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WHAT IS SELF-POTENTIAL AND HOW DOES IT
RELATE TO PERSONAL INTELLIGENCE?

BY

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DISSERTATION

Submitted to the University of New Hampshire

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in

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TABLE OF CONTENTS

LIST OF TABLES	vi
LIST OF FIGURES	vii
DEDICATION	viii
ACKNOWLEDGEMENTS	ix
ABSTRACT	xi
INTRODUCTION	1
Elements of Self-Potential	4
Personal Intelligence and Self-potential	4
Relationships between general intelligence and broad intelligences	4
Hot intelligences	5
Skills of Personal Intelligence	6
Measuring personal intelligence	6
Higher Self-potential	7
Relationships Among Concepts	13
Introduction to the Studies	14
Study 1	15
Hypotheses	15
Methods	16
Results	19
Data Handling	19

Preliminary Analysis	20
Strategies of Data Analysis and Model Criteria	21
Scores on the Self-Potential Variables were Positively Related	21
Discussion	25
Study 2	27
Methods	28
Results.....	30
Study 2 Discussion	33
General Discussion	35
References.....	46
TABLES	63
FIGURES.....	73
APPENDICES	79
APPENDIX A.....	80
APPENDIX B	82
APPENDIX C	83
APPENDIX D.....	85
APPENDIX E	86
APPENDIX F.....	89
APPENDIX G.....	92
APPENDIX H.....	94

APPENDIX I 95

APPENDIX J 96

LIST OF TABLES

Table 1 Elements of Self-potential: Variables Included in the Self-Potential Model

Table 2 Study 1 Gender and Race Demographics

Table 3 Study 1 Descriptive statistics of original measures

Table 4 Study 1 Correlations among the Self-Potential Scales; and Creativity about Personality Scale and the TOPI

Table 5: The Factor Based Restructured Scales

Table 6 Study 1 Exploratory Factor Analysis of Restructured Scales Used to Develop the Model of Restructured Variables Study 1 Pattern Matrix^a

Table 7 Study 1 Correlations among Restructured Scales, Latent Variables, Aggregates and TOPI

Table 8 Gender and Race Demographics Information for Study 2

Table 9 Descriptive Statistics of the Central Measures for Study 2

Table 10 Study 2 Correlations of the Original Variables With the TOPI

Table 11 Study 2 Correlations Among Rescaled And Latent Variables

LIST OF FIGURES

Figure 1 Proposed conceptual relationship among concepts associated with self-potential.

Figure 2 Initial hierarchical model tested in Study 1.

Figure 3 Proposed one-factor model tested in Study 1

Figure 4 Simple correlated model tested in Study 1

Figure 5 The model that attained good fit in Study 1, but not in Study 2

DEDICATION

To my loving husband James Turner, who wanted to help me achieve this goal, for his support, technical assistance, late night proof reading and formatting assistance. To my son, Daniel Bear Turner who is my joy, thank you for understanding when I wasn't there and for being so independent. I hope that you too are able to accomplish your academic and professional goals. To Esther and John Barlow, my mom and dad, thank you for your emotional support and patience and for giving me the space I needed to accomplish this goal.

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ABSTRACT**WHAT IS SELF-POTENTIAL AND HOW DOES IT
RELATE TO PERSONAL INTELLIGENCE?**

by

Bonnie A. Barlow

University of New Hampshire, May, 2016

Intelligence is an important ability that we use in our everyday lives to understand people, such as choosing the best partner to work with on a project. Personal intelligence is the ability to “reason about personality and its processes, as applied to one’s self and others” (Mayer, Panter & Caruso, 2012). The Test of Personal Intelligence (TOPI) was developed to test this important ability. If the TOPI measures people’s ability to understand their own and other’s personality, as personal intelligence increases so should a person’s level of self-potential. This idea was tested in two studies by conducting correlations between the TOPI and measures of self-potential, defined as the creative process of making sense of our experience, finding direction and purpose in life, and making goals and plans based on life purpose. The model of self-potential employed here includes such concepts as identifying your true self (Schlegel & Hicks, 2011) and being creative (Maslow, 2011). Although no stable model was found, there was some evidence for two factors of "meaning" and "renewal." Progress also was made in the development of unifactorial scales for the self-actualization and preconscious activity scales. Some of the measures of self-potential, such as self-actualization, were correlated with the TOPI, but not all were. The TOPI was not related to words used in an essay that predict self-potential from everyday trauma.

INTRODUCTION

Intelligence is an important ability that influences many areas of our lives. Psychologists define intelligence as a “mental capability that, among other things, involves the ability to reason, plan, solve problems, think abstractly, comprehend complex ideas, learn quickly and learn from experience” (Gottfredson, 1997 P. 13). People use intelligence to adapt to academic subjects such as math or writing, but intellectual capacities are not only used in academic situations. They can also be used in every area of life to adapt to the environment. Intelligences divide into broad intelligences, such as *long-term memory storage and retrieval*, and possibly *personal intelligence*. Personal intelligence (PI) is the ability to “reason about personality and its processes, as applied to one’s self and others” (Mayer, Panter & Caruso, 2012). This capacity to reason could be about our own personality or about others’ personalities. Here I will pay particular attention to reasoning about one’s own personality, and in particular, one’s self and whether it relates to our capacity for self-potential.

People have many theories about personality, but one view defines it as “the organized, developing system within each of us that represents the collective action of our psychological processes such as motives, emotions, social planning and self-regulation” (Mayer, Panter & Caruso, 2012 p.124). People ask many questions about their personalities, including the fundamental question: “Who am I?” This question facilitates self-potential by leading people to explore themselves and then to develop their own characteristics.

I define self-potential as the creative process of making sense of our experience, finding direction and purpose in life, setting goals, and making plans based on life purpose. Self-potential is closely related to the term self-development as it is used in personality psychology. I

have used “self-potential” here rather than “self-development” to avoid the implication that this research is longitudinal. Nonetheless, humanistic personality psychologists did employ (and continue to employ) the term “self-development” apart from longitudinal studies: The term includes such concepts as identifying your true self (Schlegel & Hicks, 2011) and being creative (Maslow, 2011). Personal intelligence is the function that we use to understand the self and use that information to develop ourselves; for example, to make good choices and form plans and goals that fit with who we are. In other words, the ability to understand the self that is afforded by personal intelligence is also central to self-development and self-potential.

Self-potential, as I use the term here, includes many facets. Primary among them are (a) identifying one’s true self, (b) integrating various aspects of the self, such as cognition, emotion and motivation, (c) the process of creating personal meaning and (d) creating plans and goals. These components are interrelated; for example, identifying personally-important meanings requires making sense of our experiences. Such meaning-making is necessary, in turn, to developing plans and goals that are important to us. When a person adds concrete goals that express what she believes is the meaning of her experience, she forms a purpose (Bronk, 2014).

The true self is a cognitive schema that contains knowledge of what is personally meaningful (Schlegel, Hicks, King & Arndt, 2011; Schlegel, Vess & Arndt, 2011). Having access to this true self is important to identifying meaningful experiences. As self-potential increases, awareness of the true self – as opposed to the expectation of others – becomes increasingly important (Loevinger & Blasi, 1976) because the true self acts as a guide to experiences that are meaningful to the individual. Increased personal intelligence should increase one’s understanding of her true self, but we currently don’t have any evidence to support this assertion.

The purpose of this set of studies is to examine people's personal intelligence scores in relation to measures of their self-potential. People with higher personal intelligence should experience better psychological potential, because in order to foster potential development of any system, it is necessary to understand the way the system functions. In this set of studies, I will describe a proposed model based on past research and theory that groups together a set of variables associated with self-potential. This model is important because self-potential as it is related to development is important to mental health and functioning (Lent, 2014; Maslow, 2011). I also will compare a measure of personal intelligences to variables related to self-potential to understand if personal intelligence predicts self-potential. An understanding of what PI correlates with will increase our understanding of the validity of the TOPI, as well as suggest models of self-potential.

Elements of Self-Potential

Personal Intelligence and Self-potential

Personal intelligence allows a person to understand herself by making self-observations, forming a model of herself, making choices based on the self-model and using this information about herself to form plans and goals. People with higher personal intelligence should know themselves better than those with lower personal intelligence, and those higher in personal intelligence should be able to know which kinds of experiences are more meaningful to them. A person who realizes that her experience cataloguing new species of plants in the Amazon rain forest is meaningful, and integrates this information into her self-understanding, would be able to use this information to make choices about what she would like to do for work in the future and where she would like to live. She may also be able to understand why this experience is meaningful to her. For example, the experience may be meaningful to her because she believes that all life forms are important. This understanding can then be used to form goals and plans that bring greater purpose to her life.

Relationships between general intelligence and broad intelligences

Research indicates that general intelligence (g) is a powerful predictor of many outcomes such as social class, educational attainment and longevity (Deary, 2012). Some psychologists believe that g is so strong an indicator of intelligence that examining intelligence further—for example, looking at the broad intellectual abilities that make it up—may not add much to research in the area (Gottfredson, 2004). Gottfredson's perspective reflects a tradition in the field that views general intelligence as an adequate summary—and perhaps the foundation—of all

mental abilities. According to this theory, a person who is intelligent would be able to calculate math problems, read and write well, and lead people with equal talent.

Schneider and Newman (2015) made the opposing case for the importance of studying broad intelligences. Most people realize that there are examples of brilliant mathematicians who have difficulty writing a clear essay or fixing the kitchen sink. Many of us notice that we ourselves differ in each of our abilities. In the past, human resource managers have focused upon *g* when considering people for particular jobs (Schmidt & Hunter, 2004), but evidence has emerged more recently that differences on broad intelligences can affect job performance on certain tasks. In response to those findings, human resource managers have begun to include broad intelligences in their evaluation of job candidates (Schneider & Newman, 2015).

One of the most widely accepted conceptions of broad intelligences, the Cattell-Horn-Carroll model, includes a general intelligence, *g*, and places other intelligences such as *long-term storage and retrieval*, and *comprehension-knowledge* in a hierarchical arrangement under *g* (McGrew, 2009). This model recognizes that intelligence is made up of sub-abilities, and the greater these sub-abilities the greater general intelligence.

An alternative model suggested by Sternberg included creativity as an intelligence (Sternberg, Castejón, Prieto, Hautamäki & Grigorenko, 2001). Creative intelligence (discovering, creating and inventing ideas and products) is the ability people apply when they encounter a novel problem.

Hot intelligences

Some types of intelligences are referred to as hot intelligences because they focus on “hot cognitions:” personal information that elicits emotional reactions in the perceiver (Mayer, Panter & Caruso, 2012). In contrast, cool intelligences, such as analytical intelligence, involve fewer

personally relevant meanings. Memorizing the multiplication table is an example of the use of a cool intelligence, because the multiplication tables contain relatively impersonal information. In contrast, reasoning about your personality can bring up pleasurable or painful feelings. Mayer has proposed personal intelligence as one of these hot intelligences, because it involves reasoning about information that is personally significant. Some other examples of hot intelligences are emotional and social intelligences (Mayer, Panter & Caruso, 2012).

Skills of Personal Intelligence

Mayer divides personal intelligence into four areas:

(a) to recognize personally relevant information from introspection and from observing oneself and others, (b) to form that information into accurate models of personality, (c) to guide one's choices by using personality information where relevant, and (d) to systematize one's goals, plans, and life stories for good outcomes. (Mayer, 2008, p. 215)

These areas build upon one another and could help people to understand themselves.

Introspection and reflection on information about the self, such as identifying values, increases self-knowledge.

Measuring personal intelligence

Mayer and colleagues (Mayer, Panter & Caruso, 2012) developed the Test of Personal Intelligence (TOPI) to measure these abilities. The TOPI 1.4 is comprised of 96 multiple-choice items. An example item reads, "Susan is depressed and self-conscious. Most likely she could also be described as: (a) Calm and even tempered, (b) self-controlled, (c) anxious and impulsive, (d) fairly thick skinned." Based on personality research, the correct answer would be (c) because the traits depressed and self-conscious usually co-occur with the traits anxious and impulsive. The TOPI has shown good reliability ($\alpha = .88$ to $.90$).

Test validity requires that tests are both independent of unrelated measures and correlate with measures that are theoretically related (Clark & Watson, 1995; Smith, Fisher & Fister, 2003). In one study (Mayer, Panter & Caruso, 2012), the TOPI correlated with The Modified Vocabulary Scale ($r = .39$ to $.45$; Pucci & Viard, 1995) and with openness ($r = .11$ to $.16$; BFI-44; John & Srivastava, 1999) and with Psychological Mindedness ($r = .27$ to $.38$) (Conte, Plutchik, Jung, & Picard, 1990). The moderate correlations of the TOPI with other measures indicate that while personal intelligence is related to verbal ability, psychological mindedness and the trait openness, personal intelligence is a distinct construct.

While scores on the TOPI have shown moderate relationships with these measures, the TOPI has not been compared to measures of self-potential. This comparison could be interesting, because there is a difference on the one hand between correlating personal intelligence with general traits such as extroversion and agreeableness, and on the other hand, correlating personal intelligence with measures that might be more closely related to higher self-potential such as purpose and meaning. For example, correlating PI with broad socioemotional traits tells us only that the intelligence is only slightly related to these traits. To the extent that personal intelligence allows people to understand and apply personality principles, it should help people to develop by helping them to understand themselves. We don't know what the relationship between personal intelligence and the self-potential is, but finding out about this relationship could help with the understanding and measurement of self-potential.

Higher Self-potential

Self-potential, as I use the term here, involves the interplay of self-understanding and renewal. Figure 1 illustrates this approach. Self-understanding and renewal are at the top of the figure, and are indexed with a number of more specific, measured variables. Understanding,

pictured on the left, is the ability to understand the self in terms of what is meaningful, the person's goals and values, and the ability of the person to access information about the self. Renewal, pictured on the right, is the means to this self-understanding. Renewal's variables include: creativity, openness, preconscious activity and self-actualization. Each of these seven variables supports the self-potential in different ways.

True self and self- potential. The left hand of Figure 1 depicts the first area of potential, understanding. Within self-understanding is the capacity to know one's true self. Schlegel and colleagues define the true self as a cognitive schema of what the person believes is a true reflection of herself, including her values and principles. (Schlegel, Hicks, Arndt & King, 2009 P.475). The true self is a "set of innate characteristics that each person is born with" (Schlegel, Hirsch & Smith, 2013, p. 208). It is one answer to the question "Who am I?" (Schlegel, Hirsch & Smith, 2013). The true self is at the core of many theories of personality (Jung, 1977; Rogers, 1951).

The self-schema develops during daily activities when people make choices that express their true selves. Their concrete self-expression helps people to be aware of components of themselves and allows for further self-reflection and self-exploration. For example, if playing the piano brings meaning to your life, then expressing the true self through this activity provides an opportunity to further explore this true self. Expressing the true self through everyday activities fosters the relationship between the true self and meaning in life (Schlegel, Hirsch & Smith, 2013). People consult this true self when asked to make personal decisions (Bellah, Madsen, Sullivan, Swidler, & Tipton, 1985). Schlegel, Hicks, Davis, Hirsch, and Smith (2012) found that people who could easily access this true self are happier with their choices.

Continuing with the above example, the person will explore self-expression through playing the piano. Some of the music she plays will seem meaningful to her because it resonates with her personality, but other styles will not (Faber & Mayer, 2009). Here, music is a concrete expression that the person may reflect upon. The more that a person is able to express her true self in daily activities, the more that a person feels like life has meaning (McGeggor & Little, 1998).

Schlegel argues that accessibility to the true self is important because it is related to greater ability to form meaning and purpose in life. In one study, Schlegel and her colleagues measured access to the true self schema by asking participants to list six descriptors of their true self and to rate how difficult it was to generate the descriptors (Schlegel, Hicks, King & Arndt, 2011). In this study, they found that the rating of ease of producing descriptors of the true self correlated ($r=.29$) with meaning in life scores. Those who were more easily able to access their true self reported that they found greater meaning in life than those who were not able to access the true self.

Meaning and the self-potential. Returning to Figure 1, the second variable beneath understanding is meaning. Bronk (2014 P. 7) defines meaning as “anything that makes one’s life seem more significant.” Steger and his colleagues define meaning as “the sense made of and significance felt regarding the nature of one’s being and existence” (Steger, Frazier, Oishi & Kaler, 2006 P. 81). Meaning is derived through integration of parts of the self, such as memories, relationships, goals, values and possible selves (Loevinger, 1976; MacGeggor & Little, 1998) Meaning is gained “from feeling that one is in touch with and enacting goals that are expressions of who one believes he or she really is” Schlegel, Hicks, Arndt & King, 2009 P.474).

Steger, Frazier, Oishi and Kaler (2006) created a commonly used scale (Heintzelman & King, 2014; Kobau, Snizek, Zack, Lucas, & Burns, 2010; Lambert, Stillman, Hicks, Kamble, Baumeister, & Fincham, 2013) to measure meaning. The Meaning in Life Questionnaire (MLQ) is comprised of 10 items, with two subscales: presence of meaning and search for meaning. This is the measure that Schlegel, Hicks, King and Arndt (2011) used to demonstrate the relationship between meaning and the self. An example item from this scale is “I have a good sense of what makes my life meaningful.” Participants answer from 1 (absolutely untrue) to 7 (absolutely true). The meaning in life scale is extensively used in research (King, Hicks, Krull & Del Gaiso, 2006; Schlegel, Hicks, King & Arndt, 2011).

Purpose and goals. Continuing in the “Understanding” area, “Purpose” is the next variable. Purpose in life is the “central, self-organizing life aim that organizes and stimulates goals and behaviors” (McKnight & Kashdan, 2009 P. 242). People who have a high level of purpose have goals and are directed by plans based on these goals (Ryff & Singer, 2008). Although purpose can include meaning, it is centrally focused on commitment and goal-directedness (Bronk, 2014). The Purpose in Life Test (Crumbaugh and Maholick, 1964) has recently been revised by McGreggor and Little (Hicks & King, 2007; King, Hicks, Krull & Del Gaiso, 2006). The McGreggor and Little scale is four items long. The participants respond to the prompt “In life, I have:” with answers such as “no goals and aims” or “clear goals and aims.” Despite its brevity, the scale has an alpha reliability of .87 (Hicks & King, 2007).

Creativity and self-creativity. In Figure 1, the second set of variables concern renewal (top right). The first measured variable beneath renewal is self-creativity. Feist and Baron (2003) defined creativity as the ability to solve problems originally and adaptively. One method researchers use to measure creativity is divergent thinking tests. An example of such a measure is

Wallach and Kogan's (1965) test of divergent thinking. Divergent thinking is the ability to produce original but appropriate responses to stems such as "Name all the round things you can think of." A very common answer to the question above is "a wheel." A rarer response would be "a sand dollar." Statistically rare responses are considered original and a greater number of them indicate creative processing.

People who are able to access these creative ideas from within themselves have more possible viewpoints than less creative people, which leads to a greater number of choices about self-expression (Maslow, 2011; Kris, 1952; Kubie, 1958). If a person is able to go inside of herself and become aware of these novel associations, it helps her to discover who she really is because these associations are part of the yet undiscovered self.

In a preliminary study (Barlow, 2016 unpublished test manual) I applied the divergent thinking measurement technique to assess people's abilities to problem solve specifically about personality. In a pilot study, when I asked participants, for example "What clues indicate that a person can make a commitment?" some people were able to think of more unique clues to personality than others. When I asked people to list clues to a person's willingness to commit themselves to a relationship or goal, for example, I found that conventionally-thinking people often responded with "showing up on time" or "having a job." Those who think more creatively about personality believed that, "getting a tattoo," is a clue that a person was capable of making a commitment.

Being aware of these undiscovered parts of themselves allows creative people to have more possible ways of developing. For this reason, creativity is central to the potential development of the self (Frankl, 1963; Jung, 1977; Kohut, 1966, Maslow, 2011). Maslow (2011) believed that creativity was the pathway to self-discovery and self-actualization.

Openness, creativity and self-potential. The next variable on the renewal side of the model is openness. Openness to experience is one of the Big Five traits; the Big Five are a set of traits commonly found when factor analyzing trait words used in everyday language. The other four are extroversion, agreeableness, neuroticism, and conscientiousness. Openness is defined by Widiger & Costa (2012) as an interest in creativity, intellect, imagination and unconventionality. Carl Rogers (1995) viewed this trait as the opposite of defensiveness and said that this openness allows a person to “become more aware of reality as it exists outside of himself, instead of perceiving it in preconceived categories” (P.115). This predisposition to be more objective about reality allows a person to solve problems that they have not seen before because they can see the unique features of each situation. The person can deal with conflicting information without prematurely coming to a conclusion. Openness is typically measured on Big Five Scales. One such measure is the Big Five Inventory-44 (BFI-44) (John, Naumann & Soto, 2008), which is composed of 44 questions. An example of an item on the openness scale is “Likes to reflect, play with ideas.” Participants answer from 1 (disagree strongly) to 5 (agree strongly). The alpha reliabilities reported by Soto and John (2009) are .63-.84.

Preconscious Activity and Creativity. The third variable on the renewal side is preconscious activity. Preconscious activity is a type of primitive associationistic thinking that was described by Maslow and others as necessary for creativity. Holland and Baird (1968) developed a scale to measure this type of thinking (Dellas & Gaier, 1975; Griffiths-Hemans, 2006; Holland, Gottfredson, Nafziger, 1975; Holland & Holland, 1977). Their Preconscious Activity Scale (PAS) has 38 items of the sort “I often daydream about unsolved problems.” These items are answered true or false and the scale has a reliability of $K-R_{20}=.75-.77$.

Self-actualization and creativity. Looking again at Figure 1 in the renewal area, the final variable is self-actualization. Maslow's concept of self-actualization is one of the main ways that self-development is conceptualized (Pfaffenberger, 2011). Maslow (2011) conceptualized self-development as a hierarchy of needs going from deficiency needs such as survival and safety needs to being needs such as self-actualization: actualizing your potential. Once the deficiency needs are met, people begin to be motivated by self-actualizing needs, and this process is developed through creativity aimed at expressing the unique self also referred to by Maslow as "being creativity".

Today researchers often use Jones and Crandall's (1986) Short Instrument of Self-Actualization (SISA) to measure this construct (Ivtzan, Chan, Gardner, Prashar, 2011; Landau, Vess, Arndt, Rothschild, Sullivan & Atchley, 2011; Mc Farland, Webb & Brown, 2012; Runco, Ebersol & Mraz, 1991). One item on this scale reads, "I can like people without having to approve of them" (Crandall & Jones, 1991). Participants rate themselves on these items from 1 (Strongly disagree) to 6 (Strongly agree). It has a reliability of $\alpha=.63-.68$. The SISA has 15 items.

Relationships Among Concepts

Unsurprisingly, given the theoretical relations among the seven measures, the variables in Figure 1 often correlate with one another. For example, in one study Schlegel and her colleagues found on the Meaning in Life Questionnaire that the Presence subscale (Steger, Fraizier, Oishi, & Kaler, 2006) correlated $r=.76$ with four questions from the Purpose in Life scale (Crumbaugh & Maholick, 1964). The Big Five trait openness is also related to creativity $r= .18, p<.01$ (McCrae, 1987). While some of the relationships among these variables have been found, many have yet to be ascertained. One aim of this set of studies is to identify the relationships among these variables through both correlations and factor analysis.

Introduction to the Studies

This work consists of two studies. Study 1 uses factor analysis to test a model of self-potential and identify the relationship between the model and personal intelligence. Study 2 tests whether personal intelligence has an impact on linguistic usage in a writing sample as measured by the Linguistic Inquiry Word Count (LIWC) (Pennebaker, 2011). If personal intelligence helps people to know themselves better and to create personal life meaning, scores on personal intelligence should have a positive relationship with scores on measures of potential for self-potential.

While the TOPI has been validated against general measures of personality and intelligence, as well as a few more closely related concepts such as psychological mindedness and emotional intelligence, its relationship to instruments that measure self-potential remains unknown. Personal intelligence, because it involves the capacity to problem-solve about oneself, could be regarded as a key source of various pathways to self-potential.

Study 1

The purpose of this study is to evaluate the relationships between the self-potential and personal intelligence. Measures of self-potential and the TOPI were administered to identify the relationships between scores on the TOPI and scores on the measures of self-potential.

Hypotheses¹

The hypotheses are divided into two groups: The measurement hypotheses and the criterion hypotheses. I begin with the measurement hypotheses.

Measurement hypotheses.

Hypothesis 1. The scores on the self-potential variables correlate positively with one another, reflecting that people exhibit an overall self-potential.

Hypothesis 2. Confirmatory factor analysis will indicate that self-potential measures (excluding the TOPI) fall into two latent variables: understanding and renewal. The purpose of proposing and testing a model is to identify the structure of the relationships between the various variables that I proposed were related to the self-potential.

Hypothesis 3. [Please note: After an initial examination of the data, we concluded that many of the original scales were not unifactorial. We therefore added the following hypothesis *post-hoc*]: Unifactorial scales could be created from some of the complexly-factored original scales. The purpose of this hypothesis is to develop a model with scales that each more distinguishable measures a single construct.

Criterion Model. To validate a scale, it is often correlated with important criteria—Hypothesis 4 addresses that issue.

Hypothesis 4. The fourth hypothesis was that scores on the TOPI and Creativity would be positively correlated to the variables of self-potential.

Methods

Description of Sample Characteristics

The participants in Study 1 consisted of 194 college students from the University of New Hampshire psychology department participant pool. This group included 129 females, 64 males and one of an unidentified gender. Further demographics are reported in Table 2.

Procedure. Participants took the personality measures on an online survey delivered through Qualtrics. The survey took approximately 60-75 minutes and participants received two credits to apply to the psychology course of their choosing. After choosing the study through SONA, the department participant pool recording service, participants followed a link to the survey on Qualtrics. Once at the Qualtrics survey, they read a short letter thanking them for taking the survey and the consent form. They had the opportunity to consent to take the survey. If they consented to take the survey, they were asked the demographics questions and then proceeded to the questionnaires.

Measures. The TOPI was administered at the same time as the measures of self-potential. An overview of the measures is listed in Table 1.

Test of Personal Intelligence (TOPI). Mayer, Panter & Caruso, (2012) developed the TOPI 1.4, a 96-item test that measures personal intelligence. A sample item reads “If a person wants to be with one or more people, talk to them, go out with them, and have a good time, the person is likely going to: a. be in love, b. express warmth toward someone, c. meet a goal of excellence, d. socialize” The correct answer is d. The test reliability is reported to be $\alpha=.86-.92$ over several samples (Mayer, Caruso, Panter, 2014).

Ease of Access to the True Self. Schlegel and her colleagues developed a question to measure ease of access to the true self. Schlegel and her colleagues (Schlegel, Hicks, Davis & Smith, 2013; Schlegel, Vess & Arndt, 2011, P. 978) asked participants to “Please list the 10 ‘best’ words that you would use to describe who you really are...” After completing their lists of ten items, participants were asked to rate on a 10 point scale (1= extremely difficult and 10= extremely easy) how easy it was for them to think of the 10 words. That ease of recall rating is the central score.

Meaning in Life Questionnaire (MLQ). Steger, Frazier, Kaler & Oishi,(2006) developed this 10 item measure, which includes scales labeled Search and Presence, and measures the degree to which a person is searching or experiences the presence of meaning in their life. A presence item is “I understand my life’s meaning.” A representative search item is “I am searching for meaning in my life.” Participants rate the item 1-7, one being absolutely untrue and 7 being absolutely true. The reliability for the search scale is ($\alpha=.87$) and presence is ($\alpha=.82$). The MLQ correlates with access to the true self $r=.29, p<.01$ (Schlegel, Hicks, King & Arndt, 2011).

Purpose in Life (PIL). The purpose in life scale was developed by McGreggor and Little (1998) and is composed of four items, including, “In life, I have very clear goals and aims”; and “My personal existence is very purposeful and meaningful.” Each item is answered on a 1 to 7 scale of agreement. These four items had a reliability of ($\alpha=.83$).

Creativity about Personality (CAPS). I developed this two-item scale and a scoring manual to measure divergent thinking ability in the area of personality. Before completing the two items, participants read instructions based on an amalgamation of various instructions from other scales (Harrington, 1975; Runco, 1986; 2010; Torrance, 1993; Wallach & Kogan, 1965).

These instructions borrow phrases from a number of instructions used by these researchers.

Some sentences come directly from other published instructions.

This is a test of your ability to be creative about personality. Try to think of responses that no one else will think of. Please be as creative as possible. Please list as many responses as you are able to for each item. A creative response is one that is both unusual (a response which other people would be unlikely to think of) and means something. In trying to be creative, therefore, you should try to list responses, which are both unusual and worthwhile at the same time. (By the way, uncreative responses do not count against you, they just do not count for you). Do not spend too much time on any one item. Write down those creative responses that occur to you and go on to the others in the same part. You may return to the incomplete items in a part if time for the part permits. Try to be creative.

Three undergraduate co-coders scored the responses of both items based on the methods described in the scoring manual (Barlow, 2016). Interrater reliabilities for the total score for creativity about personality scale (CAPS) were from .91 to .99. An example of an item from this scale is “What clues indicate that someone might be dangerous? Please provide as many responses as you are able. You have the option of providing up to 10 responses.” An example of an answer that was scored as original was “devious laughter.” Examples of answers that were not original are “a weapon” or “hands in pockets.” Participants are able to give up to 10 responses. Parallel forms reliability for these two items was ($r=.80$). For more information about this new measure, please see Appendix E.

Big Five Inventory-44. (John, O. P., Naumann, L. P., & Soto, C. J. (2008)) The BFI-44 is a 44 item instrument that measures the Big Five personality traits. An example of an item on the

openness scale is “Likes to reflect, play with ideas.” Participants rate themselves from 1 (disagree strongly) to 5 (agree strongly) on each item. The alpha reliabilities reported by Soto and John (2009) are .63-.84. Only the openness scale is part of the model developed here, and only those results will be reported.

Short Instrument of Self-Actualization (SISA). The SISA is a 19 item scale developed by Crandall and Jones (1991) that measures self-actualization. A sample item reads, “I can like people without having to approve of them” (Crandall & Jones, 1991). Participants rate their agreement with the items 1 to 6. The scale’s reported reliability varies from $\alpha=.63-.68$ (Crandall & Jones, 1991).

The Preconscious Activity Scale (PAS). Holland and Baird (1968) developed this 38 item scale to measure a preference for associationistic thinking. A sample item is “I often daydream about unsolved problems.” These items are answered true or false and the measure has a reliability of $K-R20=.75-.77$.

Results

Data Handling.

General issues. I screened the data in order to identify the most complete and dependable responses that would give the most useful results. I downloaded 228 cases from Qualtrics (214 from UNH and 14 from Keene State) into an SPSS data file.

Thirty-four responses were removed in five steps: (a) 24 responses were removed because they were missing the creativity data or missing 10% or more of the self-report data, (b) three participants’ initial surveys were removed because they completed the scale twice, (c) two participants were removed because they were under 18 years old and ineligible to consent, and

(d) five participants who scored lower than four on the TOPI attention items were removed. This left 194 surveys.

I further screened the data for issues of distribution normality, outliers and missing data, linearity and homoscedasticity (Kline, 2011). The original scales measured thirteen variables: True Self, the full TOPI 93 items, openness, meaning and its two subscales presence and search, preconscious activity, purpose, self-actualization and self-creativity.

First, I looked for missing scores, because SEM has a difficult time handling missing scores and the presence of missing values limits the methods of analysis to maximum likelihood and prevents the use of modification indices. There were 189 cases with no missing data. All of the skewness or kurtosis scores were within normal range except creativity and search (search is one of the subscales of meaning). The data for these two items were negatively skewed. I was able to transform search by reflecting the data and taking the square root. The histograms also appeared to be normal in distribution. Finally, I noted that four cases on the TOPI were outliers—they had z scores less than -3. In the analyses reported subsequently, models that included the TOPI were done with both the outliers and the outliers removed to identify any discrepancies (Warner, 2008). There were few differences and so all analyses are reported using the full set of data (N=194). Finally, I examined scatter plots to identify if variables had bivariate nonlinear relationships. Mahalanobis D did not indicate any multivariate outliers. The creativity about personality portion of the data was scored by three undergraduate coders and a total score was calculated as described in the methods section. Interrater reliabilities for the total score for creativity about personality scale (CAPS) were from .91 to .99.

Preliminary Analysis

As a check on the validity of the scale performance in this study, the means, standard deviations and other characteristics of the measures employed were examined. The means, standard deviations and reliabilities were within range of their values reported earlier in the literature. Table 3 shows their descriptive statistics. These values were similar to earlier-reported values in the literature. For example, previous research found that the PAS has a mean range of 20.62 to 21.91 and a range of standard deviations of 6.21-5.61. The mean of the data for PAS in this study was 21.00 and the standard deviation was 5.12. These figures are relatively similar in magnitude, which indicates that the measures are behaving as expected.

Strategies of Data Analysis and Model Criteria

We followed several general procedures when conducting and evaluating the factor analyses we report later in this results section. First, all exploratory factor analyses are conducted in SPSS, version 23, using principal axis factoring from with direct oblimin rotation.

All confirmatory factor analyses were conducted in AMOS, version 23. For our confirmatory factor analyses, we set the following as criteria for a good model fit: that TLI and CFI should be near .95 (Bentler & Bonett, 1980; Kline, 2010;) and RMSEA should be below .06 (Browne & Cudeck, 1993). We also report chi-square values, but because those are affected by sample size and almost always significant with sizeable samples, we did not use those as a criterion.

Scores on the Self-Potential Variables were Positively Related

Hypothesis 1 stated that the scores on the self-potential variables would be positively related. Relationships among the original scales can be seen in Table 4. Many but far from all of the scores were positively related and followed a pattern. The search scale of the Meaning in Life Questionnaire (MLQ) was positively related to variables concerned with creativity (openness

$r=.20, p<.01$ and preconscious activity $r=.26, p<.01$). The presence scale of the MLQ was correlated with the variables purpose ($r=.75, p<.01$) and self-actualization ($r=.35, p<.01$). The creativity about personality scale was not related to any of the self-judgment scales. There are many correlations reported in the tables of correlations throughout both studies. The author recognizes that some of these correlations may be a result of chance. As you will note, the correlations weren't all positive, which point to difficulties for the model—a matter we will deal with below.

Did the original “Understanding and Renewal” model fit the data? The second hypothesis stated that confirmatory factor analysis would indicate that self-potential measures (excluding the TOPI) would fall into two latent variables: *understanding* and *renewal*.² Both the 1-factor (Fig. 2) and the 2 factor model (Fig. 3) had very poor fit statistics (One factor: $\chi^2 = 89.19, df = 14, p<.001, TLI=.83, CFI=.61, RMSEA=.41$; Two factor: $\chi^2 = 44.91, df = 13, p<.001, TLI=.83, CFI=.73, RMSEA=.11$). Because the original models proposed had poor fit, I began to make modifications to the models based on the relationships of the variables found in the correlation tables.

General Considerations and Refining Scales. Two central issues were that (a) the scales represented different types of data: The TOPI and creativity about personality scales were ability scales, whereas the remaining scales involved self-judgments, and, moreover (b) many scales appeared to measure more than one factor when examined with exploratory factor analysis. I first simplified the analyses by focusing on just one kind of scale: only self-judgment scales.

Because the self-judgment scales were sometimes multidimensional, I continued by restructuring the scales so as to make them more unidimensional. In Confirmatory Factor

Models, the presence of an unaccounted-for factor (i.e., multidimensionality on several measures) can cause correlated errors terms—a condition in which the indicator variables correlate more than anticipated by the model, and yield a bad fit. This was the case in several of the measurement models I tested. In addition, unifactorial scales are often preferred in contemporary measurement models because they are simpler to deal with in scale construction.

To correct multidimensionality, I first corrected all of the items so that a higher score on an item indicated agreement with the item. Next, all the original scales were subjected to an exploratory factor analysis and any scales that appeared strongly multifactorial, as indicated by two interpretable factors and a scree criterion, were divided into two factors. (No scale yielded a clearly superior three-factor solution). These restructured scales are reported in Table 5. Most of the restructured scales were as reliable or more reliable than in their original form (Table 5).

Specifically, The BFI-44 openness scale was divided into two scales, the first assessing curiosity and invention, and the other more focused on interest in the arts. The preconscious activity scale (PAS) was also divided into two scales. The first scale focused on interests in realistic and entrepreneurial jobs and the second focused on interest in the arts. Finally, the Self Actualization scale (SISA) divided into two scales, the first composed of items indicating self-actualization and the second of items measuring irrational beliefs.

Retesting the models with revised scales

One model had good fit. The third hypothesis indicated that the restructured variables would load on two latent variables, Understanding and Renewal, in a confirmatory factor analysis model.

Exploratory factor analysis. Once the unifactorial scales were developed, I used an exploratory factor analysis of the new scales to examine how the scales clustered and determine

the arrangement of the new scales in a model (Table 6). I conducted a two-factor exploratory factor analysis. Presence, purpose and the two self-actualization scales loaded on the first factor. Search, both scales of the PAS and both openness scales loaded on the second factor.

Confirmatory factor analysis. The initial confirmatory factor analysis model developed from the new scales had poor fit statistics: $\chi^2 = 75.56$, $df=26$, $p < .001$, $TLI=.65$, $CFI=.80$, $RMSEA=.10$. To improve upon this model, I began removing scales with the lowest loadings on their respective latent variable. One problem was that the variable purpose had a standardized path coefficient greater than one. After trying several modifications, I removed purpose from the model. Once purpose and several other variables were removed from the model, the model attained good fit: $\chi^2 = 10.32$, $df=8$, $p < .32$, $TLI=.96$, $CFI=.98$, $RMSEA=.04$. The standardized coefficients are displayed in Figure 5. All paths were statistically significant except the path between the latent variables. A one factor version of this model demonstrated marginal fit: $\chi^2 = 15.90$, $df=9$, $p < .09$, $TLI=.91$, $CFI=.94$, $RMSEA=.06$.

Factor-Based Scales for Understanding and Renewal

The above confirmatory model appeared to be the best fit I could obtain. Based on it, I created two factor-based scales by forming composite score of the variables, which loaded on the factors. These factors were named understanding and renewal in the models. The Understanding scale was the mean of the z-scores of the scales that loaded on the Understanding (SISA1-self-actualization and presence of meaning). The Renewal scale was calculated in the same way but with the z-scores of the variables that loaded on that factor (BFIO1-curiosity-invention, BFIO2-artistic and search for meaning).

What Did the Self-Potential Scales Correlate With?

The fourth hypothesis was that scores on the TOPI would be positively correlated to the variables of self-potential. The correlations of all restructured variables and the TOPI are reported in Table 7. The TOPI was correlated to the self-actualization scale (SISA1-self-actualization, $r = .36, p < .01$) The TOPI was also negatively related to the reported ability to access the true-self ($r = -.14, p < .05$).

Discussion

I tested the original models and I was not able to identify a model that had the self-potential variables loading on only one latent factor and had good fit statistics. I realized that one problem may have been the low correlations between the ability and self-judgment scales. I first tried to modify the models by removing the self-judgment scales, but that modification was not sufficient.

I used factor analysis to ameliorate the problem of factors loading on both factors. Factor analysis helped us to break down the original scales to see which parts of the constructs might be related. I found that the preconscious activity scale (PAS) and the short instrument of self-actualization (SISA) as well as the openness scale of the BFI-44 were multifactorial.

Both the PAS and SISA were not designed to be factor analyzed (Crandal & Jones, 1991). Crandal and Jones are mainly psychotherapists and their aim was to develop a short instrument with reasonable reliability as a tool to use with their therapy clients. For this reason, they were less concerned about developing unifactorial scales that could be used in structural equation modeling.

After restructuring the scales and modifying the model, the model did fit the data. The correlations between the new scales highlighted the relationship of the TOPI with a measure of

self-actualization (SISA-1). The short instrument of self-actualization (SISA) was divided into two scales. The first set of items eight items were related to self-actualization and formed the scale SISA-1. The second set of six items were related to neuroticism. Once the items of this second scale were separated from the items related to self-actualization (SISA-1), the relationship between the TOPI and self-actualization was revealed. Restructuring the measures allowed the uncovering of relationships among the variables, which would otherwise have been hidden, and the new scales could be used to form a model with good fit.

Low correlations between the creativity about personality scale led to removing this creativity ability scale from future analyses. The BFIO2-artistic scale is one of the two measures that were formed from dividing the items of the openness scale of the big five factor-44 measure. While the creativity about personality did correlate with the restructured scale BFIO2-artistic – one of the two openness scales derived from the ($r = .16, p < .05$), the lack of any other significant correlations were problematic.

Value of a Second Study

In the first study, I found correlations among the self-judgment scales, found a model that fit the data of Study 1 and identified correlations between the TOPI and measures of self-potential. In the second study, I sought to replicate the correlational findings and identify a behavioral expression of self-potential through linguistic styles that indicate personal growth.

Study 2

In study 2, I hoped to revisit the model of self-potential I created and to replicate such relations as I found between self-potential and the TOPI. I also examined those variables in relation to another independent criterion of personal maturity.

Pennebaker and his colleagues have been investigating the relationship between writing style and personality characteristics. They believe they can assess maturity through people's writing style—estimated age and growth from trauma. Pennebaker (2011) found that older people tend to use bigger words, prepositions and articles more frequently and more positive emotion words. I predicted that Pennebaker's category of cognitive words would likely increase with self-potential because people who are trying to make sense of the world tend to use more cognitive words. He also found that people who recovered from trauma increased the number of insight, causal and cognitive words (Pennebaker, 1993). (My emphasis here is not traumatic growth, but growth that would be expected based on personal intelligence).

Words denoting maturity should increase with variables of self-potential, because people who have higher personal intelligence and have greater awareness of meaning and purpose, should have greater scores on measures of self-development and increases of words in writing that indicate increasing maturity, emotion regulation and making sense of the world.

Measurement Model

Hypothesis 1³ The measurement model developed in Study 1 will replicate in Study 2.

Hypothesis 2. The scores on the self-potential variables correlate positively with one another, reflecting that people exhibit an overall self-potential.

Criterion Model Hypotheses

Hypothesis 3: As personal intelligence increases so should the use of words indicating maturity (bigger words, articles, prepositions, positive emotion words) and words indicating growth (cognitive words, insight words and causal words). The occurrence of words in a writing sample indicating growth should be correlated with the TOPI.

Hypothesis 4: As personal intelligence and words indicating growth and maturity increase so should measures of self-potential increase.

Methods

Description of Sample Characteristics.

The participants in Study 2 consisted of 329 participants drawn from Amazon Mechanical Turk. Mechanical Turk is an online survey service administered through the company Amazon. Participants can sign up to complete a survey through this site and be paid. Participants were paid three dollars for approximately 45 minutes of work. This group included 201 females, 127 males and one of an unidentified gender. The mean age of participants was 34.47 years, $SD=11.67$ with a range of 19-70 and 90% of the participants were 19-52 years of age. Sample characteristics are reported in Table 9.

Measures. The TOPI was administered and participants were asked to write about their transition between high school and college

Self-potential scales from Study 1. This survey included the same seven scales excluding the creativity about personality scale (CAPS) as in Study 1.

Essay analysis using Linguistic Inquiry Word Count. Participants were asked to write about their thoughts and feelings about first coming to college (Pennebaker & Francis, 1996). Participants saw these instructions taken from a study conducted by Pennebaker

and Francis (1996). See Appendix I. Their answers were then entered into a text analysis software program that counts the number of times people use word categories in writing. The key part of the instruction was to please “write about your very deepest thoughts and feelings about coming to college. In your writing, try to let yourself go and to write continuously about your emotions and thoughts related to leaving home, coming to [college], and preparing for the future. You can write about leaving your friends, family, or high school, or about adjusting to a new social and academic world here. You could also focus on classes, your future, your parents’ or your own expectations. The primary task, however, is for you to reflect on your most basic thoughts and emotions about coming to college.” (Pennebaker & Francis, 1996, p.607)

WordSum- Is a ten item measure of verbal ability used in research interested in verbal IQ (Huang & Hauser 1998). This measure was added in the event that the TOPI is highly correlated with the words related to self-development to determine the extent to which any correlations might be due to verbal ability as opposed to personal intelligence.

Procedure.

Study 2 followed the same procedure as Study 1 except that instead of completing the creativity about personality scale (CAPS), participants completed the essay about their experience in transitioning from high school to college (see measures). Additionally, the participants were MTurk workers who were paid for approximately one hour of work instead of students who received credit. As in Study 1, participants took the personality measures on an online survey delivered through Qualtrics.

As in Study 1, participants took the TOPI and the self-judgment measures from Study 1. The participants also wrote a short essay on their transition to college in an online survey

delivered through Qualtrics. The survey took approximately one hour and participants were paid through Amazon Mechanical Turk. After choosing the study through MTurk, Amazon's survey service, participants followed a link to the survey on Qualtrics. Once at the Qualtrics survey, they read a short letter thanking them for taking the survey and the consent form. They had the opportunity to consent to take the survey. If they consented to take the survey, they were asked a few demographic questions and proceeded to the survey.

Results

Data Handling

I used the same procedure for data handling as in Study 1. I downloaded 399 cases from Qualtrics and removed cases based on missing data, time to complete the survey, and lack of attention. At the end of the procedure, there were 329 cases. I also used the same procedure as in Study 1 for data used in SEM modeling: removing cases with missing scores, examining the distributions for skewness or kurtosis, removing outliers, scanning for multivariate outliers, linearity and homoscedacity. There were 325 cases with no missing data. Nine cases with outliers greater than -3.30 z score on the TOPI were removed.

Tabachnik and Fidell (1996) suggest that distributions with a z-score of greater than 2 or less than -2 are in danger of violating the assumptions SEM. By their criterion, several of the distributions were moderately skewed and transformations were not helpful in making the data less skewed. For example, the skew of SISA1-self actualization was -3.60. All analyses were completed with both the data set which included the outliers and the data set without the outliers. There was very little difference between the data sets in the outcomes of the analyses. For that reason, all analyses that follow are reported using the larger set of data (N=329).

Descriptive statistics and reliabilities for each original measure.

Would the final model that fit the data in Study 1 replicate with Study 2 data? To test Hypothesis 1, I tried to confirm the model and scales developed in Study 1 with the new set of data from Study 2. The final model in Study 1, which had good fit, exhibited poor fit statistics when tested with the data from study 2: $\chi^2= 75.87$, $df= 8$, $p<.001$, $CFI=.81$, $TLI=.50$, $RMSEA=.16$, failing to replicate.

Would self-potential variables correlate positively with one another and factor based latent scales? To test Hypothesis 2, I conducted bivariate correlations among the new scales and composites.

Scale characteristics. Linear composite variables were formed from the variables on each latent variable, renewal and understanding based on the model developed in Study 1 and re-tested in Study 2. An examination of the 2-factor exploratory factor analysis with the new scales in Study 2 revealed that the scales loaded on the two factors in the same pattern as in Study 1 with the creativity self-report variables (PAS1 and BFIO 1&2) loading with search, and self-actualization and purpose loading with presence. An additional advantage of keeping the composite variables consistent is that the analyses can be compared across studies.

The Understanding variable consisted of presence, purpose and SISA1-self-actualization. The Renewal variable consisted of PAS1-unconventional, BFIO1-curiosity-invention and BFIO2-artistic. The correlation between the two composite variables was $r=.14$, $p<.01$. In the Study 2 data set, search and presence had a stronger negative correlation ($r=-.30$, $p<.01$) than in the Study 1 data set. Presence was positively related to self-actualization ($r=.24$, $p<.01$), BFIO1-curiosity ($r=.26$, $p<.01$), BFIO2-arts ($r=.15$, $p<.01$). PAS1 (unconventional) was positively related to BFIO 1($r=.41$ $p<.01$), BFIO2 ($r=.52$, $p<.01$),

Hypothesis 3 Was the TOPI positively correlated to words which indicate growth?

As part of these studies purpose of expanding the validation of the personal intelligence construct, I specifically examined, in Hypothesis 3, whether as personal intelligence increases so the use of words indicating maturity and growth also increased (maturity: bigger words, articles, prepositions, positive emotion words; growth: cognitive words, insight words and causal words). It did not appear that this was the case (Table 11). Scores on the TOPI had a low positive correlation with the use of bigger words used on an essay ($r = .11, p < .05$) but contrary to maturity hypothesis, a low negative correlation with the positive emotion words ($r = -.14, p < .01$). Though the TOPI was correlated with the measure of verbal ability as measured on the WordSum scale ($r = .53, p < .01$), a measure of verbal ability, verbal ability did not have a great influence on the relationships between the TOPI and the behavioral measures of personal development in the LIWC measures were not very strong. The TOPI had a few low correlations with words that indicate growth from everyday traumas such as transitions from school to work, but there is little evidence in this data set that the PI is related to behavioral outcomes as demonstrated by the LIWC.

Is the TOPI and/or LIWC related to measures of self-potential?

Recall that hypothesis 3 stated that as personal intelligence and words indicating growth and maturity increase so should measures of self-potential increase. There are two sets of correlations to examine: correlations with the original set of measures (Table 10) and the restructured set of measures (Table 11). Because the restructured scales are likely most informative, I will focus on those here.

In the restructured data set (Table 11), the LIWC word categories correlate with very few of the restructured variables, cognitive words correlated with the presence of meaning ($r=-.15$, $p<.05$). Causal words correlate positively with PAS1-unconventional ($r=.12$, $p<.05$)

The TOPI exhibited relationships similar to those in Study 1: The TOPI was positively related to the composite of the understanding variables ($r=.17$, $p<.01$) and the composite of renewal variables ($r=.12$, $p<.05$). The TOPI was more strongly correlated with SISA1-self-actualization in the Study 1 data ($r=.36$, $p<.01$) than in the Study 2 data ($r=.26$, $p<.01$). In this second set of data, the TOPI was related negatively to search ($r=-.11$, $p<.05$) and positively to PAS($r=.22$, $p<.01$) and the two subscales of openness BFIO1($r=.11$, $p<.05$) and BFIO2($r=.11$, $p<.05$). The full set of correlations can be seen in Table 11.

Relations to criteria. The strongest correlations in the restructured set of scales were between PAS1-unconventional BFIO1-curiosity-intention($r=.41$, $p<.01$) and BFIO2-arts ($r=.52$, $p<.01$). These high correlations represent the similarities in what they are measuring; all three self-judgment scales are related in various ways to creativity. These relationships demonstrate a coherency of the creativity related scales of the latent variable renewal. The TOPI and self-actualization (SISA1) were also correlated ($r=.26$, $p<.01$). The relationship between the TOPI and self-actualization (SISA1) indicates that the TOPI is related to self-potential.

Study 2 Discussion

As in Study 1, the original scales behaved in a similar way to what is reported in research, which provides some confidence that results are not due to some error in responding or scoring. One aim of this study was to connect the variables of self-potential to some behavioral outcome. In this study I attempted to find a correlation between frequency of word categories that are found to indicate self-potential. There were very few correlations between the variables

and the word categories, and they were very low. This finding indicates that high self-potential is not related to the use of word categories that reflect self-development.

Many of the results from Study 1 were replicated in Study 2. In the restructured variables of both studies PAS1-unconventional and BFIO-curiosity-invention were correlated with each other and with search. Similarly, in both studies SISA1-self-actualization and purpose were correlated with presence. Study 2 results differed from Study 1 results in that there were more significant correlations among the variables, but the correlations tended to be lower. The finding that the self-actualization scale (SISA1-self-actualization) of the SISA was correlated with the TOPI is evidence that the TOPI is related to the self-potential.

General Discussion

Summary of Main Findings

Initially, the studies began by testing the hypothesis that original scales as published in the literature would load on two factors—understanding and renewal. Based on theories, I believed that variables related to creativity would load on two factors. The first factor, Understanding, would include variables related to purpose and the ease of access to the true-self, and the second factor, Renewal, would include variables related to creativity. I tested a model in AMOS based on that hypotheses, but that model revealed that three of the scales (BFI-openness, preconscious activity and short instrument of self actualization) loaded on both of the factors. After the model could not be fit without correlating error terms, I conducted exploratory factor analyses of the items to learn about their structure. These factor analyses confirmed that the three scales were not unifactorial. To resolve this obstacle, I restructured these scales based on the factor analyses.

The correlations of both the original and restructured scales, the exploratory factor analysis in Study 1 and 2, and the confirmatory model in Study 1 indicated the variables of self-potential fell into two categories: understanding (purpose, presence and SISA1-self-actualization) and renewal (search, PAS1-unconventional, BFIO1-curiosity-invention, BFIO2-artistic). Nevertheless, a confirmatory factor analysis model could not be developed based on the two latent variables, understanding and renewal, that would replicate in both studies.

There were findings in this set of studies which replicated results found in the literature. Presence, having a sense of the presence of meaning in your life, and purpose, having concrete goals for achieving meaning, were related in Study 1 and 2 as found in the literature. Steger, Frazier, Kaler and Oishi (2006) ($r = .86$ to $.88$, $p < .05$) and others (Schlegel Hicks, Arndt & King, 2009) ($r = .81$, $p < .05$) described this positive relationship between presence and purpose.

Schlegel Hicks, King and Arndt, (2011) also identified a positive relationship between ease of access to the true-self and having the presence of meaning in life ($r = .33, p < .05$). Purpose and presence are correlated with each other in Study 1 ($r = .75, p < .01$) and in Study 2 ($r = .82, p < .01$). Ease of access to the true self was correlated with presence in Study 1 ($r = .29, p < .01$) and in Study 2 ($r = .32, p < .01$). These findings replicate findings in the literature.

What Is Self-potential Made Of?

There was some evidence for the idea that self-potential is made of two sets of variables. These two sets can be seen in the correlation tables found in Studies 1 and 2, and in the exploratory and confirmatory factor analyses of Study 1. One set of variables called understanding describes people's ability to understand the self in terms of what is meaningful, the concrete goals they have concerning meaning, and the ability of the person to access this kind of information about the self. This variable was indicated by the presence of meaning and SISA1-self-actualization (originally proposed to be on the renewal factor).

The second set, called renewal, is the process people use to achieve self-understanding. Renewal was indicated by creativity measures (PAS1-unconventional, BFIO1- curiosity-invention & BFIO2-artistic) and search for meaning.

These two latent variables, as formulated here, correlated low and negatively in the first model, but when linear composites (renewal and understanding) are formed by summing the variables in each group, they formed composites that were not correlated in Study 1 ($r = .00, p > .05$), and low and positively ($r = .14, p < .01$) in Study 2. The relationship between the two composite variables indicate that these two groups of variables are not strongly related.

In Study 1, with the exception of self-actualization the restructured variables loaded in both the exploratory factor analysis and the confirmatory factor analysis model in the way that

was expected, and the variables themselves correlated in an expected way. These outcomes indicate that there may be two processes: searching for meaning which involves creative activity, and achieving meaning which is associated with self-actualization. These two sets of variables deserve further investigation.

Limitations of the Studies: The Challenges of Model Fit and Good Measurement

Although several analyses supported the existence of two latent variables, I was unable to confirm their existence with confidence: A model that could be replicated in both sets of data was not found. These particular variables did not have strong enough correlations as predicted to form stable models that could be replicated in the data of both studies.

There are three possible reasons for not finding a model that would replicate in both sets of data: the scales are problematic, the models are too restrictive, the theory is wrong, or some combination of the three.

Issues with the selected scales. I chose these particular scales because they were most closely related to the construct that I was trying to measure, and thought they would compose the variables of self-potential. For example, Crandall and Jones developed the SISA by drawing on the best items from multiple different scales of self-actualization, and some of the items had been approved by Maslow himself (Crandal & Jones, 1986). I chose the PAS (Holland & Baird, 1968) because it was developed based on Kubie's (1961) theory of creativity which was a foundational theory for Maslow's thinking about creativity. I learned, however, that perhaps the scales were not capturing the information that I was trying to collect.

Issues of scale content. For example, Holland (1968), the creator of the PAS scale, used questions that focused on decisions between jobs such as "I would rather edit than write a book" to measure preconscious activity, a type of associationistic thinking proposed by Kubie (1961) as

a basis for creative problem solving. Although writing a book may involve more preconscious activity than editing a book, both tasks arguably could involve both original or more rational thinking to different degrees. Additionally, the PAS is narrowly focused towards creativity in the arts and does not capture more general forms of creative thinking as described by Maslow (2011) and Rogers (1995).

Issues of scale dimensionality. A further problem was that some of the scales (PAS and SISA) were developed in a time and environment in which researchers were not as focused on ensuring the structural integrity of their scales as they are today. For example, Crandal and Jones expressed a reluctance to use factor analysis and claimed their scale could be used regardless of any evidence of its structural validity (using factor analysis). Their arguments against examining their scale's structure were a bit eccentric, even in 1990, relative to the mainstream, but both then and today it would be regarded as insufficient to meeting the standards of test development (American Educational Research Association, American Psychological Association, & National Council on Measurement in Education, 2014). Contemporary psychometrics emphasizes the importance of studying unifactorial scales.

Knowing the importance of unifactorial scales for confirmatory models helped me to diagnose the problems after the models of the selected scales failed; I discovered that a number of the scales were multifactorial in their original forms. Many of the scales available were developed using less sophisticated techniques than those used today. Though these scales were not designed to be used with structural equation modeling, they are still important concepts for understanding personality and research in therapy. While researchers may wish to use these scales in measurement models, the available scales that are focused on measuring constructs such

as self-actualization and preconscious activity may not be suitable for use in CFA models without first restructuring them.

One example of this difficulty is found in the short instrument of self-actualization (SISA). In order to understand self-actualization better, we need ways to measure it. This work here has made progress in the improvement of self-actualization scales through restructuring of these old scales. There is a dearth of readily available scales available for research in these areas. Through developing the self-actualization scale (SISA) I identified a relationship between the TOPI and self-actualization. I would not have found that relationship if I had not make progress in scale restructuring.

Issues of scale normality. At a more mundane level, the outcomes may have been influenced by non-normal distributions in the restructured scales in Study 1 and in both sets of scales of Study 2. The distribution of the data were negatively skewed for these scales, and despite the use of maximum likelihood and bootstrapping methods, a model with good fit statistics could not be formed. The problem with these scales and normality of distributions are not uncommon. Crandall, Crowne and Robb (1988) found that SISA distributions tend to be skewed. Ideally, these models would be somewhat robust in respect to small violations of assumptions but that may not always be the case.

Issues with existing models, related software, and sample size.

Existing models. To use contemporary psychometric models, it is often necessary to force complex data into simple models. This often requires, as previously discussed, that individual scales measure just one latent variable, which forces researchers to use only purely structured scales to avoid having to correlate error terms. Error terms represent variance not explained by the predictor. This error is partly due to “random measurement error or score unreliability”

(Kline, 2010, p. 27); however, correlated error terms also may indicate that the scales are measuring something other than the latent variable. That was possibly the problem with several of the original scales, and even the restructured scales are likely not wholly unifactorial.

Sample size. Another possible issue with the model is sample size. Sources recommend from 10 to 20 cases per parameter estimate (Kline, 2010; Schreiber, Stage, King, Nora, & Barlow, 2006). In my first study, I had a sample size of 194, which limit the number of parameter estimates to 19. Most of the models I tried had over 21 parameters. As models become more complex and distributions become less normal, the sample sizes may need to increase.

Given the difficulties of sample size and distribution, perhaps the guidelines for model fit usually expected are too stringent. Schreiber, Stage, King, Nora, and Barlow (2006) provide guidelines for model fit indices, but both these authors and the original sources of these guidelines (Bentler & Bonett, 1980; Browne & Cudeck, 1993) remind their readers that these are only guidelines. Sometimes researchers allow for relaxed criteria in fit statistics when measures meet other needs (Marsh, Liem, Martin, Morin, & Nagengast, 2011; Steger, Frazier, Kaler & Oishi, 2006).

Proposed Relations with Criteria

One hypothesized finding we did confirm in both studies is that the TOPI correlates with a measure of self-actualization. In Study 2, the TOPI correlates with the original as published SISA scale, but it doesn't in Study 1. In both Studies 1 and 2, the TOPI correlates with the restructured SISA1-self-actualization.

The self-judgment variables included in the model tested in both studies correlated in a way predicted by the literature into creative variables associated with searching for meaning and creativity (PAS1-unconventional, BFIO1-curiosity-invention, BFIO-2), and the presence of

meaning, purpose and SISA1-self-actualization. This organization of the variables was also supported by exploratory and confirmatory factor analyses in Study 1. However, I was not able to replicate the CFA model showing these relationships using data from Study 2, but that may have been due to non-normally distributed data. The correlations in both Studies 1 and 2 indicate that the TOPI is related to a measure of self-potential (SISA1-self-actualization).

Conclusion

This research addressed two important issues: understanding the the relationships among variables that are in theory related to self-potential, and validation of the TOPI. Validation of the TOPI is important, because in order for a test to be useful it is necessary to understand what it measures and how it is related to other measures that are conceptually similar. But before the TOPI can be validated with with self-potential scales, the structure of these scales needs to be better understood. In this set of studies, progress was made on understanding the relationships among the scales and the structure of the scales themselves.

Returning to discussing the scales in the studies, I had hoped to find that these theoretical relationships, proposed by Maslow and others, would fit in the models proposed in Study 1 and 2. I was not able to confirm the proposed model of relationships in the studies, although exploratory factor analyses and correlations suggested that variables that Maslow and others proposed to be related to self-potential fell into two groups, understanding and renewal. Creativity variables (preconscious activity and openness to experience) are related to the search for life meaning.

The correlations from Study 1 and 2 and the factor analyses from Study 1 suggest that when people are searching for meaning, they tend to use creative thought processes described by Maslow and others, such as preconscious activity. They are also more open to experience.

When people experience a greater presence of meaning in their lives, the correlations of Studies 1 and 2 and factor analyses of Study 1 indicate that they tend to also to have a greater sense of purpose. The presence scale measures having a sense of the presence of meaning in life, and purpose is having concrete goals that are a vehicle for expressing that sense of meaning. Steger, Frazier, Kaler and Oishi (2006) and others (Schlegel Hicks, King & Arndt, 2011) described this positive relationship between presence and purpose. Schlegel Hicks, King and Arndt, (2011) also identified a positive relationship between ease of access to the true-self and having the presence of meaning in life.

The Studies 1 and 2 of the present document replicate the relationships found in the literature (presence of meaning and purpose in life) and add the relationships among self-actualization, presence and purpose.

Additionally, Studies 1 and 2 have extended the research on the meaning in life questionnaire by finding the relationships among the renewal variables, which include search, PAS1-unconventional, BFIO1-curiosity-invention and BFIO2-artistic. Recall that in the introduction, meaning in life was considered an important aspect of self-potential because it acts as a guide to life choices that bring a sense that life has meaning. This sense of meaning directs our life goals and is associated in these studies with self-actualization and ease of access to the true self. High scores on the presence of meaning in life scale of the MLQ indicates that a person experiences the presence of meaning in their life.

High scores on the search scale of the MLQ indicate that the person is still searching for what is meaningful to them. The research here found relationships between searching for meaning in life and self-judgment creativity scales. This finding suggests that people use a creative process when searching for meaning. Maslow (2011) and Rogers (1995), humanistic

psychologists whose theories continue to influence the practice of psychotherapy (Sue & Sue, 2008) predicted this finding in their descriptions of the self-development process.

While the prediction that people use creativity to find meaning in life have been influential, it is important to find empirical evidence for Maslow and Roger's predictions about the role of creativity in finding meaning. The patterns exhibited in the exploratory factor analyses, while not conclusive, support Maslow and Roger's predictions and point to further need for research into the creative process of finding personal meaning. When people seek new meaning in life, fostering creative thinking may aid in the process. Understanding the relationship between creativity and the achievement of life meaning can help direct us in aiding people to reach their self-potential.

This set of studies aimed to further validate the TOPI with criterion measures and identify the relationships among variables proposed in the literature as promoting self-potential. While the models proposed at the beginning of the project could not be confirmed, new relationships among variables related to the search for meaning and the presence of meaning scales were found. In the process, some useful measures were updated by restructuring their content. This process made it possible to identify a relationship between the TOPI and a restructured scale self-actualization (SISA1). The newly introduced concept of self-potential, once further developed, may help us understand some of these relationships.

Footnotes

¹ In my proposal, I originally had 3 hypotheses in my first study:

Hypothesis 1: As scores on the TOPI increase, scores on the measures of self-development (true-self, purpose, meaning, openness, creativity and self-actualization) will increase. (Approximately $r=.30$)

Hypothesis 2: As scores on one measure of self-development increases (e.g. self-actualization) scores on the other measures of self-development will increase. (Approximately $r=.30$).

Hypothesis 3: Confirmatory factor analysis will indicate that self-development measures (excluding the TOPI) will fall into two latent variables: understanding and renewal. That is, Model 1 pictured in Figure 2, which has two variables will have a better fit than Model 2 pictured in Figure 3, which has only one latent variable or Model 3 pictured in Figure 4, which has two correlated latent variables.

Two new hypotheses were added to Study 1 to guide the reader through the narrative of the supplemental analyses.

² True-self, meaning and purpose scales were on the latent variable understanding, and self-creativity, openness, preconscious activity and self-actualization scales were on the latent variable renewal. One- and two- factor models were proposed. To test these models, I used the SEM program AMOS 23 to perform CFA with the maximum likelihood method estimation method for this set of tests and all subsequent set of tests. [Isn't this in the text now? If not, I think perhaps it would be better there than in this footnote]

³ Study 2 originally had two hypotheses. The hypotheses were modified to account for new analyses and guide the reader through the results section. The original hypotheses were:

Hypothesis 1: As personal intelligence increases so should the use of words indicating maturity (bigger words, articles, prepositions, positive emotion words) and words indicating growth (cognitive words, insight words and causal words).

Hypothesis 2: As personal intelligence and words indicating growth and maturity increase so should measures of self-development increase.

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TABLES

Table 1

Elements of Self-potential: Variables Included in the Self-Potential Model

Variable	Measure	Number of items	Scales	Reliability	Citation
Personal Intelligence	Test Of Personal Intelligence	96	Descriptive Inferential	$\alpha=.86-.92$	Mayer, Panter & Caruso (2014)
Access to the true self	Access to the True Self	1	-	Not reported	Schlegel, Hicks, Davis & Smith, 2013; Schlegel Vess & Arndt, 2011)
Purpose	Modified version of Purpose in Life scale (PIL)	4	Meaning ²	$\alpha=.87$	Crumbaugh & Maholick, (1964), modified by McGreggor & Little (1998) Hicks & King (2007)
Meaning	Meaning in Life Questionnaire MLQ (Steger, Frazier, Kaler & Oishi, 2006)	10	Search Presence	Search $\alpha=.82$ Presence $\alpha=.87$	(Steger, Frazier, Kaler & Oishi, 2006)
Self-creativity	Self-creativity	7	- ¹		
Openness to Experience	Big Five Inventory-44	44	Openness ³	$\alpha=.63-.84$ (John & Soto, 2009)	(John, Naumann & Soto, 2008)
Self-actualization	Short Index of Self-Actualization (SI)	19	-	Test Retest Reliability .69 $p \leq .01$	Crandall & Jones (1991, 1986)
Preconscious Activity	Preconscious Activity Scale (PAS)	38	-	KR20 = .75-.77	Holland & Baird (1968)

¹ There could be up to 4 scales within the self-creativity measure.

² There are two scales to (search and presence).

³ There are four other scales of the Big Five, which were be measured.

Table 2
Study 1 Gender and Race Demographics

Demographics		Frequency
Gender		
	Female	129
	Male	64
	Not reporting	1
Race		
	White	171
	African American	3
	Hispanic	7
	Asian	10
	Other	3

Table 3
Study 1 Descriptive statistics of original measures

	Mean	Std. Deviation	Minimum	Maximum	Reliability Cronbach's Alpha
True self	5.70	2.16	1	10	-
TOPI 14_m	.77	.13	.28	.95	.88
TOPI 14_F1	.80	.14	.22	1.00	.88
TOPI14_F2	.71	.18	.19	1.00	.82
Presence	28.05	5.69	15.00	38.00	.87
Search	24.50	5.88	10.00	35.00	.83
Preconscious Activity	21.00	5.12	6.00	35.00	.72
Purpose	5.31	1.13	2.50	7.00	.84
Themes	.00	2.73	-5.99	4.71	-
Clues	.00	2.69	-6.56	5.42	-
Creativity about Personality	.00	4.83	-10.74	8.97	-
Total					
Self-actualization*	55.95	6.60	37.00	75.00	.72
BFI Openness scale score	3.53	.55	2.20	4.90	.73

* Corrected- Higher scores reflect greater self-actualization

Table 4

Study 1 Correlations among the Self-Potential Scales; and Creativity about Personality Scale and the TOPI

	True- self	TOPI	Openness	Presence	Search	Preconscious Activity	Purpose	Creativity about Personality	Self- actualization***
True self	1								
TOPI	-.14*	1							
Openness	.30**	.00	1						
Presence	.29**	.03	.13	1					
Search	.13	.08	.20**	-.20**	1				
Preconscious Activity	.14	-.06	.53**	-.05	.26**	1			
Purpose	.28**	.01	.10	.75**	-.10	-.09	1		
Creativity about Personality	.04	.06	.10	-.12	.13	.13	-.06	1	
Self- actualization**	.12	.12	.13	.35**	-.03	.06	.32**	-.06	1

*
***Self-actualization is scored in the reverse direction from the instructions. Higher numbers indicate greater self-actualization

Table 5: The Factor Based Restructured Scales

Original Scale	Factor-Based Scales (items)	Interpretative Name	Example of High-loading Item ¹	M	S	Alpha
Meaning	Search(5)	Search	I am seeking a purpose or a mission for my life.	4.92	1.18	.83
	Presence(5)	Presence	My life has a clear sense of purpose	4.49	.81	.87
Purpose	Purpose (4)	Purpose	I have clear goals and a satisfying purpose in life	5.30	1.12	.84
Big-Five Openness	BFIO1 (6)	Curiosity-Invention	Is curious about many different things	3.84	.63	.78
	BFIO2 (3)	Artistic	Values artistic aesthetic experiences	3.32	.94	.69
Preconscious Activity	PAS1 (13)	Realistic/Entrepreneur	I would rather be an engineer than an artist.	.45	.23	.75
	PAS2 (8)	Artistic	Is sophisticated in art literature and music.	.68	.20	.50
Self-Actualization	SISA1 (8)	Self-actualization	I am loved because I give love.	4.40	.70	.68
	SISA2 (6)	Neuroticism	It is always necessary that others approve of what I do.	3.41	.81	.64

Some items were abbreviated.¹

These new scales were developed by

1. Choosing items that loaded on a factor at .275 or higher for scales with 15 or fewer items (Openness and Self-actualization) and .30 for scales that had more than 15 items (Preconscious activity). Items were placed on whichever factor it loaded highest on.
2. Reverse scoring any of the items that were loading negatively on their respective factor.

Table 6
 Study 1 Exploratory Factor Analysis
 of Restructured Scales Used to
 Develop the Model of Restructured
 Variables
 Study 1 Pattern Matrix^a

	Factor	
	1	2
Presence	.89	-.19
Purpose	.82	-.18
SISA1-Self- actualization	.36	.10
SISA2- Neuroticism	-.37	-.04
Search	-.10	.36
PAS1 Realistic/Entrepreneur	-.07	.67
PAS2-Artistic	-.07	.25
BFIO1- Curiosity- Invention	.33	.50
BFIO2- Artistic	.09	.67

Extraction Method: Principal Axis
 Factoring.

Rotation Method: Oblimin with
 Kaiser Normalization.^a

a. Rotation converged in 4 iterations.

Table 7

Study 1 Correlations among Restructured Scales, Latent Variables, Aggregates and TOPI

	Unders	Pres	Purp	SISA1	SISA2	T-S	Ren	Sear	PASJ1	PASJ2	BFIO1	BFIO2	CAPS	TOPI
Understanding (Unders)	1.00													
Presence (Pres)	.74**	1.00												
Purpose (Purp)	.72**	.63**	1.00											
SISA1 - Self- actualization	.58**	.17*	.28**	1.00										
SISA2- Neuroticism	.18*	-.14	-.30**	-.16*	1.00									
True self (T-S)	.19**	.25**	.28**	.09	-.18*	1.00								
Renew (Ren)	.00	.01	.01	.09	-.12	.22**	1.00							
Search (Sear)	-.04	-.09	-.10	.05	.05	.15*	.54**	1.00						
PAS1- Realistic/Entrepreneur	-.01	.01	.06	-.12	.02	-.08	-.05	-.26**	1.00					
PAS2-Artistic	-.11	-.11	-.14	.05	-.08	-.04	.58**	.08	-.09	1.00				
BFIO1- Curiosity- Invention	.11	.17*	.21**	.13	-.26**	.35**	.63**	.17*	-.31**	.18*	1.00			
BFIO2- Artistic	.06	.05	-.02	.09	-.01	.12	.56**	.25**	-.47**	.14	.37**	1.00		
Creativity about Personality (CAPS)	.02	-.09	-.01	.08	.06	.07	.10	.13	-.12	-.02	.07	.16*	1.00	
TOPI	.08	-.10	.01	.36**	-.10	-.14*	.07	.07	-.01	.06	.07	-.04	.02	1.00

Table 8
Gender and Race Demographics Information for Study 2

Demographics	Frequency
Gender	
Female	201
Male	127
Not reporting	1
Race	
White	268
African American	28
Hispanic	11
Asian	18
Other	3
Not reporting	1

Table 9
Descriptive Statistics of the Central Measures for Study 2

Variable	Minimum	Maximum	Mean	SD	Cronbach's alpha
True Self	1.00	10	6.97	2.47	-
BFI Openness	1.20	5.00	3.71	.70	.85
Presence	8.00	38.00	28.18	7.07	.92
Search	5.00	35.00	21.67	8.00	.94
Preconscious Activity	.00	37.00	21.42	6.10	.82
Purpose	1.00	7.00	5.22	1.34	.93
Self-actualization*	20.00	83.00	57.38	8.51	.82
TOPI	.25	.99	.81	.14	.92
LIWC					
Big Words	5.60	33.33	16.46	4.32	-
Articles	.00	13.91	5.42	2.03	-
Prepositions	3.03	25.81	15.11	2.60	-
Positive Emotion	.00	11.88	3.32	1.80	-
Cognitive	3.23	42.42	13.15	4.14	-
Insight	.00	10.20	2.72	1.63	-
Causal	.00	8.11	1.72	1.28	-
WordSum	2.00	10.00	7.41	1.68	.61

Table 10
Study 2 Correlations of the Original Variables With the TOPI

	TOPI_	WordSum	LIWC							Self-judgment							
			Big words	Articles	Prepositions	Positive Emotion	Cognitive	Insight	Causal	True-Self	Openness	Presence	Search	Preconscious Activity	Purpose	Self Actualization	
TOPI_	1.00																
WordSum	.53**	1.00															
LIWC																	
Big Words	.11*	.15**	1.00														
Articles	.02	.04	.17**	1.00													
Prepositions	.07	.01	.00	.08	1.00												
Positive Emotion	-.14**	-.02	.05	.01	-.16**	1.00											
Cognitive	.03	.05	.02	-.23**	-.33**	-.04	1.00										
Insight	.03	.03	.12*	-.14*	-.22**	.08	.49**	1.00									
Causal	-.07	-.06	.07	-.02	-.16**	.01	.34**	.09	1.00								
Self-judgment																	
True Self	-.04	-.07	-.02	-.03	-.07	.11*	-.12*	.04	-.06	1.00							
Openness	.14*	.18**	.08	.01	-.05	.02	-.02	.03	-.01	.21**	1.00						
Presence	.02	-.04	-.02	-.01	.01	.02	-.15**	-.01	-.09	.32**	.23**	1.00					
Search	-.11*	-.05	-.00	.02	.02	.10	.02	.04	.06	-.09	.19**	-.30**	1.00				
Preconscious Activity	.13*	.22**	.02	-.04	-.04	.04	.04	.09	.11	.11*	.66**	-.00	.21**	1.00			
Purpose	-.08	-.13*	-.10	-.08	-.05	.02	-.10	.03	-.05	.34**	.29**	.82**	-.13*	.02	1.00		
Self Actualization	.13*	.09	.02	-.07	.02	-.09	-.05	-.05	-.01	.15**	.20**	.35**	-.31**	.13*	.28**	1.00	

Table 11
Study 2 Correlations Among Rescaled And Latent Variables

	Understanding				Renewal				LIWC							
	UND	PRES	SISA1	REN	SEA	PAS1	BFIO 1	BFIO 2	TOPI_m	B-W	ART	PREP	PE	COG	IN	CL
Understanding (UND)	1.00															
Presence (PRES)	.79**	1.00														
Self-actualization (SISA1)	.79**	.24**	1.00													
Renewal (REN)	.14**	.03	.20**	1.00												
Search (SEA)	-.21**	-.30**	-.03	.51**	1.00											
PAS1						1.00										
Realistic/Entrepreneurial BFIO1	.07	-.03	.14*	.73**	.12*	1.00										
Curiosity/Invention BFIO2-Artistic	.30**	.26**	.21**	.78**	.20**	.41**	1.00									
TOPI_m	.25**	.15**	.23**	.79**	.12*	.52**	.59**	1.00								
Big words (B-W)	.17**	-.00	.26**	.12*	-.11*	.22**	.11*	.11*	1.00							
Articles (ART)	-.02	-.01	-.02	.06	.00	.00	.09	.08	.11*	1.00						
Prepositions (PREP)	-.05	-.03	-.04	-.04	.02	-.08	.01	-.05	.02	.17**	1.00					
Positive Emotion (PE)	-.03	.01	-.06	-.05	.07	-.04	-.03	-.10	.07	.00	.08	1.00				
Cognitive (COG)	.02	.03	.00	.05	.10	.03	.01	.01	-.14**	.05	.01	-.16**	1.00			
Insight (IN)	-.11	-.15*	-.03	.02	.02	.05	-.01	.00	.03	.02	-.23**	-.33**	-.04	1.00		
Causal (CL)	-.01	-.00	-.01	.08	.04	.10	.01	.07	.03	.12*	-.14*	-.22**	.08	.49**	1.00	
	-.02	-.07	.03	.06	.06	.12*	-.02	.01	-.07	.07	-.02	-.16**	.01	.34**	.09	1.00

**Correlation is significant at the 0.01 level (2-tailed).

*Correlation is significant at the 0.05 level (2-tailed).

FIGURES

Figure 1 Proposed conceptual relationship among concepts associated with self-potential.

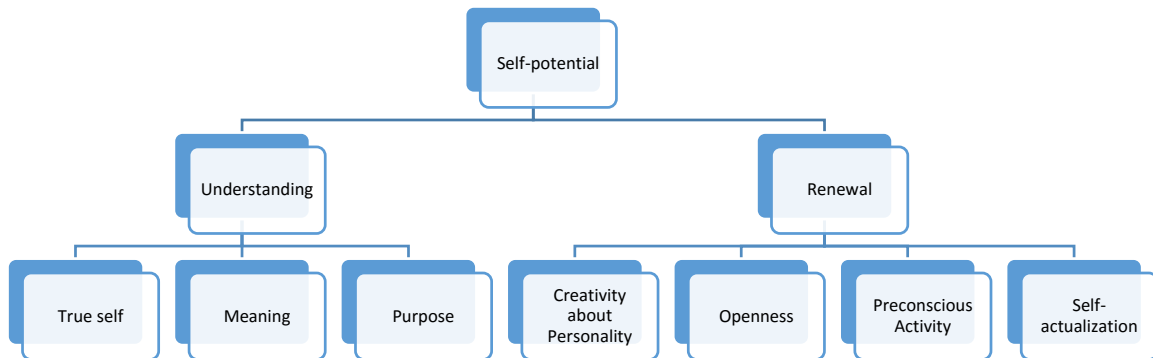


Figure 1 Self-potential has two latent variables Understanding and Renewal. Initially the measured variables proposed to load on the latent variable understanding were: Ease of access to the true self, meaning and purpose. The proposed measured variables associated with the latent variable renewal were: creativity about personality (CAPS), openness (BFIO), preconscious activity and self-actualization. Correlations and factor analyses in Study 1 suggested modifications of this proposed model.

Figure 2 Initial hierarchical model tested in Study 1.

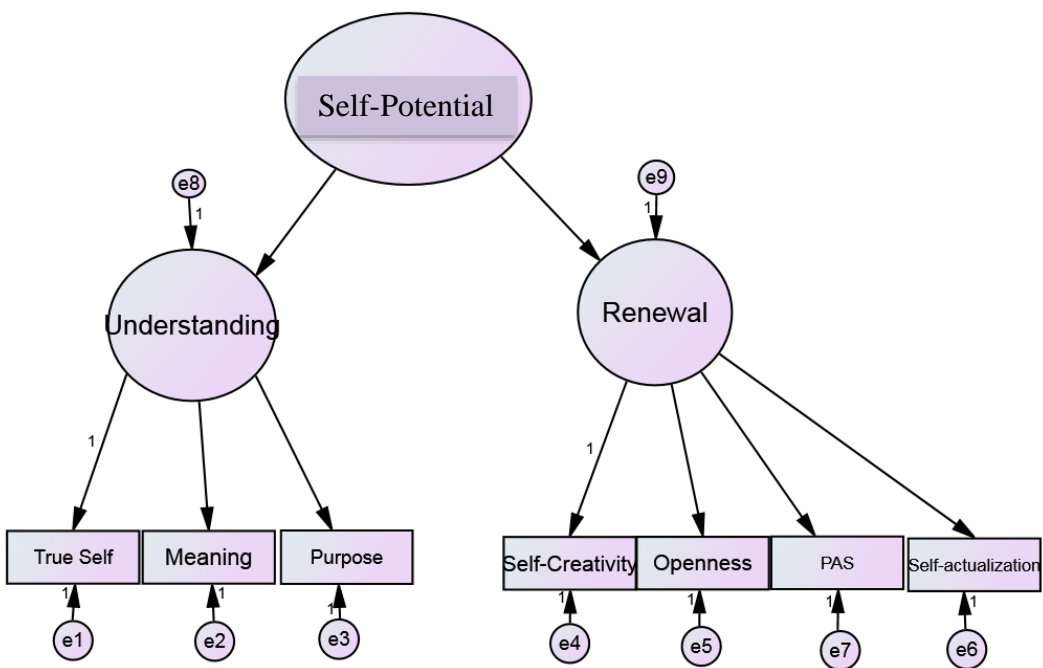


Figure 3 Proposed one-factor model tested in Study 1

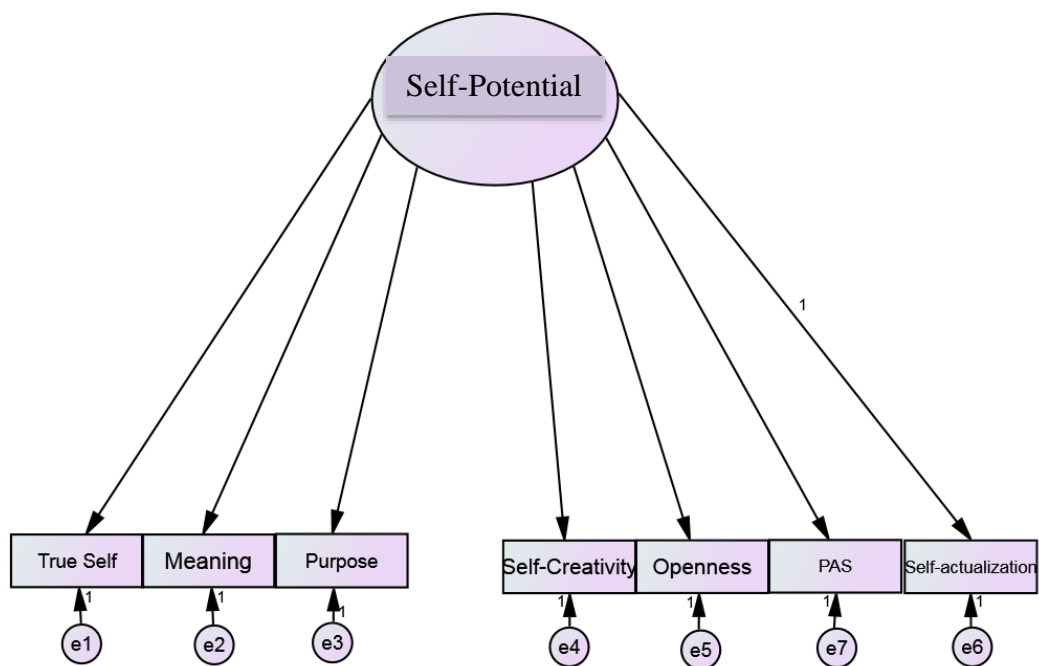


Figure 4 Simple correlated model tested in Study 1

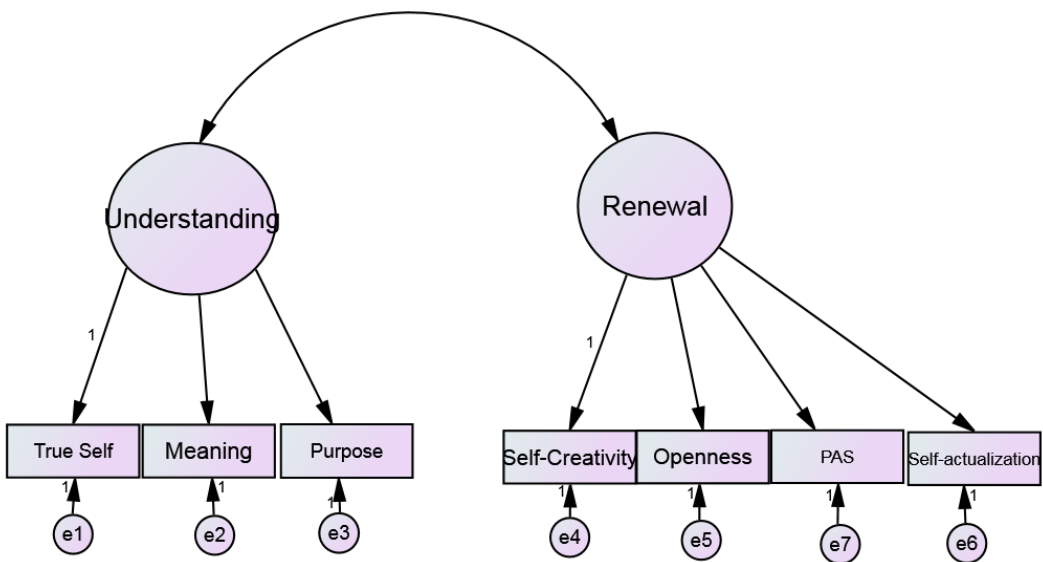


Figure 5 The model that attained good fit in Study 1, but not in Study 2

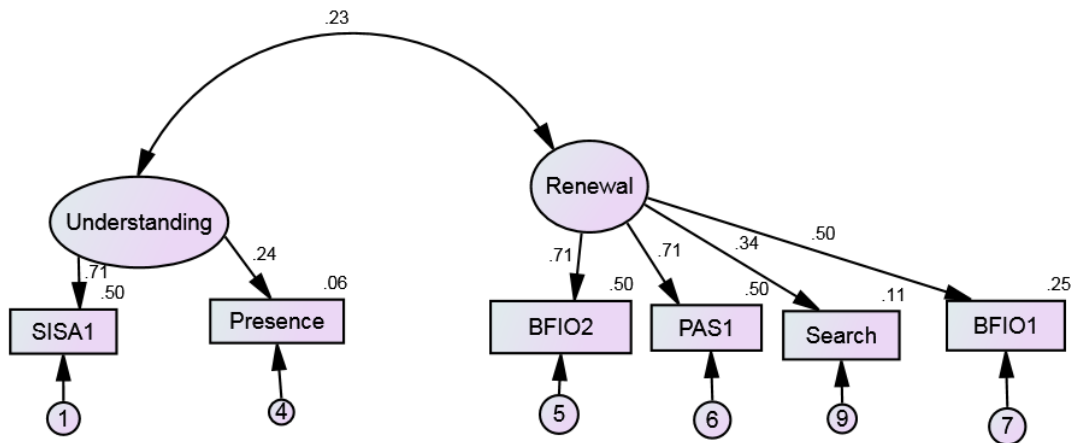


Figure 5 This is the model that was able to attain good fit $\chi^2 = 75.56$, $df = 26$, $p < .001$, $TLI = .65$, $CFI = .80$, $RMSEA = .10$. This model has two correlated latent variables understanding and renewal. The latent variable has two measured variables self-actualization (SISA1) and presence. Renewal has four latent variables, two openness variables (BFIO 1&2) and preconscious activity (PAS 1) and search.

APPENDICES

APPENDIX A

TEST OF PERSONAL INTELLIGENCE - TOPI

The TOPI has 96 questions divided into four areas of functioning: identifying clues to personality, forming models of personality, guiding choices with information about personality, and systematizing goals and plans.

Four questions, one from each problem-solving area of the TOPI 1.4 are listed below.

1. If a person wants to be with one or more people, talk to them, go out with them, and have a good time, the person is likely going to:

- a. be in love
- b. express warmth toward someone
- c. meet a goal of excellence
- d. socialize

2. A person is depressed and self-conscious. Most likely, she also could be described as:

- a. calm and even-tempered
- b. anxious and impulsive
- c. self-controlled
- d. fairly thick-skinned

3. Ned's boss, Alan, is highly conscientious and orderly. When Alan finds out Ned was late for work, Alan likely:

- a. won't care
- b. will – at minimum – make a note of it, and may be disturbed by it
- c. greet Ned enthusiastically
- d. feel distressed and anxious

4. A person wants “to perform at work with excellence”. What goal might most promote this?

- a. to take a training course to learn to do the job better
- b. to be a good leader to others
- c. to use forceful, strong actions so as to become a good leader
- d. to try to be a good friend

APPENDIX B

TRUE SELF EASE

Participants are asked “Please list the 10 “best” words that you would use to describe who you really are. Specifically, we’d like you to think about the characteristics, roles or attributes that define who you really are—even if those characteristics are different than how you sometimes act in your daily life.” (Schlegel, Vess & Arndt. 2011, P. 978) After completing their lists of ten items, participants will be asked to rate on a 10 point scale (1= extremely difficult and 10= extremely easy) how easy it was for them to think of the 10 words.

APPENDIX C

MEANING IN LIFE QUESTIONNAIRE

Meaning in life Questionnaire – (Steger, Frazier, Kaler & Oishi, 2006)

Please take a moment to think about what makes your life and existence feel important and significant to you. Please respond to the following statements as truthfully and accurately as you can, and also please remember that these are very subjective questions and that there are no right or wrong answers. Please answer according to the scale below:

1 Absolutely Untrue 2 Mostly Untrue 3 Somewhat Untrue 4 Can't say True or False
5 Somewhat True 6 Mostly True 7 Absolutely True

1. I understand my life's meaning.
2. I am looking for something that makes my life feel meaningful.
3. I am always looking to find my life's purpose.
4. My life has a clear sense of purpose.
5. I have a good sense of what makes my life meaningful.
6. I have discovered a satisfying life purpose.
7. I am always searching for something that makes my life feel significant.
8. I am seeking a purpose or mission for my life.
9. My life has no clear purpose.
10. I am searching for meaning in my life.

MLQ syntax to create Presence and Search subscales:

Presence = 1, 4, 5, 6, & 9-reverse-coded

Search = 2, 3, 7, 8, & 10

APPENDIX D

PURPOSE IN LIFE

Purpose in Life – modified McGregor and Little, (1998)

Choose the number (1 to 7) below each statement that is most true for you right now.

“In life, I have very clear goals and aims”

1 2 3 4 5 6 7

Not at all

Extremely

“My personal existence is very purposeful and meaningful”

1 2 3 4 5 6 7

Not at all

Extremely

“I have clear goals and a satisfying purpose in life”

1 2 3 4 5 6 7

Not at all

Extremely

“I regard my ability to find a meaning, purpose, or mission in life to be very great.”

1 2 3 4 5 6 7

Not at all

Extremely

APPENDIX E

Creativity About Personality Scale

Self-creativity is defined as a cognitive process that allows people to produce multiple answers to open-ended questions or problems about personality. To test this ability, I developed a two item scale, the Creativity About Personality Scale (CAPS). These two items were the best items selected from an original set of seven items. (For more information about the process of choosing the two items please see the unpublished test manual (Barlow, 2016)). When participants came to the creativity about personality survey, they saw these instructions, which are based on an amalgamation of various instructions from other scales (Harrington, 1975; Runco, 1986; 2010; Torrance, 1993; Wallach & Kogan, 1965). These instructions borrow phrases from a number of instructions used by these researchers. Some sentences come directly from other published instructions.

This is a test of your ability to be creative about personality Try to think of responses that no one else will think of. Please be as creative as possible. Please list as many responses as you are able to for each item. A creative response is one that is both unusual (a response which other people would be unlikely to think of) and means something. In trying to be creative, therefore, you should try to list responses, which are both unusual and worthwhile at the same time. (By the way, uncreative responses do not count against you, they just do not count for you). Do not spend too much time on any one item. Write down those creative responses that occur to you and go on to the others in the same part.

You may return to the incomplete items in a part if time for the part permits. Try to be creative.

The two items used in Study 1 were

1. Try to list as many creative responses as you can. What clues indicate that someone might be dangerous? Please provide as many responses as you are able. You have the option of providing up to 10 responses.
2. List as many life themes as you can that emerge from this story. You have the option of providing up to 10 responses.

- A young man's grandmother lives with his large family while he is young, and all of the family members pitch in to take care of his grandmother.
- The young man goes to college and earns a master's degree in social work.
- While working at the community mental health center he meets his wife. They marry and also have a large family.

Three undergraduate co-coders coded the responses of both items responses in Study 1 in three categories: fluency, originality, flexibility and a total. They used a scoring manual that included instructions for coding the data and scoring it in three categories fluency, originality, flexibility. The three scores were summed to form a total. Interrater reliability among the three coders for the total score of the first item ranged from .95-.99 and the range of interrater reliability for total score for the second item was .91 to .95.

The z-scores of the three coding categories (fluency, originality and flexibility) were summed and used as the total score. This total of the z-score was used in the correlational analyses of Study 1.

APPENDIX F

BIG FIVE INVENTORY

The Big Five Inventory (BFI)

Here are a number of characteristics that may or may not apply to you. For example, do you agree that you are someone who likes to spend time with others? Please write a number next to each statement to indicate the extent to which you agree or disagree with that statement.

Disagree	Disagree	Neither agree	Agree	Agree
strongly	a little	nor disagree	a little	Strongly
1	2	3	4	5

I see Myself as Someone Who...

- | | |
|---|--|
| ___ 1. Is talkative | ___ 23. Tends to be lazy |
| ___ 2. Tends to find fault with others | ___ 24. Is emotionally stable, not easily
upset |
| ___ 3. Does a thorough job | ___ 25. Is inventive |
| ___ 4. Is depressed, blue | ___ 26. Has an assertive personality |
| ___ 5. Is original, comes up with new ideas | ___ 27. Can be cold and aloof |
| ___ 6. Is reserved | ___ 28. Perseveres until the task is
finished |
| ___ 7. Is helpful and unselfish with others | ___ 29. Can be moody |

- ___8. Can be somewhat careless
- ___9. Is relaxed, handles stress well
- ___10. Is curious about many different things
- ___11. Is full of energy
- ___12. Starts quarrels with others
- ___13. Is a reliable worker
- ___14. Can be tense
- ___15. Is ingenious, a deep thinker
- ___16. Generates a lot of enthusiasm
- ___17. Has a forgiving nature
- ___18. Tends to be disorganized
- ___19. Worries a lot
- ___20. Has an active imagination
- ___21. Tends to be quiet
- ___22. Is generally trusting
- ___30. Values artistic, aesthetic experiences
- ___31. Is sometimes shy, inhibited
- ___32. Is considerate and kind to almost everyone
- ___33. Does things efficiently
- ___34. Remains calm in tense situations
- ___35. Prefers work that is routine
- ___36. Is outgoing, sociable
- ___37. Is sometimes rude to others
- ___38. Makes plans and follows through with them
- ___39. Gets nervous easily
- ___40. Likes to reflect, play with ideas
- ___41. Has few artistic interests
- ___42. Likes to cooperate with others
- ___43. Is easily distracted
- ___44. Is sophisticated in art, music, or literature

Scoring:

BFI scale scoring (“R” denotes reverse-scored items):

Extraversion: 1, 6R, 11, 16, 21R, 26, 31R, 36

Agreeableness: 2R, 7, 12R, 17, 22, 27R, 32, 37R, 42

Conscientiousness: 3, 8R, 13, 18R, 23R, 28, 33, 38, 43R

Neuroticism: 4, 9R, 14, 19, 24R, 29, 34R, 39

Openness: 5, 10, 15, 20, 25, 30, 35R, 40, 41R, 44

APPENDIX G

PRECONSCIOUS ACTIVITY SCALE

The Preconscious Activity Scale (PAS) (Holland & Baird, 1968) - Please answer each question true or false. Below are example items.

1. I would rather be a senator than a philosopher.
4. In writing a report or paper, I find the searching for ideas the most distasteful process.
5. I rarely come up with novel ideas.
7. I would rather be an engineer than an artist.
8. I am occasionally taken in by new books and ideas.
9. I often daydream about unsolved problems.
10. I enjoy daydreaming about future projects, activities, or problems.
12. I get my best ideas by daydreaming rather than relying on books, well-established authorities, or other people.
13. If I had the talent, I would enjoy being a composer.
16. I often try to be alone so I can think things through.
19. Daydreaming is a poor way to solve problems.
21. I would rather be an influential public figure than a creative artist.
23. I prefer teachers who give well-organized courses and clear assignments to those who require independent reports and papers.

24. I have to learn things in my own way rather than accepting ideas or relationships suggested in textbooks, etc.

25. The way to solve difficult problems is by thorough planning and good organization of your time.

27. I would like to be an inventor.

28. I solve intellectual problems by careful, logical thinking.

29. I would rather be an experimental than a clinical psychologist.

30. If I had the necessary talent, I would enjoy being a sculptor.

31. I enjoy problems for which you can obtain precise answers.

32. I would rather be a writer than a banker.

33. I think I am a practical rather than an imaginative person.

35. I begin projects by daydreaming about how they might be done.

36. My friends regard me as somewhat absent-minded.

37. I am more of a realist than an idealist.

1. False 16. True 31. False

4. False 19. False 32. True

5. False 21. False 33. False

7. False 23. False 35. True

8. True 24. True 36. True

9. True 25. False 37. False

10. True 27. True

13. True 28. False

12. True 29. True

APPENDIX H

SHORT INSTRUMENT OF SELF-ACTUALIZATION

Short Instrument of Self-Actualization (SISA) –

Please indicate to what extent you agree or disagree with each of the following statements.

Strongly agree Agree Somewhat agree Somewhat disagree Disagree
 Strongly disagree

1. I do not feel ashamed of any of my emotions
2. I feel I must do what others expect of me.
3. I believe that people are essentially good and can be trusted.
4. I feel free to be angry at those I love.
5. It is always necessary that others approve what I do.
6. I don't accept my own weaknesses.
7. I can like people without having to approve of them.
8. I fear failure.
9. I avoid attempts to analyze and simplify complex domains.
10. It is better to be yourself than to be popular.
11. I have no mission in life to which I feel especially dedicated.
12. I can express my feelings even when they may result in undesirable consequences.
13. I do not feel responsible to help anybody.
14. I am bothered by fear of being inadequate.
15. I am loved because I give love.

APPENDIX I

Linguistic Word Inquiry Count

Please “write about your very deepest thoughts and feelings about coming to college. In your writing, try to let yourself go and to write continuously about your emotions and thoughts related to leaving home, coming to [college], and preparing for the future. You can write about leaving your friends, family, or high school, or about adjusting to a new social and academic world here. You could also focus on classes, your future, your parents’ or your own expectations. The primary task, however, is for you to reflect on your most basic thoughts and emotions about coming to college.” (Pennebaker & Francis, 1996, p.607)

APPENDIX J

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**University of
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October 16, 2015

To whom it may concern:

This letter confirms that the research project “Is Personal Intelligence Related to Self-potential?” was approved by me, on behalf of the Psychology Department Review Committee on August 10, 2015 with approval code EAug102015. I also approved minor modifications to the research description on October 15, 2015.

On behalf of the Psychology DRC,

Sincerely,

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