational effect of non-defensiveness in the relationship between MC and SA for none of the samples of non-education students (see Table 31).

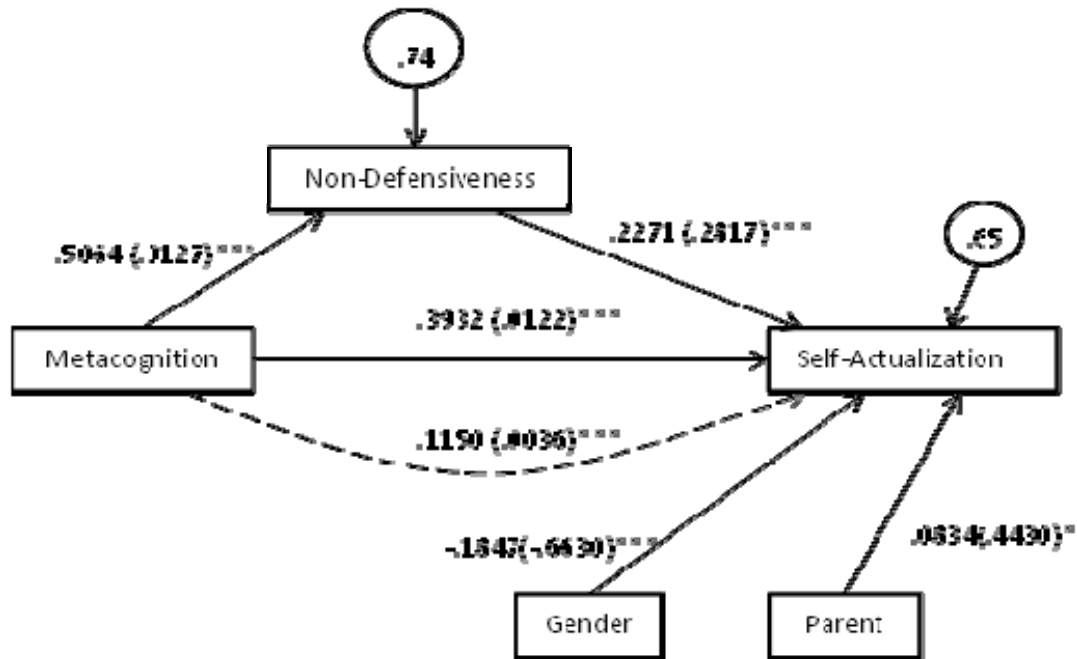


Figure 13. Path coefficients for the mediation model tested for Hypothesis 9 (The dashed line represents the indirect/mediational path)

In all cases, metacognition still accounted for a significant proportion of variance in self-actualization through its direct effect even over and above the mediational effect. For the full sample: $\beta = .3932$, $B = .0122$, $p < .001$; for non-immigrant non-education students: $\beta = .4233$, $B = .0131$, $p < .001$; for non-immigrant education students: $\beta = .3324$, $B = .0107$, $p < .001$; for immigrant non-education students: $\beta = .4472$, $B = .0138$, $p < .001$; and for immigrant education students: $\beta = .4028$, $B = .0113$, $p < .001$. The

(standardized) regression weights were all positive and significant ranging from .3324 to .4233 across samples. Adding this result to previous findings suggests partial mediational effect for non-defensiveness in the relationship between metacognition and self-actualization for education students (see Table 31).

Table 31
Summary of Mediation analyses Predicting Self-Actualization (SA) from Metacognition (MC) with Non-Defensiveness (ND) as the Mediator

Path	Point of Estimate	Lower Bound to Upper Bound (95% Confidence Interval)
<i>Full Sample (N = 513)</i>		
Direct Effect of MC on ND	.5064 (.0127)***	.4205 to .5764 (.0106 to .0146)
Direct Effect of ND on SA	.2271 (.2817)***	.1409 to .3156 (.1700 to .3958)
Direct Effect of MC on SA	.3932 (.0122)***	.3137 to .4723 (.0096 to .0149)
Indirect Effect of MC on SA	.1150 (.0036)***	.0689 to .1688 (.0021 to .0053)
<i>Non-Immigrant Non-Education Students (n = 125)</i>		
Direct Effect of MC on ND	.5576 (.0126)***	.4018 to .6740 (.0088 to .0160)
Direct Effect of ND on SA	.1396 (.1918)	-.0390 to .3136 (-.0503 to .4567)
Direct Effect of MC on SA	.4233 (.0131)***	.2357 to .5888 (.0074 to .0191)
Indirect Effect of MC on SA	.0778 (.0024)	-.0194 to .1817 (-.0006 to .0057)
<i>Non-Immigrant Education Students (n = 217)</i>		
Direct Effect of MC on ND	.4651 (.0124)***	.3304 to .5771 (.0088 to .0159)
Direct Effect of ND on SA	.3139 (.3804)***	.1843 to .4373 (.2180 to .5398)
Direct Effect of MC on SA	.3324 (.0107)***	.2125 to .4529 (.0069 to .0149)
Indirect Effect of MC on SA	.1460 (.0047)***	.0821 to .2280 (.0026 to .0076)

(continued)

Table 31 (continued)
Summary of Mediation analyses Predicting Self-Actualization (SA) from Metacognition (MC) with Non-Defensiveness (ND) as the Mediator

Path	Point of Estimate	Lower Bound to Upper Bound (95% Confidence Interval)
<i>Immigrant Non-Education Students (n = 76)</i>		
Direct Effect of MC on ND	.3507 (.0096)***	.1177 to .5612 (.0035 to .0149)
Direct Effect of ND on SA	.0870 (.0982)	-.1152 to .3589 (-.1276 to .4241)
Direct Effect of MC on SA	.4472 (.0138)***	.2639 to .6041 (.0079 to .0203)
Indirect Effect of MC on SA	.0305 (.0009)	-.0274 to .1767 (.0053 to .4196)
<i>Immigrant Education Students (n = 95)</i>		
Direct Effect of MC on ND	.6521 (.0157)***	.4824 to .7681 (.0110 to .0195)
Direct Effect of ND on SA	.2716 (.3160)*	.0609 to .4788 (.0701 to .5593)
Direct Effect of MC on SA	.4028 (.0113)***	.1960 to .6008 (.0052 to .0176)
Indirect Effect of MC on SA	.1771 (.0049)**	.0462 to .3399 (.0013 to .0094)

Note. Significant levels are based on p values estimated by Bias-Corrected confidence intervals.

The effect sizes for the overall models across samples were in medium range (ranging from .2801 to .4077). The overall model accounted for 34.61% of variance in self-actualization for the full sample; 95% CI [.2808, .4046], $p = .001$. The total variance accounted for by the overall models was .2801 (95% CI [.1380, .3927], $p < .01$) for non-immigrant non-education students, .3600 (95% CI [.2489, .4521], $p < .01$), for non-immigrant education students, .3471 (95% CI [.1783, .4634], $p < .01$) for immigrant non-education students, and .4077 (95% CI [.2544, .5118], $p < .01$) for immigrant education students.

Variance accounted for by Metacognition through mediation. Similar to Hypothesis 8, a set of hierarchical regression analyses was conducted to find an

approximation of the unique mediational contribution of Metacognition (MC) to Self-Actualization (SA) for the full sample and for non-education samples (for procedural details please see the same section on *H8*). The unique contribution of Metacognition, when no mediator was involved (i.e., before controlling for ND) was obtained in testing *H8*: 25.2% for the full sample, 24.5% for non-immigrant non-education students, 22.5% for non-immigrant education students, 22.3% for immigrant non-education students, and 33.9% for immigrant education students, $p < .001$. After controlling for ND, the unique proportion of variance accounted for by Metacognition was 11.3% for the full model ($p < .001$), 8.4% for non-immigrant education students ($p < .001$), and 9.3% for immigrant education students ($p < .001$).

The calculation ($\Delta R^2_{without\ mediator} - \Delta R^2_{with\ mediator}$) indicated that for the full sample MC and ND shared 13.9% of variance in SA while another 11.3% of variance accounted for by Metacognition was independent from ND. For non-immigrant education students, 14.1% of variance in SA was shared by MC and ND and another 8.4% of variance accounted for by MC was independent from ND. For immigrant education students, the mediational contribution of MC to SA was 24.0% and another 9.3% of variance accounted for by MC was independent from mediational effect.

On the other hand, in samples of non-education students the unique contribution of MC in predicting SA after controlling for ND was 12.2% for non-immigrant non-education students ($p < .001$) and 17.1% for immigrant non-education students ($p < .001$). For non-immigrant non-education students the variance in SA which was shared by both MC and ND was 12.3% and another 12.2% of variance accounted for by MC was independent from ND. Similarly for immigrant non-education students, 5.2% of variance

in SA was shared by MC and ND while remaining 17.1% of variance was independent from ND.

Summary of results for Hypothesis 9. In total, the results of Shrout and Bolger's (2002) bootstrap procedure to test the mediation effect indicated that indirect effects for the full sample and for the two samples of education students (immigrants and non-immigrants) were significant, while the indirect effects and, in fact, the direct effect of ND on SA was not significant for non-education students. That is, metacognition significantly predicted self-actualization through its contribution to non-defensiveness for education students but not for non-education students with immigrant students having higher mediated variance accounted for (24.0%) compared to non-immigrants (14.1%). The confirmation of this mediational effect only across two of the four demographic samples provides only partial support for Hypothesis 9.

Summary

The results of bivariate correlation analyses and hierarchical regression analyses support the hypothesized relationships for *H1*, *H2*, *H3*, *H4*, *H5*, *H6*, and *H7*. The constructs, metacognition and self-actualization were both significantly and positively associated with well-being (*H1* and *H7*). The constructs, metacognition, need-satisfaction, and non-defensiveness explained unique variances in self-actualization (*H2*, *H3*, and *H6*). Further, metacognition was significantly and positively associated with both need-satisfaction and non-defensiveness (*H4* and *H5*). There were two non-significant results, one for the sample of parents ($n = 61$) and another one for the sample of *female* immigrant education students ($n = 78$) respectively for *H1* and *H6*. These

results were equivocal due to small sample sizes; the hypotheses need to be further investigated with larger samples of parents and female immigrant education students.

Furthermore, the partial mediational effect of need-satisfaction in the relationship between metacognition and self-actualization was supported by the data (*H8*). The mediational effect of non-defensiveness in aforementioned relationship (*H9*) was partially supported for education students, but not for non-education students. Chapter 5 discusses the results and implications of these findings for research, theory, and practice.

CHAPTER V

DISCUSSION

Chapter 5 provides a brief summary of the study and a discussion of the results. Implications for theory, research, and practice are presented, as well as recommendations for future research.

Summary of Study

Today's educational system seems to be shortsighted in conceptualizing and operationalizing a holistic view of education. The high pressure of good academic performance has often left students' psychological nurturing, their personal growth, and their overall well-being to themselves. The field of psychology, nevertheless, has much to offer to enrich our educational practices and to take care of present shortcomings. Humanistic psychology with its account of human nature and self-actualization, positive psychology with its more modern take on human well-being and optimal human functioning, and cognitive psychology with its breakthroughs about the science of learning and brain functions are all invaluable resources in building both the theoretical and practical foundations of a holistic education, which has self-actualization of the individuals as its chief goal.

Based on this vision, this study was centered on unraveling the challenges of training self-actualizing minds with a focus on individuals' metacognitive and cognitive capabilities. This study addressed these challenges from a theoretical perspective to establish a conceptual foundation for future research in the direction of developing the best practices for self-actualization and personal growth suited for educational settings.

Taking an Aristotelian perspective in the conceptual framework set forth in this study, self-actualization was conceptualized as a goal-oriented process which is the means to achieve eudaimonia or well-being. In addition, guided by humanistic theories of self-actualization, Maslow's (1968) and Roger's (1961), need-satisfaction and non-defensiveness were argued as precursors of self-actualization. Moreover, general metacognitive competence was identified as a facilitator of reasoning, analyzing, problem-identification, goal-setting, and problem-solving. As such, it was considered a precursor and facilitator in the process of self-actualization, need-satisfaction, and non-defensiveness. The conceptual model presented in Figure 6 (p. 122; re-presented below) illustrates the hypothesized antecedents and outcomes of self-actualization set forth by this conceptual framework.

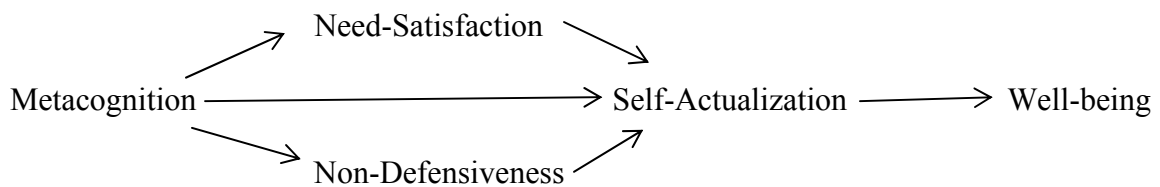


Figure 6. A conceptual model presenting possible antecedents and outcomes of Self-Actualization

The results of correlational analysis, hierarchical regression analysis, and mediational analysis (using Shrout and Bolger's [2002] Bootstrap procedure using structural equation modeling), largely support the hypotheses of this study, except for a few exceptions. The findings suggest some refinements to the conceptual model. The results are discussed in the following sections.

Discussion of the Results

Overall, the results supported the hypotheses and suggested statistically significant and meaningful relationships among the constructs of interest. However, H1, H6 and H9 were not supported for some demographic groups. The following section discusses the results of the study for each hypothesis and a brief summary to conclude the section.

Summary and Discussion of Results for Hypothesis 1

H1: Summary of results. The results of the bivariate correlational analysis indicated medium to large effect sizes for the relationship between self-actualization (SA) and well-being (WB). This suggests that students who reported higher degrees of self-actualization, actualizing-self, and actualizing-striving, compared to ones who scored lower on these variables, also were more likely to report experiencing a higher level of subjective well-being (SWB), eudaimonic well-being (EWB), and well-being in general

Except for inconclusive results for the parents, the results of the hierarchical regression analysis supported hypothesis 1, which posited a positive relationship between self-actualization and human well-being. The unique variance accounted for by self-actualization ranged from .205 to .292 for WB (i.e., medium to large effect size), .255 to .363 for EWB (i.e., medium to large effect size), and .079 to .164 for SWB (i.e., small to medium effect sizes). In conclusion, self-actualization made a unique positive contribution to overall WB ($p < .001$).

H1: Discussion. Hypothesis 1 stated that there was a positive relationship between self-actualization and WB. The results of the analyses support this hypothesis across samples, except for the relatively small sample of parents ($n = 61$). This finding is

consistent with Bauer et al.'s (2011) studies of self-actualization and well-being. Bauer et al. (2011) found that people in highest stages of Loewinger's (1979) ego development, which was argued to correspond to Maslow's (1968) self-actualization, are more likely to experience higher level of well-being (i.e., SWB and PWB) as compared to people in lower levels of ego development.

In the present study, self-actualization was defined as a goal-oriented process consisting of goal self-concordance, goal aspiration and goal striving. In studies by Sheldon and colleagues (2002; 2004) and by Kasser and Ryan (1996, 2001), intrinsic goal aspirations and motives (i.e., intrinsic vs. extrinsic), self-concordant goal attributions or (i.e., autonomous vs. controlled or self-concordant), and indicators of goal striving (e.g., goal progress and goal attainment) were found to positively predict WB. Kasser and Ryan (1996) found positive correlations between intrinsic goal aspirations and different indicators of psychological and physical well-being. Sheldon et al. (2002; 2004) found that autonomous and self-concordant goal attributions positively and significantly predicted SWB and PWB. Attaining intrinsic goals also predicted PWB while attaining extrinsic goals did not (Kasser & Ryan, 2001).

Furthermore, goal progress, regardless of goal motives, was positively and significantly related to both PWB and SWB (e.g., felt aliveness; psychological adjustment and positive affect vs. negative affect; Sheldon & Kasser, 1998; Sheldon et al., 2002). Thus, the present findings support existing research on goals and well-being.

Summary and Discussion of Results for Hypothesis 2

H2: Summary of results. The bivariate correlational analyses results indicated a significant relationship between Non-Defensiveness (ND) and SA (small to medium

effect sizes (Cohen, 1988). This suggests that students who reported higher degrees of self-actualization, actualizing-self, and actualizing-striving, compared to ones who scored lower on these variables, were more likely to be using adaptive styles of psychological defense, more likely coped successfully with a stressful situation and less likely to merely react to the situation.

The results of the hierarchical regression analyses also supported Hypothesis 2 with medium to large effect sizes. The F changes were significant for the full sample and for the four groups in the split-sample analyses when using SA as the dependent variable and ND as the independent variable, over and above all demographic covariates. Finding significant results for each of the groups suggests that the adoption of more adaptive styles of psychological defense uniquely contribute to the self-actualization of individuals.

H2: Discussion. Hypothesis 2 stated that there was a positive relationship between the adoption of more adaptive styles of psychological defense and SA. In this study, ND scores were used as the indicator of the adoption of more adaptive styles of psychological defense. The results of the analyses support this hypothesis across split-samples. These results provide preliminary evidence indicating that ND is an antecedent to self-actualization, as implied by Rogers' self (-actualization) theory (1951, 1961).

Definitional and, thus, ambiguity issues have unnecessarily limited SA research. Some related research studies though have investigated the relationship between defense mechanisms and WB. Among them, the ones which focused on PWB or Self-Realization in PWB are presented as supportive evidence for H2's results. The present study's findings are consistent with Milquelon and Vallerand's (2008) research. Milquelon and

Vallerand, however, tested a predictive path from self-realization to defense/coping, finding a negative association between self-realization (growth-component of PWB) and avoidant coping (i.e., defensiveness) and a positive association with vigilant/active coping. Studies by Kling et al. (1997) and Park and Adler (2003) also supported the positive link between adaptive styles of defense and PWB.

Summary and Discussion of Results for Hypothesis 3

H3: Summary of results. The bivariate correlational analyses indicated medium to large effect sizes (Cohen, 1988) for the relationship of Need-Satisfaction and its components with Self-Actualization and its components. This suggests that students who reported a higher level of need-satisfaction in total, in a general sense, or in relation to their goal pursuits were more likely to experience higher degrees of self-actualization and more likely to demonstrate higher levels of both actualizing-self (personality) and actualizing-striving (i.e., committedly pursuing self-actualizing goals). This result supports Hypothesis 3, which hypothesized a positive relationship between NS and SA.

Testing the contribution of Need-Satisfaction (NS) to predicting Self-Actualization (SA) included the interaction between gender and NS for both the full sample and subsample of education students. Testing the simple effect of NS for males and females showed that in both samples, the change in SA was greater for males than it was for females for every 1 *SD* (or 1 unit) change in NS (i.e., different slopes for the regression lines for males and females). On the other hand, for the sample of education students, the changes in SA (which was associated with changes in NS) did not differ for males and females (i.e., no interaction between Gender and NS in predicting SA). In sum, the association of NS with SA was positive and statistically significant for the full

sample and for the two split samples by Major (large effect sizes; Cohen, 1988). The results of the hierarchical regression analysis provide additional evidence to support Hypothesis 3.

H3: Discussion. Hypothesis 3 stated that there was a positive relationship between need-satisfaction (NS) and self-actualization (SA). The analyses provide preliminary supporting evidence for NS being an antecedent to SA, as implied by Maslow's (1968) conceptualization of hierarchy of needs.

Similar to non-defensiveness, there is a lack of research investigating the link between SA and NS. There are a few studies (e.g., Reis et al., 2000; Sheldon et al., 1996) however that investigated the relationship between NS and WB, but not with SA. In addition, there are two studies that investigated the moderating or mediational role of NS (respectively, Sheldon & Elliot, 1999; Niemeic et al., 2006) in the relationship between goal attainment and SWB. Although the positive relationship between need-satisfaction and intrinsic goal-attainment was supported as part of the mediational study (Niemeic et al., 2006), none of the studies looked at NS as an antecedent to SA as it is in accordance with Maslow's (1968) self-actualization theory. The present study was the first to the researcher's knowledge attempting to test this relationship in the context of Maslow's (1968) conceptualization of needs and self-actualization as the highest level need, within an educational setting.

Summary and Discussion of Results for Hypothesis 4

H4: Summary of results. The bivariate correlational analyses revealed significant relationships between Metacognition (MC) and Need-Satisfaction (NS) (small to large effect sizes, Cohen, 1988). This suggests that students who reported a high level

of overall general Metacognition (GMC), Knowledge of Cognition (KC), or Regulation of Cognition (RC) were more likely to report higher degrees of overall NS, General Need-Satisfaction (GNS), and Goal-Related Need-Satisfaction (GRNS). This supports Hypothesis 4 which predicts a positive relationship between MC and NS. The unique contribution of MC to NS was also found for the full sample, as well as the four split samples Major X Immigrant. The effect sizes ranged from medium to large for this contribution.

H4: Discussion. Hypothesis 4 stated that there was a positive relationship between MC and NS. The results of the analyses provided supporting evidence for MC positively predicting NS.

There is a lack of research examining the relationship between MC and NS. The novel view employed by this study posited that every need and every problem was a goal of metacognition, rather than more traditional views that see need-satisfaction as a social or personal arbitrary occurrence. Aside from very basic tangible needs (physiological and safety needs), basic psychological needs are in part manageable by the individual if satisfying needs is consciously set as personal goals and tackled strategically and skillfully. The results of the present research lend support to the notion that metacognitive knowledge and skills may be part of an overarching psychological system to deal with the problem of NS.

Summary and Discussion of Results for Hypothesis 5

H5: Summary of results. The bivariate correlational analyses indicated small to large associations between Metacognition (MC) and Non-Defensiveness (ND). The results suggested that students who reported a high level of total Metacognition (GMC),

Knowledge of Cognition (KC), or in their Regulation of Cognition (RC) were more likely to adopt a more adaptive style of defensiveness (i.e., demonstrate higher degree of non-defensiveness), use more coping mechanisms, and express less reactive emotions and behaviors in a stressful situation. This result supports Hypothesis 5 which predicts a positive relationship between MC and ND.

The regression results found the unique contribution of MC to ND for the full sample as well as each of the four split samples by Major X Immigrant. The effect sizes ranged from small to large for this contribution.

H5: Discussion. Hypothesis 5 stated that there was a positive relationship between MC and adopting adapting styles of psychological defense. In the present study, ND scores were used as indicators of adopting adapting styles of psychological defense. The results provided supporting evidence for MC positively predicting ND.

To the researcher's knowledge, no study has directly investigated the MC and ND relation. Few researchers (Berzonsky, 1990, 1992; Berzonsky & Kinney, 2008; Soenens et al., 2005), however, have explored the relationship between defense mechanisms and self-awareness and self-concept, which can be considered closely associated conceptually with metacognitive knowledge. Demarree and Marrison (2011) nicely outlined self-related concepts including self-awareness, self-worth, and defensiveness as metacognitive processes. Individuals with limited self-awareness or lack of openness to unfamiliar/uncertain experiences are more likely to use reactive defense, such as denial and behavioral disengagement (Berzonsky, 1990, 1992; Soenens et al., 2005). Metacognitive individuals, who were characterized as individuals with informational identity style, are more likely to use adaptive coping strategies, such as positive

reframing and active coping, and planning/problem-solving (Berzonsky & Kinney, 2008). The present findings are in line with previous studies of defense mechanisms and add more to the body of knowledge by introducing MC as a potential overarching construct associated with both identity styles and choice of defense mechanisms. Further research would enrich our understanding of the relations among MC, identity style, and defense choice.

Summary and Discussion of Results for Hypothesis 6

H6: Summary of results. The bivariate correlational analyses indicated the relationship of Metacognition (MC) with Self-Actualization (SA), while holding Need-Satisfaction (NS) and Non-Defensiveness (ND) constant (medium to large effect sizes, Cohen, 1988). The results suggested that regardless of their NS level and style of psychological defense, students who reported a high level of total Metacognition (GMC), Knowledge of Cognition (KC), or in their Regulation of Cognition (RC) were more likely to report higher degrees of SA. This result supports Hypothesis 6, which posits a positive relationship between MC and SA over and above NS and styles of psychological defense.

The regression results revealed the unique contribution of MC to SA for the full sample as well as each of the four split samples by Major X Immigrant. When the gender by MC interaction was involved in the analysis for the immigrant education students, the positive and significant contribution of MC to SA only held true for males (i.e., the simple effect of MC was not significant for females).

H6: Discussion. Hypothesis 6 stated that there was a positive relationship between MC and SA over and above the variance accounted for by NS and ND. Although the effect sizes were small across samples, after controlling for all other

variables, and the effect was non-significant for the small sample of female immigrant education students, the overall results suggested MC positively predicted SA, independent of NS and ND.

This finding is in line with Culbert et al.'s (1968) study which showed that trainings focused on self-awareness enhanced students' self-actualization orientation, although not necessarily their self-aware verbal behavior about such personal orientations. Bar-On (2001, 2006) also identified self-awareness as a key factor in predicting self-actualization. None of the studies, however, discussed this relationship in a metacognitive framework. Again, the present study provided evidence suggesting MC may be a potential overarching construct in predicting SA.

Summary and Discussion of Results for Hypothesis 7

H7: Summary of results. The bivariate correlational analyses supported H7, indicating medium to large effect sizes (Cohen, 1988). Metacognition (MC) was positively associated with overall well-being (WB; r s ranging from .47 to .51), eudaimonic well-being (EWB; r s ranging from .51 to .56), and subjective well-being (SWB; r s ranging from .30 to .32). The results suggested that students who reported a high level of Metacognition in total (GMC), Knowledge of Cognition (KC), or Regulation of Cognition (RC) were more likely to experience higher WB, SWB and EWB. This result supported Hypothesis 7 which predicted a positive relationship between MC and WB.

The regression results of revealed the unique contribution of MC to WB for the full sample, immigrant education and non-education students, and non-immigrant non-education students for WB, EWB, and SWB as DVs. When the Age Group by MC

interaction was involved in predicting SWB for non-immigrant education students, the results showed that the contribution of MC differed for adults (at or above 30 years of age) and emerging adults (17-29 years of age). However, this contribution was still positive and statistically significant for both groups.

H7: Discussion. Hypothesis 7 stated that there was a positive relationship between MC and WB. The results of the analyses provided supporting evidence for MC positively predicting WB.

There was no known research that investigated the MC and WB relationship. The present study provided support for the positive relationship between MC and WB and shed light on the potential predictive utility of MC for WB. An additional preliminary regression analysis of the full sample indicated that MC accounted for unique variance in WB over and above Non-Defensiveness (ND), Need-Satisfaction (NS), and Self-Actualization (SA), $F(1,503) = 27.626$, $\Delta R^2 = .032$, $p < .001$. The variance accounted for by the overall model corresponded to a large effect size, $R^2 = .423$, *adjusted* $R^2 = .412$.

Summary and Discussion of Results for Hypothesis 8

H8: Summary of results. The effects for the overall models predicting SA across samples were large, ranging from .591 to .688 of the variance being explained. By employing Shrout and Bolger's (2002) bootstrap procedure to test possible mediational effects, there was evidence of a partial mediational effect for the contribution of MC to SA, with NS as the mediator.

H8: Discussion. The results support the thesis of this study that MC is an antecedent to NS and SA, and predicts SA partially through its contribution to NS. Finding evidence for the mediating role of NS also validates the idea of partial personal

autonomy and control over one's NS through acquiring and applying general metacognitive competence. Whether or not more need-specific metacognitive strategy use, instead of general ones, better helps with NS and SA is a subject for future research. Research on this topic might add new insights into better understanding the nature of metacognition and to develop effective metacognitive strategies to be practiced in a self-coaching curriculum.

Summary and Discussion of Results for Hypothesis 9

H9: Summary of results. Shrout and Bolger's (2002) bootstrap procedure was used to test for mediational effects, revealing significant indirect effects for the full sample and for the two education student samples (immigrants and non-immigrants). The indirect and direct effects of ND on SA in the model were not significant for non-education students. That is, MC significantly predicted SA through its contribution to ND for education students, but not for non-education students. For non-education students, the contribution of MC to SA was independent from their non-defensiveness. In other words, a partial mediation effect was detected for the contribution of metacognition to self-actualization, with non-defensiveness as the mediator only for education students. The confirmation of this mediational effect only across two of the four demographic samples provides only partial support for hypothesis 9.

H9: Discussion. The regression analyses on the two samples of non-education students confirmed that the regression weights in the overall model were not significant for ND in predicting SA. However, ND predicted SA significantly over and above the demographic covariates for both samples before adding MC to the model. For non-immigrant non-education students, $F(1,121) = 19.785$, $\Delta R^2 = .137$, $B = .512$, $\beta = .371$, $p <$

.001, $R^2 = .164$, *adjusted R*² = .143. For immigrant non-education students, $F(1,72) = 5.169$, $\Delta R^2 = .058$, $B = .277$, $\beta = .244$, $p < .05$, $R^2 = .189$, *adjusted R*² = .155. This significant contribution was eliminated when MC was added to the regression model; demonstrating a suppression effect.

This finding implies that MC may fully mediate the contribution of ND to SA for non-education students. This new notion was tested by running an SEM in Amos 18.0; the notion was supported for both immigrant non-education students (*indirect effect* = .18, *standardized indirect effect* = .16, $p < .01$) and non-immigrant non-education students (*indirect effect* = .32, *standardized indirect effect* = .23, $p < .001$).

Of course, a causal relationship could not be argued for the mediation analysis due to the lack of an experimental design. Therefore, the more plausible approach in discussing the observed relationship in H9 was through analyzing the variance shared by the three constructs of interest. Limiting the discussion to these two samples of non-education students, additional regression analyses showed that MC accounted for 24.5% of the variance in SA for the first group, 12.3% of which is the same variance accounted for by Non-Defensiveness, and 22.3% for the second group, of which 5.2% is the same variance accounted for by Non-Defensiveness.

Implications for Theory, Research, and Practice

The conceptual model researched by the present study sought to bring an interdisciplinary perspective to the fields of education and psychology with the goal of informing school policies and practices of the implications of psychological theories and practices for holistically enriching students' lives in educational settings. It also tested self-actualization models implied by two venerable theories of self-actualization, Rogers'

(1951, 1961) and Maslow's (1968), that had been largely overlooked by both psychological and educational researchers. The findings from this study have wide range of implications for scholars, researchers, and practitioners. The following sections present the implications of this study for theory, research and practice.

Implications for Theory

The conceptual framework and the conceptual model presented in this study portray a novel approach to human well-being and full functionality by taking a goal-oriented view of self-actualization. The framework was also intended to establish a theoretical foundation to revisit the philosophy of education and rethinking it towards holistically enhancing human wellbeing and functionality. By finding support for this conceptual model, which includes a teachable competence, namely metacognition, as an overarching contributing variable to human well-being and self-actualization, a fundamental step has been taken towards supporting this conceptual framework as a means to guide educational practices, as well as life-coaching and counseling practices. The following sections outline the theoretical implications related to each hypothesis.

Theoretical implications for H1. The findings provide support for the thesis that self-actualization and human well-being are two separate phenomena. This thesis offers a contemporary operational definition for self-actualization that permits researching the link between self-actualization and well-being. This is in contrast to the traditional approach in well-being research where self-actualization is regarded as being part of well-being, rather than being independent (e.g., psychological well-being; Watson et al., 1988). Finding support for this hypothesis gave credibility to the new operational

definition of self-actualization taken by the present study to inform both the positive and humanistic psychology literatures.

Theoretical implications for H2 and H3. Supporting evidence for Hypothesis 2 and 3 add to the body of knowledge by directly exploring the relationship of self-actualization with defense/coping mechanisms and need-satisfaction which, to the best of the researcher's knowledge, had not been undertaken by any previous psychological research. Finding supporting evidence for these hypotheses highlights some under-examined aspects of Roger's (1951, 1961) and Maslow's (1968) theories where such relationships were implied. Guided by these theories, the present study identified, tested, and found empirical support for some heretofore untested contributors to the process of self-actualization. These findings can enrich our understandings of the self-actualization phenomenon and its related conceptualizations (e.g., Maslow's [1968] and Rogers' [1951, 1961]).

Theoretical implications for H4 and H5. Hypothesis 4 and 5 also explored and found support for the relationship of metacognition with need-satisfaction and non-defensiveness. It was one of the first attempts to identify a common contributor to need-satisfaction and non-defensiveness, constructs which were implied by Rogers's (1951, 1961) theory of self and Maslow's (1968) theory of motivation as precursors to self-actualization.

Theoretical implications for H6 and H7. Supporting evidence for Hypothesis 6 and 7 also establishes the beginning of an evidence-based theoretical foundation to broaden the conceptualization and implications of metacognition.

Theoretical implications for H8 and H9. Hypothesis 8 and 9 tested the nature of self-actualization by investigating metacognition as the precursor to need-satisfaction, non-defensiveness, and self-actualization, which contributes to self-actualization through its contribution to the two aforementioned constructs. Although these mediational models were supported largely, the mediational effect of non-defensiveness was not supported for non-education students. These inconsistent findings suggest that the conceptual framework and the conceptual model presented in this study can benefit from further refinement.

For instance, in explaining the amount of variance in self-actualization, metacognition functions as the overarching construct in relation to non-defensiveness, rather than as an antecedent to non-defensiveness. In other words, there is a proportion of variance in self-actualization which is defined through the relationship of metacognition and non-defensiveness, while metacognition accounts for more than this shared variance. The proposition of a causal relationship, that is, whether enhancing metacognition helps with developing higher level of non-defensiveness, or it is non-defensiveness that provides a medium to add to general metacognitive competence is subject to further research using experimental design.

Implied by the direction of the path in the refined mediational model tested and supported earlier (see H9: Discussion), higher non-defensiveness may be hypothesized to result in a higher level of metacognition. The direction of this “causal” relationship, however, does not contradict the proposed premise of this study that non-defensiveness can be a goal of metacognition. Indeed, to manipulate non-defensiveness some interventions need to be developed, including but not limited to meditational

interventions, social interventions or emotional interventions; all can be regarded as strategies to achieve the goal of non-defensiveness. The notion is that using these strategies metacognitively makes them effective. Using strategies metacognitively means being aware of the different strategies and their probable effectiveness in different situations (i.e., metacognitive monitoring), and selecting a strategy to start with and shifting between strategies if one in use is not working (i.e., metacognitive control). Thus, the hypothesis is that if by applying these strategies, higher non-defensiveness is achieved, then higher non-defensiveness leads to growth in general metacognitive competence. Thus, effective interventions to develop non-defensiveness affect general metacognitive competence as well as domain-specific metacognitive competence. The argument is that domain-specific metacognitive development (which is centered on an issue such as defensiveness) might add to the general metacognitive competence of individuals and help with metacognitive development in general.

Implications for Research

Prior to this research, little was known empirically about the precursors or outcomes of self-actualization. What's more, self-actualization was assessed as a set of personality characteristics and a view of self-actualization as a process was absent from the empirical literature. Rules (1991) suggested a contemporary view of self-actualization which regards it as a goal-oriented process; an operational definition that suggests measuring a self-variable as well as a goal-related variable. The present study adopted this perspective and conducted research employing an ex post facto design to test a conceptual model predicting self-actualization and to add insight to understanding the nature and requirements of the self-actualization process.

Educational psychologists are urged to further test this conceptual model to refine it by uncovering more about the nature of each construct in the model and identifying other antecedent variables which might improve the variance explained by the conceptual model. Replicating this study could provide more evidence supporting the model. Replication of the study is also recommended while utilizing larger samples allowing for proportional representation for each demographic group. In addition to replicating the study with a similar population, researchers need to take it further and test the conceptual model in different populations in terms of ethnicity/nationality and also different educational as well as organizational settings. Measures can be refined to be age-appropriate to test the conceptual model for different educational levels in school settings. They also can be used, as they are, in other organizational settings; the results from these studies can be also used for personal and professional development in workplaces.

Using the measures with different populations would also help further refine and validate the measures. The present study provided preliminary evidence of validity and reliability (through Exploratory Factor Analysis) for the measures used in this study (see Chapter 4). All of the constructs were a combination of scores from different measures and some of the measures were modified. Therefore, further validation studies could be useful for additional instrument development purposes. Although the hypotheses were largely supported, the predictive quality of constructs changed somewhat from sub-sample to sub-sample (i.e., subsamples split by demographic variables) for all hypotheses. Investigating similar research questions across demographically different samples might add insight to our understanding of the nature and functionality of each

construct. Moreover, detecting differences in their functionality and predictive quality may shed light on developing demographically appropriate and effective interventions to enhance self-actualization and well-being and to maintain a realistic expectation of the effectiveness of the interventions for each demographic group.

Finally, self-actualization needs to be measured longitudinally to be completely in line with Rule's (1991) conceptualization of self-actualization. One of the characteristics Rule (1991) explained in his operational definition of self-actualization was defining it as a process; not static in time like a personality trait. To bring this consideration to the measurement of self-actualization, he suggested including the function of time in measuring this construct. Administering pre-tests and post-tests before and after implementing an intervention is indeed necessary. Further, longitudinal designs that follow individuals over a longer period of time (e.g., over the years) will help to examine the persistence of skill-building or character-building through specific interventions. It may also help to understand each phenomenon developmentally.

Implications for Practice

The findings provide empirical support for the practical implications of the conceptual model tested for tackling cognitive, emotional, and psychological dilemmas in educational settings as well as in coaching and counseling. For instance, in an educational context, there are several daily emotional and psychological challenges that teachers and school personnel need to address in classrooms and on school grounds. Bullying, a substantial challenge in educational settings, was found to be associated with high psychological defensiveness, low self-esteem and the urge for popularity in bullies and low belonging and esteem in the victims (Hawker, & Boulton, 2000; Nail, Bihm, &

Simon, 2011; Salmivalli, Kaukiainen, Kaistaniemi, & Lagerspetz, 1999). Academic and social competitive atmosphere of schools may create situations that threaten students' self-worth and/or bring to the surface dissatisfaction of their esteem and belonging needs. The conceptual model presented in this study provides a theoretical foundation for practice and research to develop curricular and instructional interventions that teaches specific metacognitive skills focused on developing need-satisfaction, reducing defensiveness, and promoting the use of adaptive coping strategies. This model could be extended in a practical sense to include any other psychological growth-oriented challenges of students as metacognitive goals.

The present study has employed university students as the target population for the purpose of investigating the relationship between a general metacognitive competence, self-actualization, and individuals' well-being. The reason for this choice was that emerging adults (i.e., university-age individuals) tend to be more advanced in their cognitive development (Reio & Sanders-Reio, 2009) and in their metacognitive development (e.g., Pressley et al., 1984), as compared to school-age students. Therefore, findings supporting evidence for the hypotheses with this population adds empirical support for its possible applicability in designing interventions for earlier ages, as well as for university students in educational settings beyond the geographic region where the data were collected.

Accordingly, the findings of this study provided an empirical foundation to developing metacognitive curricular and instructional interventions that help students develop a metacognitive system towards self-actualization. Nevertheless, the age-appropriateness of interventions must be acknowledged to accommodate stage and age of

cognitive development. Metacognitive skills can be taught from early ages, and because they need practice and habituation over years to be fully and effectively developed (Gaskin & Pressley, 2005), it seems prudent to begin teaching them as early as possible. Although research supports the effectiveness of different models of metacognitive instructions for different age groups, one must employ age-appropriate language when teaching general metacognitive skills.

Perhaps, developing metacognitive knowledge of psychological concepts may not be expected from young children. In the case of addressing need-satisfaction, it seems more appropriate to develop metacognitive curricular interventions for emerging adults (e.g., college and university students) in that they may be more in charge of fulfilling their own needs and abler to pursue their interests as compared to younger individuals. Some metacognitive interventions may also be useful for adolescents in the areas of belonging and esteem needs to encourage them to become involved in shared activities and community-based learning, and to develop the same respect and recognition for their peers as they would wish for themselves (i.e., their esteem needs). Need-Satisfaction for younger individuals may be best handled by their families and schools.

On the other hand, teaching and learning about psychologically threatening situations, defense mechanisms, and adaptive coping strategies, through the use of suitable metacognitive skills, may be addressed in early ages, as well as in adolescence and young adulthood. It necessitates establishing age-appropriate psychological literacy. Psychological literacy has been defined as “the general capacity to adaptively and intentionally apply psychology [i.e., psychological principles] to meet personal, professional and societal needs” (Cranney, Botwood, & Morris, 2012, p. iii).

In line with this vision, the present study suggests directions for practice and research to develop a self-coaching curriculum with an aim for self-actualization. For the development of an evidence-based self-coaching curriculum, the researcher suggests developing a metacognitive instructional model of coaching that teaches metacognitive skills specifically related to need-satisfaction and defense/coping mechanisms. Of interest for future research is the investigation of developing and incorporating psychological literacy in form of a self-coaching curriculum for individuals in different age-groups. Life coaching approaches that incorporate metacognitive skills and focus on students' psychological needs can be a curricular innovation for schools.

Limitations of the Study and Recommendations for Future Research

Limitations

The findings of this study are limited by the use of metacognition in the model as the way of approaching self-actualization. There may be other constructs, such as emotional intelligence, that better relate to self-actualization and/or well-being or adding them to the model may explain more variance in the criterion variables. Although the present research was focused on intrapersonal factors in relation to individuals' self-actualization and well-being, there are also factors external to the person (i.e., social environment), which may contribute to their metacognition, need-satisfaction, defensiveness, self-actualization, and well-being. Future research should examine other possible routes towards self-actualizations and well-being.

Moreover, using self-report measures may introduce common method biases to the measurements and, thus, to the parameter estimates. However, some procedural considerations can be taken to reduce the probability of common method biases

(Podsakoff et al., 2003; Reio, 2010). The procedural remedies used for this study include (a) reducing item ambiguity by modifying the wording of some items, (b) assuring participants of the confidentiality of their responses, (c) using different scales and end points for different measures, (d) providing verbal labels for different scale points, and (d) counter balancing the order in which the measurements were presented to participants.

In addition, the convenience sample used in this study introduces a limitation to the generalizability of the findings. The sample was a convenient sample of graduate and undergraduate students with a majority being Hispanic (64.3%) and majoring in education (60.8%) in a public university in South Florida (e.g., all graduate students were education students.). Therefore, caution should be used when generalizing the results to demographically different populations. Also small sample sizes for split samples lowered the power of the analysis. Future research needs to consider a more diverse population and larger sample sizes, particularly with respect to grouping demographic variables used in this study.

Recommendations for Future Research

This study provided a conceptual framework for research and practice in the field of self-actualization and human well-being, particularly in educational contexts. The vision taken by the author is to revive a self-actualizing philosophy of education by providing theoretical foundations for developing the best practices for self-actualization suited for educational settings. Some recommendations have been made to provide direction for future research with the aim of developing metacognitive self-coaching curricula for different age-groups while targeting self-actualization as the goal.

Enhancing students' psychological literacy, as an addition to students' metacognitive knowledge repertoires, should be one of the objectives of this self-coaching curriculum.

In this study, general metacognitive competence was identified to be associated with need-satisfaction and non-defensiveness in contributing to self-actualization.

Further research is needed to define effective domain-specific metacognitive skills and strategies in the areas of need-satisfaction and defensiveness/coping for different age

groups ranging from childhood to adolescence to emerging adulthood and adulthood.

Developing such strategies and examining their age-appropriateness are challenges for future research. Developing strategies and interventions will help experimentally test the conceptual model presented in this study and make evidence-based causal inferences.

This study was the first study which used a contemporary operational definition of self-actualization, considered well-being and self-actualization as separate variables, hypothesized and investigated a metacognition-based conceptual model for self-actualization and well-being, and tested the self-actualization theories of Maslow (1968) and Rogers (1951,1961). The author calls for further theoretical and experimental studies to provide additional empirical supports for the findings of this study and add insight to possible causal relationships between constructs of interest in this study.

Moreover, the present study calls for further research on existing school practices to investigate their short-term and long-term effects on students' personal growth and well-being. Identifying and investigating other intrapersonal and interpersonal factors which may enhance or detract from students' self-actualization and well-being can be the topic of future research. Research on different possible contributors to self-actualization enriches the conceptual model set forth in this study. Furthermore, of interest for future

research is the investigation of demographic differences in the constructs involved in this study and the contribution of different demographics to the relationship between the constructs. This line of research will add insight to our understanding of the nature of each construct.

Conclusion

Developing effective, independent individuals who know how to monitor and control their goals, actions, and plans has been one of the intended objectives of metacognitive instructional approaches in classrooms for a few years now (e.g., Gaskin & Pressley, 2005). The present study views self-actualization as a conscious and deliberate process that involves pursuing one's intrinsic, self-concordant, constitutive, and personally expressive goals, and recognizes holistic education as the gateway for self-actualization. The model presented in this study establishes a conceptual and empirical foundation to incorporate into the school curricula some psychological aspects of life and human development that students need to build bright futures and fulfilling lives.

The present study provides a direction for future research and informs educational policy to advance education as a means to keeping individuals on the path for life-long learning and to continuously and holistically advancing towards their optimal well-being. Achieving this goal requires collaborative interdisciplinary endeavors among educational psychologists and curriculum specialists as well as educational policy-makers and administrators. These efforts need to be put to work in two ways: (a) one is to raise awareness of the need for reviving the self-actualizing philosophy of education and (b) the other is to promote research and intervention development to support the practice of this philosophy.

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APPENDIX

Appendix A

Measures of Well-Being (Hedonic and Eudaimonic Well-Being)

Measures of Hedonic (Subjective) Well-Being

- (1) The Positive and Negative Affect Schedule (PANAS; see Watson et al., 1988, for the complete questionnaire)
- (2) The Satisfaction with Life Scale (SWLS; Diener et al., 1985, see <http://internal.psychology.illinois.edu/~ediener/SWLS.html> for the complete questionnaire)

The Measure of Eudaimonic Well-Being (Adapted with the authors' permission)

This questionnaire contains a series of statements that refer to how you may feel things have been going in your life. Read each statement and decide the extent to which you agree or disagree with it. Try to respond to each statement according to your own feelings about how things are actually going, rather than how you might wish them to be.

Please use the following scale when responding to each statement.

Strongly Disagree 0 1 2 3 4 Strongly Agree

Adapted from QEWB (Waterman et al., 2010)⁶

- 1- I find I get intensely involved in many of the things I do each day.
- 2- I believe I have discovered who I really am.
- 3- I think it would be ideal if things came easily to me in my life. (R)
- 4- My life is centered around a set of core beliefs that give meaning to my life.
- 5- It is more important that I really enjoy what I do than that other people are impressed by it.
- 6- I believe I know what my best potentials are and I try to develop them whenever possible.
- 7- Other people usually know better what would be good for me to do than I know myself. (R)
- 8- I feel best when I'm doing something worth investing a great deal of effort in.
- 9- I can say that I have found my purpose in life.
- 10- If I did not find what I was doing rewarding for me, I do not think I could continue doing it.
- 11- As yet, I've not figured out what to do with my life. (R)
- 12- I can't understand why some people want to work so hard on the things that they do. (R)
- 13- I believe it is important to know what I'm doing is something worth pursuing.
- 14- When I engage in activities that involve my best potentials, I have this sense of really being alive.
- 15- I am confused about what my talents really are. (R)
- 16- I find a lot of the things I do are aligned with who I really am.
- 17- It is important to me that I feel fulfilled by the activities that I engage in.
- 18- If something is really difficult, it probably isn't worth doing. (R)

⁶ From "The Questionnaire for Eudaimonic Well-Being: Psychometric Properties, Demographic Comparisons, and Evidence of Validity," by A. S. Waterman, S. J. Schwartz, B. L. Zamboanga, R. D. Ravert., M. Williams, V. B. Agocha, S.Y. Kim, and M. B. Donnellan, 2010, *The Journal of Positive Psychology*, 5 (1), p. 49. Copyright 2010 by A. S. Waterman. Adapted with permission.

19- I find it hard to get really invested in the things that I do. (R)

20- I believe I know what I was meant to do in life.

Items adapted from LRI-R (Debats, 1998)⁷

21- I feel that I'm really going to attain what I want in my life.

22- I spend most of my time doing things that really aren't very important to me. (R)

23- There honestly isn't anything that I totally want to do. (R)

24- I have a clear idea of what I'd like to do with my life.

25- I have real passion in my life.

26- I have a philosophy of life that really gives my living significance.

27- I get so excited by what I'm doing that I find new stores of energy I didn't know that I had.

Note. (R) Item is revers scored.

⁷ From "Measurement of Personal Meaning: The Psychometric Properties of the Life Regard Index," by D. L. Debats, 1998. In T. P. Wong and P. S. Fry (Eds.), *The Human Quest for Meaning: A Handbook of Psychological Research and Clinical Applications* (pp.237-260), Copyright 1998 by D. L. Debats. Adapted with permission.

Appendix B

Measures of Self-Actualization

(a) Actualizing-Self (Actualizing Disposition & Actualizing Initiation):

- (1) **Measure of Actualizing Dispositions (27 items):** Items 1 to 27 of the **Measure of Actualization of Potentials** (see Leclerc et al., 2002, for the complete questionnaire and manual)
- (2) **Measure of Actualizing Initiation (2 items):** Items 28 & 29 were adopted from the **Personal Growth Initiative Scale** (Robitschek, 1998, items were reprinted with the author's permission)⁸

Using the scale below, circle the number which best describes the extent to which the statement is true about you.

28. If I want to change something in my life, I initiate the transition process.

1	2	3	4	5
<i>not me at all</i>		<i>somewhat me</i>		<i>definitely me</i>

29. I have a plan for making my life more balanced.

1	2	3	4	5
<i>not at all</i>		<i>Somewhat</i>		<i>very much</i>

(b) Actualizing-Striving

List of Goals

Please think of your personal goals you want to accomplish, your goals you are concerned about when planning for your future, and goals that inspire you in your everyday life. Personal goals might involve various life areas, as for example study, family, friends, your own personal growth, leisure time, health, jobs, housing conditions, etc. Focus on long-term goals (e.g., to improve the relationship with a friend) rather than on single behavioral acts or short-term pursuits (e.g., to buy a present for a friend next week).

⁸ From "Personal Growth Initiative: The Construct and Its Measures," by C. Robitschek, 1998. *Measurement and Evaluation in Counseling and Development*, 30(4), 183-198. Copyright 1998 by C. Robitschek. Reprinted and adapted with permission.

List or briefly describe the five most important goals you are pursuing in your life at the present:

1	
2	
3	
4	
5	

(1) Measures of Goal Self-Concordant and Goal Aspiration⁹

(one copy per goal)

Please rewrite your first goal here

And answer the following questions about this goal.

Think about this goal and keep in mind, it really does not matter if your goal actually leads to these specific things mentioned below or not. Please think about your aspirations and intentions and honestly rate on a scale of 1 to 7 to what extent you pursue this goal:

1- Because you endorse it freely and value it wholeheartedly.

1	2	3	4	5	6	7
<i>Not at all for this reason</i>						<i>Very much for this reason</i>

2- Because somebody else wants you to or because the situation seems to compel it.

1	2	3	4	5	6	7
<i>Not at all for this reason</i>						<i>Very much for this reason</i>

3- Because of the enjoyment or stimulation which that goal provides you.

1	2	3	4	5	6	7
<i>Not at all for this reason</i>						<i>Very much for this reason</i>

⁹ The first 4 items represent Goal Attribution or Goal Self-Concordance and were adapted from *Optimal Human Being: An Integrated Multi-Level Perspective*, by K. M. Sheldon, 2004, Mahwah, NJ: Lawrence Erlbaum Associates. Copyright 2004 by K. M. Sheldon. Adapted with permission. Items for Goal Aspirations (5 to 15) were developed guided by literature (see Table 2 in the manuscript for more details).

4- Because you compel yourself because you would feel ashamed, guilty, or anxious if you didn't.

1	2	3	4	5	6	7
<i>Not at all for this reason</i>						<i>Very much for this reason</i>

5- Because it is good by itself.

1	2	3	4	5	6	7
<i>Not at all for this reason</i>						<i>Very much for this reason</i>

6- Because it makes you a better person.

1	2	3	4	5	6	7
<i>Not at all for this reason</i>						<i>Very much for this reason</i>

7- Because people will like you more.

1	2	3	4	5	6	7
<i>Not at all for this reason</i>						<i>Very much for this reason</i>

8- Because it makes you learn new things about yourself and/or the world.

1	2	3	4	5	6	7
<i>Not at all for this reason</i>						<i>Very much for this reason</i>

9- Because it makes you look better among your friends, family, or other people in general.

1	2	3	4	5	6	7
<i>Not at all for this reason</i>						<i>Very much for this reason</i>

10- Because it makes other people's lives better.

1	2	3	4	5	6	7
<i>Not at all for this reason</i>						<i>Very much for this reason</i>

11- Because it makes you well-known.

1	2	3	4	5	6	7
<i>Not at all for this reason</i>						<i>Very much for this reason</i>

Importance:

18- How important is this goal to you in your life, and how committed are you to working towards each goal?

1	2	3	4	5	6
<i>not at all important</i>	<i>slightly important</i>	<i>somewhat important</i>	<i>moderately important</i>	<i>very important</i>	<i>extremely important</i>

Inspiration:

19- How inspiring is this goal to you?

1	2	3	4	5	6	7
<i>not at all</i>			<i>moderately</i>			<i>extremely</i>

20- How inspired are you to pursue and reach this goal?

1	2	3	4	5	6	7
<i>not at all</i>			<i>moderately</i>			<i>extremely</i>

Effort:

21- How much effort and energy do you generally expend in trying to be successful in this goal?

1	2	3	4	5	6
<i>no effort</i>	<i>very little effort</i>	<i>some effort</i>	<i>moderate effort</i>	<i>much effort</i>	<i>very much effort</i>

Appendix C

Measure of Need-Satisfaction (Sheldon & Elliot's approach, 1999)¹¹

(Adapted with the authors' permission)

(1) General Need-Satisfaction

Please rate the extent to which you are having each of these three types of experience in your life, at present:

1- feeling generally competent and able in what I attempt

1	2	3	4	5	6	7
<i>Very little</i>						<i>Very much</i>

2- feeling generally autonomous and choiceful in what I do

1	2	3	4	5	6	7
<i>Very little</i>						<i>Very much</i>

3- feeling generally related and connected to people spend time with

1	2	3	4	5	6	7
<i>Very little</i>						<i>Very much</i>

(2) Goal-Related Need Satisfaction (One copy per goal)

Please write your goal here

And answer these questions about your goal striving:

(a) Competence

How competent you feel while striving for this goal?

1	2	3	4	5	6	7
<i>Very little</i>						<i>Very much</i>

¹¹ The approach and the items were Adapted from "Goal striving, need satisfaction, and longitudinal well-being: The self-concordance model," by K. M. Sheldon and A. J. Elliot, 1999, *Journal of Personality and Social Psychology*, 76(3), p. 482-497. Copyright 1999 by K. M. Sheldon. Adapted with permission. The Support (Relatedness) item was adapted from *The Psychology of Ultimate Concerns: Motivation and Spirituality in Personality*, by R. A. Emmons, 1999, New York, NY: Guilford. Copyright 1999 by R. A. Emmons. Adapted with permission.

(b) Autonomy

- (1) Identified Motivation, (2) External Motivation, (3) Intrinsic Motivation, and
- (4) Introjected Motivation

To what extent you pursue this goal:

(1) Because you endorse it freely and value it wholeheartedly

1	2	3	4	5	6	7
<i>Not at all for this reason</i>						<i>Very much for this reason</i>

(2) Because somebody else wants you to or because the situation seems to compel it

1	2	3	4	5	6	7
<i>Not at all for this reason</i>						<i>Very much for this reason</i>

(3) Because of the enjoyment or stimulation which that goal provides you.

1	2	3	4	5	6	7
<i>Not at all for this reason</i>						<i>Very much for this reason</i>

(4) Because you compel yourself because you would feel ashamed, guilty, or anxious if you didn't.

1	2	3	4	5	6	7
<i>Not at all for this reason</i>						<i>Very much for this reason</i>

(c) Support (Relatedness)

Think about the person who has the most impact on you in pursuing this specific goal (either positive impact, negative impact, or both), choose a number from the scale below to rate the degree of support or hindrance that you usually receive from that person in your effort to attain this goal.

1 = Extremely supportive of my efforts at achieving this goal

2 = Supportive of my efforts at achieving this goal

3 = Somewhat supportive of my efforts at achieving this goal

4 = Neither supportive of nor a hindrance to my efforts at achieving this goal

5 = Somewhat of a hindrance to my efforts at achieving this goal

6 = A hindrance to my efforts at achieving this goal

7 = An extreme hindrance to my efforts at achieving this goal

Appendix D

Non-Defensiveness

(Modified and reordered version of Brief-COPE; Carver, 1997)¹²

We are interested in how people respond when they confront difficult or stressful events in their lives. There are lots of ways to try to deal with stress. This questionnaire asks you to indicate what **you** generally do and feel, when you experience stressful events. Obviously, different events bring out somewhat different responses, but think about what you **usually** do when you are under a lot of stress. Think about what **you** do, not what most people do.

Use the scale below to rate your answers:

1 = *I usually don't do this at all*

2 = *I usually do this a little bit*

3 = *I usually do this a medium amount*

4 = *I usually do this a lot*

1- I concentrate my efforts on doing something about the situation I am in.

1	2	3	4
<i>I usually don't do this at all</i>	<i>I usually do this a little bit</i>	<i>I usually do this a medium amount</i>	<i>I usually do this a lot</i>

2- I learn to live with it.

1	2	3	4
<i>I usually don't do this at all</i>	<i>I usually do this a little bit</i>	<i>I usually do this a medium amount</i>	<i>I usually do this a lot</i>

3- I say things to let my unpleasant feelings escape.

1	2	3	4
<i>I usually don't do this at all</i>	<i>I usually do this a little bit</i>	<i>I usually do this a medium amount</i>	<i>I usually do this a lot</i>

4- I try to come up with a strategy about what to do.

1	2	3	4
<i>I usually don't do this at all</i>	<i>I usually do this a little bit</i>	<i>I usually do this a medium amount</i>	<i>I usually do this a lot</i>

¹² Adapted from "You want to measure coping but your protocol's too long: Consider the Brief COPE," by C. S. Carver, 1997, *International Journal of Behavioral Medicine*, 4, p. 92-100. Copyright 1997 by C. S. Carver. The use was permitted by the author: <http://www.psy.miami.edu/faculty/ccarver/sc1BrCOPE.html>

5- I get help and advice from other people.

1	2	3	4
<i>I usually don't do this at all</i>	<i>I usually do this a little bit</i>	<i>I usually do this a medium amount</i>	<i>I usually do this a lot</i>

6- I criticize myself.

1	2	3	4
<i>I usually don't do this at all</i>	<i>I usually do this a little bit</i>	<i>I usually do this a medium amount</i>	<i>I usually do this a lot</i>

7- I get emotional support from others.

1	2	3	4
<i>I usually don't do this at all</i>	<i>I usually do this a little bit</i>	<i>I usually do this a medium amount</i>	<i>I usually do this a lot</i>

8- I try to see it in a different light, to make it seem more positive.

1	2	3	4
<i>I usually don't do this at all</i>	<i>I usually do this a little bit</i>	<i>I usually do this a medium amount</i>	<i>I usually do this a lot</i>

9- I accept the reality of the fact that it has happened.

1	2	3	4
<i>I usually don't do this at all</i>	<i>I usually do this a little bit</i>	<i>I usually do this a medium amount</i>	<i>I usually do this a lot</i>

10- I take action to try to make the situation better.

1	2	3	4
<i>I usually don't do this at all</i>	<i>I usually do this a little bit</i>	<i>I usually do this a medium amount</i>	<i>I usually do this a lot</i>

11- I think about using alcohol or other drugs to help me get through it.

1	2	3	4
<i>I usually don't do this at all</i>	<i>I usually do this a little bit</i>	<i>I usually do this a medium amount</i>	<i>I usually do this a lot</i>

12- I make jokes about it.

1	2	3	4
<i>I usually don't do this at all</i>	<i>I usually do this a little bit</i>	<i>I usually do this a medium amount</i>	<i>I usually do this a lot</i>

13- I get comfort and understanding from someone.

1	2	3	4
<i>I usually don't do this at all</i>	<i>I usually do this a little bit</i>	<i>I usually do this a medium amount</i>	<i>I usually do this a lot</i>

14- I say to myself “this isn’t real.”

1	2	3	4
<i>I usually don't do this at all</i>	<i>I usually do this a little bit</i>	<i>I usually do this a medium amount</i>	<i>I usually do this a lot</i>

15- I try to find comfort in my religion or spiritual beliefs.

1	2	3	4
<i>I usually don't do this at all</i>	<i>I usually do this a little bit</i>	<i>I usually do this a medium amount</i>	<i>I usually do this a lot</i>

16- I look for something good in what is happening.

1	2	3	4
<i>I usually don't do this at all</i>	<i>I usually do this a little bit</i>	<i>I usually do this a medium amount</i>	<i>I usually do this a lot</i>

17- I try to get advice or help from other people about what to do.

1	2	3	4
<i>I usually don't do this at all</i>	<i>I usually do this a little bit</i>	<i>I usually do this a medium amount</i>	<i>I usually do this a lot</i>

18- I turn to work or other activities to take my mind off things.

1	2	3	4
<i>I usually don't do this at all</i>	<i>I usually do this a little bit</i>	<i>I usually do this a medium amount</i>	<i>I usually do this a lot</i>

19- I think hard about what steps to take.

1	2	3	4
<i>I usually don't do this at all</i>	<i>I usually do this a little bit</i>	<i>I usually do this a medium amount</i>	<i>I usually do this a lot</i>

20- I refuse to believe that it has happened.

1	2	3	4
<i>I usually don't do this at all</i>	<i>I usually do this a little bit</i>	<i>I usually do this a medium amount</i>	<i>I usually do this a lot</i>

21- I express my negative feelings.

1	2	3	4
<i>I usually don't do this at all</i>	<i>I usually do this a little bit</i>	<i>I usually do this a medium amount</i>	<i>I usually do this a lot</i>

22- I give up trying to deal with it.

1	2	3	4
<i>I usually don't do this at all</i>	<i>I usually do this a little bit</i>	<i>I usually do this a medium amount</i>	<i>I usually do this a lot</i>

23- I pray or meditate.

1	2	3	4
<i>I usually don't do this at all</i>	<i>I usually do this a little bit</i>	<i>I usually do this a medium amount</i>	<i>I usually do this a lot</i>

24- I think about using alcohol or other drugs to make myself feel better.

1	2	3	4
<i>I usually don't do this at all</i>	<i>I usually do this a little bit</i>	<i>I usually do this a medium amount</i>	<i>I usually do this a lot</i>

25- I do something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping.

1	2	3	4
<i>I usually don't do this at all</i>	<i>I usually do this a little bit</i>	<i>I usually do this a medium amount</i>	<i>I usually do this a lot</i>

26- I make fun of the situation.

1	2	3	4
<i>I usually don't do this at all</i>	<i>I usually do this a little bit</i>	<i>I usually do this a medium amount</i>	<i>I usually do this a lot</i>

27- I give up the attempt to cope.

1	2	3	4
<i>I usually don't do this at all</i>	<i>I usually do this a little bit</i>	<i>I usually do this a medium amount</i>	<i>I usually do this a lot</i>

28- I blame myself for things that happened.

1	2	3	4
<i>I usually don't do this at all</i>	<i>I usually do this a little bit</i>	<i>I usually do this a medium amount</i>	<i>I usually do this a lot</i>

Appendix E

Modifications Applied to Metacognitive Awareness Inventory¹³

(Items reprinted with the authors' permission)

Original Instrument	Modified Instrument	Subscales ^a
1- I ask myself periodically if I am meeting my goals.	Remained the same	RC
2- I consider several alternatives to a problem before I answer.	I consider several alternatives to a problem before I try to solve it.	RC
3- I try to use strategies that have worked in the past.	Remained the same	KC
4- I pace myself while learning in order to have enough time.	Eliminated	RC
5- I understand my intellectual strengths and weaknesses.	Remained the same	KC
6- I think about what I really need to learn before I begin a task.	I think about what I really need to learn or know before I begin a task.	RC
7- I know how well I did once I finish a test.	I know how well I am doing when dealing with a problem.	RC
8- I set specific goals before I begin a task.	Remained the same	RC
9- I slow down when I encounter important information.	Remained the same	RC
10- I know what kind of information is most important to learn.	I know what kind of information is most important to learn or to know in order to deal with a problem.	KC
11- I ask myself if I have considered all options when solving a problem.	Remained the same	RC
12- I am good at organizing information.	Remained the same	KC
13- I consciously focus my attention on important information.	Remained the same	RC
14- I have a specific purpose for each strategy I use.	Remained the same	KC

¹³ From "Assessing Metacognitive Awareness," by G. Schraw and R. S. Dennison, 1994, *Contemporary Educational Psychology*, 19(4), p. 460-475. Copyright 1994 by G. Schraw. Reprinted and Adapted with permission.

15- I learn best when I know something about the topic.	Eliminated	KC
16- I know what the teacher expects me to learn.	Eliminated	KC
17- I am good at remembering information.	Remained the same	KC
18- I use different learning strategies depending on the situation.	I use different strategies depending on the situation.	KC
19- I ask myself if there was an easier way to do things after I finish a task.	Remained the same	RC
20- I have control over how well I learn.	I have control over how well I handle a problem or a situation.	KC
21- I periodically review to help me understand important relationships.	Remained the same	RC
22- I ask myself questions about the materials before I begin.	I ask myself questions about how to approach a task or situation before I take actions.	RC
23- I think of several ways to solve a problem and choose the best one.	Remained the same	RC
24- I summarize what I've learned after I finish.	I think of what I've learned after I am done with a task.	RC
25- I ask others for help when I don't understand something.	Remained the same	RC
26- I can motivate myself to learn when I need to.	I can motivate myself to start on or continue with a task when I need to.	KC
27- I am aware of what strategies I use when I study.	I am aware of strategies I use when I am dealing with a problem.	KC
28- I find myself analyzing the usefulness of strategies while I study.	I find myself analyzing the usefulness of strategies while I am on a task.	RC
29- I use my intellectual strengths to compensate for my weaknesses.	Remained the same	KC
30- I focus on the meaning and significance of new information.	Remained the same	RC
31- I create my own examples to make information more meaningful.	Remained the same	RC

32-	I am a good judge of how well I understated something.	Remained the same	KC
33-	I find myself using helpful learning strategies automatically.	I find myself using helpful strategies automatically.	KC
34-	I find myself pausing regularly to check my comprehension.	I find myself using helpful strategies to check my understanding of the situation or the problem.	RC
35-	I know when each strategy I use will be most effective.	Remained the same	KC
36-	I ask myself how well I accomplished my goals once I am finished.	Remained the same	RC
37-	I draw pictures or diagrams to help me understand while learning.	I draw pictures and diagrams to help me understand a situation, solving a problem, or planning.	RC
38-	I ask myself if I have considered all options after I solve a problem.	Remained the same	RC
39-	I try to translate new information into my own words.	I try to put into my own words my experiences and new information I learned.	RC
40-	I change strategies when I fail to understand.	I change strategies when I fail to accomplish my goals.	RC
41-	I use the organizational structure of the text to help me learn.	Eliminated	KC
42-	I read instructions carefully before I begin a task.	I read or pay attention to instructions carefully before I begin a task.	RC
43-	I ask myself if what I'm reading is related to what I already know.	I ask myself if what I am dealing with is related to my previous experiences.	RC
44-	I reevaluate my assumptions when I get confused.	Remained the same	RC
45-	I organize my time to best accomplish my goals.	Remained the same	RC
46-	I learn more when I am interested in the topic.	Eliminated	KC
47-	I try to break studying down into smaller steps.	I try to break my task/a problem down into smaller steps.	RC
48-	I focus on overall meaning rather than specifics.	I focus on overall meaning underlying a situation rather than specifics.	RC

49- I ask myself questions about how well I am doing while I am learning something new.	Remained the same	RC
50- I ask myself if I learned as much as I could have once I finish a task.	Remained the same	RC
51- I stop and go back over new information that is not clear.	Remained the same	RC
52- I stop and reread when I get confused.	I stop and check what I am saying or what I am doing when I get confused.	RC

Note. ^a RC = Regulation of Cognition, KC = Knowledge of Cognition.

Appendix F

The Measure of General Metacognitive Competence

(A modified version of MAI; Schraw & Dennison, 1994)¹⁴

Consider yourself in a problem-solving situation. It can be in an academic setting (e.g., learning, studying, taking a test, etc.) or in a real-world situation (e.g., planning, finding my way in a new town, looking for a job, giving advice to a friend on a personal problem, dealing with an emotional distress, etc.). On a scale of 0 to 10 to what extent each statement is true about you:

0	1	2	3	4	5	6	7	8	9	10
<i>not at all</i>					<i>half of the time</i>					<i>all of the time</i>

-
- 1- I ask myself periodically if I am meeting my goals.
 - 2- I consider several alternatives to a problem before I try to solve it.
 - 3- I try to use strategies that have worked in the past.
 - 4- I understand my intellectual strengths and weaknesses.
 - 5- I think about what I really need to learn or know before I begin a task.
 - 6- I know how well I am doing when dealing with a problem
 - 7- I set specific goals before I begin a task.
 - 8- I slow down when I encounter important information.
 - 9- I know what kind of information is most important to learn or to know when dealing with a problem.
 - 10- I ask myself if I have considered all options when solving a problem.
 - 11- I am good at organizing information.
 - 12- I consciously focus my attention on important information.
 - 13- I have a specific purpose for each strategy I use.
 - 14- I am good at remembering information.
 - 15- I use different strategies depending on the situation.
 - 16- I ask myself if there was an easier way to do things after I finish a task.
 - 17- I have control over how well I handle a situation or problem.
 - 18- I periodically review to help me understand important relationships.
 - 19- I ask myself questions about how to approach a task or situation before I take actions.
 - 20- I think of several ways to solve a problem and choose the best one.
 - 21- I think of what I've learned after I am done with a task.
 - 22- I ask others for help when I don't understand something.
-

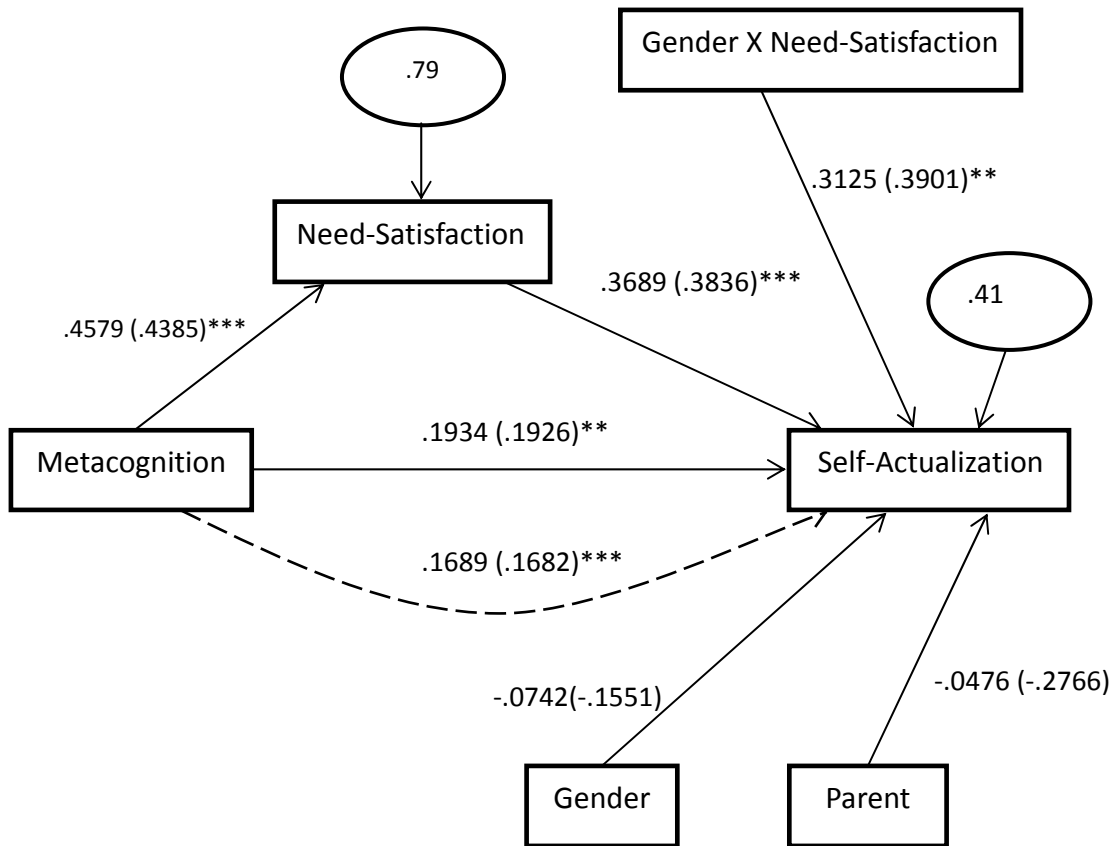
¹⁴ From "Assessing Metacognitive Awareness," by G. Schraw and R. S. Dennison, 1994, *Contemporary Educational Psychology*, 19(4), p. 460-475. Copyright 1994 by G. Schraw. Reprinted and Adapted with permission.

-
- 23- I can motivate myself to start on or continue with a task when I need to.
 - 24- I am aware of strategies I use when I am dealing with a problem.
 - 25- I find myself analyzing the usefulness of strategies while I am on a task.
 - 26- I use my intellectual strengths to compensate for my weaknesses.
 - 27- I focus on the meaning and significance of new information.
 - 28- I create my own examples to make information more meaningful.
 - 29- I am a good judge of how well I understated something.
 - 30- I find myself using helpful strategies automatically.
 - 31- I find myself pausing regularly to check my understanding of the situation or the problem.
 - 32- I know when each strategy I use will be most effective.
 - 33- I ask myself how well I accomplished my goals once I am finished.
 - 34- I draw pictures and diagrams to help me understand a situation, solving a problem, or planning.
 - 35- I ask myself if I have considered all options after I solve a problem.
 - 36- I try to put into my own words my experiences and new information I learned.
 - 37- I change strategies when I fail to accomplish my goals.
 - 38- I read or pay attention to instructions carefully before I begin a task.
 - 39- I ask myself if what I am dealing with is related to my previous experiences.
 - 40- I reevaluate my assumptions when I get confused.
 - 41- I organize my time to best accomplish my goals.
 - 42- I try to break my task/a problem down into smaller steps.
 - 43- I focus on overall meaning underlying a situation rather than specifics.
 - 44- I ask myself questions about how well I am doing while I am learning something new.
 - 45- I ask myself if I learned as much as I could have once I finish a task.
 - 46- I stop and go back over new information that is not clear.
 - 47- I stop and check what I am saying or what I am doing when I get confused.
-

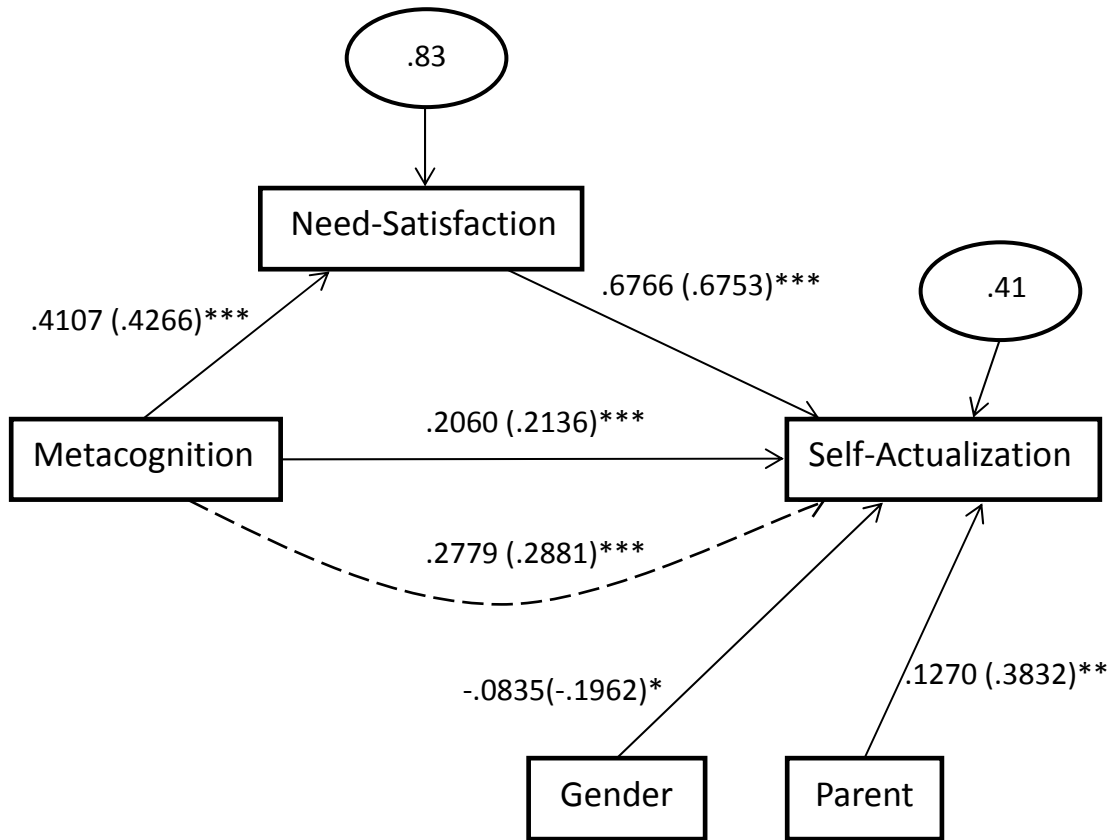
Appendix G

SEM diagrams for Split Samples for Hypothesis 8

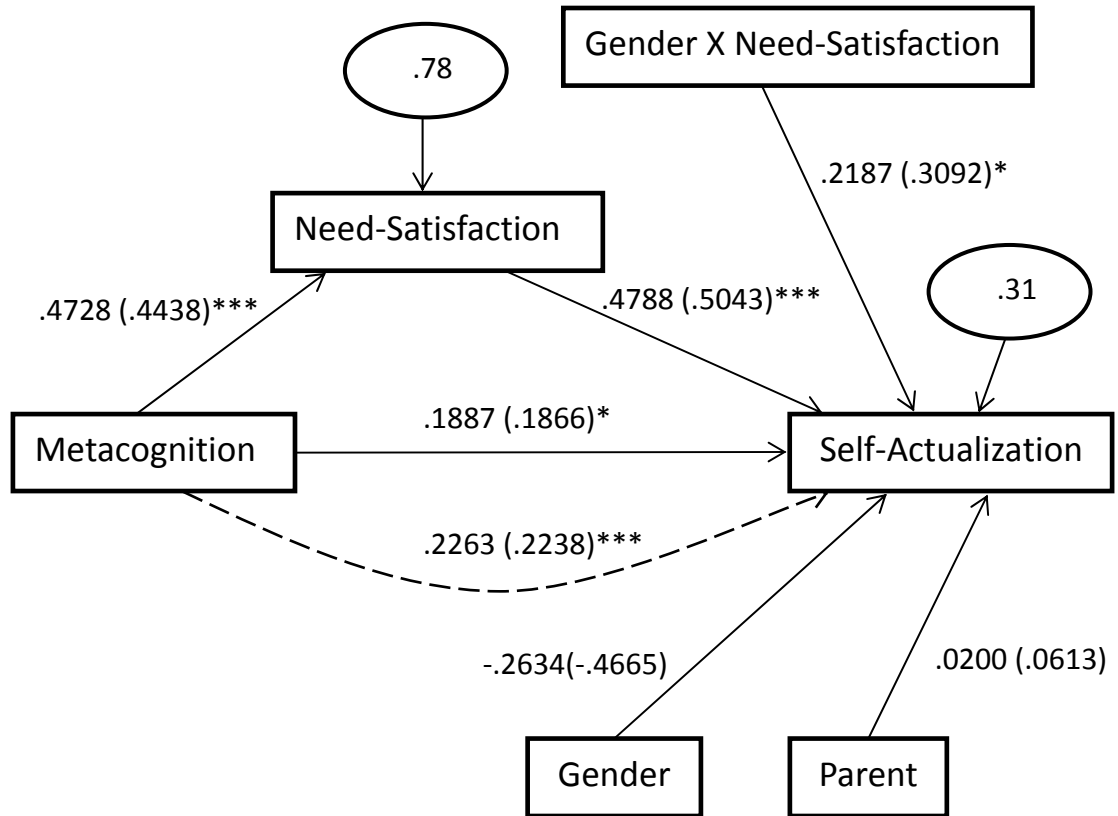
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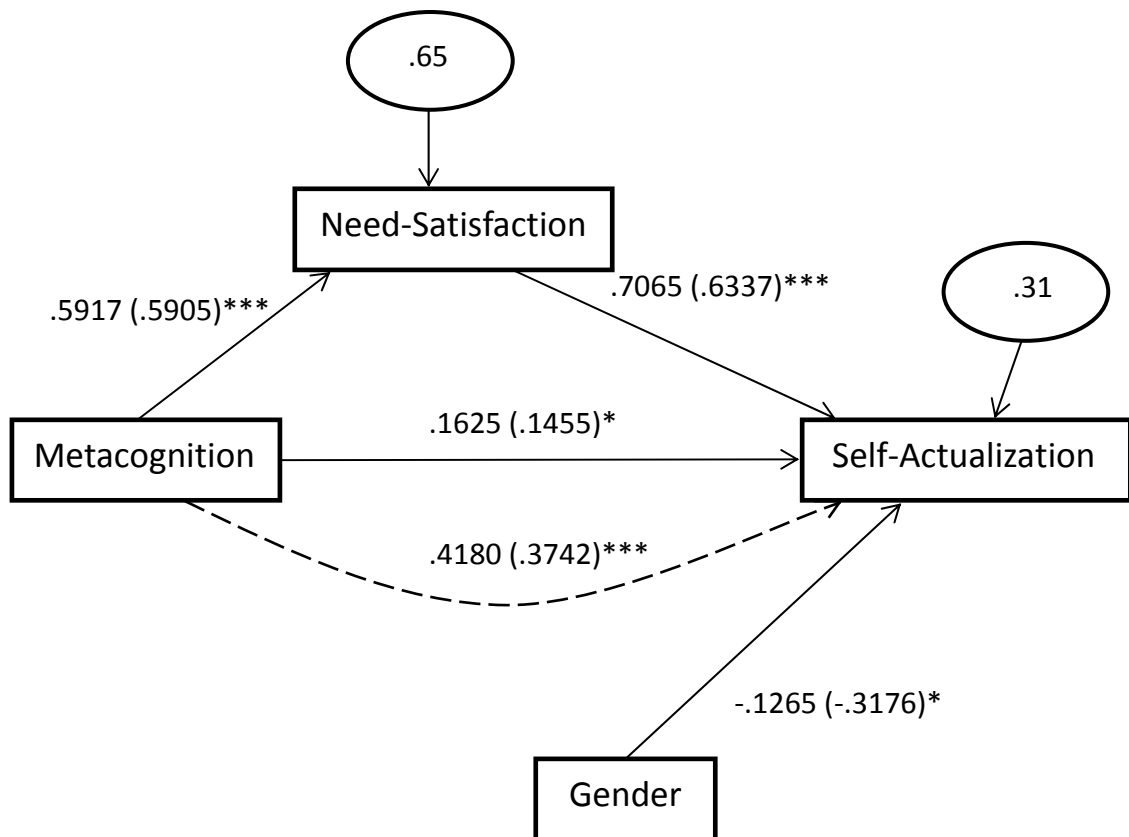
(a) Path Coefficients for the Mediation Model tested for Non-Immigrant Non-Education Students



(b) Path Coefficients for the Mediation Model tested for Non-Immigrant Education Students



(c) Path Coefficients for the Mediation Model tested for Immigrant Non-Education Students

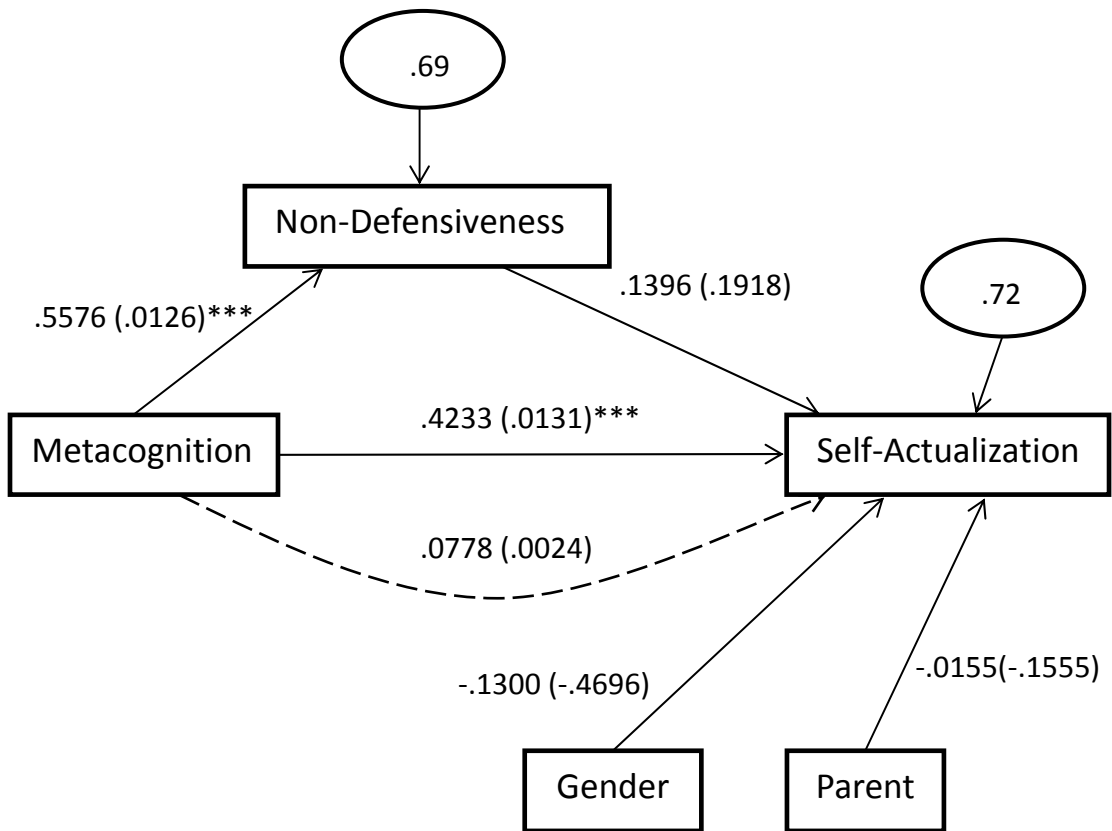


(d) Path Coefficients for the Mediation Model tested for Immigrant Education Students

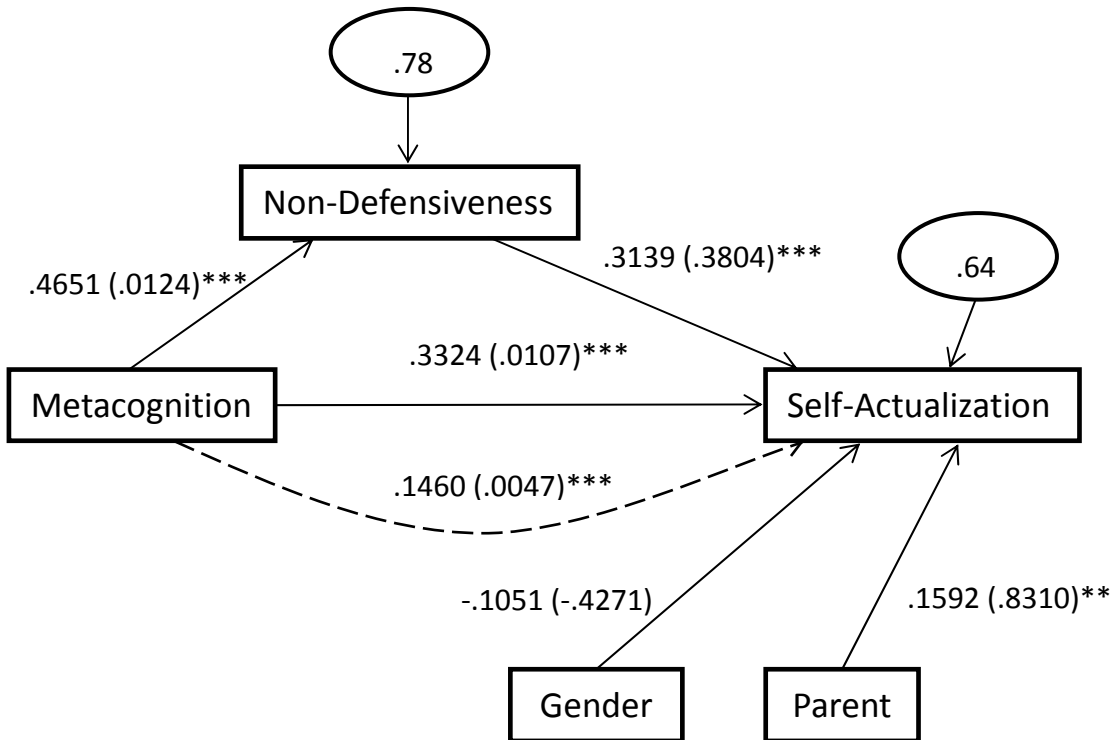
Appendix H

SEM diagrams for Split Samples for Hypothesis 9

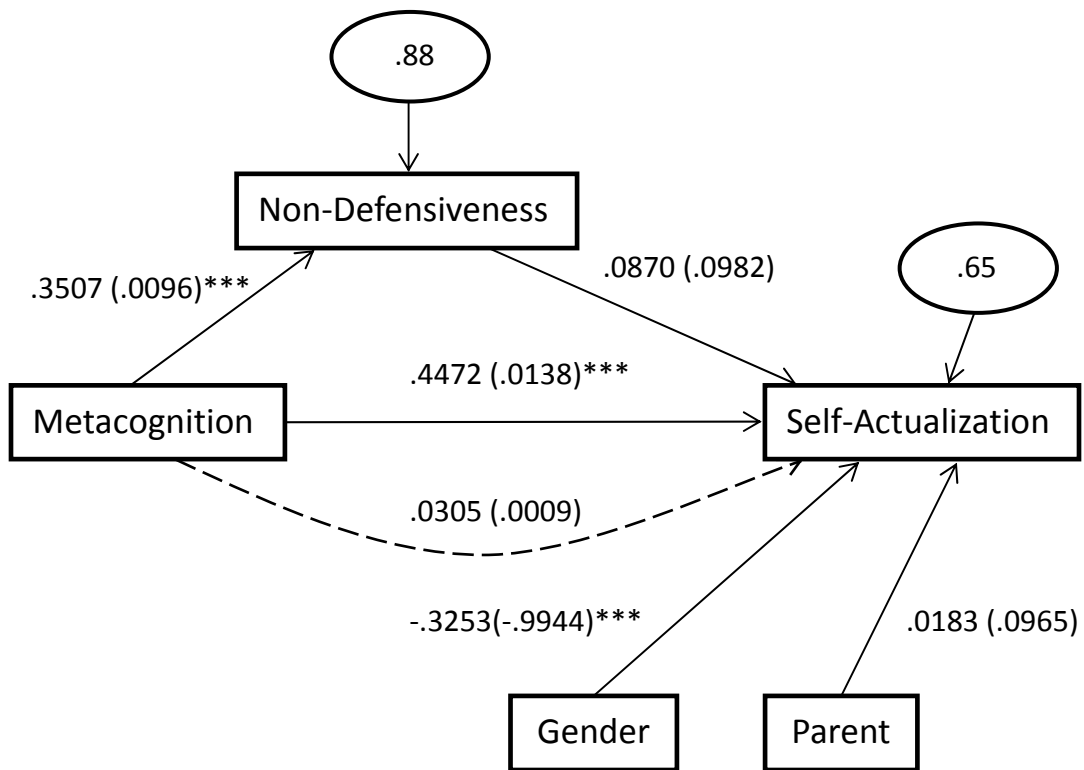
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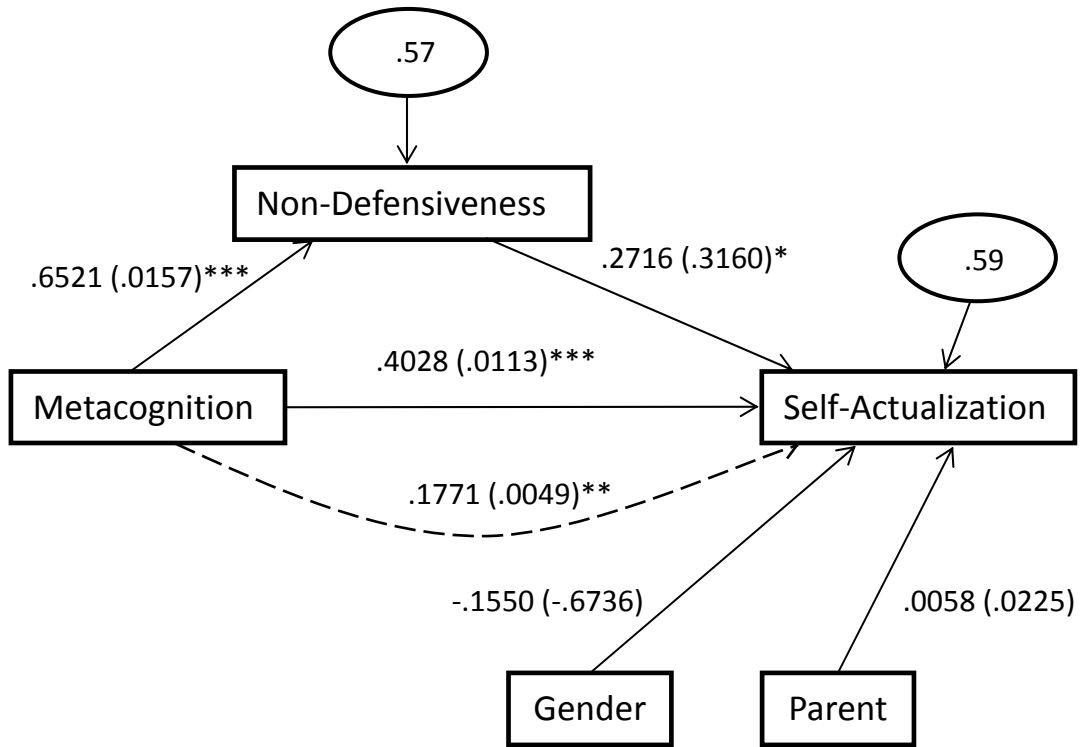
(a) Path Coefficients for the Mediation Model tested for Non-Immigrant Non-Education Students



(b) Path Coefficients for the Mediation Model tested for Non-Immigrant Education Students



(c) Path Coefficients for the Mediation Model tested for Immigrant Non-Education Students



(d) Path Coefficients for the Mediation Model tested for Immigrant Education Students

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