Honors Thesis Collection

2015

The Correlation between Introversion-Extroversion and Measures of Happiness

Courtney Brown
cbrown2@wellesley.edu

Follow this and additional works at: https://repository.wellesley.edu/thesiscollection

The Correlation between Introversion-Extroversion and Measures of Happiness

Courtney Brown

Submitted in Partial Fulfillment

of the

Prerequisite for Honors

in Psychology

April 2015

Acknowledgements

I would like to extend my thanks to the Wellesley College Psychology Department for providing me with a secondary track towards an honors thesis. I would also like to thank the Quantitative Analysis Institute and Cassandra Pattanayak for refreshing and furthering my understanding of statistical analyses. I am particularly grateful to Professors Jonathan Cheek and Paul Wink for their unwavering faith in me as a Psychology honors candidate and to Professors Robin Akert and Kyra Kulik-Johnson for working with me throughout the thesis process. I am equally grateful to Professor Margaret Keane for keeping me abreast with Psychology honors procedures, deadlines, and expectations. Furthermore, I would like to acknowledge my family, friends, fellow thesising seniors, and Café Hoop Cooperative for offering me overwhelming encouragement and support throughout the thesis process.

Abstract

Introversion-extroversion and the many measures of happiness are both much debated areas of psychological interest. Universally accepted conceptualizations of introversion-extroversion and happiness have, thus far, not been agreed upon. The present study reviewed and empirically examined the psychometric properties of Susan Cain's recently constructed Quiet Introversion Questionnaire, the domains of introversion-extroversion (social, thinking, anxious, and restrained), and five aspects of happiness among a sample of five hundred and fifteen Amazon Mechanical Turk (MTurk) workers. The study results indicated that Cain's Quiet Scale is composed of two factor subscales: Social, Anxious, and Restrained Introversion and Introversive Absorption. The results also revealed modest differences between introverts and extroverts on measures of happiness. Nonetheless, the reproducibility of the study findings, the use of additional introversion-extroversion measures, and the use of additional happiness measures warrant exploration in further investigations into the correlations between personality and well-being.

Humans are inherently social creatures, and maintaining satisfying social relationships is a central aspect of happiness (Wilson, 1967). The formation and maintenance of strong social bonds is not only an important aspect of adolescence and adulthood, but it is also necessary for one's psychological and physical well-being (Erikson, 1980; Maslow, 1968). Humans need to feel connected to one another; they need to feel as though they belong to a group of people who share their interests and value their presence. For this reason, people are intrinsically motivated to form close interpersonal relationships with individuals whom they can interact with frequently and positively (Murphy, 1954; Baumeister & Leary, 1995).

According to Nicoll (1917), some individuals (extroverts) thrive when provided an abundance of social interactions, and others (introverts) thrive when able to orient themselves inward and withdraw from social situations. Therefore, though equally capable of being outgoing, sociable, or unsociable, introverts and extroverts generally choose to seek out and participate in social situations congruent with their personality type (Diener, Larsen, & Emmons, 1984). Extroverts report having more close interpersonal relationships than do introverts. Nevertheless, introverts and extroverts do not differ markedly in their reported frequency of contact with close companions (Hills & Argyle, 2001). Thus, research suggests that the quality rather than the quantity of meaningful social contact predicts well-being (Nezlek, 2000). Research also shows that the presence of close, mutually beneficial interpersonal relationships is a strong correlate with happiness, and the absence of close, mutually beneficial interpersonal relationships is related to depression (Argyle, 1987).

Over the past 20 years, research has consistently shown that extroversion is positively related to positive affect, happiness, and subjective well-being (Costa & McCrae, 1980; Emmons & Diener, 1985; Emmons, Diener, & Larsen, 1986; Pavot, Diener, & Fujita, 1990, Watson &

Clark, 1997). Research also shows that "extraversion is the strongest predictor" of happiness and "happiness is also one of the strongest correlates of extraversion" (Argyle & Lu, 1990, p. 1011). For this reason, many researchers believe that extroverts are inherently happier than introverts. Nonetheless, the veracity of this belief is open to question. The mechanism of the relation between extroversion and happiness is unknown, and theories regarding the root of the relation are continuously debated among positive psychologist. With the intention of reviewing and adding to the extant literature on extroversion and well-being, the present study will empirically investigate the facets of introversion-extroversion and the aspects of subjective well-being to evaluate and eliminate the overlapping features of the two psychological constructs.

Extroversion and Subjective Well-being

Happiness is defined as a measure of psychological and physical well-being, positive affect, life satisfaction, and the absence of distress and negative affect (Argyle & Lu, 1990). The theoretical and empirical framework supporting the body of literature that relates extroversion and happiness is ages old. As early as 1928, Chassell showed that happiness is associated with one's enjoyment of social interactions. Equally, Smith (1961) found that warmth, optimism, emotional stability, self-insight, and sociability are related to happiness. Thus, a consistent finding in the well-being literature is that social activity predicts happiness (Watson, 1930; Wilson, 1967; Veroff, Feld, & Gurin, 1962). Moreover, as extroversion is a personality dimension marked by high sociability, extroversion is frequently related to happiness.

Research shows that extroverts are happier than introverts when alone, when working in social and nonsocial spaces, and when they living alone or cohabiting (Pavot et al., 1990; Diener, Sandvik, Pavot, & Fujita, 1992). Research also shows that extroversion correlates more strongly with positive affect than it does with negative affect (Costa & McCrae, 1980). Further, Bradburn

(1969) analyzed positive and negative affect as predictors of well-being and found that social

interaction correlates more strongly with positive affect than it does with negative affect.

Explaining the mechanism between extroversion and happiness.

Much of the literature on personality and well-being is dominated by analyses of the

relation between extroversion, neuroticism, and well-being (Costa & McCrae, 1980); the "Big-

Five" and well-being (DeNeve & Cooper, 1998); and sociability and well-being (Diener et al.,

1984; Argyle & Lu, 1990). Many researchers agree that there is a link between personality and

well-being, but their proposed explanations for mechanism of the relation between introversion-

extroversion and positive affect vary. Diener, Larsen, and Emmons (1984) proposed that

personality correlates with well-being because people are active agents in selecting their life

situations. To test their theory, the researchers observed the amount of time extroverts spent

participating in social interactions. They found that extroversion did not correlate significantly

with an individual's decision to engage in social situations. Therefore, while the proposed

mechanism was theoretically sound, the researchers' hypothesis that one's choice of social

participation explains why extroverts report higher levels of positive affect compared to

introverts is not sufficient. Indeed, the above mechanism can only partially account for the

relation between personality and choice of activity because a number of external factors can

impact one's choice of social participation. Researchers, therefore, continue to suggest models

for the relation between extroversion and positive affect.

Researchers theorize that because extroverts are more sociable than introverts and

because social activity is linked to well-being, extroversion is, by default, linked to happiness

(Argyle & Lu, 1990; Ashton, Lee, & Paunonen, 2002). Researchers also suggest that because

extroverts are more sensitive to rewards than introverts, they are more likely to have a pleasant

affect and to participate in social situations (Lucas, Diener, Grob, Suh, Shao, 2000). These ideas

are merely suggestions. While many empirical studies have shown a moderate to strong link

between personality and well-being, the proposed mechanisms justifying the relation between

extroversion and happiness are theoretically rather than empirically founded. Accordingly, "it is

possible (and even likely) that the association between extraversion and positive affect is

multiply determined" (Lucas & Baird, 2004, p. 482). All of the above mechanisms and none of

the above mechanisms may explain the link between extroversion and well-being.

Holes in the Dominant Literature

Extroversion and subjective well-being appear to be unrelated psychological constructs.

Extroversion is a permanent personality trait characterized by sociability, activity, pleasant

affect, gregariousness, warmth, assertiveness, and excitement seeking (Costa & McCrae, 1992).

Subjective well-being is a construct encompassing positive affect, life satisfaction, and happiness

(Argyle & Lu, 1990). From the above definitions, it is apparent that both extroversion and

subjective well-being measure affectivity (a fleeting positive or negative emotional state) (Yik &

Russell, 2001). For this reason, researchers propose that pleasant affect explains the link between

extroversion and happiness (Tellegen 1985, Watson & Clark 1997). Specifically, researchers

rationalize that because both constructs measure affectivity, by definition, they should correlate

(Yik & Russell, 2001).

Empirical analyses correlating extroversion and affect without removing affect from the

measures of introversion-extroversion are questionably valid. If affect were to be extracted from

measures of extroversion, researchers cannot predict whether or not a significant relation would

still exist between happiness and extroversion. Therefore, the removal of positive affect from

extroversion measures might not support the commonly held belief that extroverts are inherently

happier than introverts. Moreover, it might provoke researchers to investigate the relation between well-being and other aspects of personality. In particular, it could facilitate research into the happiness of individuals at the middle (ambivert) and opposite (introvert) loci of the introversion-extroversion personality dimension.

Research validating the presence of the happy introverts is sparse. In 2001, Hill and Argyle proposed that introverts derived their happiness from their inner lives, from solitary leisure activities, and from social activities involving a few close companions. The researchers believed that introverts experienced a different type of happiness than extroverts. They found that happy introverts and happy extrovert did not report markedly different amounts of interactions with close companions. They also found that social behavior and a preference for leisure activities were either non-significant or practically non-significant between introverted and extroverted participants. In sum, the authors proposed the existence of the happy introvert, but the data showed no differences between introverts and extroverts on the study variables. While these findings were significant, they, like all introversion-extroversion research, are limited by the narrow operationalization of introversion-extroversion.

Analyses of the relation between introversion-extroversion and subjective well-being are challenging. Both constructs are operationally defined in various ways. The lack of a universal definition for introversion, extroversion, and well-being make it exceedingly difficult for researchers to compare cross-study findings and gather a coherent body of evidence demonstrating the relation between introversion-extroversion and well-being. Moreover, it makes it hard for researchers to agree on a set of introversion-extroversion facets to model introversion-extroversion. Current introversion-extroversion facet models vary from four to five factors (e.g. Grimes, Cheek, and Norem, 2011; Cheek, Brown, and Grimes, 2014; Jung, 1923).

Research indicates that the degree of correlation between extroversion and subjective well-being varies when analyzing different facets of extroversion and different types of subjective well-being (DeNeve & Cooper, 1998 as cited in Lucas & Fujita, 2000). Therefore, personality and happiness research must evaluate all meaningful facets of introversion-extroversion and all types of subjective well-being. Researchers must use an expansive body of literature to evaluate both the relation between introversion facets and well-being and the relation between extroversion facets and well-being. Furthermore, researchers must not disregard the possibility of the happy introvert.

Susan Cain's Introversion

The publication and success of Susan Cain's (2012) book *Quiet: The Power of Introverts in a World That Can't Stop Talking* is culminating in an introversion awareness movement titled "the Quiet Revolution." Cain, a writer and researcher dissatisfied with both the extroverted ideal and society's partiality towards extroversion developed and published a 20-item Quiet Introversion Questionnaire. The scale measures personality traits such as impulsivity, activity, a preference for solitude, a preference for small scale social activities, an aversion for conflict, and a tendency to be a good listener. The informal questionnaire was created as a tool to aid readers in understanding where they exist on the introversion-extroversion continuum. Cain interpreted her Quiet Questionnaire as an introversion-extroversion measure. Because society and research upholds extroversion as the preferred personality trait, Cain reversed the scoring of her introversion-extroversion measure. For the Quiet Introversion Questionnaire, high scores indicate introversion and low scores denote extroversion. Nonetheless, the psychometric properties of the measure are unknown. The questionnaire has never been scientifically

validated. In order to investigate the validity of Cain's Quiet Questionnaire, the scale must be factor analyzed and examined in relation to other measures of introversion-extroversion.

Introversion-Extroversion

Introversion and extroversion are complex, multi-faceted personality constructs. Introduced by Jung in 1923, introversion and extroversion are assumed to be dichotomous halves of the introversion-extroversion personality dimension. Introverts are thought to be reflective, shy, thoughtful individuals with rich, internal worlds, and extroverts are thought to be adaptive, trusting, happy individuals with a tendency to take risks. Research characterizes introverts as "those who allow themselves to be determined principally by the subject," and extroverts as "individuals whose motivations are mainly conditioned by the outer object" (Jung, 1923, p.33). Despite the stark contrast between the two personality constructs, Jung (1923) suggests that people are neither introverts nor extroverts. He proposes that the two personality characteristics coexist within a person and introversion and extroversion are attitudes or psychic energies that demonstrate different "fundamental functions" (p. 34). To this end, people may not be an introvert or an extrovert but they do have a predilection toward one of the four "functions" of introversion-extroversion: sensation, thinking, feeling, and intuition (Jung, 1923, p.34).

Both pre and post-Jungian researchers define introversion-extroversion as a dimension encompassing social interaction (e.g. McDougall, 1910; Nicoll, 1917; Allport, 1921; Eysenck, 1947; and Guilford, 1959). Freyd (1924) defines extroversion as a "tendency to make social contacts" and introversion as a "tendency to withdraw from social contacts" (p. 74-75). However, to narrowly operationalize introversion-extroversion as a personality dimension describing an individuals' preference for social interaction constrains the construct. Carrigan (1960) states that introversion-extroversion literature does not conclusively indicate that

introversion-extroversion are a single factor construct. Rather, there are inconsistencies in the literature regarding not only the definition of introversion-extroversion, but also the existence of, definition of, and number of introversion-extroversion facets. As there is no universal definition for introversion-extroversion, researchers continue to introduce, debate, eliminate, and recycle facets of the personality dimension (e.g. Guilford & Guilford, 1936; Depue & Collins, 1999; Lucas et al., 2000; Ashton et al., 2002; DeYoung, Quilty, & Peterson, 2007). In addition, researchers continue to review and create scales to empirically investigate the many facets of introversion-extroversion (e.g. Grimes, Cheek, & Norem, 2011; Cheek, Brown, & Grimes, 2014).

Researchers aim to resolve inconsistencies in the literature by proposing a set of introversion-extroversion facets with meaningfully distinguishable content. To do so, they "must come to an agreement on the ability or constellation of abilities by which the extrovert-introvert opposition is identified. They must satisfy themselves that there are no other opposition of personality extremes involving other combinations of traits, which may be fully as important as extrovert-introvert" (Freyd, 1924, p. 86). Researchers must ensure that each facet of introversion-extroversion is meaningfully distinguishable from all other proposed types. The present study aims to identify and review the extant literature on introversion-extroversion facets to determine whether a four or five factor model is appropriate for the study of the two personality constructs (Guilford, 1934; Murray, 1938).

Extroversion facets.

As personality researchers cannot reach an agreement regarding the many facets of extroversion, the researcher aims to use the following four facets: sociability, assertive

ascendance, venturesomeness, and introspectiveness to effectively organize, review, and capture

the distinctive features of extroversion.

Sociability.

In 1936, Guilford and Guilford proposed that within the personality dimension of

introversion-extroversion there is a social "S factor" (p.121). The researchers characterized this

factor as a measure of both shyness and the two extremes of sociability—social withdrawal and

social dependence. The "S factor," therefore, characterizes both individuals who actively avoid

and pursue social interaction (Guilford & Guilford, 1936). Similar to Guilford and Guilford,

Costa and McCrae (1992; 2008) suggest that there is a social facet of introversion-extroversion.

They believe the sociability facet to be composed of two distinct components—warmth and

gregariousness. The warmth aspect measures an individual's sociability, friendliness,

talkativeness, and compassion. The gregariousness facet measures an individual's sociability,

superficiality, liveliness, and pleasure-seeking.

Assertive ascendance.

In addition to a social facet, introversion-extroversion has a dominance component. High

scorers on the dominance facet are generally perceived to be aggressive, competitive, and

forceful, and low scorers are typically perceived to be submissive, non-aggressive, and

accommodating. When Guilford and Guilford's factor analysis (1936) first yielded this

introversion-extroversion facet, the researchers designated it the "masculine-ideal" or "M factor"

(p.121). When contemporary researchers rediscovered this dominance facet, they rebranded it

assertiveness (Costa & McCrae, 1992; DeYoung et al., 2007), agency (Depue & Collins, 1999),

and ascendance (Watson & Clark, 1997; Lucas et al., 2000). Researchers describe assertiveness,

agency, and ascendance facets with descriptive adjectives such as confident, dominant, forceful,

and exhibitionist (Costa & McCrae, 1992; DeYoung et al., 2007; Depue & Collins, 1999;

Watson & Clark, 1997; Lucas et al., 2000).

   Venturesomeness.

   Guilford and Guilford (1936) also identified an emotional, "E factor" in their analysis of

the personality dimension introversion-extroversion (p. 121). Their proposed "E factor"

measures an individual's spontaneity, tendency to daydream, reaction to excitement, and ability

to adapt. Equally, two of the NEO "Big-Five" extroversion subscales—activity and excitement

seeking—examine the emotional introversion-extroversion factor (Costa & McCrae, 1992). The

NEO activity facet measures arousability, inertia, energy, stimulation, and busyness. The NEO

excitement seeking scale measures adventurousness, daring, impulsivity, and sensation seeking

(Costa & McCrae, 2008). Nonetheless, researchers dissatisfied with Costa and McCrae's

separate activity and excitement seeking facets suggest that a better classification for the

emotional facet of introversion-extroversion exists. Researchers propose that the emotional facet

of introversion-extroversion should be named venturesomeness. Venturesomeness measures an

individual's excitement seeking, sensation seeking, and a desire for change (Watson & Clark,

1997; Lucas et al., 2000).

   Positive affect.

   Positive affect is shown to be a correlate of extroversion and well-being. In the past, it

was unwittingly built into many measures of extroversion (Costa & McCrae, 1980). Now, many

researchers consider affect to be a facet of introversion-extroversion, and they intentionally

include it in measures of extroversion. For example, Costa and McCrae (1992) define a "positive

emotions" introversion-extroversion facet that measures an individual's joy, cheer, happiness,

and temperament (Costa & McCrae, 1992). Other researchers have alternatively proposed an

enthusiasm (DeYoung et al., 2007) and affectivity (Watson and Clark, 1997) facets to measure

the positive emotion aspect of introversion-extroversion. The enthusiasm facet measures

friendliness and positive emotion, and the positive affectivity facet measures an individual's joy

and enthusiasm (DeYoung et al., 2007; Watson & Clark, 1997).

> ### *Introspectiveness.*

The thinking component of introversion-extroversion was proposed by Jung (1923). It

characterizes individuals who suppress their external emotions and feelings so as not to impede

their internal thoughts. This logical and intellectual aspect of introversion-extroversion centers

on one's inner life and introspectiveness. Of the five components extracted from Guilford and

Guilford's factor analysis of introversion-extroversion, their "factor T" best encompasses the

cognitive component of introversion-extroversion (Guilford & Guilford, 1936, p. 122). "Factor

T" (thinking) measures an individual's introspection, intellect, hard-work, and leadership.

Equally, Grimes, Cheek, and Norem's (2011) thinking introversion domain evaluates the

introspective, cognitive aspect of introversion-extroversion.

Some researchers do not believe that introspectiveness is an aspect of introversion-

extroversion. Costa and McCrae (1992) propose that introspectiveness does not belong within

their six-factor extroversion model (warmth, gregariousness, assertiveness, activity level,

excitement-seeking, and positive emotions). The researchers propose that their openness to

experience factor better captures an individual's intellectual curiosity, imagination, inner life,

feelings, and values.

> ### **Introversion domains.**

As introversion is fundamentally the inverse of extroversion, the above facets also

dominate the literature on the many domains of introversion. The facets of introversion are

operationally defined by low sociability, low assertiveness, low venturesomeness, and high

introspectiveness. The present study examines the four factor model of introversion-extroversion

proposed by Grimes, Cheek, and Norem (2011) and later adapted by Cheek, Brown, and Grimes

(2014) as an appropriate model of the introversion domains.

     Social, thinking, anxious, and restrained introversion.

     Capturing Jung's (1923) introversion-extroversion "functions"—sensation, thinking,

feeling, and intuition—Grimes, Cheek, and Norem (2011) propose four domains of

introversion—social, thinking, anxious, and inhibited introversion. The researchers suggest that

introversion is a combined construct of low sociability, shyness and rumination,

introspectiveness, and low sensation and excitement seeking. Furthermore, they conclude that

there exists a convergence among three of the domains (social, anxious, and inhibited

introversion). Expanding the work of Grimes, Cheek, and Norem (2011), Cheek, Brown, and

Grimes (2014) identify the four introversion facets as social, thinking, anxious, and restrained

introversion (see Table 1 for operationalized definitions and sample items for each of the

introversion facets).

Table 1

Descriptive Adjectives and Sample Items for the Four Introversion Facets

Facet	Descriptive Adjectives	Sample Items
Social Introversion	Shy, withdrawn, antisocial	"After spending a few hours surrounded by a lot of people, I am usually eager to get away by myself" "I try to structure my day so that I always have some time to myself"
Thinking Introversion	Introspective, observant	"I have a rich, complex inner life" "I value my personal self-evaluation, that is, the private opinion I have of myself"
Anxious Introversion	Hypersensitive, nervous, self-conscious	"I feel painfully self-conscious when I am around strangers" "My thoughts are often focused on episodes of my life that I wish I'd stop thinking about"
Restrained Introversion	Reserved, slow-paced	"I often feel sluggish" "For relaxation I like to slow down and take things easy"

Note. Sample items from Cheek, Brown, and Grimes (2014).

Happiness and Subjective Well-being

Happiness is a difficult construct to explain. It is multi-faceted and ambiguous. As Morris

(2006) describes it:

"At the very moment when something wonderful happens to us, there is a surge of

emotion, a sensation of intense pleasure, an explosion of sheer delight—and this is the

moment when we are truly happy. Sadly, it does not last very long. Intense happiness is a

transient, fleeting sensation. We may continue to feel good for quite a while, but the

joyful elation is quickly lost" (p.12).

Are joyful experiences the epitome of happiness? Moreover, are wealth (Kasser & Ryan, 1996),

relatedness (belongingness) (Murphy, 1954; Baumeister & Leary, 1995), attachment (Hazan &

Shaver, 1987), intimacy (Nezlek, 2000), and goal pursuit (McGregor & Little, 1998) components

of happiness? Wilson (1967) suggests that the face of happiness is that of a "young, healthy,

well-educated, well-paid, extroverted, optimistic, worry free, religious, married person with high

self-esteem, high job morale, modest aspirations, of either sex and of a wide range of

intelligence" (p. 294). Provided this narrative, much of the present happiness literature aims to

investigate Wilson's theoretical beliefs of happiness.

In contemporary literature, happiness is used interchangeably with subjective well-being

(a measure of how individuals evaluate their life satisfaction, physical and psychological well-

being, positive emotion, income, and the absence of negative emotions) (Argyle, 2013). High

levels of subjective well-being indicate that an individual is both satisfied with their life and

generally un-afflicted by pain or negative affect (Diener, 2000). Low levels of subjective well-

being indicate that an individual might experience depression and low life satisfaction, score

high on measures of repressive tendencies, and emphasize materialistic goals (DeNeve &

Cooper, 1998; Kasser & Ryan 1996).

The study of happiness, well-being, and positive emotion is a relatively new field of

psychological investigation. Researchers generally prioritize the study of depression—the

inverse of happiness—as depression, unlike happiness, can be damaging and pervasive (Diener, 2009). Whereas happiness is marked by positive emotion and joy, depression is marked by rumination and negative emotion (Argyle, 2013). Thus, Wilson's question "is happiness equivalent to the absence of depression, anxiety, or neurosis?" remains pertinent (1967, p. 303). Research indicates that the absence of depression is a component of subjective well-being (Argyle, 2001). Research also shows that happiness is not the absence of mental illness. Therefore, the absence of depression does not indicate the presence of happiness (McGreal & Joseph, 1993; Ryan & Deci, 2001). Furthermore, positive emotion and joy do not fully capture the experience of happiness. There are many other aspects of happiness to consider. The present study aims to review much of the present literature on the many types of well-being (i.e. life satisfaction, self-esteem, subjective happiness, and pleasure derived from leisure activities).

Life satisfaction.

Life satisfaction is a cognitive component of well-being. It measures one's perception of his or her quality of life (Diener, 1994). Accordingly, it is largely subjective. Research shows that life satisfaction ratings are based on mood (Kahneman, Krueger, Schkade, Schwarz, & Stone, 2004), life achievements (Oishi, Diener, Suh, & Lucas, 1999), excitement in life (Oishi, Schimmack, & Colcombe, 2003), and finances (Diener & Diener, 1995). Research also shows that people place different values on the above variables and their physical well-being when rating life satisfaction (Diener, Emmons, Larsen, & Griffin, 1985). Thus, researchers propose that the cheerfulness (positive affect) facet of extroversion and the depression aspect of neuroticism explain why people report different amounts of life satisfaction (Schimmack, Oishi, Furr, & Funder, 2004).

Self-esteem.

Research evaluating the relation between happiness and self-esteem indicates that the two constructs correlate significantly, .47 (Diener & Diener, 1995) and .58 (Lyubomirsky, Tkach, & DiMatteo, 2006), with one another. Nonetheless, both the mechanism and the direction of this relationship are unknown. It is unclear whether happiness causes high self-esteem or high self-esteem causes happiness (Baumeister, Campbell, Krueger, & Vohs, 2003). As happiness and self-esteem correlate differently with other variables, researchers agree that happiness and self-esteem are not the same construct. Happiness is an emotional experience marked by positive emotion and joy (Argyle, 2013). Self-esteem is a construct composed of two factors: sense of self-worth and positive self-evaluation (Cheng & Furnham, 2003).Moreover, it is a measure of perceived self-adequacy, self-acceptance, and self-worth. Whereas happiness is a broad emotional construct, self-esteem is a narrow, cognitive construct (Lyubomirsky et al., 2006). As introverts are generally more cognitively driven, the author aims to determine whether introverts report different levels of self-esteem scores than extroverts.

Enjoyment of leisure activities.

Data show that leisure activities significantly correlate with subjective well-being (DeNeve & Cooper, 1998; Argyle, 2001; Furnham, 1991). Argyle and Lu (1990) found that the more people participate in social leisure activities the higher their reported happiness. Moreover, they found that frequent participation in social activities is related to psychological well-being. Nonetheless, choice of participation in social activities is related to personality (Hills & Argyle, 1998). Personality influences choice of leisure activities (Larsen, Diener, & Emmons, 1986). Miller (1991) found that people participate in leisure activities congruent with their personality type. Thus, extroverts, relative to introverts, are more likely to participate in social leisure activities, and introverts, relative to extroverts, are more likely to participate in solitary leisure

activities (Diener et al., 1984). The present study aims to reproduce previous findings that

introverts and extroverts prefer different leisure activities. Adapting items from subscales of the

Pleasant Events Schedule (MacPhillamy & Lewinsohn, 1982), the present study aims to

determine whether introverts and extroverts experience different amounts of enjoyability in

nature and introverted leisure activities.

Aims of the Present Study

The present study will investigate the psychometric characteristics of Susan Cain's

introversion scale; evaluate the correlations between Susan Cain's (2012) introversion scale and

the four facets of introversion (Cheek, Brown, and Grimes, 2014); and explore the correlations

between measures of introversion and five measures of well-being. The study will be the first

empirical analysis of Cain's Quiet Questionnaire, and it will be the first application of the 40-

item Social, Thinking, Anxious, and Restrained (S.T.A.R.) Introversion Scale. Correlations

between the Quiet Introversion Scale and S.T.A.R. Introversion will evaluate whether the scale

items measure the same constructs. Thus, the author aims to show that the four facet approach is

an appropriate way to measure introversion. Furthermore, the author aims to show that introverts

can be equally as happy as extroverts.

Hypotheses

1. A factor analysis of Cain's 20-item Quiet Introversion Questionnaire will not show

    distinguishable social, thinking, anxious, and restrained introversion subscales.

2. Cain's Quiet Introversion measure will correlate strongly with social introversion.

    a. Because previous research showed a moderate convergence of social, anxious,

       and restrained introversion, Cain's introversion measure will have moderate

       correlations with anxious and restrained introversion.

    b. Cain's introversion measure will not correlate with thinking introversion.

3. Depending on the operational definitions (i.e. measures) of introversion-extroversion used, introverts and extroverts will report different experiences of happiness and subjective well-being:

    a. Extroverts will score higher on measures of general happiness (as measured by the Subjective Happiness Questionnaire and the Satisfaction with Life Scale) compared to introverts.

    b. Some other aspects of happiness may be more related to introversion than to extroversion (e.g. self-esteem, Morris Happiness, and leisure activities).

        i. Introverts will report more enjoyment of solitary leisure activities than extroverts.

       ii. Introverts and extroverts will not report significant differences in their enjoyment of nature activities.

Methods

Participants

Study participants were 515 Amazon Mechanical Turk (MTurk) Workers who received $1.50 in exchange for their voluntary participation.. MTurk workers and university subject pool participants have been shown to perform differently on unsupervised surveys. MTurk workers are also shown to be more attentive to instructions compared to college subject pool participants (Hauser & Schwarz, in press). In the present study, participant ages ranged from 18 to 75 years and the mean participant age was 35.1 years old with a standard deviation of 11.8 years. Of 5 gender identity options (female, male, transgender, I prefer:, and I prefer not to answer), participants self-identified as 48.7% female and 51.3 % male. The ethnicity of the sample was

80.8% White/Caucasian, 6.4% Black/African American, .4% African/Caribbean, .4%

Black/African, .8% Hispanic/European Continent, 1.4% Hispanic/Central American, .6%

Hispanic/South American, 2.3% Latino, 3.3% Asian-American, .8% South Asian, .4% East

Asian, .6% Southeast Asian, .2% Middle Eastern, .2% Native American, .2% Hawaiian/Pacific

Islander, and 1.2% Biracial/ Multiethnic. The annual income of the sample ranged from "less

than $15,000" to "over $150,000." The mean annual income of participants was between

$30,000 and $45,000. 59.2.% of participants reported having an Associate's Degree or higher.

Measures

  Introversion. We assessed participant's introversion-extroversion with Susan Cain's

(2014) Quiet Introversion Questionnaire. The Quiet Questionnaire is a self-report instrument

composed of 20 true/false statements. For the purpose of this study, we assessed the 20

questionnaire items on a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly*

agree). A sample item from the Quiet Questionnaire is "I enjoy solitude." No psychometric

analyses of this scale have been previously conducted. Scores were calculated by summing

participants' responses on each scale item. High scores indicate introversion and low scores

indicate extroversion.

  The second introversion measure used was the Social, Thinking, Anxious, and Restrained

(S.T.A.R.) Introversion Scale (Cheek, Brown, & Grimes, 2014). The S.T.A.R. Introversion Scale

is a 40-item measure that assesses participants' social, thinking, anxious, and restrained

introversion on a 5-point Likert scale ranging from 1 (*Very uncharacteristic or untrue, strongly*

disagree) to 5 (*Very characteristic or true, strongly agree*). Some items were reverse-scored. Our

analysis of the S.T.A.R. Introversion scale showed the Cronbach's alpha of the overall scale to

be .87.

Well-being. We measured participants' well-being with the Subjective Happiness Scale (Lyubomirsky & Lepper, 1999). The four item measure assesses participants' perceived subjective happiness on a 7-point Likert scale ranging from 1 (*extremely unhappy*) to 7 (*extremely happy*). The fourth scale item was reverse coded. Scale scores were calculated by summing the participants' score on each of the four items. A sample Subjective Happiness item is "some people are generally very happy. They enjoy life regardless of what is going on, getting the most out of everything. To what extent does this characterization describe you?" The Subjective Happiness scale has been shown to have test-retest reliability; construct, convergent, and discriminant validity; and a Cronbach's alpha between .79 and .94 (Lyubomirsky & Lepper, 1999). In the present study, the Subjective Happiness scale had a Cronbach's alpha of .91.

We also evaluated participants' well-being with the Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985). The scale is composed of five items, and it measures participants satisfaction with life on a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). A sample questionnaire item is "the conditions of my life are excellent." Scale scores were calculated by summing participant scores on the five scale items. The questionnaire has test-retest reliability, construct validity, concurrent validity, and an internal consistency between .83 and .87 (Diener et al., 1985). In the present study, the reliability of the measure was (α = .93).

Participants' self-esteem was analyzed using the Single-Item Self-Esteem Scale (Robins, Hendin, & Trzeniewski, 2001). The single-item measure evaluates global self-esteem on a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The item states "I have high self-esteem." The single-item measure is shown to have predictive validity and convergent validity with the Rosenberg Self-Esteem measure (Robins, Hendin, & Trzeniewski, 2001).

Eight of the Morris Happiness types defined in the Morris Multiple Happiness Inventory were used to evaluate study participants experienced types of happiness (Furnham & Christoforou, 2007). The eight item happiness scale was extracted from the 17-item, five factor scale used by Furnham and Christoforou (2007). The measure is scored on a 6-point scale from 1 (*not at all*) to 6 (*very much*). The Morris Multiple Happiness Inventory has construct validity (Furnham and Christoforou, 2007). In the present study, the internal consistency of the measure was (α =.60) for all 8 items and (α =.70) with the removal of items 1 and 5 from the analysis (see first section of table 2).

Forty leisure activities from the 320-item Pleasant Events Schedule (MacPhillamy & Lewinsohn, 1982) were used to evaluate participants' pleasure from participating in nature and introversion related activities. Both the pleasant introverted and the pleasant nature subscales contained twenty questionnaire items. The questionnaire was scaled on a 5-point Likert scale from 1 (*not pleasant or enjoyable*) to 5 (*very pleasant or enjoyable*). The original Pleasant Events Schedule has test-retest reliability, concurrent validity, predictive validity, and construct validity (MacPhillamy & Lewinsohn, 1982). The present study has a Cronbach's alpha of .92 for the overall 40-item scale and a Cronbach's alpha of .91 and .87 for the nature and the introverted activity subscales respectively (see middle [nature activities] and bottom [introverted activities] of table 2).

Table 2

Scale Items for Morris Happiness and Pleasant Leisure Activities

Scale	Items
Morris Happiness	"Happiness derived through voluntary participation in high risk activities such as gambling or bungee-jumping." "Happiness derived through contemplation, inward thinking, and meditation." "Happiness derived through taking on new projects and experiences and working through them successfully. Happiness through experience and achievement" "Happiness derived through the suspension of reality by way of daydreaming, reading, writing, or watching television/ movies/play." "Happiness derived through religious affiliation and/or spiritual fulfillment. Happiness derived through both believing in and following religious tenants." "Happiness derived through voluntary intellectual stimulation such as playing a game, solving a puzzle, conducting research, or creating artistic pieces." "Happiness derived through dancing, singing, listening to music, playing sports, participating in religious celebration, etc. Happiness from participating in activities that follow a beat." "Happiness derived through pleasure (i.e. eating delicious foods, pampering oneself, sexual activity, etc.)"
Pleasant Nature	"Being in the country" "Kicking leaves, sand, pebbles, etc." "Rock climbing or mountaineering" "Seeing or smelling a flower or plant" "Breathing clean air" "Boating (canoeing, kayaking, motorboating, sailing, etc." "Horseback riding" "Exploring (hiking away from known routes, spelunking, etc." "Looking at the stars or moon" "Watching wild animals" "Gardening, landscaping, or doing yard work" "Sitting in the sun"

Table 2-*continued*

Pleasant Nature- *continued*	"Listening to the sounds of nature" "Watching the sky, clouds, or a storm" "Gathering natural objects (wild foods or fruit, rocks, driftwood, etc." "Being in the mountains" "Birdwatching" "Hunting or shooting" "Going on field trips, nature walks, etc." "Fishing"
Pleasant Introversion	"Reading or writing stories, novels, poems, or plays" "Going to lectures or hearing speakers" "Talking to myself" "Solving a problem, puzzle, crossword, etc." "Thinking about myself or my problems" "Being with my friends" "Reading or writing essays or technical, academic, or professional literature" "Just sitting and thinking" "Having a drink by myself" "Going to a museum or exhibit" "Having daydreams" "Being alone" "Doing a project in my own way" "Having peace and quiet" "Writing a diary" "Reminiscing, talking about old times" "Being relaxed" "Thinking about an interesting question" "Starting a new project" "Solving a personal problem"

Note. Items adapted from the Morris Multiple Happiness Inventory (Furnham and Christoforou, 2007) and the Pleasant Events Schedule (MacPhillamy & Lewinsohn, 1982).

Aspects of identity.

The Personal Identity Orientation, Relational Identity Orientation, Collective Identity

Orientation, and the Social Identity Orientation Scales of the Aspects of Identity Questionnaire

(AIQ) were used to survey participants' identity characteristics (Cheek, 1989). The Personal and Relational Identity scales each contain 10 items, and the Social and Collective Identity scales each contain 8 items. The scales are scored on a 5-point Likert scale ranging from 1 (*not important to my sense of who I am*) to 5 (*extremely important to my sense of who I am*). A sample Personal Identity item is "knowing that I continue to be essentially the same inside even though life involved many external changes." A sample Relational Identity item is "having mutually satisfying personal relationships." A sample Collective Identity item is "my feeling of belonging to my community." A sample Social Identity item is "my social behavior, such as the way I act when meeting people." The Aspects of Identity Questionnaire is both valid and reliable. According to Jowkar and Latifian (2006), the Cronbach's alpha of the Aspects of Identity Questionnaire subscales is .55, .79, .69, and .69 for the Personal, Relational, Collective, and Social Identity Orientation Scales respectively. The present study found a Cronbach's alpha of .92 for the overall Aspects of Identity scale. The Cronbach alphas of the subscales were .83, .95, .84, and .85 for the Personal, Relational, Collective, and Social Identity items respectively.

Self-concept, self-consciousness, and belonging.

The Stability of Self-Concept Scale is a 6-item scale adapted from Franzoi & Reddish (1980). The scale is measured on a 5-point Likert scale ranging from 1 (*very uncharacteristic or untrue, strongly disagree*) to 5 (*very characteristic or true, strongly agree*). The scale measures participants' perceptions of self-concept through introspectiveness, and a sample Stability of Self-Concept item is "sometimes I feel as though I don't know who I really am, or who is the "real me." In the present study, the Cronbach's alpha for the Stability of Self-Concept Scale was ($\alpha = .83$).

The 20-item Revised Self-Consciousness Scale was used to survey participants' private self-consciousness, public self-consciousness, and social anxiety (Scheier & Carver, 1985). The scale is composed of 7 private self-consciousness items (e.g. "I'm always trying to figure myself out)", 7 public self-consciousness items (e.g. "I usually worry about making a good impression)", and 6 social anxiety items (e.g. "it takes me time to get over my shyness in new situations)" scored on a 5-point Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*). The scale measures participants' self-reflection and self-perception about internal and external aspects of self. It has test-retest reliability and reported Cronbach alphas of .75, .84, and .79 for the private self-consciousness, public self-consciousness, and social anxiety subscales respectively (Scheier & Carver, 1985). In the present study, the internal reliability of the measure was .91. The Cronbach's alpha of the subscales was ($\alpha = .75$) private self-consciousness, ($\alpha = .80$) public self-consciousness, and ($\alpha = .88$) social anxiety.

Participants' belongingness was assessed with the Single-Item Need to Belong Scale (Nichols & Webster, 2013). The single-item scale is scored on a 5-point Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*), and asked participants to rate the extent to which they agree or disagree with the statement "I have a strong need to belong." The measure has convergent validity, test-retest reliability, construct validity, content validity, and face validity. The scale also has a reported Cronbach's alpha of .84 across four time points (Nichols & Webster, 2013).

Procedure

All participants were recruited using Amazon Mechanical Turk. Participants were provided a brief informational statement regarding the nature of the study, and they chose to voluntarily participate in the study. After giving their informed consent, participants completed

several self-report questionnaires via Qualtrics survey software. Upon completing the study,

participants were provided with a debriefing statement that revealed the purpose of the study and

a completion code to receive payment. Originally, 525 questionnaires were filled out. Ten (2%)

of the questionnaires were incomplete. All incomplete surveys were removed from the data

analyses.

Ethics

The Wellesley College Psychology Ethics Review Board approved the use of each of the

study measures prior to data collection, and each participant gave informed consent prior to

participating in the study. All subjects were aware that their participation was completely

voluntary, and they could withdraw from the study at any time without penalty.

Results

In preliminary data analyses, results were examined separately for male and female

participants. The overall pattern of results did not indicate large or interpretable gender

differences (Table 3). As a result, the issue of potential gender differences in correlations among

the scales has been set aside until the impending collection of a replication sample has been

completed. All psychometric analyses reported in the present study will be combined for male

and female participants. The current sample is divided evenly between self-identified male and

female participants.

Table 3

Difference between Women and Men on Study Variables (t-tests)

	Combined n=515	Men n= 264		Women n= 251				
	M	**M**	**SD**	**M**	**SD**	**t**	**d$_a$**	**p**
Quiet Introversion	73.09	72.58	9.06	73.63	9.25	1.31	.11	.19

Table 3-*continued*

Social Introversion	35.82	35.59	7.00	36.07	6.89	.79	.07	.43
Thinking Introversion	37.04	37.11	6.36	36.97	7.26	-.22	.02	.82
Anxious Introversion	29.86	29.01	8.70	30.76	8.94	2.25	.20	.03
Restrained Introversion	32.16	31.12	5.82	33.25	6.11	4.05	.36	.00
Subjective Happiness	18.79	18.93	5.93	18.63	5.77	-.58	.05	.56
Satisfaction with Life	21.38	20.50	8.22	22.32	7.77	2.58	.23	.01
Self-Esteem	3.32	3.50	1.14	3.14	1.16	-3.51	.31	.00
Morris Happiness	26.38	26.29	4.90	26.48	5.00	.44	.04	.66
Pleasant Nature	3.46	3.33	.69	3.59	.65	4.37	.39	.00
Pleasant Introversion	3.33	3.30	.58	3.37	.53	1.45	.13	.15
Personal Identity	38.59	38.18	5.72	39.02	5.97	1.64	.14	.10
Relational Identity	38.14	36.72	9.00	39.64	7.43	4.00	.35	.00
Collective Identity	21.64	20.82	7.18	22.50	6.92	2.70	.24	.01
Social Identity	20.36	20.32	5.58	20.41	5.18	.19	.02	.85
Stability of Self	21.14	21.53	4.46	20.74	5.20	-1.84	.16	.07

	Table 3-*continued*							
Private Self-Consciousness	23.87	24.03	4.52	23.70	5.20	-.82	.07	.41
Public Self-Consciousness	23.64	23.30	5.31	23.99	4.76	1.55	.14	.12
Social Anxiety	19.95	19.26	5.92	20.68	6.02	2.70	.24	.01
Need to Belong	2.71	2.67	1.09	2.76	1.09	1.03	.08	.30

Note. The *d* statistic reported in the table is Cohen's d, an effect size for the difference between two means.

As may be seen in the table, there were medium ($d > .30$) effect sizes between men and women on measures of Restrained Introversion, Self-Esteem, Pleasant Nature Activities, and Relational Identity. In particular, women scored higher than men on Relational Identity, Pleasant Nature Activities, and Restrained Introversion measures. The largest effect size, $d = .39$, was found between men and women on the 20- item Pleasant Nature Activity inventory. Notable effect sizes ($d s = .20$ to .39) were found between men and women on measures of Social Anxiety, Anxious Introversion, Satisfaction with Life, and Collective Identity (see table 3).

To explore the number of concepts measured by Cain's 20-item Quiet Introversion Questionnaire, we performed a principal axis factor analysis with Kaiser Normalization of the scale (Table 4). Inspection of the eigenvalues in the scree plot indicated that it would be appropriate to rotate two factors. The two factor varimax rotation shows that 14 items had primary loadings above .24 onto the first factor, and six items had primary loadings above .30 onto the second factor.

Table 4

Items and Rotated Factor Loading of the Quiet Introversion Questionnaire

	Factor loading	
	Factor 1	Factor 2
	Social, Anxious, and Restrained (SAR) Introversion	
I prefer one-on-one conversations to group activities (1)	.53	.29
I often prefer to express myself in writing (2)	.24	.13
I enjoy solitude (3)	.57	.23
I dislike small talk, but I enjoy talking in depth about topics that matter to me (5)	.29	.25
I'm not a big risk-taker (7)	.41	.17
I like to celebrate birthdays on a small scale, with only one or two close friends or family members (9)	.51	.32
People describe me as "soft-spoken" or "mellow" (10)	.32	.26
I prefer not to show or discuss my work with others until it's finished (11)	.42	.19
I dislike conflict (12)	.29	.19
I do my best work on my own (13)	.47	.33
I feel drained after being out and about, even if I've enjoyed myself (15)	.65	.07

Table 4-*continued*

SAR Introversion-*continued*

I often let calls go through to voice mail (16)	.46	-.03
If I had to choose, I'd prefer a weekend with absolutely nothing to do to one with too many things scheduled (17)	.65	-.05
I don't enjoy multitasking (18)	.35	-.11

		Introversive Absorption
I seem to care less than my peers about wealth, fame, and status (4)	.18	.30
People tell me that I'm a good listener (6)	-.08	.48
I enjoy work that allows me to "dive in" with few interruptions (8)	.16	.40
I tend to think before I speak (14)	.13	.35
I can concentrate easily (19)	-.21	.40
In classroom situations, I prefer lectures to seminars (20)	.20	.29

Note. The numbers in parentheses correspond to the number of the item in the Quiet Introversion Scale (Cain, 2012). n=515.

An inspection of the two columns indicate that the item content of first factor bears a strong resemblance to the social, anxious, and restrained (SAR) introversion scales (Cheek, Brown, & Grimes, 2014). The item content of the second factor bears some resemblance to the Absorption construct proposed by Tellegen and Atkinson's (1974) and revised by Jamieson

(2005). Absorption is a measure of deeply involved, fully committed, attentional control to an object of experience. Moreover, it is composed of five factors including "Aesthetic Involvement in Nature, Altered States of Consciousness, Imaginative Involvement, ESP experiences, and Synaesthesia" (Tellegen & Atkinson, 1974; Jamieson, 2005). In the present study, the factor that captures this construct is tentatively named Introversive Absorption (see table 4).

The first Quiet Introversion factor, SAR Introversion, contains eight items that correlate strongest with social introversion, two items that correlate strongest with anxious introversion items, two items with near equal correlates with social and anxious introversion, one item that correlates strongest with restrained introversion, and one item that correlates strongest with thinking introversion (Table 5). The second Quiet Introversion factor, Introversive Absorption, contains two items that correlate strongest with social introversion, three items that correlate strongest with thinking introversion, and one item that correlates strongest with anxious introversion. The item with the highest loading (.65) on the proposed SAR Introversion factor is the social introversion item "I feel drained after being out and about, even if I've enjoyed myself." The item with the highest loading (.48) onto the proposed Introversive Absorption factor is the thinking introversion item "people tell me that I'm a good listener" (refer to Table 5).

Besides the SAR Introversion and Introversive Absorption factors, no other Quiet Introversion factors were indicated in the factor analysis. Pending replication in a second sample, the present results supported the hypothesis that Cain's Quiet Introversion Scale would not yield four equally distinctive factors of Social, Thinking, Anxious, and Restrained Introversion. Nonetheless, the two obtained factors were meaningfully different constructs that correlated .31 with one another (Table 6).

Table 5

Correlations between S.T.A.R. Introversion and Susan Cain's Quiet Introversion Items

	Social Introversion	Thinking Introversion	Anxious Introversion	Restrained Introversion
SAR Introversion Items				
I prefer one-on-one conversations to group activities (1)	.49*	.14*	.30*	.23*
I often prefer to express myself in writing (2)	.12*	.28*	.18*	.03
I enjoy solitude (3)	.57*	.17*	.29*	.24*
I dislike small talk, but I enjoy talking in depth about topics that matter to me (5)	.30*	.17*	.19*	.04
I'm not a big risk-taker (7)	.29*	-.04	.29*	.51*
I like to celebrate birthdays on a small scale, with only one or two close friends or family members (9)	.48*	.10*	.22*	.23*
People describe me as "soft-spoken" or "mellow" (10)	.28*	.06	.30*	.21*
I prefer not to show or discuss my work with others until it's finished (11)	.28*	.24*	.33*	.08

Table 5-*continued*

SAR Introversion Items-*Continued*

I dislike conflict (12)	.13*	.02	.12*	.29*
I do my best work on my own (13)	.40*	.18*	.27*	.16*
I feel drained after being out and about, even if I've enjoyed myself (15)	.61*	.16*	.55*	.25*
I often let calls go through to voice mail (16)	.34*	.09*	.27*	.16*
If I had to choose, I'd prefer a weekend with absolutely nothing to do to one with too many things scheduled (17)	.47*	.06	.25*	.36*
I don't enjoy multitasking (18)	.22*	-.05	.25*	.21*

Introversive Absorption Items

I seem to care less than my peers about wealth, fame, and status (4)	.23*	.11*	.01	.08
People tell me that I'm a good listener (6)	-.03	.27*	-.11*	-.13*

Table 5-*continued*

Introversive Absorption Items- *continued*

I enjoy work that allows me to "dive in" with few interruptions (8)	.15*	.15*	.03	-.01
I tend to think before I speak (14)	.08	.21*	.04	.19*
I can concentrate easily (19)	-.05	.04	-.34*	-.11*
In classroom situations, I prefer lectures to seminars (20)	.19*	.11*	.18*	.02

Note. n=515.
*p <.05 level (two-tailed).

To test the relation between the Quiet Introversion scale and its two factor subscales and the four domains of introversion, we ran correlations between the Social, Thinking, Anxious, and Restrained Introversion scales; Cain's Quiet Introversion Scale; and Cain's SAR Introversion and Introversive Absorption subscales (Table 6). The data showed that the original 20-item Quiet Introversion Scale and the 14-item SAR Introversion factor correlated very strongly with one another, $r = .95$, $p< .01$. In contrast, the original 20-item Quiet Introversion Scale and the 6-item Introversive Absorption subscale showed a weaker correlation, $r = .60$, $p< .01$. Further, the SAR Introversion subscale contained 70% of the items and captured most of the variance in the overall Quiet Introversion scale.

Table 6

Correlations between Quiet Introversion and S.T.A.R. Introversion Scales (N= 515)

Variable	Quiet Introversion	SAR Introversion	Introversive Absorption	Social Introversion	Thinking Introversion	Anxious Introversion	Restrained Introversion
Quiet Introversion	(.78)						
SAR Introversion	.95$_a$	(.76)					
Introversive Absorption	.60$_a$	.31*	(.48)				
Social Introversion	.63*	.68*	.18*	(.84)			
Thinking Introversion	.28*	.22*	.28*	.01	(.86)		
Anxious Introversion	.43*	.53*	-.06	.53*	.07	(.90)	
Restrained Introversion	.35*	.41*	.02	.38*	-.15*	.29*	(.73)

Note. SAR = Social, Anxious, and Restrained. Alpha reliabilities are listed in parentheses on the diagonal. *n* =515.

$_a$ indicates a part-whole correlation involving overlapping items on the two measure.

* *p* <.01 level (two-tailed).

As may be seen in Table 6, there was a strong positive correlation between Cain's 20-item Quiet Introversion Scale and Social Introversion, *r* = .63, *p*< .01, a moderate positive correlation between Quiet Introversion and Anxious Introversion, *r* = .43, *p*< .01, and a moderate positive correlation between Quiet Introversion and Restrained Introversion, *r* = .35, *p*< .01. Cain's Quiet Scale also showed a modest correlation with Thinking Introversion, *r* = .28, *p*< .01. The Introversive Absorption factor retained aspect s of thinking introversion, and the two constructs had a modest intercorrelation, *r* = .28, *p* <.01, with one another. Moreover, a moderate convergence of social, anxious, and restrained introversion was evident among the three

introversion facet correlations (*rs* averging around .40). However, thinking introversion had near

zero correlations with social, anxious, and restrained introversion.

Table 7 reports the correlations of the four introversion domains (social, thinking,

anxious, and restrained introversion) with measures of self-concept, self-awareness (personal

identity, private self-consciousness, and public self-consciousness), the interdependent self

(relational, social, and collective identity), need to belong, and social anxiety.

Table 7

Correlations between S.T.A.R. Introversion and Stability of Self –Concept, Identity, Self-Consciousness, Need to Belong, and Social Anxiety

	Social Introversion	Thinking Introversion	Anxious Introversion	Restrained Introversion
Stability of Self-Concept	-.12*	-.03	-.45*	.10*
Personal Identity	-.05	.51*	-.12*	-.14*
Relational Identity	-.35*	.33*	-.21*	-.17*
Social Identity	.24*	.25*	.08	-.18*
Collective Identity	.29*	.16*	-.12*	-.24*
Private Self-Consciousness	.15*	.71*	.37*	-.07
Public Self-Consciousness	.01	.33*	.44*	-.01
Need to Belong	-.34*	.06	.09*	-.08
Social Anxiety	.54*	.02	.81*	.39*

Note. *n*=515. Overlapping items between Thinking Introversion and Private Self-Consciousness were removed for correlation analyses.
* *p* < .05 level (two-tailed).

As may be seen in the table, the strongest negative correlation is between Social Introversion items and participants reported need to belong, $r = -.34$, $p < .05$. The strongest positive correlation is between Anxious Introversion and Social Anxiety, $r = .81$, $p < .05$. Thinking introversion is strongly correlated with personal identity, $r = .51$, $p < .05$, and private self-consciousness, $r = .71$, $p < .05$. Thinking introversion is also moderately correlated with public self-consciousness, $r = .33$, $p < .05$. Social Anxiety shows a moderate to strong correlation with Restrained, $r = .39$, $p < .05$, and Social introversion, $r = .54$, $p < .05$. While Social, Thinking, and Restrained Introversion show zero or weak correlations with the Stability of Self-Concept measure, Anxious Introversion shows a significant negative correlation with Stability of Self-Concept. Moreover, Thinking Introversion has a moderate, positive correlation with Relational Identity while Social, Anxious, and Restrained Introversion have moderate, negative correlations with Relational Identity. While Social Introversion and Collective Identity show a modest positive intercorrelation, Restrained Introversion and Collective Identity show a modest negative intercorrelation (refer to Table 7).

Table 8 shows the correlations between Cain's Quiet Introversion Scale and its two subscales with measures of self-concept, aspects of identity, self-awareness, need to belong, and anxiety.

Table 8

Correlation between Quiet Introversion, SAR Introversion, and Introversive Absorption with Stability of Self –Concept, Identity, Self-Consciousness, Need to Belong, and Social Anxiety

	Quiet Introversion	SAR Introversion	Introversive Absorption
Stability of Self-Concept	-.03	-.15*	.28*

	Table 8-*continued*		
Personal Identity	.16*	.07	.31*
Relational Identity	-.02	-.10*	.20*
Social Identity	-.04	-.03	-.06
Collective Identity	-.14*	-.19*	.05
Private Self-Consciousness	.33*	.33*	.17*
Public Self-Consciousness	.19*	.22*	.02
Need to Belong	-.22*	-.17*	-.23*
Social Anxiety	.51*	.60*	-.00

Note. n=515.
*$p < .05$ level (two-tailed).

Social Anxiety shows a strong positive correlation with SAR Introversion, $r = .60$, $p < .05$, and the 20-item Quiet Introversion Scale, $r = .51$, $p < .05$. Social Anxiety also shows zero correlation with the Introversive Absorption factor. Equally, Public Self-Consciousness has a modest correlation with the SAR Introversion factor, $r = .22$, $p < .05$, and the Quiet Introversion Scale, $r = .19$, $p < .05$, but no correlation with the Introversive Absorption factor. In contrast, the Introversive Absorption factor shows a modest correlation with Stability of Self-Concept, $r = .28$, $p < .05$ while the overall Quiet Introversion Scale and SAR Introversion factor show near zero correlations with the measure. Private Self-Consciousness has a moderate correlation with the Quiet Scale and the SAR factor, $r = .33$, $p < .05$, and a weaker correlation with the

Introversive Absorption factor, $r = .17$, $p <.05$. Moreover, the Quiet Introversion Questionnaire

and its two subscales show no correlation with Social Identity. The Relational Identity Scale

shows a modest correlation with Introversive Absorption, $r = .20$, $p <.05$, a weak negative

correlation, $r = -.10$, $p <.05$, with SAR Introversion, and zero correlation with the overall Quiet

scale (see Table 8).

Correlations among measures of introversion (Quiet Introversion and S.T.A.R.

Introversion) and measures of well-being (Subjective Happiness, Life Satisfaction Self-Esteem,

Morris Happiness, and Leisure Activities) were performed to evaluate the relation between

introversion-extroversion and well-being (see Table 9).

Table 9

Correlations between Measures of Introversion and Measures of Happiness and Self-Evaluation

	Quiet Introversion vs. Extroversion	SAR Introversion	Introversive Absorption	Social Introversion	Thinking Introversion	Anxious Introversion	Restrained Introversion
Subjective Happiness	-.21*	-.33*	.18*	-.37*	.07	-.57*	-.25*
Life Satisfaction	-.15*	-.25*	.19*	-.32*	.09	-.46*	-.25*
Self-Esteem	-.25*	-.36*	.15*	-.35*	.10*	-.64*	-.36*
Morris Happiness	.24*	.18*	.27*	-.02	.48*	-.02	-.08
Pleasant Nature Activities	.07	-.00	.21*	-.10*	.23*	-.16*	-.19*
Pleasant Introverted Activities	.25*	.17*	.32*	-.07	.51*	-.03	-.20*

Note. Morris = 6 happiness items. The *Ns* for the above correlations varied between 514 and 515
due to missing data.
*$p <.05$ level (two-tailed).

As hypothesized, the measures of introversion correlate differently with each of the measures of happiness (see Table 9). To illustrate, many of the introversion measures show strong to moderate negative correlations with the two measures of general happiness: Subjective Happiness and Life Satisfaction. However, thinking introversion has no correlation with measures of general happiness, and introversive absorption has a weak positive correlation with measures of general happiness. Thinking Introversion correlates most positively with Morris Happiness items, Pleasant Nature Activities, and Pleasant Introverted Activities. Many of the measures of introversion show strong to moderate negative correlations with Self-Esteem. However, Introversive Absorption, $r = .15$, $p < .05$, and Thinking Introversion, $r = .10$, $p < .05$, show weak positive correlations with Self-Esteem. Notably, Anxious Introversion has the strongest negative correlation with Self-Esteem, $r = -.64$, $p < .05$ (see table 9).

Discussion

The present study aimed to evaluate the relation among introversion-extroversion and measures of happiness in a sample of Amazon Mechanical Turk workers. The study investigated the validity of Cain's Quiet Introversion Questionnaire and evaluated participants' reported overall happiness; need to belong; self-esteem; preference for leisure activities; self-consciousness; self-concept; and social, thinking, anxious, and restrained introversion.

The results revealed notable effect sizes between men and women on measures of restrained introversion, anxious introversion, self-esteem, relational identity, and pleasant nature activities. These results mirror those of previous studies that evaluated gender differences among the aforementioned variables. Specifically, research shows that women report more anxiety (Leach, Christensen, Mackinnon, Windsor, & Butterwort, 2008), greater relational interdependence (Gabriel & Gardner, 1999), less impulsivity and sensation seeking (Cross,

Copping, & Campbell, 2011), and lower self-esteem (Kling, Hyde, Showers, & Buswell, 1999)

compared to men. Likewise, the results show that female participants prefer to participate in

nature activities more than do men. The researcher hypothesizes that these findings are activity

specific as data show that women participate in nature walks, camping, local park visits, sight-

seeing, and horseback riding in greater numbers than do men (Jensen & Guthrie, 2006).

Therefore, if more high activity outdoor activities were included in the pleasant nature activity

inventory, then the observed gender difference might not remain. Even so, all of the observed

gender differences need to be tested for replication in a future, follow up sample.

For the purposes of this discussion, factor loadings designate the item content of each

factor, and major factor loading are $\geq$ .24 on a primary factor. The primary loadings on Cain's

Quiet Introversion Questionnaire suggest that the content of factor 1 is Social, Anxious, and

Restrained (SAR) Introversion and the content of factor 2 is Introversive Absorption. SAR

Introversion items measure low activity, social withdrawal, and impulsivity (i.e. "I like to

celebrate birthdays on a small scale, with only one or two close friends or family members)."

Introversive Absorption items measure imagination, attentional control, and engagement in an

object or an activity (e.g. "People tell me that I'm a good listener). Thus, the content of Cain's

Quiet Introversion Questionnaire is seemingly represented by the SAR Introversion and

Introversive Absorption subscales (see Table 4). Nonetheless, the tentative nomenclature of the

two factors requires future testing with confirmatory analyses.

As predicted, Susan Cain's Quiet Introversion Questionnaire was not comprised of

meaningfully distinguishable social, thinking, anxious, and restrained introversion factor

subscales. Rather, the scale was composed of two factors that correlate, $r = .31$, with one another

(Table 6). Nevertheless, Cain's measure of introversion-extroversion did correlate with each of

the four domains of introversion (see Tables 5 and 6). Analyses of the intercorrelations between

Cain's Quiet Introversion Scale and measures of social, thinking, anxious, and restrained

introversion revealed that the Quite Scale correlates .63 with social introversion, .43 with

anxious introversion, .35 with restrained introversion, and .28 with thinking introversion.

Likewise, the data show that the SAR Introversion factor correlates .68 with social introversion,

.53 with anxious introversion, .41 with restrained introversion, and .22 with thinking

introversion. In contrast, the Introversive Absorption factor has a moderate correlation with

thinking introversion, $r = .28$, $p < .01$, a weak correlation with social introversion, $r = .18$, $p < .01$,

and zero correlation with anxious and restrained introversion (Table 6). This pattern of results

supports the study hypothesis that Quiet introversion would correlate strongly with social

introversion and moderately with anxious and restrained introversion. The moderate correlation

between Quiet Introversion and its factors with thinking introversion did not support the

hypothesis that the Quiet Scale would have zero correlation with measures of thinking

introversion.

The present study's observed correlations between the Quiet Scale and its factors with

thinking introversion were unexpected because researchers remain uncertain as to whether

introspection is an aspect to introversion-extroversion (e.g. Costa & McCrae, 1992). Moreover,

previous research indicates that absorption does not correlate with extraversion (Tellegen &

Atkinson, 1974). Therefore, the author hypothesizes that the moderate correlation between

Introversive Absorption and thinking introversion shown in the present study is due to the

construct overlap between thinking introversion and absorption. According to Jamieson (2005),

the absorption construct in composed of five factors, one of which contains a fantasy facet. This

fantasy factor is called Imaginative Involvement. The Imaginative Involvement factor measures

an individual's vivid imaginative experiences (i.e. "I enjoy work that allows me to "dive in" with

few interruptions)." Notably, the content of this item is quite similar to the thinking introversion

items four ("When I am reading an interesting story or novel or when I am watching a good

movie, I imagine how <u>I</u> would feel if the events in the story were happening to me)" and nine (I

daydream and fantasize, with some regularity, about things that might happen to me)." Due to

this item content similarity, it seems reasonable to expect that both introversive absorption and

thinking introversion would have significant positive correlations with each other and with

measures of absorption in future research.

Correlations between social, thinking, anxious, and restrained introversion with measures

of self-awareness, identity, and anxiety reveal the differences between the four factors of

introversion (see Table 7). Although social anxiety has a moderate to strong correlations with

social, anxious, and restrained introversion, the measure correlates strongest with anxious

introversion. The results indicate that anxious introversion is a measure of social anxiety, self-

consciousness, and instability of self. Thinking introversion is a measure of private self-

consciousness, public self-consciousness, personal identity, and relational identity. Social

introversion is a measure of collective identity, social anxiety, and a lack of a need to belong.

Furthermore, restrained introversion is a measure of social anxiety and the inverse of personal,

relational, social, and collective identity (see Table 7). Thus, this data reinforces the four factor

model of introversion, and it shows that social, thinking, anxious, and restrained introversion are

distinctive facets that capture different constructs.

Correlations between the Quiet Introversion scale and its two factors with measures of

self-concept, identity, and self-consciousness reveal just how distinct the Introversive Absorption

factor is from the Quiet scale and the SAR Introversion factor. In particular, the Introversive

Absorption factor is unique because unlike the Quiet Scale and SAR factor it shows zero

correlation with social anxiety, public self-consciousness, and collective identity. The

Introversive Absorption factor also shows a modest correlation with stability of self-concept and

relational identity while the Quiet Scale and the SAR Introversion factor show zero or a weak

negative correlation with the constructs. Additionally, the Introversive Absorption factor shows a

stronger correlation with personal identity and a weaker correlation with private self-

consciousness compared to SAR and Quiet Introversion (see Table 8). Therefore, these

correlations suggest that Cain's Introversive Absorption factor is a better measure of stability of

self-concept, personal identity, and relational identity compared to the Quiet scale and SAR

Introversion factor. Equally, the results suggest that the Quiet Introversion scale and SAR

Introversion factor are better measures of self-awareness and anxiety compared to the

Introversive Absorption factor.

The Quiet Introversion Questionnaire is a useful measure of introversion-extroversion

without positive affect built into the scale. The scale is the most general measure of introversion-

extroversion used in the present study, and it remarkably captures each of the four domains of

introversion (Cheek, Brown, & Grimes, 2014). In using this scale as an empirical introversion-

extroversion measure, many of the study hypotheses were supported by the data. As

hypothesized, the correlations between Cain's scale and measures of subjective happiness and

life satisfaction show that extroverts report greater happiness and life satisfaction than introverts.

Cain's scale also shows moderate positive correlations with Pleasant Introverted Activities, $r=$

.25, $p < .05$, and Morris Happiness items, $r = .24$, $p < .05$ (Table 9). This suggests that introverts

are slightly more inclined towards introverted activities and Morris Multiple Happiness Types

compared to extroverts. Further, the results indicate that Thinking Introversion correlates

strongest with Morris Multiple Happiness items and Pleasant Introverted Activities (Table 9).

This suggests that Morris Happiness Types and Pleasant Introverted Activities relate most with

thinking introverts. Therefore, the study shows that introverts and extroverts do experience

distinct types of well-being, but more analyses need to be conducted to determine the types of

well-being experienced by each of the four different types of introverts.

Limitations and Future Directions

Limitations of the present research study include the use of self-report measures and the

use of Amazon Mechanical Turk workers as study participants. With the reliance on self-report

measures to evaluate participant's introversion-extroversion and well-being, it is possible that

subjects could have chosen biased responses to the questionnaire items. Additionally, as research

shows that Amazon Mechanical Turk workers perform differently than college enrolled subject

pool participants on both attention tasks and self-report measures, the study results may neither

be representative of nor generalize to all adults in the United States (Hauser & Schwarz, in

press). Namely, as the sample was self-selected Amazon Mechanical Turk workers the study

data may be skewed to favor a specific type of personality (i.e. introversion) or experienced type

of well-being (i.e. introverted activities).

In addition, the low ethnic and cultural diversity of the Amazon Turk sample may limit

the generalizability of the study. According to Census data, the study overrepresented Caucasian

Americans and underrepresented every other sampled ethnic group (U.S. Census Bureau, 2014).

The lack of an adequate cell size for each of the represented ethnic minorities limited the scope

of the study's analyses. Specifically, research indicates that personality traits are linked to

genetics (Cohen, Young, Baek, Kessler, & Ranganath, 2005), but the researcher was unable to

evaluate potential ethnic differences in participants' reported introversion-extroversion. In

particular, the researcher was unable to evaluate whether participants' self-identification with their culture and ethnicity related to their reported need to belong, self-esteem, life satisfaction, and subjective happiness. Future research should examine the above study limitations.

As the study was designed to investigate introversion-extroversion and aspects of well-being, a large limitation to the study is the lack of cohesive psychological definitions for introversion-extroversion and happiness. The study evaluated Cain's measure of introversion-extroversion and the four domains of introversion: social, thinking, anxious, and restrained. As a factor analysis of Cain's scale revealed a factor not commonly associated with introversion-extroversion (Introversive Absorption), more measures of introversion-extroversion such as the IPIP-NEO (Johnson, 2014) and the Social Attention Scale (Ashton, Lee, & Paunonen, 2002) should be considered in future studies. Furthermore, future studies should evaluate the following aspects of well-being in relation to introversion-extroversion: contentment (Veenhoven, 1984), positive and negative affect (Watson, Clark, & Tellegen, 1988), hedonia (Waterman, 1993; Waterman, Schwartz, & Conti, 2008), eudiamonia (Waterman, 1993; Waterman, Schwartz, & Conti, 2008), all seventeen Morris Multiple Happiness Inventory items (Furnham & Christoforou, 2007), and orientations to happiness (Peterson, Park, & Seligman, 2005). In sum, the inclusion of additional happiness and introversion-extroversion measures might provide further evidence regarding the types of happiness experienced by introverts and extroverts.

Conclusion and Implications

Despite the aforementioned limitations, the study contributes to the existent literature on introversion-extroversion and well-being. Specifically, the present study adds to and supports the findings of previous research that examined the link between personality and well-being. The results show that, in relation to happiness measures, there is a clear distinction between introverts

and extroverts. Moreover, the results indicate that extroverts do score slightly higher than

introverts on measures of general happiness. The present study confirms that introverts and

extroverts do experience different types of happiness, but more research needs to be done to

determine whether different types of introverts experience different types of happiness.

References

Allport, F. H., & Allport, G. W. (1921). Personality traits: their classification

    and measurement. *Abnormal Psychology and Social Psychology*, *16*, 6-40.

Argyle, M. (1987). *The psychology of happiness*. London: Methuen.

Argyle, M. (2001). *The psychology of happiness* (2nd ed.). London: Routledge.

Argyle, M. (2013). *The psychology of happiness*. London: Routledge.

Argyle, M., & Lu, L. (1990). The happiness of extraverts. *Personality and individual*

    differences, *11*, 1011-1017.

Ashton, M. C., Lee, K., & Paunonen, S. V. (2002). What is the central feature of extraversion?

    Social attention versus reward sensitivity. *Journal of personality and social*

    psychology, *83*, 245.

Baumeister, R. F., Campbell, J. D., Krueger, J. I., & Vohs, K. D. (2003). Does high self-esteem

    cause better performance, interpersonal success, happiness, or healthier

    lifestyles?. *Psychological science in the public interest*, *4*, 1-44.

Baumeister, R. F., & Leary, M. R. (1995). The need to belong: desire for interpersonal

    attachments as a fundamental human motivation. *Psychological bulletin*, *117*(3), 497.

Bradburn, N.M. (1969). *The structure of psychological well-being*. Chicago: Aldine.

Cain, S. (2012). *Quiet: The power of introverts in a world that can't stop talking.* New York:

    Crown.

Carrigan, P.M. (1960). Extraversion-introversion as a dimension of personality: A reappraisal.

    Psychological Bulletin, *57*, 329-360.

Chassell, J.O. (1928). *The experience variables. A study of the variable factors in experience*

    contributing to the formation of personality. Rochester: University of Rochester Medical

    School.

Cheek, J.M. (1989). Identity orientations and self-interpretation. In D.M. Buss & N. Cantor

    (Eds.), *Personality psychology: Recent trends and emerging directions* (pp. 275-285).

    New York: Springer-Verlag.

Cheek, J.M., Brown, C.A & Grimes, J.O. (2014, July). Preliminary research manual for

    personality scales for four domains of introversion: Social, Thinking, Anxious, and

    Restrained Introversion. Unpublished manuscript, Department of Psychology, Wellesley

    College, Wellesley MA 02481.

Cheng, H., & Furnham, A. (2003). Personality, self-esteem, and demographic predictions of

    happiness and depression. *Personality and Individual Differences*, *34*, 921-942.

Cohen, M. X., Young, J., Baek, J. M., Kessler, C., & Ranganath, C. (2005). Individual

    differences in extraversion and dopamine genetics predict neural reward

    responses. *Cognitive Brain Research*, *25*, 851-861.

Costa, P. T. & McCrae, R. R. (1980). Influence of extraversion and neuroticism on subjective

    well-being: Happy and unhappy people. *Journal of Personality and Social Psychology*,

    38, 668-678.

Costa, P. T., Jr., & McCrae, R. R. (1992). *The revised NEO personality inventory (NEOPI-R)*

    and NEO five-factor inventory (NEO-FFI) professional manual. Odessa, FL:

    Psychological Assessment Resources.

Costa, P.T., & McCrae, R.R. (2008). The revised neo personality inventory (neo-pi-r). *The SAGE*

    handbook of personality theory and assessment, 2, 179-198.

Cross, C. P., Copping, L. T., & Campbell, A. (2011). Sex differences in impulsivity: a meta-

    analysis. *Psychological bulletin*, *137*, 97.

DeNeve, K. M., & Cooper, H. (1998). The happy personality: A metaanalysis of 137 personality

traits and subjective well-being. *Psychological Bulletin*, 124, 197-229.

Depue, R. A., & Collins, P. F. (1999). Neurobiology of the structure of personality: Dopamine

facilitation of incentive motivation and extraversion. *Behavioral and Brain Sciences*, *22*,

491-569.

DeYoung, C. G., Quilty, L. C., & Peterson, J. B. (2007). Between facets and domains: 10

Aspects of the Big Five, *Journal of Personality and Social Psychology, 93,* 880-896.

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

Diener, E. (1994). Assessing subjective well-being: Progress and opportunities, *Social Indicators

Research*, *31*, 103-157.

Diener, E. (2000). Subjective well-being: The science of happiness and a proposal for a national

index. *American psychologist*, *55*, 34.

Diener, E. (2009). Subjective well-being. In *The science of well-being* (pp. 11-58). Springer

Netherlands.

Diener, E., & Diener, M. (1995). Cross-cultural correlates of life satisfaction and self-esteem.

Journal of Personality and Social Psychology, 68, 653-663.

Diener, E. D., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life

scale. *Journal of personality assessment*, *49*, 71-75.

Diener, E., Larsen, R. J., & Emmons, R. A. (1984). Person× Situation interactions: Choice of

situations and congruence response models. *Journal of personality and social

psychology*, *47*, 580.

Diener, E., Sandvik, E., Pavot, W., & Fujita, F. (1992). Extraversion and subjective well-being in

a U.S. national probability sample. *Journal of Research in Personality*, *26*, 205-215.

Emmons, R.A. & Diener, E. (1985). Personality correlates of subjective well-being. *Personality*

and Social Psychology, *11*, 89-97.

Emmons, R. A., Diener, E. & Larsen, R. J. (1986). Choice and avoidance of everyday situations

    and affect congruence: Two models of reciprocal interactionism. *Journal of Personality*

    and Social Psychology, *51*, 815-826.

Erikson, E.H. (1980). *Identity and the life cycle*. New York: W.W. Norton & Company.

Eysenck, H. J. (1947). *Dimensions of personality*. London: Routledge & Kegan Paul.

Franzoi, S. L., Reddish, B. J. (1980). Factor analysis of the Stability of Self Scale. *Psychological*

    Reports, 47, 116-1162.

Freyd, M. (1924). Introverts and extroverts. *Psychological review*, *31*, 74-87.

Furnham, A. (1991). Work and leisure satisfaction. In F. Strack, M. Argyle, & N. Schwarz

    (Eds.), *Subjective well-being*. Oxford: Pergamon Press.

Furnham, A., & Christoforou, I. (2007). Personality traits, emotional intelligence, and multiple

    happiness. *North American Journal of Psychology*, *9*, 439-462.

Gabriel, S., & Gardner, W. L. (1999). Are there" his" and" hers" types of interdependence? The

    implications of gender differences in collective versus relational interdependence for

    affect, behavior, and cognition. *Journal of personality and social psychology*, *77*, 642.

Guilford, J.P. & Guilford, R.B. (1934). An analysis of the factors in a typical test of introversion-

    extroversion. *Journal of Abnormal and Social Psychology*, *28*, 377-399.

Guilford, J.P. (1959). *Personality*. New York: McGraw-Hill.

Guilford, J.P., & Guilford, R.B. (1936). Personality factors S, E, and M, and their measurement.

    Journal of Psychology, 2, 109-127.

Grimes, J. O., Cheek, J. M., & Norem, J. K. (2011, January). *Four Meanings of Introversion:*

Social, Thinking, Anxious, and Inhibited. Poster presented at Society for Personality and

Social Psychology, San Antonio, TX.

Hazan C, Shaver P. 1987. Romantic love conceptualized as an attachment process. *Journal of

Personality and Social Psychology*, *52*, 511–524.

Hauser, D.J., & Schwarz, N. (in-press). Attentive turkers: MTurk participants perform better on

online attention checks than do subject pool participants. *Behavior Research Methods*.

Manuscript submitted for publication.

Jamieson, G.A. (2005). The modified Tellegen absorption scale: A clearer window on the

structure and meaning of absorption. *Australian Journal of Clinical and Experimental

Hypnosis*, *33*, 119-139.

Jensen, C. R., & Guthrie, S. (2006). *Outdoor recreation in America*. Human Kinetics.

Johnson, J. (2014). Measuring thirty facets of the five factor model with a 120-item public

domain inventory: Development of the IPIP-NEO-120. *Journal of Research in

Personality*, *51*, 78-89.

Jowkar, B., & Latifian, M. (2006). The relationship between aspects of identity and goal

orientation among the pre-university students of Shiraz and Yasuj cities. *Journal of

Social Sciences and Humanities, Shiraz University*, *49*, 27-46.

Jung, C. G. (1923). *Psychological types*. London: Paul, Trench, Trubner.

Hills, P., & Argyle, M. (2001). Happiness, introversion–extraversion and happy

introverts. *Personality and individual Differences*, *30*, 595-608.

Hills, P. & Argyle, M. (1998). Positive moods derived from leisure and their relationship to

happiness and personality. *Personality and Individual Differences*, *25*, 523-535.

Kahneman, D., Krueger, A.B., Schkade, D.A., Schwarz, N., & Stone, A.A. (2004). Toward

national well-being accounts. *American Economic Review*, *94*, 429-434.

Kasser T, Ryan RM. (1996). Further examining the American dream: differential correlates of intrinsic and extrinsic goals. *Personality and Social Psychology Bulletin*, *22,* 280–287.

Kling, K. C., Hyde, J. S., Showers, C. J., & Buswell, B. N. (1999). Gender differences in self-esteem: a meta-analysis. *Psychological bulletin*, *125*, 470.

Leach, L. S., Christensen, H., Mackinnon, A. J., Windsor, T. D., & Butterworth, P. (2008). Gender differences in depression and anxiety across the adult lifespan: the role of psychosocial mediators. *Social psychiatry and psychiatric epidemiology*, *43*, 983-998.

Larsen, R.J., Diener, E., & Emmons, R. A. (1986). Affect intensity and reactions to daily life events. *Journal of Personality and Social Psychology*, *51*, 803-814.

Lucas, R. E., & Baird, B. M. (2004). Extraversion and emotional reactivity. *Journal of Personality and Social Psychology*, *86*, 473–485.

Lucas, R. E., Diener, E., Grob, A., Suh, E. M., & Shao, L. (2000). Cross-cultural evidence for the fundamental features of extraversion. *Journal of Personality and Social Psychology*, *79*, 452-468.

Lucas, R.E., & Fujita, F. (2000). Factors influencing the relation between extraversion and pleasant affect. *Journal of Personality and Social Psychology*, *79*, 1039-1056.

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

Lyubomirsky, S., Tkach, C., & DiMatteo, M. R. (2006). What are the differences between happiness and self-esteem? *Social Indicators Research*, *78*, 363-404.

MacPhillamy, D. J., & Lewinsohn, P. M. (1982). The pleasant events schedule: Studies on

　　　reliability, validity, and scale intercorrelation. *Journal of Consulting and Clinical*

　　　Psychology, *50*, 363-380.

Maslow, A. (1968*). Toward a psychology of being* (2nd ed.). Princeton, NJ: Van Nostrand.

McDougal, W. M. (1921). Is America safe for democracy? New York.

McGreal, R. I. T. A., & Joseph, S. (1993). The depression-happiness scale. *Psychological*

　　　Reports, *73*(3f), 1279-1282.

McGregor, I., & Little, B.R. (1998). Personal projects, happiness, and meaning: on doing well

　　　and being yourself. *Journal of Personality Psychology,* 74, 494–512.

Miller, M.J. (1991). Accuracy of the Leisure Activities Finder: Expanding Holland's typology.

　　　Journal of Vocational Behavior, *39*, 362-368.

Morris, D. (2006). *The nature of happiness*. London: Little Books.

Murphy, G. Social motivation. In G. Lindzey (Ed.), *Handbook of social psychology* (vol. 2, pp.

　　　601-633). Reading, MA: Addison-Wesley, 1954.

Murray, H.A. (1938). *Explorations in personality.* New York: Oxford University Press.

Nezlek JB. (2000). The motivational and cognitive dynamics of day-to-day social life. In

　　　The Social Mind: Cognitive and Motivational Aspects of Interpersonal Behaviour, ed. JP

　　　Forgas, K Williams, L Wheeler, pp. 92–111.

Nichols, A. L., & Webster, G. D. (2013). The single-item need to belong scale. *Personality and*

　　　Individual Differences, 55, 189-192.

Nicoll, M. (1917). Dream psychology. London: Oxford University Press.

Oishi, S., Diener, E., Suh, E., & Lucas, R.E. (1999). Value as a moderator in subjective well-

　　　being. *Journal of Personality*, *67*, 157-184.

Oishi, S., Schimmack, U., & Colcombe, S. (2003). The contextual and systematic nature of life

satisfaction judgments. *Journal of Experimental Social Psychology*, *39*, 232-247.

Pavot, W., Diener, E., & Fujita, F. (1990). Extraversion and happiness. *Personality and

individual differences*, *11*, 1299-1306.

Peterson, C., Park, N., & Seligman, M.E.P. (2005). Orientations to happiness and life

satisfaction: The full life versus the empty life. *Journal of Happiness Studies*, *6*, 25-41.

Robins, R. W., Hendin, H. M., & Trzesniewski, K. H. (2001). Measuring Global Self-Esteem:

Construct Validation of a Single-Item Measure and the Rosenberg Self-Esteem Scale.

Personality and Social Psychology Bulletin, 27, 151-161.

Ryan, R. M., & Deci, E. L. (2001). On happiness and human potentials: A review of research on

hedonic and eudaimonic well-being. *Annual review of psychology*, *52*, 141-166.

Scheier, M.F., & Carver, C.S. (1985). The Self-Consciousness Scale: A revised version for use

with general populations. *Journal of Applied Social Psychology, 15,* 687-699.

Schimmack, U., Oishi, S. Furr, F. M. & Funder, D.C. (2004). Personality and life satisfaction: A

facet level analysis. *Personality and Social Psychology Bulletin*, *30*, 1062-1075.

Smith, H. C. (1961). *Personality adjustment*. New York: McGraw-Hill.

Tellegen, A. (1985). Structures of mood and personality and their relevance to assessing anxiety,

with an emphasis on self-report. In A.H. Tuma & J.D. Maser (Eds.), *Anxiety and the

anxiety disorders* (pp. 681-706). Hillsdale, NJ: Erlbaum.

Tellegen, A., & Atkinson, G. (1974). Openness to absorbing and self-altering experiences ("

absorption"), a trait related to hypnotic susceptibility. *Journal of abnormal

psychology*, *83*, 268.

U.S Census Bureau, Population Division. (2014). *Annual estimates of the resident population by*

sex, age, race, and Hispanic origin for the United States and states: April 1, 2010 to July

1, 2013. Retrieved from http://factfinder.census.gov/faces/tableservices/jsf/pages/

productview.xhtml?src=bkmk.

Veenhoven, R. (1984). *Conditions of Happiness*. Boston: Reidel.

Veroff, J., Feld, S., & Gurin, G. (1962). Dimensions of subjective adjustment. *Journal of*

Abnormal and Social Psychology, *64*, 192-205.

Waterman, A.S. (1993). Two conceptions of happiness: Contrasts of personal expressiveness

(eudaemonia) and hedonic enjoyment . *Journal of Personality and Social Psychology*, *64*,

678–691.

Waterman, A. S., Schwartz, S. J., & Conti, R. (2008). The implications of two conceptions of

happiness (hedonic enjoyment and eudaimonia) for the understanding of intrinsic

motivation. *Journal of Happiness Studies*, *9*, 41-79.

Watson, G. B. (1930). Happiness among adult students of education. *Journal of Educational*

Psychology, *21*, 79-109.

Watson, D., & Clark, L. A. (1997). Extraversion and its positive emotional core. In R. Hogan, J.

Johnson, & S. Briggs (Eds.), *Handbook of personality psychology* (pp. 767-793). San

Diego, CA: Academic Press.

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures

of positive and negative affect: the PANAS scales. *Journal of personality and social*

psychology, *54*, 1063-1070.

Wilson, W. R. (1967). Correlates of avowed happiness. *Psychological bulletin*, *67*, 294.

Yik, M.S., & Russell, J.A. (2001). Predicting the Big Two of affect from the Big Five of

personality. *Journal of research in personality*, *35*, 247-277.