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The Structure of Resilience: An Empirical Examination of Resilience Factors

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by

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Dedication

This dissertation is dedicated to my parents, Jay Grossman and Debra Karlitz, who have supported and encouraged me throughout my academic career.

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I would like to acknowledge the efforts of Dr. Winny Shen, whose patience remains unparalleled. I am also grateful to Dr. Walter Borman, my committee co-chair and graduate advisor, who is not only an invaluable mentor but also a dear friend. Thank you also to my dissertation committee.

Table of Contents

List of Tables

List of Figures

Abstract

Although most researchers agree that resilience is defined as the extent to which an individual bounces back and recovers from stress and adversity, the field has not yet settled on the underlying structure of the resilience construct; its lower-order factors remain in dispute and undefined. In this study, five of the most prominent resilience measures (i.e., Ego Resilience, Block & Kremen, 1996; The Resilience Scale, Wagnild & Young, 1993; The Connor-Davidson Resilience Scale, Connor & Davidson, 2003; The Resilience Scale for Adults, Friborg, Hjemdal, Rosenvinge, & Martinussen, 2003; The Brief Resilience Scale, Smith, Dalen, Wiggins, & Tooley, 2008) were administered to two large samples of U.S. adults (N = 396 and 336, respectively). Through a combination of exploratory and confirmatory techniques, seven lower-order resilience factors were identified. Relationships between general resilience, lower-order resilience factors, and correlates were examined. Results reveal that lower-order resilience factors are moderately correlated with one another and are differentially related to outcomes of interest. Follow-up hierarchical regression and relative weights analyses further reveal that general resilience substantially overlaps with Big Five personality measures, but, in many cases, its lower-order factors do not. Consequently, it is recommended moving forward that researchers continue to study the resilience construct, but do so by focusing on lower-order resilience factors, rather than on global measures of the overall resilience construct.

Introduction

Psychological resilience is typically conceptualized as the ability to bounce back from stress and recover from adversity (Klohnen, 1996; Smith, Dalen, Wiggins, & Tooley, 2008; Tugade, 2011). The construct has enjoyed an explosion of interest, and concomitantly research in this area has increased exponentially in recent decades; for example, a recent meta-analysis of this domain identified over 10,000 articles that included the term resilience (Grossman, 2014). Indeed, moderate correlations between resilience and health and well-being outcomes indicate that its popularity may be warranted. For example, Grossman (2014) found that resilience exhibits sizeable negative correlations with both physical health complaints (ρ = -.36, k = 69) and mental health complaints (ρ = -.45, k = 120), as well as a substantial positive relationship with overall well-being (ρ = .45, k = 45). Moreover, resilience is positively related to the experience of positive emotions and the use of adaptive coping strategies (i.e., problem-focused coping), both of which have been shown to aid individuals in the stress-recovery process (Tugade & Fredrickson, 2004; Tugade, Fredrickson, & Barrett, 2004).

Most researchers can agree on the overarching definition of resilience as the ability to bounce back from stress. Yet, in spite of the ballooning interest in resilience, different resilience measures espouse and assess different lower-order factors, and the research community has yet to settle on a unified set of lower-order factors of the resilience construct. In other words, although the dominant theoretical paradigm in the literature is to consider resilience as a hierarchical construct, similar to other psychological constructs and individual difference

variables, including intelligence and Big Five personality traits (e.g., Carroll, 1993; Chang, Connelly, & Geeza, 2012; DeYoung, Quilty, & Peterson, 2007; Drasgow, 2002), a lack of consensus in the literature indicates that the lower-order structure of resilience remains in dispute and undefined.

The purpose of this study is to contribute to the resilience literature by identifying a unifying set of lower-order resilience factors. To do so, I first subjected the items from extant resilience measures to an exploratory factor analysis (EFA), which segmented the resilience construct space into a set of initial lower-order resilience factors. Second, I explored the content validity of items within these newly identified factors. Third, I used confirmatory factor analysis to provide additional evidence in support of the newly identified factors by comparing the structure uncovered in my EFA to a hypothesis driven set of competing models in a separate sample. Finally, I explored the criterion-related validity and utility of the lower-order resilience factors by assessing their relationships and overlap with known correlates of resilience, including outcome variables. As a set, the analyses presented in this study unify the resilience literature by proposing a common framework or structure by which researchers can study and communicate about the construct.

Current Views on the Measurement of Resilience

Resilience is typically assessed from one of two approaches. The first is a categorical approach, which classifies individuals into ‘resilient’ and non-resilient’ groups on a person-by-person basis, typically based on outcomes that can be assessed via self-report, other-report, or more objective approaches. The second is a spectrum-based approach, which is typically assessed via psychometrically-derived, self-report survey instruments.

Categorical Approach. Many researchers in developmental psychology, clinical psychology, and related disciplines endorse the categorical approach, classifying those individuals who have experienced a positive life outcome after adversity as "resilient" (e.g., Masten, Hubbard, Gest, Tellegen, Garmezy, & Ramirez, 1999). This approach, which is laudable in that it directly relates resilience to real-world outcomes, presents a few measurement problems. Namely, criteria for determining who is resilient often differ from one study to the next, and there appears to be little consistency regarding the standard by which individuals should classified as resilient, as well as who their comparison group should be (e.g., other individuals with the same family background, those who faced the same type of adversity, and/or individuals in the population generally). For example, Neighbors, Forehand, and McVicar (1993) classified at-risk children as "resilient" if they scored in the top tercile on a measure of academic functioning, whereas Masten et al. (1999) used a median split to classify individuals into "resilient" and "non-resilient" groups on the basis of academic and social functioning. In turn, depending on the classification scheme espoused by the researcher, an individual could be classified as resilient in one study, but not another (i.e., in the above example, both the definition of resilience and the criteria for determining the cut score differed from one another).

Moreover, this approach can be argued to be syllogistic in that it does not directly assess resilience, but rather indirectly defines the construct in terms of performance on an outcome measure, the content of which often varies across studies (e.g., academic performance, social functioning, stress, mental health, and well-being). For example, Neighbors et al. (1993) and Masten et al. (1999) defined resilience as successful academic performance, so the extent to which performance is associated with resilience cannot be assessed in their studies (and, to my knowledge, no studies examine classifications of resilience in this categorical approach with

subsequent or future performance, which would be one way to get around this issue). Consequently, by not standardizing the criteria for resilience, this approach provides no vehicle by which the magnitude and directionality of the effects between resilience and some related constructs or outcomes can be assessed and/or compared across studies.

Spectrum-Based Approach. A variety of psychometric-based assessments of resilience have been developed in recent decades, and this represents the second method typically used in the resilience literature. These measures generally conceptualize resilience as a hierarchical construct reflecting the ability to bounce back and recover from stress; however, each of the proposed models operationalizes resilience slightly differently. Thus, as shown in the below review, it is unlikely that any single measure proposed thus far taps into the entirety of the resilience construct space. This gap currently renders researchers unable to comprehensively explore to the full extent of behaviors associated with the resilience construct.

It is beyond the scope of this study to review every proposed resilience structure, so five of the most prominent conceptualizations and their associated measures will be compared and contrasted below. Each of the five models and their corresponding measures are meant to assess adult resilience, has evidence supporting its reliability (for summary reliabilities of each resilience measure, see Grossman, 2014), and is summarized in Table 1.

Ego-Resilience. Ego-resilience was initially characterized as one component of Block and Block's (1980) two-dimensional framework of ego-control and ego-resilience. In this framework, ego-control specifies the ways in which individuals contain and control motivational instincts (Funder & Block, 1989). For example, those individuals excessively high in ego-control (i.e., overcontrolled) have been described as rigid, whereas those low on the construct are described as impulsive (Huey & Weisz, 1997). Ego-resilience describes the way in which one

can adapt in response to environmental demand characteristics. In other words, ego-resilience is conceptualized as a trait representing one's pattern of self-regulation (Gramzow, Sedikides, Panter, Sathy, Harris, & Insko, 2004) or level of behavioral elasticity (Funder, Block, & Block, 1983). Researchers have used the term adjustment (Block & Kremen, 1996; Letzring, Block, & Funder, 2005) or impulse control (Huey & Weisz, 1997) to describe ego-resilience.

Block and Block (1980) originally measured ego-control and ego-resilience using the California Adult Q-Sort, a set of 100 personality statements printed on individual cards (Block, 1978). Through this methodology, respondents placed each of the cards into nine categories ranging from least descriptive to most descriptive of themselves, and the placement of cards was compared with normative profiles of ego-control and ego-resilience. The resulting correlation between the individual's card placement and the normative profile represented the "prototype-derived scores" for the two constructs (i.e., similarity; Letzring et al., 2005). This measurement strategy was laborious and time consuming, and two paper-and-pencil measures of ego-control and ego-resilience were subsequently developed (i.e., Block & Kremen, 1996; Klohnen, 1996).

The first self-report measure of ego-resilience was developed by Block and Kremen (1996). Unfortunately, the exact origins of the scale are unclear; Block and Kremen and Letzring et al. (2005) note that items were drawn from the Minnesota Multiphasic Personality Inventory (MMPI, Hathaway & McKinley, 1951), the California Psychological Inventory (CPI: Gough, 1957), were written by Block himself, or are otherwise untraceable. Nevertheless, the resulting 14-item measure exhibited high internal consistency reliability and correlated highly with the prototype-derived scores from the Q-Sort (Block & Kremen, 1996). These items, which are not nested in any *a priori* hierarchical factor structure, reflect a number of different behaviors. For example, sample items from this inventory include: "I am more curious than most people", "I get

over my anger at someone reasonably quickly", "I am regarded as a very energetic person", and "I usually think carefully about something before acting." Block and Kremen note that the scale is conceptually distinct from intelligence, positively related to social skills and expressivity, and negatively related to self-defeating thinking.

The second effort to develop a self-report measure of ego resilience was led by Klohnen (1996). Klohnen collected Q-Sort ratings from adult samples and also administered the CPI to each participant. After correlating each of the CPI items with the Q-Sort ratings, she developed a CPI-based measure of ego-resilience that consisted of 29-items assessing four components (see Table 1). The first component, *confident optimism*, contrasts an optimistic and positive individual with one who is anxious, neurotic, and self-handicapping. The second, *productive and autonomous activity*, assesses persistence in the face of adversity. Third, *interpersonal warmth and insight*, reflects a capacity for close relationships. The final component, *skilled expressiveness*, reflects one's ability to interact with others. In summary, this conceptualization characterizes resilience as an aspect of one's disposition, which is expressed as a constellation of four lower-order factors.

The Resilience Scale. Wagnild and Young (1993) drew from the experiences of women who endured a major life trauma to develop their measure of resilience, writing 25 items to assess what they believed to be the five major factors of the construct (see Table 1). The first factor, *self-reliance*, taps into the notion of self-efficacy, which the authors report as the ability to "believe in oneself" (p. 167). The second factor, *meaning*, relates to the ability to understand the context and greater purpose behind the situation that one is placed in. Third, *equanimity* is related to the ability to take experiences as they come without judgment, described by the authors as the ability to "sit loose" (p. 167). Fourth, the factor of *perseverance* can be described as the

ability to continue on despite discouragement. Finally, the fifth factor of *existential aloneness* is reflected in the realization that some experiences must be faced without others.

The Resilience Scale is used widely, but there is currently only mixed support for its original five-factor structure. For example, in one study, Wagnild (2009) used EFA and concluded that only two factors emerged, labeled *personal competence* and *acceptance of self and life*. In a later study, Resnick and Ignuito (2011) subjected all of the items to a principal components analysis, finding evidence for a dominant first (or general) factor. However, when replicating the unidimensional structure with CFA, they found that many of the factor loadings were low (below .50). Taken together, these two studies indicate the precise structure of this instrument remains unclear.

Connor-Davidson Resilience Scale. Connor and Davidson (2003) wrote 25 resilience items based on their own qualitative understanding of resilience and literatures related to the construct. First, they drew from early research on hardiness to assess three factors of what they call control, commitment, and change viewed as a type of challenge (Kobasa, 1979). Second, they built off of Rutter's (1985) early clinical work on resilience and protective factors to assess goal and action orientation, self-esteem, and adaptive coping strategies. Third, following from Lyons's (1991) work on positive adjustment to trauma, they wrote items tapping patience and stress-tolerance. Finally, from their own understanding of Sir Edward Shackleton's Antarctic expedition (Alexander, 1998), they wrote items to assess spirituality. Using a principal components analysis, Connor and Davidson found support for five components of resilience, which they labeled *personal competence, trust in one's instinct, positive acceptance of change, control,* and *spiritual influences* (see Table 1).

Results of factor-analytic examinations of the instrument's structure can be described as mixed. For example, EFA studies have produced varying four-factor solutions (Lamond et al., 2008; Khoshouei, 2009), a three-factor solution (Yu & Zhang, 2007), as well as an alternative five-factor solution (Karaimak, 2010). Also, Campbell-Sills and Stein (2007) reduced the measure to 10 purportedly unidimensional items, which has been replicated with some success (Burns & Antsey, 2010; Gucciardi, Jackson, Coulter, & Mallett, 2011; Wang, Shi, Zhang, & Zhang, 2010). Thus, as is the case with other resilience measures, the factor structure of the instrument remains unclear.

The Resilience Scale for Adults. Friborg, Hjemdal, Rosenvinge, and Martinussen (2003) conceptualize resilience as a combination of both individual differences and situationally-based factors. Their measure, which consists of 37 items, assesses five factors: (1) *personal competence,* measuring aspects of self-esteem and determination in life, (2) *social competence*, the ability to maintain and establish friendships, (3) *structured style*, a preference for organization, (4) *family cohesion*, the presence of shared values and respect within the family, and (5) *social resources*, the availability of social support. Later, when trying to replicate the factor structure of their instrument, Friborg, Barlaug, Martinussen, Rosenvninge, and Hjemdal (2005) reduced the measure to 33-items and re-conceptualized *personal competence* as a higher-order factor with two-lower-order factors: *perception of self*, reflecting one's confidence in one's own abilities and judgments, and *perception of future*, or the ability to plan ahead (see Table 1).

Some research has been conducted on the psychometric properties of both the 37-item and the 33-item instruments. Jowkar, Friborg, and Hjemdal (2010) used a standard forward-back translation procedure to translate the 37-item instrument into Polish and assessed the five-factor structure in this cultural setting. Using CFA, they found adequate fit for the original five factors.

With the newer 33-item measure, Hjemdal, Vogel, Solem, Hagen, and Stiles (2011) translated the measure into French and compared the structure of the instrument in Belgium and Norwegian samples. CFA and measurement invariance tests found evidence for metric invariance in all but one of the factors (i.e., structured style), providing preliminary evidence in support of the revised measure. Taken together, the results of these two studies are somewhat promising for Friborg et al.'s (2003, 2005) conceptualizations, although the precise structure of the *personal competence* factor remains somewhat unclear.

The Brief Resilience Scale. Rather than looking to build theory about the resilience construct or posit lower-order factors (see Table 1), Smith et al. (2008) defined resilience directly in concordance with its lexical root *resile*, which means "to bounce or spring back from stress" (p. 194). Their measure consists of six items (e.g., "I tend to bounce back quickly after hard times," "It does not take me long to recover from a stressful event," and "I usually come through difficult times with little trouble"), and the authors report results from factor analyses in four different samples suggesting that the measure is unidimensional. However, at present and to the best of my knowledge, additional examinations of the measure's factor structure have not been conducted.

Summary. This review demonstrates that substantial variability exists across the espoused lower-order factors of resilience and both the conceptual and empirical overlap between proposed lower-order factors across measures and approaches is unclear. Table 1 highlights the need for a better understanding of the underlying structure of resilience in order to move the field forward. For example, only Connor and Davidson (2003) include an aspect of spirituality as a factor of resilience, both Wagnild and Young (1993) and Connor and Davidson (2003) include factors relevant to positive acceptance of change, and both Klohnen (1996) and

Friborg et al. (2003) include factors relevant to the ability to maintain social relationships. Therefore, it remains unclear how these and other proposed resilience factors relate to each other and the higher-order construct of resilience. Moreover, given that not all measures assess all possible factors of resilience, it is likely that any given measure of resilience inadequately captures the entirety of the resilience construct space (i.e., is construct deficient). Thus, additional research clarifying and synthesizing the lower-order factor structure of resilience is sorely needed.

The Present Study

Overall, the present study has three key aims, and these aims were assessed in six phases. The first aim is to identify and verify a unifying lower-order structure of resilience. This aim was accomplished by conducting an EFA of extant resilience measures (Phase 1), assessing the content validity of items associated with each identified factor (Phase 2), and comparing the structure resulting from the EFA to a hypothesis driven set of alternative structures in a new sample of participants (Phase 3). The second aim of this study, which was accomplished in Phase 4, is to examine the criterion-related validity of resilience and its lower-order factors. A variety of univariate and multivariate techniques were used to measure the direct relationships between global resilience, lower-order resilience factors, correlates, and outcomes. Finally, this paper assesses the uniqueness of resilience by examining the overlap between global resilience, its lower-order factors, and Big Five personality traits. This was accomplished through canonical correlational analyses, multiple regressions, and relative weights analyses, all of which quantified the variance shared between the different constructs and/or assessed the incremental contribution of resilience factors in predicting outcome over and beyond the Big Five (Phase 5).

Finally, by combining EFA results with the criterion-related validity results, exploratory analyses assessing the viability of a formative model were conducted in Phase 6.

PHASE 1:

Exploring the Structure of Resilience Factors across Measures

It is the assumption of this paper that the culmination of all of the items and factors from all of the most prominent resilience measures is likely to provide the best coverage and representation of the resilience construct space. Consequently, a factor analysis of all of the items from each of the common resilience measures together is likely to result in the most comprehensive set of resilience factors (c.f. Roberts, Chernyshenko, Stark, & Goldberg, 2005).

Exploratory factor analysis is especially appropriate for theory-building when *a priori* hypotheses do not exist (Farbigar, Wegener, MacCallum, & Strahan, 1999; Mulaik, 1987), and this approach has been used to clarify the lower-order factor structures of several important constructs. For example, Roberts et al. (2005) sampled from seven of the most common personality measures to identify the lower-order factors of conscientiousness, revealing six factors. A later meta-analysis found evidence for differential validities among some of these lower-order conscientiousness factors in predicting aspects of job performance (Dudley, Orvis, Lebiecki, & Cortina, 2006). Similarly, Baer, Smith, Hopkins, Krietemeyer, and Toney (2006) used EFA to synthesize the mindfulness literature, identifying five factors of the construct based on items from five different inventories. They then showed that some factors of mindfulness exhibited stronger relationships with health and well-being outcomes than others. For example, the *ability to observe experiences* factor was positively related to undesirable health symptoms (r = .17), whereas the *ability to experience without judgment* factor was negatively related to those

same symptoms (r = -.50). In this dissertation, an EFA of items from the five most popular resilience measures helps to identify a unifying set of lower-order resilience factors.

Method

Participants. Participants were 419 individuals living in the United States who were age 18 and over recruited from Amazon's Mechanical Turk (M-Turk). Prior research has found that M-Turk workers are more diverse than those in undergraduate samples and provide reliable data (Buhrmester, Kwang, & Gosling, 2011, Goodman, Cryder, & Cheema, 2013; Paolacci, Chandler, & Ipeirotis, 2010), including data for personality and workplace variables (Behrend, Sharek, Meade, & Wiebe, 2011). Participants were paid $0.50 for their participation.

Participants who failed to provide informed consent prior to beginning the survey, were missing more than 10% of their data, completed the survey in less than three minutes (approximately the fifth percentile of participants), or failed to select the required choices during any of the four accuracy checks (e.g., "Please select Option 1: Rarely True") were subsequently removed from the dataset, and a total of 396 participants were retained for the final analysis (95% of the initial sample). The average age of the final sample was 37 (SD = 12.3), 179 participants were male (45.2%, note that 2 participants did not respond to this question), 309 participants self-identified as White (78%), and 158 (42.8%) participants completed college or obtained an advanced degree.

MacCallum, Widaman, Zhang, and Hong (1999) found that sample sizes of 100 are sufficient in cases where factors are overdetermined (i.e., at least three or four variables per factor) and communalities are high (average of at least .70). Through a survey of participant-to-item ratios in published research, Costello and Osborne (2005) found that a large number of published studies employed ratios varying between 2 to 5 participants per item. In this study,

participants responded to 101 resilience items, so there were approximately 4 participants per item. Although the precise number of expected lower-order resilience factors was not initially clear, I anticipated fewer that fewer than 10 factors would emerge, resulting in at least four variables per factor (see Table 1 for extant factors, which informed expected factors). Thus, research suggests that both that recruitment methodology and the sample size were appropriate for this study and were also in line with typical practices in the literature.

Procedure. Participants responded to an online survey consisting of the five most popular and commonly used resilience inventories in the literature. Because different measures have different sets of instructions and anchors, and this has the potential to influence item interpretation, items were kept in their original form and were clustered by scale (though items were randomized within each measure and the order of measures was also randomized).

Measures. Measures of resilience were selected on the basis of three criteria. First, measures had to actually assess resilience as opposed to similar/related constructs (i.e., measures assessing hardiness and grit were not eligible for this study; see Duckworth, Peterson, Matthews, & Kelly, 2007 and Eschelman, Bowling, & Alarcon, 2010 for a review). This decision is in line with findings from Grossman's (2014) meta-analytic study, which found that hardiness and resilience are not isomorphic constructs, despite their conceptual overlap. Second, measures needed to assess personal resilience in adults (i.e., measures of family resilience and child resilience were not eligible; Jew, Green, & Kroger, 1999; McCubbin, Thompson, & McCubbin, 1996), also commensurate with decision rules from previous meta-analyses on the construct (Grossman, 2014). Finally, measures were required to have demonstrated sufficient reliability in previous research (see Grossman, 2014). Altogether, five measures were selected for this study (see Table 1 for an overview).

Ego-Resilience. Block and Kremen's (1996) measure assesses ego-resilience with 14 items. Item responses are on a four-point Likert scale (1 = *disagree very strongly* to 4 = *agree very strongly*). In their initial validation study, Block and Kremen reported the internal consistency reliability of the overall measure to be α = .76. A sample item is: "I get over my anger at someone relatively quickly".

The Resilience Scale. Wagnild and Young's (1993) measure assesses five dimensions of resilience using 25 items, which are measured on a seven-point Likert scale (1 = *disagree* to 7 = *agree*). In their initial validation work, they report the overall reliability of the entire instrument to be α = .91. A sample item is: "My life has meaning".

Connor-Davidson Resilience Scale. Connor and Davidson's (2003) measure assesses five dimensions of resilience with 25 items that are rated on a five-point scale (0 = *rarely true* to 4 = *true nearly all of the time*), and the authors reported acceptable reliability (α = .89) for the overall measure. A sample item is: "When things look hopeless, I don't give up".

The Resilience Scale for Adults. Friborg et al.'s (2003) measure assesses five dimensions of resilience using 37 items. The authors do not report the reliability of the overall instrument, but note that the reliability of the subscales ranged from α = .67 to .90. Items are rated on a five-point scale, with different positive and negative anchors for each item. A sample item is: "In difficult periods I have a tendency to…" and responses range from "1 = *view everything gloomily*" to "5 = *find something good that helps me thrive*".

The Brief Resilience Scale. The Brief Resilience Scale (Smith et al., 2008) assesses the ability to bounce back with six items, which are rated on a six-point Likert scale (1 = *strongly disagree*; 6 = *strongly agree*). In their initial validation work of the measure, the authors report

adequate levels of internal consistency reliability ranging from ranged from α = .80 to .91 across four samples. A sample item is: “I tend to bounce back quickly after hard times”.

Data Analyses

Correlations between Current Resilience Instruments. Bivariate correlations were computed for each of the original resilience instruments. The resulting correlation matrix provided a basic indication of the degree to which instruments overlapped with one another in their assessment of the resilience construct.

Exploratory Factor Analysis (EFA) of Resilience Items. An oblique EFA (i.e., promax rotation) was conducted on all of the resilience items using maximum likelihood estimation. Maximum likelihood estimation provided fit statistics for each espoused factor structure, and the oblique rotation allowed the factors to correlate with one another.

Four criteria were used to determine the number of factors to extract. First, parallel analysis (Horn, 1965) was conducted. In parallel analysis, one first generates a random dataset with the same properties as the observed data (i.e., sample size and number of variables) and then performs an EFA on the simulated data. Eigenvalues from the original and simulated analyses are compared, and only factors with eigenvalues greater than those from the simulation are retained. In other words, parallel analysis minimizes the possibility that a factor will be retained due to chance alone. Second, fit statistics from the maximum likelihood estimation were examined. Since chi-square is sensitive to sample size, I followed guidelines by Hu and Bentler (1999) and examined the RMSEA statistic. Commensurate with Roberts et al. (2005), a cut score of .05 was used as a threshold for good fit. Third, the discontinuity (scree) plot of eigenvalues (Cattell, 1996) was analyzed via a rule-of-thumb approach, such that I looked for a clear break in the graph indicating the point at which factor importance is minimized. Finally, to avoid over-

and under-factoring (Wood, Tataryn, & Gorush, 1996), theory was also relied upon. Once a final solution was obtained, the individual factors were interpreted and given names and definitions.

Results

Correlations between Current Resilience Instruments. Bivariate correlations between each of the resilience measures were analyzed (see Table 3). All of the correlations were significantly different from zero ($p < .05$, $n = 396$), and they ranged from $r = .55$ (The Ego Resilience Scale and the Brief Resilience Scale) to $r = .90$ (The Connor Davison Scale and The Resilience Scale). These results suggest that, as expected, it is likely that each of the existing resilience measures taps into some common aspects of resilience; however, given the different definitions described in Table 1, it is likely that none of the measures comprehensively captures all of the possible factors comprising the resilience construct space.

Exploratory Factor Analysis (EFA) of Resilience Items. All of the resilience items were subjected to a series of oblique-promax rotated exploratory factor analyses (Sass & Schmidt, 2010). One- to ten- factor solutions were compared (see Table 4 for a summary and Table 5 for the rotated factor loadings from the final solution), and I followed the four steps outlined above to determine the number of factors to retain. First, results from the parallel analysis (see Table 4) suggested that the variance explained by the first eight factors was most likely not due to chance. Second, also shown in Table 4, the resulting RMSEA value for the 8-factor model was equal to .05, suggesting that this model fit the data well. Third, the scree-plot of eigenvalues from the analysis showed a slight break around 8 factors (see Figure 1). Finally, I relied on theory to develop qualitative interpretations of each factor model, and the eight-factor model provided the most interpretable solution. Thus, given that the quantitative indices supported the eight-factor model, simple structure could be obtained, and the eight-factor model

was most interpretable, the following factors were retained as the preliminary lower-order factors of resilience:[1]

Factor 1: Distress Tolerance and Recovery Speed. The first factor measures the way in which an individual reacts to the experience of unpleasant emotions. A high loading on this factor indicates the ability to remain calm during difficult experiences and return to baseline quickly after stressful events, whereas a low loading reflects the converse. All five resilience inventories had items that loaded onto this first factor.

Factor 2: Support from Others. The second factor represents the degree to which an individual perceives that he or she has a support network (i.e., has close friends or family members that can provide emotional support). The Resilience Scale for Adults (Friborg et al., 2003) and the Connor-Davidson Resilience Scale (Connor & Davidson, 2003) were the only two scales that contained items that loaded onto this factor.

Factor 3: Faith, Purpose, and Future. The third factor reflects the degree to which an individual moves through life with a sense of direction and efficacy. More specifically, this factor gets at an individual's ability to relate in-the-moment experiences to a greater sense of purpose and his or her faith that goals are eventually attainable. With the exception of the Brief Resilience Scale (Smith et al., 2008), each instrument contains items that loaded onto this factor.

Factor 4: Positivity and Self Reliance. The fourth factor represents perceptions of self-reliance, or the degree to which a person feels that she or he can depend on his or her own power and resources. Relatedly, high loadings on this factor also reflect the degree to which a person

[1] Note that, following guidelines from Baer et al. (2006), construct interpretations were only primarily based on those items with factor loadings .40 or above and those items that only loaded on a single factor (i.e., items that loaded on multiple factors, threshold of .20 difference were removed). Items not eligible for interpretation were also removed from subsequent analyses. Thus, in the eight-factor model, construct interpretations were based on 76 of the original 101 items.

can approach difficult tasks with a positive attitude. The Connor-Davidson Resilience Scale (Connor & Davison, 2003) and the Resilience Scale for Adults (Friborg et al., 2003) contained the most items that loaded onto this factor, although there were also a few from The Resilience Scale (Wagnild & Young, 1993).

Factor 5: Challenge and Curiosity. The fifth factor measured the mindset in which individuals approach new situations. High loadings reflect a learning and growth orientation, such that new tasks are seen as adventures and are approached with a sense of openness or challenge. Low loadings are more indicative of a task-focused orientation and a desire to remain inside one's comfort zone. Block and Kremen's (1996) resilience measure was the only instrument with items that loaded onto this factor.

Factor 6: Work Ethic and Organization. The sixth factor represents whether or not a person possesses "life skills," such that high loadings on this factor reflect the ability to stay organized, manage one's time, plan ahead, and work hard. With the exception of the Brief Resilience Scale (Smith et al., 2008), each instrument contains items that loaded onto this factor.

Factor 7: Social Skills. The seventh factor assessed individual's social skills (i.e., ability to adapt one's style and engage with new people in a variety of different social situations). Items from both the Resilience Scale for Adults (Friborg et al., 2003) and Block and Kremen's (1996) resilience scale loaded on this factor.

Factor 8: Family Coherence. The eighth factor assessed the degree to which an individual shares values with and feels connected to his or her family. The Resilience Scale for Adults (Friborg et al., 2003) was the only instrument to contain items that loaded onto this factor.

PHASE 2:

Content Validity Analysis

Although factor analysis demonstrates which items are responded to similarly by participants, Schreisheim, Powers, Scandura, Gardiner, and Lankau (1993) note that the results of factor analyses do not always explicate the reasons underlying factor emergence. For example, some researchers have found evidence for method effects that occur due to item keying (Spector, Van Katwyk, Brannick, & Chen, 1997), and item clustering can sometimes occur for reasons unrelated to item content. In turn, Schreisheim et al. argue that a dogmatic adherence to EFA results can sometimes lead researchers to inadvertently draw the wrong conclusions about construct content, and they recommend the use of alternative strategies to provide evidence supporting the veracity and content validity of instruments.

Content validity is defined as the extent to which a measure's items reflect a particular content domain (Hinkin & Tracey, 1999; Murphy & Davidshofer, 2005; Schriesheim et al., 1993). In this study, a modified version of Anderson and Gerbing's (1991) approach (see Howard & Melloy, 2016) was used to ensure that the factor labels and definitions derived from the EFA results were consistent with the content of the items in each factor. Subject matter experts in two distinct samples were presented with the labels and definitions for each of the empirically derived lower-order resilience factors and asked to sort each item from the extant resilience measures into one of the newly identified lower-order factors. They were also given the opportunity to rate each item's relevance to resilience and provide comments. This method helped to identify and differentiate among items that represent each underlying factor with

greater and less fidelity. Overall, this analysis provided additional evidence that the newly created lower-order factor labels and definitions were accurate representations of resilience and also identified the most content valid resilience items for each lower-order factor.

Method

Participants. Two samples of subject matter experts (SMEs) were recruited for this analysis. In the first sample, 16 psychology graduate students (or recent graduates) who had completed at least two years of advanced study were recruited. Although they indicated that they were not particularly familiar with the resilience literature (mean level of familiarity = 1.94, *SD* = 0.85 on a five-point Likert scale, where 5 is most familiar), they were familiar more generally with the personality literature (mean level of familiarity = 3.56, *SD* = 0.73 on a five-point Likert scale, where 5 = most familiar). In the second sample, 17 experts on resilience, all of whom had obtained a doctoral degree and published at least one article on the construct were recruited. Their average level of familiarity with the resilience literature was 4.47 out of 5 (*SD* = 0.62; their familiarity with the personality literature was 3.94, *SD* = 1.03), and 71% of the sample indicated that they had been studying resilience for five or more years.

Schriesheim et al. (1993) and Hinkin and Tracey (1999) note that ideal participants for content validity studies should have a minimum cognitive ability to read and understand the degree to which items fit into different categories. Given the level of education and the participants' average level of comfort with either the resilience or individual differences literatures, both samples were deemed to have exceeded these criteria.

Procedure. After providing informed consent, SMEs were presented with a definition of overall resilience[2] for background as well as the labels and definitions for each of the lower-

[2] Note that overall resilience was defined as, "The ability to bounce back from stress and recover from adversity."

order resilience factors identified through the EFA. After they had the opportunity to review each of the labels and definitions, they were asked to sort each of the items into a category associated with the factor they felt it was most related to.

Measures. SMEs were presented with the items from the aforementioned five resilience measures and sorted each of the items into the categories revealed by the EFA conducted in Phase 1. Some resilience items were negatively worded, so the instructions clarified that participants should focus on the *content* (i.e., not the direction) of each item, explaining that some items measure constructs by assessing them at high levels while others assess them at lower levels (in line with prior content validity studies; for an example see Colquitt, Baer, Long, & Halvorsen-Ganepola, 2014).

Data Analyses. To assess the substantive validity of each item, I computed two indices for each sample: the Proportion of Substantive Agreement (P_{sa}) and the Coefficient of Substantive Validity (C_{sv}). The P_{sa} assesses the proportion of respondents who assigned an item to its intended construct: $P_{sa} = n_c/N$, where n_c represents the number of participants who assigned the item to its intended construct, and N represents the total number of participants. The C_{sv} represents the extent to which respondents assign an item to its intended construct more than any other construct: $C_{sv} = (n_c – n_o) / N$, where n_c represents the number of participants who assigned the item to its intended construct, n_o represents the highest number of assignments of the item to any other dimension in the set, and N represents the total number of participants. Howard and Melloy (2016) analyzed the binomial probabilities associated with the number of correct assignments relative to the number of the participants in the sample, and they subsequently developed critical values to test the statistical of significance of C_{sv}. They label critical values as M and provide a reference table of M values in text. Following this approach, C_{sv} was deemed to

be statistically significant when the number of correct cases exceeded the values of M identified by Howard and Melloy.

Results

To ensure that the selected content valid items were generalizable to a wide-array of individuals, only those items that met the criteria for retention in *both* samples were deemed to be content valid in this study (see Tables 6 and 7 for results from both SME samples). Analyses on data provided by the Graduate Student SME sample and the data provided by the Resilience SME sample resulted in the same retention decisions 85.3% of the time (Cohen's Kappa = .71, $p < .001$). Each sample independently recommended the retention of 39 items, but only 33 items met the criteria for retention in both samples (see Table 8, which also includes the average relevance to overall resilience as rated across both samples). The remaining items were removed from all subsequent analyses.

Two additional item retention decisions are worth mentioning. First, results showed that participants in both samples often incorrectly assigned items from *Positivity and Self-Reliance* to the *Distress Tolerance and Recovery Speed* factor, and only one item from *Positivity and Self-Reliance*, "I am able to depend on myself more than anyone else" was correctly classified in both samples. Thus, although the possibility remains that *Positivity and Self-Reliance* constitutes a lower-order factor of resilience, the data to date suggests that existing items assessing this aspect of resilience may not be sufficiently distinguishable from those assessing other lower-order resilience factors. Further, since one item is insufficient to represent a lower-order factor, this factor (along with the one item in question) was removed from subsequent analyses. Second, one item, "When I make plans, I follow through with them," was inadvertently left out of materials presented to the Graduate Student SME sample. This item strongly met the criteria for retention

in the Resilience SME sample and was included in the final analysis (see Table 9 for a list of final resilience items).[3]

Given their domain-relevant expertise, I also gave the Resilience SME sample the opportunity to provide written qualitative feedback on the working lower-order factor taxonomy of resilience. Generally, the SMEs did not indicate that other lower-order resilience factors were missing from the working taxonomy, suggesting that this taxonomy is likely quite comprehensive and not deficient in covering the construct space. However, several SMEs did express the belief that, despite their inclusion in several resilience measures, items in the *Support from Others* and *Family Coherence* factors may be more appropriately conceptualized as antecedents of resilience rather than an aspect of resilience itself.

[3] Note that the confirmatory factor analyses below were run with and without the item in question, and the presence of the item did not fundamentally alter model fit.

PHASE 3:

Confirm Structure and Test Alternative Confirmatory Factor Models

Once a set of lower-order factors and their most representative items had been identified, I used CFA to test competing ways to model the lower-order factor structure of resilience by considering the viability of different reflective models in a separate sample. Briefly, reflective (i.e., effect-indicator) models, which are most common in the resilience literature, suggest the direction of causality flows from the latent construct (i.e., resilience) to its indicators or lower-order factors (e.g., *persistence* and *the ability to find meaning in adversity*; Wagnild & Young, 1993). In other words, each of the identified factors or indicators is an imperfect reflection of the latent variable, and the shared or common variance across all of the indicators is of particular interest in driving prediction.

CFAs are useful here for several reasons. In particular, EFAs can sometimes reveal a number of plausible models, which differ on number and content of factors, and CFAs can then be used to examine and compare the fit of such models. For example, although their initial analyses of the lower-order structure of conscientiousness provided evidence in support of both a five and six-factor model, CFAs helped Roberts et al. (2005) settle on a five-factor model. Similarly, in their analysis of mindfulness factors, Baer et al. (2006) conducted nested chi-square comparison tests to explore whether a second-order model better fit the data than a model of separate, yet correlated, mindfulness factors.

In the resilience literature, there is some debate as to whether or not resilience is best represented by a unidimensional model (i.e., all of the items load on a common factor), a series of correlated lower-order factors, or a second-order model (i.e., an underlying factor of resilience drives variation in the espoused, lower-order factors). Additionally, some researchers argue that resilience is an individual characteristic reflecting aspects of one's disposition (e.g., Block & Block, 1980), whereas others argue that the presence of protective situational factors, such as social support, are the primary predictors of stress recovery and better reflect resilience (e.g., Bonanano, 2012; Friborg et al., 2003). Measures of resilience often include items tapping both conceptualizations. In this study, CFAs were used to explore alternative hierarchical structures for given factors, including those that model the effects of dispositional and situational items on resilience and overall fit.

Method

Participants. Participation was restricted to U.S.-based adults recruited from MTurk. Although being a worker in paid employment was not a requirement for inclusion in this study, individuals who were currently employed were asked to report on some workplace variables so that potential relationships between resilience and work outcomes could be examined on an exploratory basis. Five hundred and eleven individuals responded to the first wave and 186 responded to the second wave (2 weeks later; retention rate = 37%). Note that this sample is distinct (i.e., non-overlapping) from the first sample obtained for the exploratory factor analyses (Phase 1). Data were cleaned following the same guidelines as in the EFA. The final cleaned sample consisted of 435 individuals, 186 of which were male (42.8%). The average age of the sample was 38.56. (*SD* = 12.91), 345 (79.3%) participants self-identified as White, and 116 (48%) had completed college or obtained an advanced degree.

Because the criterion related variables were assessed in Time 2, criterion related validity analyses could only be conducted on those individuals who completed both waves of the study. Once the data were cleaned, the criterion related validity analyses (note analyses in all subsequent phases used this sample) were based on a sample consisting of 166 individuals; 60 (36.14%) of which were male. The average age of the sample was 42.7 (*SD* = 13.46), 141 (85%) participants self-identified as White, and 195 of the participants (50.1%) had completed college or obtained an advanced degree. Although it was not a requirement for participation in this study, 115 (69%) of those participants worked full-time. On average, those participants were full-time employees for 18.65 years (*SD* = 11.74) and were at their current job for 7.86 years (*SD* = 7.04).

Statistical tests were conducted to compare the demographic makeup of those individuals who only completed Wave 1 to the demographic makeup of those who participated in both waves of the survey. Results revealed that the proportions of males, $\chi^2(1) = 29.66$, $p < .001$, differed across the two samples (i.e., less men returned to complete Wave 2 surveys), as did the proportion of non-minority (i.e., white) participants (i.e., there were fewer minority participants in Wave 2), $\chi^2(1) = 12.92$, $p < .001$. Additionally, the average age of the participants differed statistically across the samples, such that those who completed both waves were older, $t(434) = 5.37$, $p < .001$, $d = 0.53$. Taken together, these results suggest that those participants who completed both waves of the assessment are somewhat different from those who only completed Wave 1 of the assessment, representing a limitation of this study.

Procedures and Measures. Data were collected in two waves online. In Wave 1, participants responded to items assessing the lower-order resilience factors identified in Phase 2 (i.e., the same five resilience measures described in Phase 1) and a number of personality traits. Wave 2 was conducted two weeks later to reduce the potential effects of common method

variance (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003), and participants responded to measures assessing criteria theoretically expected to be related to resilience (described in greater detail in Phase 4). Participants were paid $0.50 for their participation in each wave of the survey.

Data Analyses

CFAs were conducted in MPlus 7 using maximum likelihood estimation. An initial confirmatory factor analysis based on the results of the exploratory factor analysis and the SME content validity study (herewith identified as the c*orrelated traits model*; see Figure 2*)* was conducted first, and then alternative confirmatory factor analytic models were also considered.

Reise, Moore, and Haviland (2010) outline four models that researchers use to study latent constructs, and all four competing models were tested in this study. First, as mentioned above, those items that were retained on the basis of the exploratory factor analysis and content validity study were combined into a *correlated traits model*, such that items loaded on given factors, and the factors were correlated with one another. Reise et al. (2010) note that this model is a reasonable way to understand multidimensionality, but also argue that this model does not assume or assess the degree to which latent traits are indicated by a common cause. Alternative measurement models were thus also considered. I first tested, a *unidimensional model* (see Figure 3), where all items were forced to load on a common factor. This model, though likely implausible, is important to the study of resilience because it empirically establishes whether or not it is it is appropriate to conceptualize the construct as consisting of just one factor or several factors, as outlined above. A *second-order model* (see Figure 4) was then considered, which posits that resilience is a higher-order construct that explains why a number of primary dimensions (i.e., those identified in the EFA and content validity study) may be correlated. This model assumes that there is no direct relationship between each of the items and general

resilience, instead assuming that there is an indirect effect between items and resilience, such that the effect of each item is mediated through its associated lower-order factor. Finally, a *bifactor model* (see Figure 5) was tested to simultaneously model the common variance shared by all factors as well as the specific variance unique to each factor (Chen, Hayes, Carver, Laurenceau, & Zhang, 2012; Chen, Jing, Hayes, & Lee, 2013). Additionally, a few theoretically driven supplementary models that considered the effects of individual versus situational drivers were considered, as were modification indices when appropriate (see Figures 6-9).

Model fit was assessed using the chi-square test of exact fit, the comparative fit index (CFI), the Root Mean Square Error of Approximation (RMSEA), and the Standardized Root Mean Square Residual (SRMR). The chi-square test, which approximates model misfit, is sample size dependent. Thus, Hu and Bentler's (1999) criteria were followed, where fit is deemed acceptable when the CFI is above .95, SRMR is below .08, and RMSEA is below .06. Additionally, following recommendations by Browne and Cudeck (1993), confidence intervals are reported for RMSEA estimates. Model comparisons were assessed using a chi-square difference test, such that a significant decrease in the chi-square indicates a more plausible model.

Results

I first followed the results of the exploratory factor analysis and the content validity analysis and combined the seven-factors into a *correlated traits model* (see Table 10 for a summary of all models). The fit of this model in the was adequate: $\chi^2(474) = 1169.44$, CFI = .90, TLI = .88, RMSEA = .06 (.055, .064), SRMR = .06. However, it should be noted that RMSEA

only met MacCallum, Brown, and Sugawara's (1996) criteria for mediocre fit,[4] and the CFI, and did not fully meet Hu and Bentler's (1999) specifications for good fit.

Next, I tested the three alternative models outlined by Reise et al. (2010). In the *unidimensional model*, I tested whether resilience could be classified as a construct consisting of just one factor. Although coefficient α was high (α = .94), likely due to the sheer number of items, Table 10 shows that the unidimensional model did not fit the data well: $\chi^2(528) = 7209.16$, CFI = .57, TLI = .55, RMSEA = .12 (.114, .122), SRMR = .10. The *second-order model*, for which variance in lower-order factors could be explained by a higher-order resilience factor, also fit the data adequately, but did not offer improvement over the *correlated-traits model:* $\chi^2(488) = 1307.94$, CFI = .88, TLI = .87, RMSEA = .06 (.060, .068), SRMR = .08. Finally, the *bifactor model* also did not offer a significant improvement in fit over the *correlated-traits model*: $\chi^2(470) = 1610.09$, CFI = .83, TLI = .81, RMSEA = .08 (.073, .081), SRMR = .12. Relevant fit statistics, as well as chi-square difference tests with respect to the *correlated traits model*, are presented in Table 10.

As mentioned previously four other models were tested on the basis of theory. I first considered a model, herewith labeled *higher-order (1),* consisting of two higher-order factors (see Figure 6): "individual differences" (*Distress Tolerance and Recovery Speed*; *Faith, Purpose, and Future*; *Challenge and Curiosity*; *Work Ethic and Organization*; *Social Skills*) and "situational drivers (e.g., *Support from Others*; *Family Coherence*). The model did not offer any

[4] As mentioned prior, one item, "When I make plans I go through with them," was accidently omitted in the Graduate Student SME sample, but was ultimately retained in the overall resilience model. To ensure that this was appropriate, I removed the one item in question and retested the model. The models were not properly nested (i.e., there were different observed variables in each model), so a chi-square comparison test could not be conducted. However, the global fit indices showed that removing the item did not substantially improve the fit of the model $\chi^2(443) = 1119.22$, CFI = .90 , TLI = .88, RMSEA = .06(.056, .065), SRMR = .06. As such, I retained the item in the model in subsequent analyses.

improvement over the *correlated traits model*: $\chi^2(487) = 1434.84$, CFI = .86, TLI = .85, RMSEA = .07(.065, .073), SRMR = .15. The other three models also did not offer any significant improvement in: *Select correlations (1),* a model in which *Distress Tolerance and Recovery Speed*, *Faith, Purpose, and Future*, *Challenge and Curiosity*, *Work Ethic and Organization*, *Social Skills* were allowed to correlate, and *Support from Others*, and *Family Coherence* were allowed to correlate, but there were no higher-order factors (see Figure 7): $\chi^2(484) = 1399.68$, CFI = .85, TLI = .85, RMSEA = .07(.064, .072), SRMR = .16; *Higher-order (2),* a model in which *Social Skills* loaded on the "situational driver" factor instead of the "individual differences" factor (see Figure 8): $\chi^2(487) = 1483.01$, CFI = .86, TLI = .85, RMSEA = .07(.064, .072), SRMR = .16; and *select correlations (2),* a model in which *Distress Tolerance and Recovery Speed*, *Faith, Purpose, and Future*, *Challenge and Curiosity*, and *Work Ethic and Organization* were allowed to correlate with one another, and factors *Support from Others*, *Social Skills,* and *Family Coherence* were allowed to correlate (see Figure 9): $\chi^2(486) = 1474.77$, CFI = .88, TLI = .84, RMSEA = .07(.066, .074), SRMR = .18. Chi-square difference tests for these models are also presented in Table 10 and, as indicated, none of the tested models offered improved fit over the *correlated traits model*.

Finally, in an exploratory analysis, I did try to improve the fit of the *correlated traits model* by making adjustments based on the modification indices (herewith referred to as the *modified correlated traits mode*l). The end result allowed for a few correlated errors between items that were similar in content, from the same original measurement instrument, and currently nested within the same factor,[5] and these modifications significantly improved the fit of the

[5] Errors from the following variables were allowed to correlate with one another in the *modified correlated traits model*: two related items in the *Distress Tolerance and Recovery Speed* factor assessing the ease to which someone bounces back from stress (from The Brief Resilience Scale, Smith et al., 2008); two related items in the *Faith,*

correlated traits model: $\chi^2(470) = 1019.57$, CFI = .92, TLI = .91, RMSEA = .05(.048, .060), SRMR = .06, $\chi^2_{diff}(4) = 149.87$, $p < .001$. Taken together, results of these analyses suggest that *correlated traits model* is the best reflective representation of the resilience construct space and, if one is willing to consider correlating the errors of some theoretically similar items, the *modified correlated traits mode*l is the best representation of the resilience construct and does come closer to reaching Hu and Bentler's criteria.

Purpose, and Future factor assessing faith and the belief that thing happen for a reason (from the CDRISC, Connor & Davidson, 2003); two related items in the *Work Ethic and Organization* assessing organizational skills (from the RSA, Friborg et al., 2003).

PHASE 4:

Criterion-Related Validity of Resilience

Overall Resilience and Criteria

Grossman's (2014) meta-analysis found some evidence that the measure of resilience employed moderates relationships between resilience and correlates. For example, the Connor-Davidson scale exhibited a very strong correlation with conscientiousness ($\rho = .70$, $k = 2$), whereas a more modest relationship ($\rho = .33$, $k = 6$) was found for Block and Kremen's (1996) measure of resilience, and the confidence intervals of two estimates did not overlap. Similarly, the Resilience Scale for Adults (Friborg et al., 2005) emerged as a stronger predictor of mental health symptoms than the Connor-Davidson Resilience Scale ($\rho = -.67$, $k = 5$, vs. $\rho = -.39$, $k = 30$; non-overlapping confidence intervals), but for well-being, the Connor-Davidson Resilience Scale was a stronger predictor than The Resilience Scale ($\rho = .59$, $k = 8$ vs. $\rho = .33$, $k = 5$), although the confidence intervals did overlap slightly. As mentioned, each of the aforementioned resilience measures is comprised of a different set of lower-order factors, and it is plausible that the moderating effect of measurement scale is due to the fact that the measures do not all tap into the same aspects of the resilience construct space. Therefore, although Grossman's analyses were based on relatively small numbers of studies and may potentially be subject to second-order sampling error, they suggest that the way resilience is measured can influence conclusions drawn by researchers. Consequently, a unified set of lower-order resilience factors will provide greater clarity about the structure and nature of resilience, in turn helping researchers to better

understand the directionality and strength of relationships between resilience, both overall and specific factors, and important criteria of interest.

Resilience Factors and Criteria

Lower-order factor scores consist of both common (i.e., shared) and specific (i.e., unique to the factor) variance. They therefore have the potential to exhibit differential relationships from one another in predicting criteria of interest, consequently influencing relationships between higher-order constructs and important criteria. Stewart (1999), for example, found that the order and industriousness factors of conscientiousness differentially predicted job performance at different stages of one's career. Order was most predictive of job performance during the transition phase early in one's career, enabling employees to manage resources and competing work demands; however, as employees entered a maintenance phase at work, industriousness became more predictive of performance. Similarly, Dudley et al.'s (2006) meta-analysis of conscientiousness factors found that achievement was most predictive of overall task performance ($\rho = .25$, $k = 26$) whereas dependability was most predictive of job dedication ($\rho = .45$, $k = 46$).

Opposing relationships between lower-factors and outcomes can also lead to somewhat misleading conclusions regarding the relationship between the higher-order construct and outcomes. For example, Moon (2001) found that achievement-striving positively predicted organizational commitment, while duty negatively predicted organizational commitment—leading to an overall null relationship between overall conscientiousness and organizational commitment. Therefore, it is important for researchers to understand relationships between resilience factors and outcomes as they may differ meaningfully between factors as well as from the underlying latent construct.

Clarification of relationships between lower-order resilience factors and criteria advances both science and practice by providing specific information about what areas should be targeted for intervention. For example, Wagnild and Young (1993) propose meaning finding as a key element of resilience, and studies have found positive relationships between the ability to find meaning in adversity and beneficial health outcomes (Penley, Tomaka, & Wiebe, 2002; Davis, Nolen-Hoeksema, & Larson, 1998). As an example, a discovery that a meaning finding factor exhibits a stronger negative relationship to negative mental health outcomes (e.g., depression) relative to other resilience factors may lead to resilience training programs that emphasize cognitive processes, teaching individuals to restructure their thoughts in challenging situations. Alternatively, if social support was found to be the factor of resilience most strongly negatively related to depression or other negative mental health outcomes, then resilience training programs may choose to focus more on teaching individuals how to make, keep, and rely upon social connections.

Method

Participants and Procedures. Analyses in this phase were conducted with the 166 participants who completed both waves of Phase 3 (i.e., Wave 1: Resilience and personality measures and Wave 2: Time-lagged health, well-being and workplace correlates).

Measures – Time 1

Resilience. Overall global resilience was conceptualized as a composite score, calculated as the arithmetic mean[6] of all of the items, and it exhibited high internal consistency reliability (α

[6] Note that source items were derived from different measurement instruments with different measurement scales/anchors. To ensure consistency among responses, a linear transformation was conducted to place all of the scores, based on percentage, on the same 10 point scale (item score / scale-maximum * 10). Linear transformations, by definition, do not alter the structure of the data, so the correlations between the items/scales remains the same (note that the subsequent analyses using these items/scales rely on item correlations). The global resilience

= .94, though the debate as to whether or not it is appropriate to combine multidimensional constructs into a single composite is worth acknowledging and will be further addressed below; e.g., Edwards, 2001; Paunonen, Rothstein, & Jackson, 1999). Lower-order resilience scores were calculated in the same fashion using only those items associated with a specific factor (confirmed by Phases 2 and 3). Table 11 provides descriptive statistics for the global resilience composite measure, lower-order resilience factors, and the other assessments used in Waves 1 and 2.

***Dispositional Optimism*.** The Life Orientation Test–Revised (LOTR: Scheier, Carver, & Bridges, 1994) was used to assess dispositional optimism. The measure consists of six items rated on a five-point Likert scale (0 = *strongly disagree* to 4 = *strongly agree*). The authors report acceptable internal consistency reliability for the overall measure (α = .78).

Five-Factor Model of Personality. DeYoung et al.'s (2007) Big Five Aspects Scale was used to assess neuroticism, agreeableness, conscientiousness, extraversion, and openness/intellect. For each Big Five personality trait, 20 items are rated on a five-point Likert scale (1 = *strongly disagree*; 5 = *strongly agree*), consisting of ten items for each meso-level factor (i.e., volatility and withdrawal for neuroticism; compassion and politeness for agreeableness; industriousness and orderliness for conscientiousness; enthusiasm and assertiveness for extraversion; intellect and openness for openness). Prior research supports the validity of DeYoung et al.'s classification scheme within the broader FFM, including for the

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composite score was calculated as the mean of the transformed items but, because each of the sub-factors did not necessarily consist of the same amount of items, some factors are weighted slightly more highly than others. As an alternative check, mean scores for each of the dimensions were first calculated, and then those factor scores were aggregated to create an alternative overall score. This approach, which weighted the dimensions equally, was correlated r = .995 with the original approach; thus, a simple linear composite was deemed appropriate for this analysis.

prediction of workplace outcomes (Judge, Rodell, Klinger, Simon, & Crawford, 2013). The authors report adequate reliabilities for each assessed trait (all αs > .70).

Positive and Negative Affect. Trait positive and negative affect was assessed using the Positive and Negative Affectivity Schedule (PANAS; Watson, Clark, & Tellegen, 1988). The PANAS consists of a list of 20 emotions, and participants rated how frequently they experienced each emotion "in the past few weeks" on a five-point Likert scale (1 = *very slightly or not at all*; 5 = *very much*). The authors report acceptable levels of internal consistency reliability for both positive and negative affect (α = .87 for both).

Measures – Time 2, General

Anxiety. Anxiety was assessed via the Beck Anxiety Inventory (BAI: Beck, Epstein, Brown, & Steer, 1988). The BAI consists of 21 items measuring the extent to which individuals experience symptoms of anxiety, and participants rated the severity to which they experienced each feeling or behavior in the past month on a four point Likert scale (0 = *not at all*; 5 = *severely – it bothered me a lot*). The authors report high internal consistency reliability (α = .92).

***Depression*.** Depression was assessed via the Revised Center for Epidemiologic Studies Depression Scale (CESD-R; Van Dam & Earleywine, 2011). The CESD-R consists of 20 items measuring the extent to which individuals experienced DSM-IV symptoms of depression, and participants rated how frequently they experienced each feeling or behavior in the past two weeks on a five-point Likert scale (1 = *not at all or less than one day*; 5 = *nearly every day for 2 weeks*). The authors report high internal consistency reliability (α = .93).

Physical Health. Physical health complaints were assessed with Spector and Jex's (1998) 13-item Physical Symptom Inventory (PSI). The PSI asks participants to indicate the frequency with which they have experienced a number of physical health complaints (e.g., upset stomach or

nausea, acid indigestion or heartburn, tiredness or fatigue) in the past month on a 1 (*not at all)* to 5 (*every day*) Likert scale. Spector and Jex note that the items can be summed to provide an indication of the frequency to which an individual experiences physical health complaints; however, because the items are in checklist format and the items are not indicators of a latent construct, they note that internal consistency reliability is not appropriate and do not report Cronbach's α.

Daily Drinking Questionnaire. The Daily Drinking Questionnaire (DDQ; Collins, Park, and Marlatt, 1985) assesses self-reported drinking behavior. Participants are instructed to think back to the last thirty days and then fill in daily counts of the number of drinks and the number of hours drinking for a typical week and a heavy drinking week. The authors do report some evidence of convergent validity, reporting a significant correlation ($r = .50$, $p < .001$) between the DDQ and results from another pre-established drinking questionnaire (Drinking Practices Questionnaire; Cahalan, Cisin, & Crossley, 1969). However, because the items are frequency-based and not indicators of a latent construct, Cronbach's α is not reported.

Satisfaction with Life. The Satisfaction with Life Scale (SWLS: Diener, Emmons, Larsen, & Griffin, 1985) assesses global judgments about one's life satisfaction with five items on a seven-point Likert scale ranging from 1= *strongly disagree* to 7 = *strongly agree*. In their study of more than 5,000 community-dwelling adults, Kobau, Sniezek, Zack, Lucas, and Burns (2010) found that the SWLS demonstrated adequate internal consistency reliability (α = .88).

Vitality. Vitality was assessed with a subscale from the short form (SF-36) of the health status survey of the medical outcomes study (MOS; Ware & Sherbourne, 1992). Participants indicated the frequency of four behaviors (e.g., Did you feel full of pep; Did you have a lot of energy) during the past four weeks on a six point Likert scale ranging from 1 = *all of the time* to

6 = *none of the time*. In their initial validation of the instrument, Ware and Sherbourne (1992) found that the vitality subscale of the SF-36 demonstrated adequate internal consistency reliability (α = .86).

Measures – Time 2, Workplace

Burnout. Burnout was assessed via the Shirom-Melamed Burnout Measure (SHBM: Shirom, 1989), which consists of 14 items assessing three factors of burnout: physical fatigue (6-items), emotional exhaustion (3 items) and cognitive weariness (5 items). Participants rated how frequently they experienced each feeling at work over the past 30 workdays on a seven-point Likert scale (1 = *never or almost never*; *7 = always or almost always*). In one study, the authors report an overall α = .93 for the measure (Shirom, Nirel, & Vinokur, 2006).

Job Satisfaction. A modified version of Brayfield and Rothe's (1951) job satisfaction index was used in this study (Judge, Locke, Durham, & Kluger, 1998). Participants responded to five items assessing global perceptions of job satisfaction on a seven-point Likert scale ranging from *strongly disagree* to *strongly agree*. In their study of 222 university employees, Judge et al. (1998) found evidence for adequate internal consistency reliability (α = .88).

Counterproductive Work Behavior. Counterproductive work behavior was assessed with the short version of the Counterproductive Work Behavior Checklist (CWB-C: Spector, Bauer, & Fox, 2010). Participants rated how frequently they performed ten counterproductive behaviors at work on a five-point Likert scale (1 = *never*, 5 = *every day*). Spector et al. (2010) found an internal consistency α = .78 for the measure.

Organizational Citizenship Behavior. Organizational citizenship behavior was assessed with the Short Version of the Organizational Citizenship Behavior Checklist (OCB-C: Spector et al., 2010). Participants rated the frequency to which they performed ten work behaviors on a

five-point Likert scale (1 = *never*, 5 = *every day*). Spector et al. (2010) found an internal consistency α = .80 for the measure.

Task Performance. Task performance was measured with Griffin, Neal, and Parker's (2007) measure of workplace performance, which assessed three dimensions: task proficiency (3 items; α = .88), adaptability (3 items; α = .89), and proactivity (3 items; α = .92). Participants rated how often they performed workplace behaviors over the past month on a five-point Likert scale (1 = *very little*; 5 = *a great deal*).

Data Analyses. I first conducted univariate analyses to test the magnitude and significance of the correlations between global and lower-order factors of resilience and relevant criteria.

As mentioned, global resilience is currently conceptualized as an average of all resilience variables, and this sort of analysis implicitly assumes that all variables either load on the same factor (akin to the *unidimensional model*) or are explained by a higher-order factor (akin to the *second-order model).* Taking into the consideration the fact that both the *unidimensional model* and the *second-order model* were not strongly supported in Phase 3 of this study, relationships between overall resilience and criteria were re-analyzed using relative weights analysis, which is more closely aligned with the *correlated traits model*. Each of the seven lower-order resilience factors was entered simultaneously into each equation (note separate relative weights analyses were run for each criterion) as different variables. The resulting output orthogonalized (i.e., re-specified the variables in such a way that they became uncorrelated with each other; Johnson, 2000; Tonidandel, Lebreton, & Johnson, 2009) and weighted the variables, so that the unique contribution of each lower-order resilience factor, relative to the other lower-order resilience factors, in predicting outcome could be determined. This is a substantial improvement over the

univariate approach, which does not consider shared variance between multiple predictors and therefore does not consider whether or not lower-order factors exhibit differential relationships with criteria. Effect size estimates (R^2) resulting from relative weights analysis in this study represent the percent of total variance in criteria that can be explained by the set of lower-order resilience factors, as opposed to the previous estimates which were calculated by reducing resilience down to a single factor and then correlating it with outcome of interest.

Finally, to formally use the *correlated traits model*, I also tested a series of structural equation models with paths from each of the lower-order resilience factors to four newly created latent outcome variables (see Figure 10): (1) a latent variable of health (i.e., anxiety, depression, and presence of physical symptoms), (2) a latent variable of well-being (i.e., satisfaction with life and vitality), (3) a latent job attitude variable (i.e., job satisfaction and burnout), and (4) a latent variable of job performance (i.e., task performance, OCB, CWB). This final approach, although similar to the relative weights analysis approach, considers the possibility of measurement error, noting that this method uses latent variables whereas the aforementioned two methods only use manifest variables.

Results

Univariate Analyses. Correlations between each of the resilience factors can be found in Table 12, and Table 13 provides a summary of the relationships between resilience, its factors, and examined criteria. Results show that the correlations with outcome were consistently in the same direction across factors; however, the magnitudes of the relationships at times differed from one another, such that some factors exhibited strong or moderate relationships with some outcomes, yet were only weakly or non-significantly correlated with others. Relationships were

examined between resilience, its lower-order factors, and criteria associated with personality, health, well-being, job attitudes, and job performance.

Personality Correlates. Among the Big Five personality traits, global resilience was most strongly associated with neuroticism (r = -.77)[7], extraversion (r = .78), and conscientiousness (r = .63). Relationships with agreeableness (r = .38) and openness to experience (r = .43) were lower. As expected, resilience also exhibited a strong positive relationship with optimism (r = .75) and positive affectivity (r = .65) and a strong negative relationship with negative affectivity (r = -.63).

Each of the seven lower-order resilience factors was significantly correlated with the higher-order Big Five personality traits, positive affectivity, negative affectivity, and optimism, and the pattern of correlations between lower-order resilience factors and both higher and lower-order factors of personality was consistent with the global resilience analyses. Relationships between lower-order resilience factors and neuroticism, conscientiousness, and extraversion were on average larger than those relating to agreeableness and openness to experience. For example, aside from C*hallenge and Curiosity* (r =.33), there were no significant correlations between any of the lower-order factors of resilience and openness, a sub-factor of openness to experience. Taken together, these results suggest that resilience as a construct likely overlaps with personality, and relationships of resilience with conscientiousness, extraversion, and neuroticism are particularly noteworthy.

Health and Well-Being Outcomes. The relationships between global resilience and each of the assessed health and well-being outcome measures were all significant, although some

[7] Note that, unless otherwise specified, all correlations discussed within Phase 4 are significant at the $p < .01$ level. Table 13 provides a full listing of all examined correlations and their significance levels.

relationships were larger than others. Specifically, global resilience exhibited strong relationships with depression (r = -.71), satisfaction with life (r = .59), and vitality (r = .58) and more moderate, though still substantial, relationships with anxiety (r = -.48) and negative physical health symptoms (r = -.46).[8]

Many of the relationships between lower-order resilience factors and health outcomes were similar in magnitude to those with general resilience. *Distress Tolerance and Recovery Speed* emerged as the top predictor in all cases (depression, r = .64; anxiety, r = -.46, and physical health symptoms, r = -.46), though the correlation between depression and *Support from Others* was also substantial (r = -.47). Well-being variables, however, did not exhibit the same pattern of relationships. *Social Skills* was the lower-order factor most strongly correlated with vitality (r = *.54*), though the correlation between *Distress Tolerance and Recovery Speed* was still large (r = .51). *Support from Others* (r = .54) and *Faith Purpose and Future* (r = .53) exhibited the strongest correlations with satisfaction with life. As a group, these results suggest that resilience, as well as its lower-order factors, are substantially related to both health and well-being and, in most cases, *Distress Tolerance and Recovery Speed* is the strongest lower-order predictor. It should also be noted that top predictors for satisfaction with life differed substantially from those of the other examined variables.

Workplace Outcomes. On an exploratory basis, relationships between resilience, job attitudes and job performance were also examined. The global resilience composite variable was significantly correlated with each of the higher-order workplace variables, though the

[8] Frequency data from the Daily Drinking Questionnaire were non-normal, and all correlations throughout the analysis were therefore non-significant. Of interest, resilience did not emerge as a predictor when either a Poisson distribution or a Negative Binomial distribution was used, both of which may be more appropriate for frequency data. On account of these results, number of drinks consumed was excluded from all further discussion in this paper, though when appropriate these health-related outcome variables are included in results tables.

relationships between resilience and the attitude-driven variables (i.e., burnout, r = -.62; job satisfaction, r = .56) were quite a bit stronger than the relationships between resilience and those variables relating to job performance (i.e., counterproductive work behavior, r = -.45; organizational citizenship behavior, r = .31; task performance, r = .31). With the exception of task proficiency, a lower-order factor of task performance (r = .07, p = *ns*), resilience was also correlated with the lower-order factors of each workplace outcome examined.

At the lower-order factor level, job attitudes were most strongly correlated with *Distress Tolerance and Recovery Speed* (*r*s = -.52 for burnout and .49 for job satisfaction) and *Work Ethic and Organization* (*r*s = -.55 for burnout and .49 for job satisfaction); *Faith, Purpose, and Future* also emerged as a moderate correlate of job satisfaction (r = .46). A number of factors were significantly correlated with the various aspects of job performance (i.e., CWB, OCB, and Task Performance), but the only correlations above .40 were with CWB (r = -.46 for *Distress Tolerance and Recovery Speed*; r = -.40 for *Work Ethic and Organization*). On the whole, the pattern of results shows that resilience is related to workplace variables, but more strongly so with those variables associated with job attitudes.

Relative Weights Analyses. The pattern of relationships from the relative weights analyses, where each factor was entered separately as a predictor, was also largely consistent with the pattern of univariate relationships found by examining correlations between the global resilience composites and criteria. In general, more variance in each outcome was explained when resilience-criteria relationships were modeled with relative weights analysis, where lower-order factors were treated as a set of predictors for each criteria, as opposed to correlation analysis, where all scale items were averaged into a composite variable that was then used as a predictor. However, two notable exceptions are worth mentioning. First, the relationship between

resilience and organizational citizenship behavior was only significant at the $p < .10$ level when analyzed with relative weights analysis, whereas it was significant at the $p < .01$ level when treated as a composite. Second, regarding task performance, resilience only emerged as a significant predictor of the lower-order factor of proactivity when relative weights analysis was used, whereas it emerged was a significant predictor of both adaptability and proactivity when treated as a composite variable (see Table 13, which compares the variance in outcome explained from the relative weights to global resilience and lower order resilience factors, and see Table 14, which summarizes the variance components from the relative weights analyses).

Nonetheless, these results confirm the aforementioned findings that global resilience has stronger relationships with health, well-being, and job attitudes and weaker relationships with other workplace variables (e.g., job performance). Results further underscore the finding that the relationships between different factors of resilience may differentially relate to criteria of interest, and more detailed analyses are presented below.

Personality Correlates of Lower-Order Resilience Factors. Among the Big Five, the seven lower-order resilience factors exhibited the strongest relationships with neuroticism (R^2 = .67), conscientiousness (R^2 = .68), and extraversion (R^2 = .76); however, the relationships with agreeableness, R^2 = .16, and openness to experience, R^2 = .35, were still statistically significant. All of the lower-order resilience factors emerged as significant predictors of extraversion and neuroticism. For neuroticism, more than half (56.72%) of the explainable variance can be attributed to *Distress Tolerance* (38.17%) and *Social Skills* (18.55%) and, for extraversion, 56.87% of the explained variance was due to *Social Skills* (39.63%) and *Challenge and Curiosity* (17.25%). Unlike the other Big Five personality factors, however, the relationship between Conscientiousness and *Work Ethic and Organization* was so strong that that none of the other

relative weights remained significant (the factor accounted for 57.44% of explained variance). As expected, these results echo the pattern findings from the univariate analyses presented above (see Tables 15-19 for detailed relative weights analyses with resilience factors as predictors of Big Five personality).

Regarding other personality correlates, resilience was moderately related to both positive (R^2 = .44) and negative (R^2 = .47) affectivity and strongly related to optimism (R^2 = .60). All of the lower-order factors, with the exception of *Family Support*, emerged as significant predictors of positive affectivity, and the explained variance was almost evenly distributed amongst those factors reflecting aspects of one's disposition (e.g., results range from 16.20% for *Distress Tolerance and Recovery* to 17.47% for *Faith, Purpose, and Future*, whereas the situationally driven factor of *Social Support was* significant but only accounted for 9.28% of explainable variance). Negative affectivity was more strongly influenced by situational factors, in addition to individual factors, such that most of variance in the construct could be attributed to *Distress Tolerance and Recovery Speed* (29.17%), *Work Ethic and Organization* (20.41%), *Social Skills* (18.07%), and *Social Support* (15.14%). For optimism, *Distress Tolerance* (24.19%) and *Social Skills* (16.23%) also emerged as top predictors, though it should be noted that weights associated with all of the predictors were statistically significant. Together, these results not only replicate the finding that some resilience factors are differentially related to personality constructs in magnitude, but also demonstrate that some relationships between lower-order resilience factors and personality traits become non-significant when considered in the context of the other lower-order resilience factors (see Tables 20 – 22).

Health and Well-Being Outcomes. The combined effect of all lower-order resilience factors and depression emerged as the strongest (R^2 = .55) of the three assessed health outcomes,

followed by physical health symptoms (R^2 = .30) and anxiety (R^2 = .29). *Distress Tolerance and Recovery Speed* expectedly emerged as the top predictor in all three models, and it was the only significant variable in the model predicting physical health symptoms. *Social Skills* was the only other significant predictor of anxiety (accounting for 23.41% of explainable variance; *Distress Tolerance and Recovery Speed* accounted for 31.05%). Although *Challenge and Curiosity* only accounted for 4.53% of explained variance, all of the lower-order resilience factors were significant predictors of depression. Tables 23-25 present detailed breakouts of these analyses and, as a set, demonstrate that resilience factors are stronger predictors of mental health outcomes than physical health outcomes.

Both well-being variables were related to resilience (R^2 for satisfaction with life = .42 and R^2 for vitality = .39). *Faith, Purpose, and Future* (25.52%), *Social Support* (23.14%), *Distress Tolerance and Recovery Speed* (16.03%), and *Family Coherence (14.28%)* emerged as significant predictors of satisfaction with life. For vitality, *Distress Tolerance and Recovery Speed* (20.95%) and *Social Skills* (accounting for 33.33% of explainable variance) were the only two significant variables. Again, these results emphasize the findings that the pattern of relationships between resilience, its lower-order factors, and health is different from the pattern of relationships associated with well-being (see Tables 28 and 29).

Workplace Outcomes. Resilience was related to both job attitude variables: burnout (R^2 = .42) and job satisfaction (R^2 = .34). For burnout, *Distress Tolerance and Recovery Speed (*accounting for 20.68% of explainable variance) and *Work Ethic and Organization* (accounting for 24.46% of explainable variance) were the strongest predictors. Relationships were expectedly lower for counterproductive work behavior (R^2 = .26), organizational citizenship behavior (R^2 = .12), and task performance (R^2 = .15). *Distress Tolerance and Recovery Speed* (36.86% of

explainable variance) and *Work Ethic and Organization* (accounting for 21.89% of explainable variance) were the only significant predictors of counterproductive work behavior, and none of lower-order resilience factors emerged as significant predictors of organizational citizenship behavior or task performance. These final workplace analyses suggest that resilience factors are more useful as predictors for affective workplace outcomes than performance-related outcomes (see Tables 30-40).

Structural Equations Modeling Analyses. Accounting for both the possibility of measurement error, as well as the intercorrelations between the lower-order resilience factors, I examined the paths between each of the factors and latent variables of health, well-being, job attitude, and job-performance (see Table 41). For health, the only significant paths were from *Distress Tolerance and Recovery Speed* ($\beta = -3.10$, $p < .001$) and from *Social Skills* ($\beta = 2.21$, $p < .05$). For well-being, paths from *Faith, Purpose, and Future* ($\beta = -.65$, $p < .001$), *Family Coherence* ($\beta = .23$, $p < .05$), and *Distress Tolerance and Recovery Speed* ($\beta = -.23$ $p < .05$) were significant. For job attitudes, only the path from *Distress Tolerance and Recovery Speed* emerged as significant ($\beta = .23$ $p < .05$). *Work Ethic and Organization* ($\beta = .77$, $p < .05$) was the only significant path in the job performance model, which made sense given the large correlation between *Work Ethic and Organization* and conscientiousness ($r = .81$), a known predictor of job performance (Dudley et al., 2006).

PHASE 5:

Examination of Construct Utility – Overlap with Big Five Personality

Grossman's (2014) meta-analysis found evidence that resilience substantially overlaps with Big Five personality traits, so much so that it could in some circumstances be conceptualized as a simple linear combination of the existing traits from the Five-Factor model. He further found that, in many cases, resilience may offer little to no incremental validity in predicting key health and well-being outcomes above and beyond Big Five personality. This study expands on those results by further examining the relationships between personality, resilience, and relevant outcome at both the higher-order (general construct) and the factor level.

Method

Participants and Procedures. Analyses in this phase were conducted with the 166 participants who completed both waves of Phase 3 (i.e., Wave 1: Resilience and personality measures and Wave 2: Time-lagged health, well-being and workplace correlates).

Data Analyses. The Big Five personality traits were regressed as a set of predictors onto the global resilience composite score and each of the lower-order resilience variables. The resulting R^2 values assessed the degree of overlap between resilience, its lower-order factors, and personality, and follow-up relative weights analyses determined the proportion of R^2 in each examined criterion attributable to the different personality factors.

The *correlated factor model*, however, considers resilience to be a construct comprised of a series of different but related factors and further suggests that it may not be appropriate to

aggregate all of the lower-order resilience factors into a single composite score. I accordingly conducted a canonical correlation analysis to further understand the multivariate pattern of relationships between resilience factors and Big Five personality factors. Essentially, this analysis sequentially fit a series of orthogonal vectors to the two variables sets in such a way that each successive vector explained the maximum possible amount of remaining variance in the two construct spaces. The ways in which resilience and big five personality factors loaded on each of the vectors provided additional insight into how Big Five personality factors, as a set, overlap with the newly identified resilience factors, as a set.

Finally, I used multiple regression to assess the utility of resilience factors in predicting outcome above and beyond Big Five personality factors. In the first step of the multiple regression analysis, I regressed the set of Big Five personality traits onto outcome of interest and then, in the second step, I added the seven lower-order factors of resilience to the regression equation as separate predictors. The ΔR^2 between the two models was computed, and its significance was assessed with an *F*-test.

Results

General Resilience and Big Five Personality. Tables 43 and 44 report the results of the regression and relative weights analyses, including those where Big Five personality traits served as predictors of the global resilience composite variable. Results suggest that 79% of variance in the global resilience composite overlaps with Big Five personality traits, and 88% of that variance can be explained by extraversion (35.67%), neuroticism (32.02%), and conscientiousness (19.11%). Interestingly, Grossman's (2014) meta-analytic study found that openness to experience emerged as a top predictor of resilience, where in this study it only explained 7% of variance in the resilience construct. Extraversion also emerged as a weaker

predictor in some of Grossman's models, but was a top predictor in the current study. Given the previous analysis, which suggests that resilience is not a unidimensional construct, the strong overlap between extraversion and *Social Skills*, and the more moderate relationships between most factors of resilience and openness to experience, these findings are not particularly surprising.

Factor Level Analyses. I further explored the overlap between resilience and Big Five personality by conducting relative weights analyses, such that each of the lower-order resilience factors were predicted by the ten lower-order factors of personality. *Work Ethic and Organization* was most strongly related to personality (R^2 = .74; conscientiousness: industriousness 33.47%, conscientiousness: orderliness 22.60%), followed by *Social Skills*, (R^2 = .70; extraversion: enthusiasm 35.84%, extraversion: assertiveness 19.24%), and *Distress Tolerance and Recovery Speed* (R^2 = .65; neuroticism: withdrawal 31.19%, neuroticism: volatility: 19.58%). As expected, *Family Coherence*, exhibited the weakest relationship with personality (R^2 = .32), but the other "socially derived factor," *Social Support*, was moderately related to Big Five personality (R^2 = .51, extraversion: enthusiasm 33.40%, neuroticism: withdrawal 21.67%). See Table 43 for a summary of the factor-level relative weights analyses and Tables 44-51 for detailed breakouts.

Canonical Correlation Analysis. I conducted a canonical correlation analysis to further understand how the seven resilience factors as a set related to Big Five personality (see Tables 52 and 53). The analysis produced five functions/vectors and was significant using Wilks $\lambda = .04$, $F(35,650.25) = 20.79$, $p < .001$. Wilks λ technically represents the variance unexplained by the model, so it is estimated that the full model explained approximately 96% of the variance between resilience factors and the Big Five (1 - Wilks λ).

A dimension reduction analysis tested the hierarchical arrangement of functions for statistical significance (i.e., Functions 1-5, functions 2-5; functions 3-5, functions 4-5, and function 5). Function 5 was technically the only model tested in isolation, and it did not account for a significant amount of shared variance among the variable sets, $F(1.22, 3, 158) = n.s.$. Subsequently, only the first 4 canonical correlations were considered for the analysis (r^2s = 77.93, 14.41, 4.71, and 2.65 respectively). The first canonical correlation (.92) was strongly correlated with each of the resilience factors and, as expected, was most strongly related to neuroticism ($r_s^2 = 70.18$), extraversion ($r_s^2 = 80.59$), and conscientiousness ($r_s^2 = 50.96$). This finding lends further credence to the earlier result that individuals high on all of the resilience factors are also low on neuroticism, high on conscientiousness, and high on extraversion. The second canonical variable (.72) was primarily characterized by a high score on *Work Ethic and Organization* and a high score on conscientiousness, suggesting that those individuals high on *Work Ethic and Organization* are also likely high on trait conscientiousness. Opposing scores between *Challenge and Curiosity* and openness to experience characterized the final two models, showing that those who score highly on *Challenge and Curiosity* most likely also score highly on openness to experience. However, less consideration should be given to these last two canonical correlations because, even though they were statistically significant, they collectively only accounted for 7.63% of remaining variance. Regardless, when all four models are considered together, the multivariate pattern of relationships functioned as expected and generally echoed the findings from the relative weights analysis.

Some scholars (e.g., Cramer & Nicewander, 1979) have conceptualized the average of the significant squared canonical correlations as an index of construct redundancy. According to this analysis, resilience factors and Big Five personality factors share approximately 44.83% of

variance. However, as each canonical correlation by definition continues to grow smaller than the next, and the smaller correlations also account for less variance in the model, it is likely that this value is downwardly biased (i.e., too conservative) and should therefore be interpreted with a strong degree of caution (Stevens, 2009).

Incremental Validity of Resilience over Personality. I assessed the predictive utility of resilience by examining its incremental validity in predicting criteria over and above Big Five personality (see Table 43 for a summary). This analysis was conducted with multiple regression, such that all of the Big Five personality factors were entered into the equation in the first step, and the seven lower-order resilience factors were added to the regression equation in the next step. *F*-tests were used to assess the change in R^2. Resilience failed to significantly improve prediction in most models, with the exception of optimism ($\Delta R^2 = .13$, $p < .001$), depression ($\Delta R^2 = .05$, $p < .01$), and satisfaction with life ($\Delta R^2 = .13$, $p < .001$). It should be noted that these analyses were also run in reverse, such that the Big Five personality factors predicted outcome over and above resilience, and those analyses revealed that the Big Five also provided some incremental validity in depression ($\Delta R^2 = .06$, $p < .001$), but not satisfaction with life or optimism. Taken together, these analyses echo the findings of Grossman's (2014) meta-analysis, where satisfaction with life was one of the only variables in which resilience provided incremental validity over and above Big Five personality.

PHASE 6:

Exploratory Formative Resilience Assessment

A formative (causal-indicator) model of resilience was also considered as an alternative to the *correlated traits model*. Briefly, formative models suggest that various aspects of one's disposition and situation come together to define resilience (e.g., resilience is a combination of individual difference and support factors; Friborg et al., 2003). Unlike reflective models that measure indicators as expressions of the latent construct, formative models use manifest variables to compose constructs that are then linked to relevant criteria of interest. In other words, formative constructs are linear combinations of variables (i.e., composite variables) that are then used to predict criteria. For resilience, the formative approach is compelling because factors can be viewed as somewhat interchangeable in that they have the ability to cancel each other out (i.e., the system is compensatory). For example, it may not matter whether an individual is high on self-esteem or has warm parents, both indicate that an individual is more resilient than someone without these resources. The chain of causality flows from the measured variables to the latent variable in the formative model which, given the fact that many situationally derived variables are most likely not driven by an underlying construct, may be more theoretically appropriate for resilience.

MacCallum and Browne (1993) demonstrate that, in the formative model, a researcher must specify paths from the composite (formative) variable to at least two reflective constructs in order to set the scale for the variable and achieve identification. Following these

recommendations, most researchers include outcome variables theoretically linked to the construct of interest (MacKenzie, Podsakoff, & Jarvis, 2005) when examining formative models and, after estimating the model, the weight (i.e., paths) assigned to each factor in the formative model provides critical information about the utility of that factor in predicting outcomes. For example, in their analysis of a four-factor model of sexual harassment behavior, Nye, Brummel, and Drasgow (2014) found that the paths from two factors were insignificant when a formative model with outcome variables was modeled, and they were able to reduce sexual-harassment behavior to a more parsimonious two-factor model. In this study, a formative model was used to explore the viability of lower-order resilience factors in predicting relevant latent outcomes.

Two potential drawbacks of the formative model are worth mentioning. First, Edwards (2011) notes that because formative constructs are modeled as linear combinations of exogenous predictors, uniqueness terms cannot be added to the model. Therefore, the formative approach only includes a disturbance term, which in this model is technically a residual that addresses the extent to which the formative construct is not associated with its measures. In other words, the formative model rests on the assumption that each of the measured indicators is assessed perfectly, without error, and this condition is rarely met in psychological research. To address this first drawback, the aggregate construct model (Edwards, 2001; also called the spurious model by Edwards & Bogozzi, 2001) was used in lieu of the traditional formative model. In the aggregate construct model, individual items were first combined into reflective constructs on the basis of the factors uncovered by my EFA. These factors were then combined together in a formative fashion to compose the higher-order construct of interest that in turn predicted latent outcome variables of interest. In other words, the aggregate construct model enabled me researcher to account for some measurement error at the item level.

Second, similar to the categorical approach to resilience, the formative model also relies on outcome measures for identification. Edwards (2011) notes that the choice of outcome measure can strongly influence the ways in which a construct is defined. Therefore, although the use of outcome variables were aimed to help me uncover which lower-lower order factors were most useful in predicting important criteria of interest, the formative model should be viewed as tentative as these relationships may not generalize across outcomes. Indeed, depending on the outcome variable(s) chosen, different indicators have the potential to carry more or less weight in the composition of the formative variable and the overall fit of the model. Consequently, information about the underlying structure of resilience gleaned from the formative analysis is to some extent exploratory and should be interpreted with a degree of caution.

Method

Participants and Procedures Analyses in this phase were conducted with the 166 participants who completed both waves of Phase 3.

Data Analyses. I used the aggregate construct model (Edwards, 2001) to analyze whether or not it was viable to conceive of resilience as a formative, rather than a reflective construct (Edwards, 2011; Edwards & Bogozzi, 2001). In this model, reflective constructs were first created for each of the lower-order resilience factors (using only the final items that were retained after the content validity study). Paths were included from each of those reflective constructs to the resilience construct; however, paths moved from the sub-dimensions to the general construct of resilience, rather than away.

Paths were also included from resilience to at least two outcome variables at a time for model identification purposes (MacCallum & Browne, 1993), and I tested a few different models (see Figure 11 for a sample aggregate construct model) to ensure that the outcomes were not

biasing the results. On the basis of Grossman's (2014) meta-analysis, paths were first included to latent variables assessing health and well-being, each of which has been shown to exhibit substantial correlations with overall resilience. On a more exploratory basis, I then tested models that look at relationships with between resilience and job attitudes and relationships between resilience and job performance. The fit of the formative models was assessed following the same guidelines as the CFAs (Hu & Bentler, 1999).

Results

The first model predicting health and well-being outcomes fit the data adequately, $\chi^2(635) = 1231.00$, CFI = .86, TLI = .86, RMSEA = .08 (.069, .081), SRMR = .07), and the formative resilience construct significantly predicted both health and well-being outcomes. However, the pattern of relationship between the identified lower-order factors and the formative resilience construct were not commensurate with any of the previous analyses, such that *Distress Tolerance* ($\beta = .40$) and *Faith, Purposes, and Future* ($\beta = .42$) were the only factors to exhibit statistically significant relationships with resilience. Further, the remaining three models all either failed to converge or had positive definite matrices (see Table 54). I therefore concluded that the formative model was not a viable way to conceptualize resilience in this circumstance.

Discussion

As noted previously, five scales are commonly used within the spectrum-based approach to assess resilience. These scales are similar to each other in that they all define resilience at a high level as the ability to bounce back and recover from adversity, and they are often used interchangeably. However, Phase 1 found that the correlation between some resilience instruments is as low as $r = .55$ (Brief Resilience Scale and Ego Resilience; see Table 3), suggesting that the scales are not necessarily isomorphic. Further, as shown in Table 1, different scales do not define resilience in the same way; scales espouse and assess different aspects of the resilience construct. As a corollary, one can assume that it is unlikely that any one scale offers adequate coverage of the resilience construct space, and it is may be inappropriate to use current resilience measures interchangeably. Thus, current practices create a challenging situation for researchers looking to assess relationships between resilience, its factors, and external constructs.

In this study, I drew from the lexical hypothesis and methods similar to those used by Roberts et al., (2005), who addressed similar questions in the conscientiousness literature, to address this methodological gap. Specifically, I defined the resilience construct space as the conglomeration of all of items from existing resilience measures, conducted a series of exploratory and confirmatory factor analyses, and proposed a common model consisting of seven lower-order resilience factors (i.e., *Distress Tolerance and Recovery Speed, Support from*

Others, *Faith, Purpose and Future*, *Challenge and Curiosity*, *Work Ethic and Organization*, *Social Skills*, and *Family Coherence*).[9]

Points of Convergence and Divergence with Extant Resilience Dimensions

A few factors in the new taxonomy strongly overlap with factors present in extant measures. The factor *Distress Tolerance and Recovery Speed*, defined in this paper as the way in which a person reacts to unpleasant emotions, for example by staying calm, is similar to the general dimension herewith labeled *Bounce Back*, defined as the ability to quickly recover from adversity (The Brief Resilience Scale, Smith et al., 2008). Likewise, a number of the social-related dimensions overlap with factors from extant scales. For example, *Support from Others* consisted only of items from the Resilience Scale for Adults (Friborg et al., 2003) and the Connor-Davidson Resilience Scale (Connor & Davidson, 2003). It is also similar in content to Friborg et al.'s dimension of *Social Resources*, defined as the presence of a peer support network. *Family Coherence* only consisted of items from Friborg et al.'s conceptualization of resilience and overlaps strongly with the dimension of *Family Cohesion*, defined as having a strong family support network present.

Other aspects of the seven-factor taxonomy cut across dimensions espoused by previous measures. Both *Faith, Purpose, and Future* and *Social Skills*, represent strong examples of this. *Faith/ Purpose, and Future*, for example, is defined as the degree to which a person moves through life with a sense of direction and efficacy. It contains items from all but one of the measures (note that the Brief Resilience Scale, Smith et al., 2008, was not represented, but it also does not break resilience down into dimensions) and overlapped with some dimensions identified

[9] Note that one additional factor of *Positivity and Self-Reliance* emerged as a result of the factor analysis, but was later excluded due to insufficient evidence for content validity of existing items per the research conducted with the two samples of SMEs

in those measures. For example Wagnild and Young's (2003) factor of *Meaning*, defined as having a sense of purpose and directionality in life, and Connor and Davidson's dimension of *Spirituality*, which includes an item assessing the belief and/or understanding that things in life happen for a reason, are both reflected in this factor. Likewise, the newly defined dimension of *Social Skills*, assessing the ability to adapt one's style and engage with individuals in a variety of different social situations, overlaps with Klohnen's (1996) dimension of *Skilled Expressiveness*, and Friborg et al.'s (2003) factor of *Social Competence*.

Finally, although the current taxonomy is comprised of items from current resilience measures, some of the new factors depart strongly from factors defined as parts of previous measures. For example, *Challenge and Curiosity* assesses the mindset by which individuals approach new situations and, although this factor only consisted of items from the Ego-Resilience Measure (Block & Kremen, 1996), the pattern of items loaded in a way that was inconsistent with Klohnen's (1996) factor analysis. Wagnild and Young's (1993) dimension of *Existential Aloneness*, or the belief that some events must be faced alone, was not represented in the current taxonomy.[10]

These results collectively reiterate the importance of the newly proposed lower-order structure of resilience, a construct consisting of at least seven unique factors. As shown above, unique factors from each of the individual scales were retained wherever possible and necessary, factors that cut across scales were identified, and new factors not previously defined were also explicated as a result of the analysis. Overall, none of the individual extant resilience measures appear to capture all aspects of the newly defined resilience construct space. For example, the

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[10] The closest factor, *Positivity and Self-Reliance*, assessing the degree to which a person felt that s/he could depend on his or her power and resources, touched upon self-efficacy but did not note that events should be faced alone. It was also dropped from the inventory on the basis of the content validity analyses

current taxonomy consists of seven factors whereas factor analyses of all previous measures suggest there are no more than five factors of resilience.[11] It is thus recommended that as researchers move forward in their study of the resilience construct, they explore the full breadth of resilience by considering the entire seven-factor lower-order taxonomy, rather than relying on a single pre-existing measure.

Differential Validities and With Outcome Measures

The possibility of finding differential relationships with outcome of interests represents a compelling reason to study constructs at the lower-order level of analysis. Roberts et al. (2005) demonstrated that lower-order factors of a construct can show differing relationships with outcomes, even if they are in the same direction. For example, in their study, the lower-order factor of *Traditionalism* exhibited one of the smallest relationships with preventative health behaviors (r = -.02, p = *n.s.*) yet, at the same time, exhibited one of the strongest negative relationships with drug use (r = -.44, $p < .05$). In this study, results were not quite as extreme; however, one does find evidence for differential relationships when looking across factors. *Distress Tolerance and Recovery Speed*, for example, consistently emerged as a top predictor of most health and well-being outcomes (though it also demonstrated strong overlap with other personality characteristics), whereas factors of *Challenge and Curiosity* and *Family Coherence* exhibited small and often insignificant relationships with outcomes.

Moon (2001) found that two lower-order factors of conscientiousness exhibited opposing relationships with organizational commitment, therefore cancelling out the conscientiousness-organizational commitment relationships at the overall construct level. Evidence for this sort of

[11] Note that, as mentioned, some argue that the Resilience Scale for adults can actually be divided into two factors of *Perception of Self* and *Perception of Future*, resulting in a is a six factor solution (Friborg et al., 2005).

relationship was not found in the current study; the directionality of the relationships between different lower-order resilience factors and outcome remained consistent and were generally positive. It is therefore unlikely that any two resilience factors would work against each other to cancel out a higher-order relationship. This finding is most likely due to the fact that all identified aspects of the seven-factor resilience taxonomy assess positive aspects of one's life that, in one fashion or another, prevent risk from escalating. Such elements are referred to as "protective factors" (Baruth & Carroll, 2002) in the resilience literature, and, from a theoretical standpoint, it is unlikely that any protective factor would exhibit a negative relationship with a desirable outcome. As such, it is not particularly surprising that the present results diverged from Moon's study.

Finally, results of these analysis showed that it is possible that relationships between lower-order factors and outcome may be significant at the univariate level of analysis but fail to remain significant when examined in the context of other lower-order factors. For example, in the current study, all of the lower-order resilience factors exhibited statistically significant and positive correlations with conscientiousness. However, when examined in a relative weights context, *Work Ethic and Organization* subsumed so much of the variance that all of the other factor-conscientiousness relationships no longer remained significant. This is important because as researchers and practitioners look to predict outcomes and/or stage interventions based upon a person's standing on a certain factor, it is possible that univariate correlations may be misleading. Neither Moon (2001) nor Roberts et al. (2005) conducted relative weights analyses, so comparisons to their studies cannot be drawn.

Implications of Accepting the *Correlated Traits Model*

Several confirmatory models were tested in a large sample, including a *correlated traits model,* a *unidimensional model,* a *second-order model,* and a *bifactor model.* By relying on theory, I tested a few other models that explored the ways in which individual-difference and situational-based factors interplay with one other. For example, I tested models with second-order factors explaining individual differences and situational drivers as well as models that only allowed those individual-difference based or situational-based dimensions to correlate with one another. Finally, in an exploratory analysis, I tested a *formative model* of resilience, a model that reverses the chain of causality and suggests that the seven identified dimensions actually come together to form the construct of resilience, which in turn predicts outcomes (see Figures 2-7).

Across the board, the *correlated traits model* and the *modified correlated traits model* fit the data most strongly, and these results have important implications. First, it should be noted that there was no evidence for a common factor among resilience items that explained variance in the lower-order factors. In other words, it is may be appropriate for a researcher to treat each lower-order resilience factor as a separate construct, so long as correlations between constructs are taken into consideration. Indeed, evidence supports the notion that resilience is formulated as a constellation of lower-order factors. As such, results also suggest that it may not always be appropriate to combine lower-order resilience scores into an overall higher-level composite variable.

The different definitions of, moderate correlations between, and differential validities associated with each of the underlying factors provide further evidence for this recommendation. For example, even though an individual may have a relatively high mean level of resilience across most factors, he or she may be low on certain actionable key protective factors relevant to

the outcome of interest. By only looking at an overall score, a researcher could miss out on these areas of opportunity by assuming an individual will be sufficiently protected from risk. Conversely, although an individual may have an exceptionally low score on a couple of dimensions, driving the overall mean level of resilience down, he or she may score highly on a few key protective factors relevant to an outcome of interest and may therefore have enough resources to work through a given situation. Thus, the recommendation following from the analyses presented above is that researchers and practitioners consider a person's standing on each of the lower-order resilience factors and explore which of those factors are most relevant or important for a given situation.

Overlap between Resilience and Personality

A few different analyses were conducted to determine the overlap between resilience and Big Five personality. First, a canonical correlation analysis was run to fully represent the *correlated traits model* and the Big Five model. As shown above, four vectors emerged to explain variance in the resilience construct. The first canonical vector was characterized by high loadings on all seven resilience factors and also high loadings on conscientiousness, extraversion, and neuroticism. The second vector was characterized by a high loading on *Work Ethic and Organization* and also a high conscientiousness score, suggesting that some of the resilience/personality overlap missing from the first canonical correlation could be explained by the strong factor-conscientiousness relationship. Finally, the last two vectors focused on openness to experience; they accounted for the least amount of variance but suggested that those with high scores on *Challenge and Curiosity* also scored highly on openness to experience. Taken together, results of the canonical correlation analysis suggest that most of the

resilience/personality overlap can be explained by conscientiousness, extraversion, and neuroticism.

In an attempt to gain more insight into these relationships, results were then re-analyzed in a relative weights context. First, the relationship between the global resilience construct and personality was assessed. Personality explained 79% of variance in global resilience, 86% of which could be attributed to relationships with extraversion, conscientiousness, and neuroticism. Further, when results were re-analyzed at the factor level, a similar pattern of relationships emerged. *Work Ethic and Organization* shared 71% of variance with personality, more than half of which was due to conscientiousness (59% of total variance explained), S*ocial Skills* shared 70% of variance with Big Five personality, most of which was due to extraversion (60% of total variance explained), and *Distress Tolerance and Recovery Speed* shared 63% of variance with Big Five personality, largely driven by neuroticism (54% of total variance explained). These results further underscored the results of the canonical correlation analysis.

Grossman (2014) noted in his meta-analysis that overall resilience may not provide substantial predictive utility in predicting many health and well-being outcomes over and above Big Five personality. In this primary study, using the newly derived seven lower-order factor structure of resilience, I was able to replicate this finding. Using a two-step multiple regression procedure, such that the five factors of personality were entered in step one and the seven resilience factors were entered in step two, resilience failed to significantly improve prediction in all of the analyzed outcomes, with the exception of depression (an additional 5% of variance was explained), satisfaction with life (an additional 13% of variance was explained), and the personality correlate of optimism (an additional 13% of variance was explained). When run in reverse (i.e., the resilience factors were entered into the equation first), results were also

commensurate with Grossman (2014); in this case, the Big Five only provided some incremental validity in predicting depression (an additional 6% of variance was explained). Taken together, these results suggest that the newly created seven-factor model of resilience does not offer additional predictive utility over and above Big Five personality in predicting most of the outcomes examined in this study.

Implications for Practice

The *correlated traits model* suggests that it is most appropriate to examine each lower-order resilience factor separately, further implying that one may not wish to examine resilience as an overall score. Harms and Wood (2016) reiterate this sentiment by also arguing that it is misleading to look at the incremental validity of the entire resilience construct over the full set of Big Five predictors; they argue it is important to understand the drivers of change for specific outcomes in specific situations. Although it does not seem likely that interventions focused on factors very highly correlated with personality will be particularly efficacious (i.e., those in practice may not want to focus efforts on *Work Ethic and Organization, Social Skills,* and *Distress Tolerance and Recovery Speed*), there does appear to be hope for other lower-order resilience factors, especially if one targets cognitive or behavioral interventions. For example, *Faith, Purpose and Future* only shares 33% of variance with personality, and it is related to depression (r = -.54), satisfaction with life (r = .55), burnout (r = -.46), and job satisfaction (r = .47). It is plausible that interventions empowering people to connect specific tasks to a larger goal or mission may serve as an important protective factor in the workplace and in other relevant situations. *Challenge and Curiosity, Support from Others,* and *Family Coherence* also each share less than 50% of variance with Big Five personality. It is therefore recommended that

future work consider the efficacy of training programs that target specific factors as well as study, in a more general sense, the test-retest reliability of lower-order resilience factors.

Limitations and Potential Areas for Future Research

Although the above research suggests that the seven-factor model of resilience is the most exhaustive structure currently present in the field, a few limitations should be noted. First, concerns about sampling warrant address. All of the analyses were based on individuals' self-report assessment of their standing on resilience and outcome of interest, and the sample was from Amazon's Mechanical Turk (M-Turk). It was therefore not entirely random or representative of U.S. adults. However, research suggests that M-Turk workers are more diverse than and just as reliable as undergraduate samples (Buhrmester et al., 2011, Goodman et al, 2013; Paolacci et al., 2010). Survey items were optional, and several validation checks were also implemented as a safeguard. Therefore, although a true random or nationally representative sample would have been ideal, this research is commensurate with other research currently being conducted in the field. That said, it is recommended that researchers replicate the results of this analysis in different samples and explore alternative ways to assess outcomes of interest. For example, researchers might consider conducting multi-rater studies, comparing self- and other-report measures as they continue to study resilience and its lower-order factors.

Further, although all of the structural analyses were based on the entire sample from Phase 3, the criterion related validity analyses could only be performed on those individuals who returned for the Wave 2 (2 weeks later; N = 166, 37% response rate). Statistical tests comparing the demographic makeup of the two samples found that fewer males and fewer non-white participants returned for Wave 2, and an age-based t-test also showed that participants who returned for Wave 2 were slightly older than those who did not. As such, these differences allow

for the possibility of attrition bias, which in theory could have influenced some of the study's findings. However, prior empirical studies corroborated most of the high-level relationships found in this study (e.g., Grossman, 2014), and it is likely safe to assume that the relationships between lower-order factors and correlates were not spurious. As noted by Porter, Woo, and Campion (2015), it is more likely the case that some of the relationships could potential be inflated or deflated based on the characteristics of the sample. This in turn can limit the generalizability of this study's findings, so researchers are encouraged to replicate these analyses in larger, more robust sample.

Second, although the most common resilience inventories were used in this analysis to derive the seven lower-order factors, not all existing resilience taxonomies could be included. The resilience construct space was defined in this study to consist of those factors reflected in existing measures of resilience and, because some scales could not be included, it is conceivable that aspects of the pre-defined resilience construct space could have been omitted. Additionally, the content validity of the items from one of the identified resilience dimensions, *Positivity and Self-Reliance*, could not be validated in the two SME samples, and the dimension was omitted from most analyses in this study. It therefore remains unclear whether or not an eighth factor of resilience relevant to these items can be identified and studied. Researchers are encouraged to revisit the items associated with this factor (e.g., potentially write additional items that more clearly differentiate this factor from *Distress Tolerance and Recovery Speed*), consider alternative interpretations for how/why the items cluster together, and further explore the implications of this emergent factor. However, provided one accepts the definition of the resilience construct space espoused in this paper, it is possible to confidently conclude that there

are at least seven lower-order factors of resilience.[12] As such, results do suggest that the current taxonomy is the most comprehensive structure of resilience defined to date.

Finally, it should be noted that, although the current taxonomy is based on the most common resilience measures, those inventories do differ in measurement-scale and format. In a way this represented a strength of the current study, as it added diversity to the measures and potentially reduced common-method bias. However, it also created a situation by which the newly identified factors may be challenging to study. It would be difficult to create a user-friendly measurement instrument out of extant items. Researchers are therefore encouraged to create new inventories that assess the newly identified seven-factors of resilience in a consistent fashion.

Conclusions and Recommendations

Through a combination of exploratory and confirmatory techniques, I was able to identify at least seven lower-order factors of resilience, providing the most comprehensive exposition of the resilience construct space to date. Relationships between each of the lower-order factors, general resilience, and meaningful outcomes were examined, as was overlap with Big Five personality. Results of this study verify the importance of lower-order resilience factors, as well as the importance the resilience construct generally. Noting that the inter-correlations between the factors were low and the *correlated traits model* best fit the data, it is recommended moving forward that resilience be studied at the factor level, rather than at the overall level. Indeed, although overall resilience may appear redundant with personality, the seven newly identified

[12] Note that a few SMEs argued that some lower-order resilience factors might be better conceived of as predictors of resilience, rather than lower-order factors of resilience. This argument is definitional in nature; those that do not accept the current definition of resilience as the construct space defined by pre-existing measures of resilience are encouraged to explore other ways to define and measure the construct.

factors of resilience do not all substantially overlap with Big Five personality and often exhibit differential validities with criteria. Thus, from a practical standpoint, it is recommended that practitioners explore interventions that focus specifically on those lower-order resilience factors exhibiting higher relationships with outcome of interest and lower-relationships with personality. More generally, researchers are encouraged to design measures to assess the newly created seven-factor model and continue to examine resilience at the facet level, rather than at the overall level.

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Tables

Table 1. Extant Operationalizations of the Resilience Construct

Conceptualization:	Ego-Resilience [1]	The Resilience Scale [2]	Connor-Davidson Resilience Scale [3]	Resilience Scale for Adults [4]	Brief Resilience Scale
References:	Block & Block, (1980); Block & Kremen (1996); Klohnen (1996); Letzring et al. (2004)	Resnick & Inguito (2011), Wagnild (2009, 2013); Wagnild & Young (1993)	Campbell-Sills & Stein (2007), Connor & Davidson (2003), Vaishnavi et al., (2007)	Friborg et al. (2003, 2005)	Smith et al. (2008)
Factors:	Confident Optimism Exhibits a positive, optimistic, and energetic life outlook.	Self-Reliance Belief in oneself and one's abilities	Personal Competence Goal-Striving and belief in oneself	Perception of Self Confidence in one's own decisions and abilities	Bounce Back Ability to bounce back and recover from stress and adversity
	Productive and Autonomous Activity Demonstrates persistence in the face of adversity.	Meaning Purpose and direction in life	Trust in One's Instincts Ability to handle unpleasant emotions; self-efficacy	Perception of the Future Plans and goals for future events	

Table 1 (Continued)

	Interpersonal Warmth and Insight Has a capacity for close relationships.	Equanimity Balanced perspective on life experiences	Positive Acceptance of Change Belief in ability to bounce back	Structured Style Conscientiousness, organization, and rule-following
	Skilled Expressiveness Able to interact with others.	Perseverance Persistence despite adversity	Control Empowerment and sense of purpose	Social Competence Enjoys social situations
		Existential Aloneness Feeling of freedom and uniqueness. Realization that some life events must be faced alone.	Spirituality Belief in god; Understanding that that things happen for a reason	Family Cohesion Presence of family support network
				Social Resources Presence of a peer support network

[1] Factors presented for Ego-Resilience are from Klohnen (1996) analysis with items from the CPI (Gough, 1956). Block & Kremen (1996) present an alternative conceptualization of the construct but do not espouse a lower order factor structure.
[2] Factors for The Resilience Scale are from the original conceptualization. More recent conceptualizations (Resnick & Inguito, 2011) note that the instrument may be best represented by two highly correlated factors or one single factor.
[3] Connor and Davidson (2003) initially espoused this five-factor model of the construct; however, factor analytic studies have suggested alternative models. Campbell-Sills and Stein (2007) revised the instrument to ten items, which are purportedly unidimensional, and Vaishnavi et al., (2007) created an alternative two-item short form version of the instrument.
[4] Friborg et al. (2003) initially conceptualized their measure with six factors. Factor analytic work by Friborg et al. (2005) later revealed that perception of strength and perception of future may be best conceptualized as two parts of an overall "personal strength" factor.

[5] Friborg et al. (2003) initially conceptualized their measure with six factors. Factor analytic work by Friborg et al. (2005) later revealed that perception of strength and perception of future may be best conceptualized as two parts of an overall “personal strength” factor.

Table 2. Standardized Abbreviations

Abbreviation	Variable Name
F1	Resilience Factor 1: Distress Tolerance and Recovery Speed
F2	Resilience Factor 2: Support from Others
F3	Resilience Factor 3: Faith, Purpose, and Future
F4	Resilience Factor 4: Challenge and Curiosity
F5	Resilience Factor 5: Work Ethic and Organization
F6	Resilience Factor 6: Social Skills
F7	Resilience Factor 7: Family Coherence
N	Big 5: Neuroticism
N_V	Big 5: Neuroticism, Volatility
N_W	Big 5: Neuroticism, Withdrawal
A	Big 5: Agreeableness
A_C	Big 5: Agreeableness, Compassion
A_P	Big 5: Agreeableness, Politeness
C	Big 5: Conscientiousness
C_I	Big 5: Conscientiousness, Industriousness
C_O	Big 5: Conscientiousness, Orderliness
E	Big 5: Extraversion
E_E	Big 5: Extraversion, Enthusiasm
E_A	Big 5: Extraversion, Assertiveness
O	Big 5: Openness to Experience
O_1	Big 5: Openness to Experience, Intellect
O_2	Big 5: Openness to Experience, Openness
HO	Higher-order Factors
LO	Lower Order Factors

Table 3. Correlations between Current Resilience Instruments

	1	2	3	4	5
1. Ego-Resilience	(.86)				
2. The Resilience Scale	.71**	(.95)			
3. Connor-Davison Resilience Scale	.74**	.90**	(.95)		
4. Resilience Scale for Adults	.62**	.78**	.81**	(.95)	
5. Brief Resilience Scale	.55**	.70**	.72**	.65**	(.91)

Note: All values within the table are from Data Collection 1. Chronbach's α is reported on the diagonal, in parentheses.

Table 4. Exploratory Factor Analysis Summary Table

	Simulated Eigenvalue	Original Eigenvalue	χ^2	*df*	*p*	RMSEA	95%CI
1 Factor	1.65	38.24	14569.58	4949	<.001	0.077	(.076, .079)
2 Factor	1.56	4.84	12729.53	4849	<.001	0.070	(.069, .072)
3 Factor	1.50	3.60	11432.04	4750	<.001	0.066	(.064, .067)
4 Factor	1.43	3.03	10279.31	4652	<.001	0.061	(.061, .059)
5 Factor	1.38	2.52	9260.02	4555	<.001	0.056	(.058, .039)
6 Factor	1.34	1.81	8650.16	4459	<.001	0.054	(.052, 0.55)
7 Factor	1.29	1.69	8135.12	4364	<.001	0.051	(.050, .053)
8 Factor	*1.25*	*1.25*	*7712.01*	*4270*	*<.001*	*0.050*	*(.048, .051)*
9 Factor	1.21	1.19	7357.38	4177	<.001	0.048	(.046, .050)
10 Factor	1.17	1.02	7045.63	4085	<.001	0.047	(.045, .028)

Note: Final eight-factor solution is emphasized in italics. RMSEA statistics are drawn out to three decimal places, rather than 2, so as not to obscure differences among solutions.

Table 5. Factor Loadings: Rotated 8-Factor Solution

	Item Text	Factor Loading 1	2	3	4	5	6	7	8
1.	It is hard for me to snap back when something bad happens	**0.94**	0.04	-0.11	-0.03	-0.08	0.01	0.13	0.01
2.	I have a hard time making it through stressful events	**0.92**	-0.01	-0.11	-0.02	-0.03	0.06	0.01	0.01
3.	Meeting new people is: difficult for me TO something I am good at	-0.01	-0.14	0.08	-0.03	0.11	-0.02	**0.88**	0.02
4.	New friendships are something: I have difficulty making TO I make easily	0.15	0.00	-0.01	-0.03	-0.08	-0.06	**0.88**	-0.04
5.	I tend to bounce back quickly after hard times	**0.88**	0.00	0.13	-0.04	-0.01	-0.09	-0.01	-0.04
6.	It does not take me long to recover from a stressful event	**0.87**	-0.03	0.02	0.05	-0.09	-0.10	0.08	-0.03
7.	I get support from: no one TO friends/family members	0.05	**0.86**	0.03	0.04	-0.01	-0.05	-0.09	0.05
8.	When needed, I have: no one who can help me TO always someone who can help me	0.03	**0.84**	0.05	-0.06	0.12	0.02	-0.16	0.07
9.	I tend to take a long time to get over set-backs in my life	**0.81**	0.08	0.02	-0.06	-0.06	0.11	0.08	-0.03
10.	I like to do new and different things	-0.02	0.04	-0.06	-0.02	**0.78**	-0.15	0.13	-0.04
11.	My family is characterized by: disconnection TO healthy coherence	0.02	0.16	0.06	0.01	-0.05	-0.03	0.06	**0.78**
12.	I can discuss personal issues with: no one TO friends/family members	-0.08	**0.77**	0.15	0.05	-0.01	-0.01	0.06	0.01
13.	I enjoy dealing with new and unusual situations	-0.01	0.00	0.13	-0.13	**0.76**	-0.11	0.06	-0.05
14.	Those who are good at encouraging me are: Nowhere TO close friends/family	-0.01	**0.75**	-0.09	0.03	-0.01	0.10	0.02	0.11
15.	I am more curious than most people	-0.04	0.02	-0.22	0.09	**0.71**	0.04	-0.07	-0.02
16.	Facing other people, our family acts: unsupportive of one another TO loyal towards one another	-0.01	**0.34**	-0.10	0.10	0.01	0.01	-0.12	**0.67**

Table 5 (Continued)

17.	I usually manage one way or another	0.23	0.04	0.05	**0.67**	-0.09	0.05	-0.08	0.01
18.	Strong sense of purpose	0.15	0.00	**0.67**	0.06	0.00	0.25	-0.03	-0.08
19.	My future goals are: I am unsure how to accomplish TO I know how to accomplish	0.10	0.04	**0.66**	-0.12	0.04	0.27	0.08	-0.05
20.	My personal problems: Are unsolvable TO I know how to solve	0.20	0.08	**0.65**	-0.01	-0.02	-0.02	-0.03	0.04
21.	My future plans are: difficult to accomplish TO possible to accomplish	0.22	0.04	**0.63**	-0.11	-0.03	0.10	0.04	0.03
22.	My life has meaning	0.06	0.11	**0.63**	0.12	-0.07	0.18	0.04	-0.05
23.	I like to take different paths to familiar places	-0.14	-0.08	0.11	0.07	**0.61**	-0.08	0.04	0.04
24.	My goals for the future are: Unclear TO Well thought out	0.03	-0.06	**0.61**	0.03	0.02	**0.33**	0.06	0.01
25.	I can get through difficult times because I've experienced difficulty before	0.25	0.00	0.07	**0.60**	0.02	0.08	-0.09	-0.03
26.	Keeping interested in things is important to me	-0.10	0.07	0.05	**0.59**	0.12	0.17	-0.05	-0.05
27.	I am resilient	**0.35**	-0.04	0.01	**0.59**	-0.02	0.11	-0.02	-0.01
28.	I feel that my future looks: uncertain TO very promising	0.18	0.18	**0.58**	-0.22	0.08	0.12	0.06	-0.03
29.	Tend to bounce back after illness or hardship	**0.57**	0.03	0.14	0.23	0.07	-0.01	0.01	-0.05
30.	Sometimes I make myself do things whether I want to or not	-0.16	0.05	-0.04	**0.57**	-0.04	0.11	-0.02	-0.04
31.	When I start on new things/projects: I rarely plan ahead, just go with it TO I prefer to have a thorough plan	-0.08	0.08	0.12	0.02	-0.14	**0.56**	-0.12	0.04
32.	I like challenges	0.20	0.05	-0.03	-0.02	**0.56**	**0.31**	0.02	-0.05
33.	For me, thinking of good topics for conversation is: difficult TO easy	-0.01	-0.11	0.13	0.00	0.13	0.04	**0.56**	0.08
34.	I am good at: Wasting my time TO organizing my time	0.07	-0.04	**0.37**	0.01	-0.23	**0.55**	0.15	-0.03
35.	In my family, we like to: do things on our own TO do things together	-0.01	0.12	0.18	-0.12	-0.02	-0.03	0.12	**0.55**

Table 5 (Continued)

36.	You can achieve your goals	0.16	0.03	**0.55**	0.16	0.12	0.23	-0.11	-0.09
37.	My family's understanding of what's important in life is: quite different than mine TO very similar to mine	-0.04	0.25	0.23	-0.06	-0.08	-0.01	0.04	**0.55**
38.	I am at my best when I: Can take one day at a time TO have a clear goal to strive for	0.19	0.08	-0.08	-0.19	0.13	**0.55**	-0.11	-0.02
39.	Know where to turn for help	0.00	**0.54**	**0.31**	0.12	-0.04	0.08	-0.02	0.02
40.	See the humorous side of things	0.12	0.14	-0.16	**0.53**	0.16	-0.09	-0.01	0.03
41.	I quickly get over and recover from being startled	**0.51**	0.01	-0.10	0.24	0.17	-0.12	0.06	0.05
42.	When a family member experiences a crisis/emergency: It takes a while before I am told TO I am informed right away	0.11	0.27	-0.06	-0.07	-0.01	0.08	0.00	**0.51**
43.	In control of your life	0.20	0.06	**0.51**	0.07	0.01	0.12	0.02	0.00
44.	Things happen for a reason	-0.10	0.02	**0.51**	0.06	-0.09	0.03	0.05	0.06
45.	I am determined	0.09	-0.08	0.14	**0.51**	0.03	**0.33**	0.03	0.07
46.	I enjoy being: By myself TO Together with people	-0.05	0.17	0.01	-0.10	0.10	0.05	**0.51**	0.03
47.	I can usually find something to laugh about	0.11	0.08	-0.06	**0.50**	0.11	-0.07	0.10	0.06
48.	I am able to depend on myself more than anyone else	0.10	-0.26	0.11	**0.50**	-0.02	0.24	-0.07	0.06
49.	I am generous with my friends	-0.14	0.22	-0.19	**0.50**	0.14	0.21	0.14	-0.02
50.	I seldom wonder what the point of it all is	0.12	-0.01	**0.49**	-0.02	-0.04	-0.15	-0.08	-0.01
51.	Events in my life that I cannot influence: Are a constant source of worry/concern TO I come to terms with	**0.49**	0.12	0.25	-0.12	0.07	-0.04	0.07	-0.03
52.	It's okay if there are people who don't like me	**0.33**	-0.10	0.01	**0.48**	-0.13	-0.11	-0.04	-0.05
53.	Can handle unpleasant feelings	**0.48**	0.06	0.11	0.21	0.16	-0.01	-0.08	-0.02
54.	I feel proud that I have accomplished things in life	0.06	0.06	**0.47**	0.26	0.02	0.17	0.04	-0.07
55.	Close and secure relationships	0.01	**0.47**	0.16	0.26	-0.06	0.02	0.07	0.05

Table 5 (Continued)

56.	Under pressure, focus and think clearly	**0.47**	-0.09	0.05	0.00	**0.31**	0.17	-0.06	0.17
57.	Sometimes fate or God can help	-0.14	0.01	**0.46**	0.03	-0.07	-0.06	-0.02	0.11
58.	I usually succeed in making a favorable impression on people	0.15	0.06	0.04	0.13	0.08	0.03	**0.46**	-0.05
59.	Best effort no matter what	0.07	0.02	0.09	0.26	0.12	**0.46**	0.08	-0.03
60.	When I'm in a difficult situation, I can usually find my way out of it	**0.33**	-0.02	0.13	**0.46**	0.09	0.04	-0.06	0.02
61.	I do not dwell on things that I can't do anything about	**0.46**	-0.02	0.28	0.09	-0.07	-0.07	0.08	-0.06
62.	My close friends/family members: dislike my qualities TO appreciate my qualities	-0.01	**0.45**	0.12	0.16	-0.04	0.04	0.05	0.24
63.	My judgments and decisions: I often doubt TO I trust completely	0.21	-0.12	**0.45**	0.12	-0.05	0.11	0.08	0.09
64.	Can deal with whatever comes	**0.45**	0.04	0.25	0.11	0.28	0.04	-0.24	0.11
65.	My abilities: I am uncertain about TO I strongly believe in	0.15	-0.01	**0.45**	0.04	0.09	0.22	0.10	0.01
66.	I am regarded as a very energetic person	0.08	-0.03	0.22	-0.21	0.25	0.05	**0.45**	0.03
67.	I enjoy trying new foods I have never tasted before	-0.01	0.02	-0.04	0.08	**0.43**	-0.07	0.14	-0.15
68.	In difficult periods, I have a tendency to: view everything gloomily TO find something that helps me strive	**0.32**	0.05	**0.42**	0.02	0.03	0.04	0.13	-0.01
69.	Rules and regular routines: are absent in my everyday life TO simplify my everyday life	-0.16	0.10	0.10	0.15	**-0.32**	**0.42**	0.04	0.03
70.	You work to attain your goals	-0.03	0.08	**0.36**	0.30	0.14	**0.42**	-0.07	-0.12
71.	Have to act on a hunch	-0.29	0.00	**0.41**	0.03	**0.31**	-0.18	-0.02	0.11
72.	Able to adapt to change	**0.34**	0.03	0.11	0.17	**0.41**	0.00	-0.10	-0.02
73.	When something unforeseen happens: I often feel bewildered TO I always find a solution	**0.41**	-0.11	0.13	0.25	-0.01	0.19	0.08	0.08
74.	When I make plans, I follow through with them	-0.01	0.08	0.17	**0.40**	-0.02	**0.40**	-0.01	0.00
75.	Prefer to take the lead in problem solving	0.14	-0.13	0.14	-0.03	**0.39**	**0.31**	0.08	0.04

Table 5 (Continued)

76.	Not easily discouraged by failure	**0.39**	-0.09	**0.35**	0.10	0.07	0.13	0.02	0.02
77.	I usually think carefully about something before acting	-0.04	0.04	0.02	0.26	-0.04	**0.39**	-0.12	-0.04
78.	I take things one day at a time	-0.06	0.04	0.07	**0.39**	-0.09	-0.15	0.06	-0.06
79.	Past success gives confidence for new challenge	0.12	0.17	**0.38**	0.14	0.24	0.14	-0.11	-0.11
80.	I usually take things in stride	**0.38**	-0.01	0.22	**0.30**	0.07	0.00	0.01	0.05
81.	I have self-discipline	0.11	-0.17	0.22	**0.33**	-0.07	**0.38**	0.04	0.16
82.	My daily life is full of things that keep me interested	-0.06	0.10	**0.37**	0.16	0.18	0.08	0.03	-0.04
83.	I can usually look at a situation in a number of ways	0.18	0.05	-0.10	**0.35**	**0.37**	0.13	-0.06	0.09
84.	In difficult periods my family: Views the future as gloomy TO keeps a positive outlook on my future	0.18	**0.30**	0.20	-0.08	0.02	-0.06	-0.07	**0.37**
85.	To be flexible in social settings: is not important to me TO is really important to me	0.00	0.11	-0.04	0.08	0.23	-0.04	**0.36**	0.02
86.	I am friends with myself	0.26	-0.10	**0.35**	0.28	-0.10	0.01	0.08	0.10
87.	In an emergency, I'm someone who people can generally rely on	0.29	0.07	-0.11	**0.35**	0.11	0.16	0.11	0.01
88.	I feel that I can handle many things at a time	**0.35**	0.04	0.15	0.15	0.20	0.07	0.01	0.05
89.	My belief in myself gets me through hard times	0.21	-0.16	**0.33**	**0.31**	0.04	0.14	0.08	0.10
90.	Pride in your achievements	0.03	0.10	**0.33**	**0.33**	0.07	0.24	-0.03	-0.10
91.	The bonds among my friends are: weak To strong	0.01	**0.33**	0.00	0.23	-0.08	0.09	**0.32**	0.10
92.	When I am with others: I seldom laugh TO I easily laugh	0.07	0.28	-0.10	**0.32**	0.03	-0.02	0.22	-0.07
93.	Think of self as a strong person	**0.31**	-0.09	0.14	**0.32**	0.06	0.19	0.13	0.04
94.	I would be willing to describe myself as a pretty "strong" personality	-0.08	-0.22	0.14	0.13	**0.32**	0.07	0.28	0.04
95.	When things look hopeless, I don't give up	**0.32**	0.01	0.29	**0.31**	0.00	0.13	-0.03	-0.07
96.	Most of the people I meet are likeable	0.05	0.24	0.09	0.09	0.06	-0.02	**0.31**	-0.05

Table 5 (Continued)

97.	I have enough energy to do what I have to do	0.28	0.03	**0.31**	0.08	-0.14	0.20	0.13	-0.05
98.	I usually come through difficult times with a little trouble	**0.31**	0.03	0.12	0.15	-0.06	-0.06	-0.01	0.02
99.	I get over my anger at someone reasonably quickly	**0.30**	0.20	0.13	0.08	0.02	-0.15	0.04	-0.10
100.	Coping with stress strengthens	0.28	0.13	0.26	0.10	0.21	0.04	-0.08	0.05
101.	Make unpopular or difficult decisions	0.09	-0.12	0.11	0.15	0.26	0.00	-0.16	0.09

Note: Analysis was conducted using maximum likelihood estimation, and a promax rotation was applied to the factor loadings. Loadings greater than |+/- .3| are highlighted in bold. Also note that The Resilience Scale for Adults (Friborg et al., 2003) uses two opposing statements as anchors for its measurement scale, and they are indicated in the above table by the word “TO”.

Table 6. Graduate Sample Content Validity Results

		Number of Categorizations														
	N	F1	F2	F3	F4	F5	F6	F7	F8	N/A	PSA	CSV	CSV_c	M	M_c	Retain
Factor 1																
1. It is hard for me to snap back when something bad happens	16	16	0	0	0	0	0	0	0	0	100%	100%	50%	16	12	YES
2. I have a hard time making it through stressful events	16	15	0	0	1	0	0	0	0	0	94%	88%	50%	15	12	YES
3. I tend to bounce back quickly after hard times	16	16	0	0	0	0	0	0	0	0	100%	100%	50%	16	12	YES
4. It does not take me long to recover from a stressful event	16	16	0	0	0	0	0	0	0	0	100%	100%	50%	16	12	YES
5. I tend to take a long time to get over set-backs in my life	16	16	0	0	0	0	0	0	0	0	100%	100%	50%	16	12	YES
6. Tend to bounce back after illness or hardship	16	16	0	0	0	0	0	0	0	0	100%	100%	50%	16	12	YES
7. I quickly get over and recover from being startled	16	16	0	0	0	0	0	0	0	0	100%	100%	50%	16	12	YES
8. Events in my life that I cannot influence: Are a constant source of worry/concern TO I come to terms with	16	2	0	9	3	2	0	0	0	0	13%	-44%	50%	2	12	NO
9. Can handle unpleasant feelings	16	12	0	0	3	0	0	1	0	0	75%	56%	50%	12	12	NO
10. I do not dwell on things that I can't do anything about	16	6	0	4	4	0	0	0	0	2	38%	13%	50%	6	12	NO

Table 6 (Continued)

11. Can deal with whatever comes	16	9	0	0	0	0	0	7	0	0	56%	13%	50%	9	12	NO
12. Under pressure, focus and think clearly	16	10	0	0	4	1	1	0	0	0	63%	38%	50%	10	12	NO
13. Not easily discouraged by failure	16	9	0	0	7	0	0	0	0	0	56%	13%	50%	9	12	NO
14. I usually take things in stride	16	12	0	1	3	0	0	0	0	0	75%	56%	50%	12	12	NO
15. When something unforeseen happens: I often feel bewildered TO I always find a solution	16	9	0	0	4	0	2	0	0	1	56%	31%	50%	9	12	NO
16. I usually come through difficult times with a little trouble	16	12	0	0	4	0	0	0	0	0	75%	50%	50%	12	12	NO
17. I get over my anger at someone reasonably quickly	16	13	0	0	0	0	0	3	0	0	81%	63%	50%	13	12	YES
Factor 2																
1. I get support form: no one TO friends/family members	16	0	15	0	0	0	0	0	1	0	94%	88%	50%	15	12	YES
2. When needed, I have: no one who can help me TO always someone who can help me	16	0	15	0	0	0	0	1	0	0	94%	88%	50%	15	12	YES
3. I can discuss personal issues with: no one TO friends/family members	16	0	14	0	0	0	0	0	2	0	88%	75%	50%	14	12	YES

Table 6 (Continued)

4. Those who are good at encouraging me are: Nowhere TO close friends/family	15	0	11	0	0	0	0	0	4	0	73%	47%	60%	11	12	NO
5. Know where to turn for help	16	0	16	0	0	0	0	0	0	0	100%	100%	50%	16	12	YES
6. Close and secure relationships	15	0	9	0	0	1	0	5	0	0	60%	27%	60%	9	12	NO
7. My close friends/family members: dislike my qualities TO appreciate my qualities	16	0	10	0	0	0	0	1	5	0	63%	31%	50%	10	12	NO
Factor 3																
1. Sometimes fate or God can help	16	0	0	16	0	0	0	0	0	0	100%	100%	50%	16	12	YES
2. My personal problems: Are unsolvable TO I know how to solve	16	1	0	1	13	0	1	0	0	0	6%	-75%	50%	1	12	NO
3. Strong sense of purpose	16	0	0	15	1	0	0	0	0	0	94%	88%	50%	15	12	YES
4. My life has meaning	16	0	0	15	1	0	0	0	0	0	94%	88%	50%	15	12	YES
5. I seldom wonder what the point of it all is	16	0	0	15	0	1	0	0	0	0	94%	88%	50%	15	12	YES
6. Things happen for a reason	16	1	0	15	0	0	0	0	0	0	94%	88%	50%	15	12	YES
7. Have to act on a hunch	13	0	0	4	3	3	3	0	0	0	31%	8%	54%	4	10	NO
8. My future plans are: difficult to accomplish TO possible to accomplish	16	0	0	6	4	3	3	0	0	0	38%	13%	50%	6	12	NO
9. My future goals are: I am unsure how to accomplish TO I know how to accomplish	16	0	0	6	3	6	0	0	0	1	38%	0%	50%	6	12	NO

Table 6 (continued)

10. I feel that my future looks: uncertain TO very promising	16	0	0	13	3	0	0	0	0	0	81%	63%	50%	13	12	YES
11. My goals for the future are: Unclear TO Well thought out	16	0	0	6	0	0	10	0	0	0	38%	-25%	50%	6	12	NO
12. In control of your life	16	0	0	8	7	0	1	0	0	0	50%	6%	50%	8	12	NO
13. My judgments and decisions: I often doubt TO I trust completely	16	0	0	4	12	0	0	0	0	0	25%	-50%	50%	4	12	NO
14. You can achieve your goals	16	0	0	7	6	0	3	0	0	0	44%	6%	50%	7	12	NO
15. I feel proud that I have accomplished things in life	16	0	0	3	12	0	0	0	0	1	19%	-56%	50%	3	12	NO
16. My daily life is full of things that keep me interested	16	0	0	0	2	14	0	0	0	0	0%	-88%	50%	0	12	NO
17. In difficult periods, I have a tendency to: view everything gloomily TO find something that helps me strive	16	3	0	0	13	0	0	0	0	0	0%	-81%	50%	0	12	NO
Factor 4																
1. I usually manage one way or another	16	7	0	0	7	1	1	0	0	0	44%	0%	50%	7	12	NO
2. Sometimes I make myself do things whether I want to or not	15	0	0	0	2	2	11	0	0	0	13%	-60%	60%	2	12	NO
3. Keeping interested in things is important to me	16	0	0	1	0	15	0	0	0	0	0%	-94%	50%	0	12	NO

Table 6 (Continued)

4. See the humorous side of things	16	0	0	0	14	0	0	2	0	0	88%	75%	50%	14	12	YES
5. I can get through difficult times because I've experienced difficulty before	16	11	0	1	4	0	0	0	0	0	25%	-44%	50%	4	12	NO
6. I can usually find something to laugh about	16	0	0	0	15	0	1	0	0	0	94%	88%	50%	15	12	YES
7. I am able to depend on myself more than anyone else	16	0	0	0	16	0	0	0	0	0	100%	100%	50%	16	12	YES
8. I take things one day at a time	16	0	0	4	3	0	9	0	0	0	19%	-38%	50%	3	12	NO
9. I am generous with my friends	14	0	2	0	0	0	0	12	0	0	0%	-86%	57%	0	11	NO
10. When I am with others: I seldom laugh TO I easily laugh	16	0	1	0	2	0	0	13	0	0	13%	-69%	50%	2	12	NO
11. I am determined	15	0	0	2	6	6	0	0	0	1	40%	0%	60%	6	12	NO
Factor 5																
1. I like to do new and different things	16	0	0	0	0	16	0	0	0	0	100%	100%	50%	16	12	YES
2. I enjoy dealing with new and unusual situations	16	0	0	0	0	16	0	0	0	0	100%	100%	50%	16	12	YES
3. I am more curious than most people	16	0	0	0	0	16	0	0	0	0	100%	100%	50%	16	12	YES
4. I like to take different paths to familiar places	16	0	0	0	0	16	0	0	0	0	100%	100%	50%	16	12	YES
5. I enjoy trying new foods I have never tasted before	16	0	0	0	0	16	0	0	0	0	100%	100%	50%	16	12	YES

Table 6 (Continued)

Factor 6																
1. I am at my best when I: Can take one day at a time TO have a clear goal to strive for	14	0	0	3	0	0	11	0	0	0	79%	57%	57%	11	11	NO
2. When I start on new things/projects: I rarely plan ahead, just go with it TO I prefer to have a thorough plan	16	0	0	0	0	0	16	0	0	0	100%	100%	50%	16	12	YES
3. I am good at: Wasting my time TO Organizing my time	16	0	0	0	0	0	16	0	0	0	100%	100%	50%	16	12	YES
4. Rules and regular routines: are absent in my everyday life TO simplify my everyday life	15	0	0	1	1	0	13	0	0	0	87%	80%	60%	13	12	YES
5. Best effort no matter what	16	0	0	0	2	3	9	0	0	2	56%	38%	50%	9	12	NO
6. I usually think carefully about something before acting	16	0	0	1	0	0	13	0	0	2	81%	69%	50%	13	12	YES
7. You work to attain your goals	16	0	0	1	2	0	13	0	0	0	81%	69%	50%	13	12	YES
8. When I make plans, I follow through with them*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
9. I have self-discipline	16	0	0	0	4	0	12	0	0	0	75%	50%	50%	12	12	NO

Table 6 (Continued)

Factor 7																
1. Meeting new people is: difficult for me TO something I am good at	16	0	0	0	0	1	0	15	0	0	94%	88%	50%	15	12	YES
2. New friendships are something: I have difficulty making TO I make easily	16	0	1	0	0	0	0	15	0	0	94%	88%	50%	15	12	YES
3. For me, thinking of good topics for conversation is: difficult TO easy	16	0	0	0	0	0	0	16	0	0	100%	100%	50%	16	12	YES
4. I enjoy being: By myself TO Together with people	16	0	3	0	0	0	0	12	0	1	75%	56%	50%	12	12	NO
5. I usually succeed in making a favorable impression on people	16	0	0	0	0	0	0	16	0	0	100%	100%	50%	16	12	YES
6. I am regarded as a very energetic person	14	0	0	0	10	2	0	2	0	0	14%	-57%	57%	2	11	NO
Factor 8																
1. My family is characterized by: disconnection TO healthy coherence	16	0	0	0	0	0	0	0	16	0	100%	100%	50%	16	12	YES
2. In my family, we like to: do things on our own TO do things together	16	0	0	0	0	0	0	1	15	0	94%	88%	50%	15	12	YES
3. My family's understanding of what's important in life is: quite different than mine TO very similar to mine	16	0	0	0	0	0	0	0	16	0	100%	100%	50%	16	12	YES

Table 6 (Continued)

4.	When a family member experiences a crisis/emergency: It takes a while before I am told TO I am informed right away	16	0	0	0	0	0	0	0	16	0	100%	100%	50%	16	12	YES

Note: One question (denoted with an *) was accidently omitted from Graduate Student Sample. PSA = Proportion of Substantive Agreement; SV = Coefficient of Substantive validity; CSV_c is the associated critical value; M = Number of responses consistent with intended factor; M_c represents the critical value, as reported by Howard and Melloy (2016) associated with the specific question; RETAIN specifies whether a not an item met the criteria for retention in the sample. Also note that The Resilience Scale for Adults (Friborg et al., 2003) uses two opposing statements as anchors for its measurement scale, and they are indicated in the above table by the word “TO”.

Table 7. Resilience/Personality Subject Matter Expert Content Validity Results

		Number of Categorizations														
	N	F1	F2	F3	F4	F5	F6	F7	F8	N/A	PSA	CSV	CSV_c	M	M_c	Retain
Factor 1																
1. It is hard for me to snap back when something bad happens	17	16	0	1	0	0	0	0	0	0	94%	88%	53%	16	13	YES
2. I have a hard time making it through stressful events	17	17	0	0	0	0	0	0	0	0	100%	100%	53%	17	13	YES
3. I tend to bounce back quickly after hard times	17	17	0	0	0	0	0	0	0	0	100%	100%	53%	17	13	YES
4. It does not take me long to recover from a stressful event	17	16	0	0	1	0	0	0	0	0	94%	88%	53%	16	13	YES
5. I tend to take a long time to get over set-backs in my life	17	16	0	0	1	0	0	0	0	0	94%	88%	53%	16	13	YES
6. Tend to bounce back after illness or hardship	17	16	0	0	0	0	0	0	0	1	94%	88%	53%	16	13	YES
7. I quickly get over and recover from being startled	17	15	0	0	0	1	0	0	0	1	88%	82%	53%	15	13	YES
8. Events in my life that I cannot influence: Are a constant source of worry/concern TO I come to terms with	17	9	0	5	3	0	0	0	0	0	53%	24%	53%	9	13	NO
9. Can handle unpleasant feelings	17	16	0	0	1	0	0	0	0	0	94%	88%	53%	16	13	YES
10. I do not dwell on things that I can't do anything about	17	9	0	0	6	1	0	0	0	1	53%	18%	53%	9	13	NO

Table 7 (Continued)

11. Can deal with whatever comes	17	8	0	0	9	0	0	0	0	0	47%	-6%	53%	8	13	NO
12. Under pressure, focus and think clearly	17	9	0	0	4	1	3	0	0	0	53%	29%	53%	9	13	NO
13. Not easily discouraged by failure	17	11	0	1	4	1	0	0	0	0	65%	41%	53%	11	13	NO
14. I usually take things in stride	17	12	0	0	3	1	0	0	0	1	71%	53%	53%	12	13	NO
15. When something unforeseen happens: I often feel bewildered TO I always find a solution	17	7	0	0	7	3	0	0	0	0	41%	0%	53%	7	13	NO
16. I usually come through difficult times with a little trouble	16	14	0	0	1	0	1	0	0	0	88%	81%	50%	14	12	YES
17. I get over my anger at someone reasonably quickly	16	9	1	0	1	0	0	5	0	0	56%	25%	50%	9	12	NO
Factor 2																
1. I get support from: no one TO friends/family members	17	0	15	0	0	0	0	1	1	0	88%	82%	53%	15	13	YES
2. When needed, I have: no one who can help me TO always someone who can help me	17	0	16	0	0	0	0	1	0	0	94%	88%	53%	16	13	YES
3. I can discuss personal issues with: no one TO friends/family members	16	0	13	0	0	0	3	0	0	0	81%	63%	50%	13	12	YES

Table 7 (Continued)

4. Those who are good at encouraging me are: Nowhere TO close friends/family	17	0	16	0	0	0	0	1	0	0	94%	88%	53%	16	13	YES
5. Know where to turn for help	17	0	14	0	0	0	0	2	0	1	82%	71%	53%	14	13	YES
6. Close and secure relationships	17	0	14	0	0	0	0	0	2	1	82%	71%	53%	14	13	YES
7. My close friends/family members: dislike my qualities TO appreciate my qualities	19	0	3	0	4	0	0	0	12	0	16%	-47%	47%	3	14	NO
Factor 3																
1. Sometimes fate or God can help	16	0	2	13	1	0	0	0	0	0	81%	69%	50%	13	12	YES
2. My personal problems: Are unsolvable TO I know how to solve	16	2	0	3	7	1	1	2	0	0	19%	-25%	50%	3	12	NO
3. Strong sense of purpose	17	0	0	17	0	0	0	0	0	0	100%	100%	53%	17	13	YES
4. My life has meaning	16	0	0	14	1	0	0	0	0	1	88%	81%	50%	14	12	YES
5. I seldom wonder what the point of it all is	16	0	0	14	0	1	0	0	0	1	88%	81%	50%	14	12	YES
6. Things happen for a reason	16	0	0	16	0	0	0	0	0	0	100%	100%	50%	16	12	YES
7. Have to act on a hunch	14	0	0	3	2	4	1	0	0	4	21%	-7%	57%	3	11	NO
8. My future plans are: difficult to accomplish TO possible to accomplish	17	0	0	9	3	3	2	0	0	0	53%	35%	53%	9	13	NO
9. My future goals are: I am unsure how to accomplish TO I know how to accomplish	17	0	0	8	3	0	6	0	0	0	47%	12%	53%	8	13	NO

Table 7 (continued)

10. I feel that my future looks: uncertain TO very promising	17	0	0	13	3	0	0	0	0	1	76%	59%	53%	13	13	NO
11. My goals for the future are: Unclear TO Well thought out	17	0	0	13	0	0	4	0	0	0	76%	53%	53%	13	13	NO
12. In control of your life	17	0	0	10	6	1	0	0	0	0	59%	24%	53%	10	13	NO
13. My judgments and decisions: I often doubt TO I trust completely	15	0	0	1	12	0	2	0	0	0	7%	-73%	60%	1	12	NO
14. You can achieve your goals	17	0	0	7	5	5	0	0	0	0	41%	12%	53%	7	13	NO
15. I feel proud that I have accomplished things in life	16	0	0	4	8	1	0	0	0	3	25%	-25%	50%	4	12	NO
16. My daily life is full of things that keep me interested	17	0	0	2	3	12	0	0	0	0	12%	-59%	53%	2	13	NO
17. In difficult periods, I have a tendency to: view everything gloomily TO find something that helps me strive	17	5	0	1	10	1	0	0	0	0	6%	-53%	53%	1	13	NO
Factor 4																
1. I usually manage one way or another	17	1	0	1	14	1	0	0	0	0	82%	76%	53%	14	13	YES
2. Sometimes I make myself do things whether I want to or not	15	1	0	0	4	3	7	0	0	0	27%	-20%	60%	4	12	NO
3. Keeping interested in things is important to me	17	0	0	2	1	14	0	0	0	0	6%	-76%	53%	1	13	NO

Table 7 (Continued)

4. See the humorous side of things	16	0	0	1	12	2	0	1	0	0	75%	63%	50%	12	12	NO
5. I can get through difficult times because I've experienced difficulty before	17	9	0	2	3	2	0	0	0	1	18%	-35%	53%	3	13	NO
6. I can usually find something to laugh about	16	0	0	0	12	2	0	1	0	1	75%	63%	50%	12	12	NO
7. I am able to depend on myself more than anyone else	15	0	1	0	13	0	0	0	0	1	87%	80%	60%	13	12	YES
8. I take things one day at a time	13	4	0	4	3	1	1	0	0	0	23%	-8%	54%	3	10	NO
9. I am generous with my friends	14	0	0	0	0	0	6	8	0	0	0%	-57%	57%	0	11	NO
10. When I am with others: I seldom laugh TO I easily laugh	15	0	1	0	4	0	0	10	0	0	27%	-40%	60%	4	12	NO
11. I am determined	17	1	0	0	9	0	7	0	0	0	53%	12%	53%	9	13	NO
Factor 5																
1. I like to do new and different things	17	0	0	0	0	17	0	0	0	0	100%	100%	53%	17	13	YES
2. I enjoy dealing with new and unusual situations	17	0	0	1	0	16	0	0	0	0	94%	88%	53%	16	13	YES
3. I am more curious than most people	16	0	0	0	0	15	0	0	0	1	94%	88%	50%	15	12	YES
4. I like to take different paths to familiar places	16	0	0	0	0	16	0	0	0	0	100%	100%	50%	16	12	YES
5. I enjoy trying new foods I have never tasted before	16	0	0	0	0	15	0	0	0	1	94%	88%	50%	15	12	YES

Table 7 (Continued)

Factor 6																
1. I am at my best when I: Can take one day at a time TO have a clear goal to strive for	16	1	0	7	3	0	5	0	0	0	31%	-13%	50%	5	12	NO
2. When I start on new things/projects: I rarely plan ahead, just go with it TO I prefer to have a thorough plan	17	0	0	1	1	1	14	0	0	0	82%	76%	53%	14	13	YES
3. I am good at: Wasting my time TO Organizing my time	16	0	0	0	1	1	14	0	0	0	88%	81%	50%	14	12	YES
4. Rules and regular routines: are absent in my everyday life TO simplify my everyday life	16	1	0	2	0	2	9	0	0	2	56%	44%	50%	9	12	NO
5. Best effort no matter what	15	0	0	0	6	1	7	0	0	1	47%	7%	60%	7	12	NO
6. I usually think carefully about something before acting	16	0	0	1	2	0	11	0	0	2	69%	56%	50%	11	12	NO
7. You work to attain your goals	17	0	0	1	0	1	14	0	0	1	82%	76%	53%	14	13	YES
8. When I make plans, I follow through with them	17	0	0	2	0	0	15	0	0	0	88%	76%	53%	15	13	YES
9. I have self-discipline	16	0	0	1	6	1	8	0	0	0	50%	13%	50%	8	12	NO

Table 7 (Continued)

Factor 7																
1. Meeting new people is: difficult for me TO something I am good at	17	0	0	0	0	2	0	15	0	0	88%	76%	53%	15	13	YES
2. New friendships are something: I have difficulty making TO I make easily	17	0	0	0	0	0	0	16	0	1	94%	88%	53%	16	13	YES
3. For me, thinking of good topics for conversation is: difficult TO easy	16	0	0	0	0	0	0	14	0	2	88%	75%	50%	14	12	YES
4. I enjoy being: By myself TO Together with people	15	0	0	3	1	0	0	8	0	3	53%	33%	60%	8	12	NO
5. I usually succeed in making a favorable impression on people	16	1	0	0	1	0	0	14	0	0	88%	81%	50%	14	12	YES
6. I am regarded as a very energetic person	16	0	0	0	8	3	2	1	0	2	6%	-44%	50%	1	12	NO
Factor 8																
1. My family is characterized by: disconnection TO healthy coherence	16	0	1	0	0	0	0	0	15	0	94%	88%	50%	15	12	YES
2. In my family, we like to: do things on our own TO do things together	16	0	0	0	0	0	0	0	15	1	94%	88%	50%	15	12	YES
3. My family's understanding of what's important in life is: quite different than mine TO very similar to mine	18	0	0	0	0	0	0	0	16	2	89%	78%	44%	16	13	YES

Table 7 (Continued)

4.	When a family member experiences a crisis/emergency: It takes a while before I am told TO I am informed right away	15	0	0	0	0	0	0	0	15	0	100%	100%	60%	15	12	YES

Note: PSA = Proportion of Substantive Agreement; SV = Coefficient of Substantive validity; CSV_c is the associated critical value; M = Number of responses consistent with intended factor; M_c represents the critical value, as reported by Howard and Melloy (2016) associated with the specific question; RETAIN specifies whether a not an item met the criteria for retention in the sample. Also note that The Resilience Scale for Adults (Friborg et al., 2003) uses two opposing statements as anchors for its measurement scale, and they are indicated in the above table by the word “TO”.

Table 8. Item Retention Decisions and Aggregated Relevance to Resilience

	Graduate Students			Resilience/Personality SME			Combined	
	N	Rel	Retain	N	Rel	Retain	Rel	Retain
Factor 1								
1. It is hard for me to snap back when something bad happens	*16*	*4.76*	*YES*	*17*	*4.65*	*YES*	*4.70*	*YES*
2. I have a hard time making it through stressful events	*16*	*4.53*	*YES*	*17*	*4.76*	*YES*	*4.65*	*YES*
3. I tend to bounce back quickly after hard times	*16*	*4.88*	*YES*	*17*	*4.88*	*YES*	*4.88*	*YES*
4. It does not take me long to recover from a stressful event	*16*	*4.82*	*YES*	*17*	*4.71*	*YES*	*4.76*	*YES*
5. I tend to take a long time to get over set-backs in my life	*16*	*4.88*	*YES*	*17*	*4.71*	*YES*	*4.79*	*YES*
6. Tend to bounce back after illness or hardship	*16*	*4.65*	*YES*	*17*	*4.59*	*YES*	*4.62*	*YES*
7. I quickly get over and recover from being startled	*16*	*4.12*	*YES*	*17*	*3.71*	*YES*	*3.91*	*YES*
8. Events in my life that I cannot influence: Are a constant source of worry/concern TO I come to terms with	16	4.00	NO	17	3.94	NO	3.97	NO
9. Can handle unpleasant feelings	16	4.53	NO	17	4.18	YES	4.35	NO
10. I do not dwell on things that I can't do anything about	16	4.29	NO	17	3.88	NO	4.08	NO
11. Can deal with whatever comes	16	4.63	NO	17	4.59	NO	4.61	NO
12. Under pressure, focus and think clearly	16	4.00	NO	17	4.06	NO	4.03	NO
13. Not easily discouraged by failure	16	4.35	NO	17	4.35	NO	4.35	NO
14. I usually take things in stride	16	4.29	NO	17	3.94	NO	4.11	NO
15. When something unforeseen happens: I often feel bewildered TO I always find a solution	16	4.24	NO	17	4.06	NO	4.14	NO

Table 8 (Continued)

16. I usually come through difficult times with a little trouble	16	4.35	NO	16	4.13	YES	4.24	NO
17. I get over my anger at someone reasonably quickly	16	3.59	YES	16	3.06	NO	3.32	NO
Factor 2								
1. I get support form: no one TO friends/family members	*16*	*3.82*	*YES*	*17*	*3.31*	*YES*	*3.56*	*YES*
2. When needed, I have: no one who can help me TO always someone who can help me	*16*	*4.12*	*YES*	*17*	*3.71*	*YES*	*3.91*	*YES*
3. I can discuss personal issues with: no one TO friends/family members	*16*	*3.82*	*YES*	*16*	*3.29*	*YES*	*3.56*	*YES*
4. Those who are good at encouraging me are: Nowhere TO close friends/family	15	3.29	NO	17	3.18	YES	3.23	NO
5. Know where to turn for help	*16*	*4.18*	*YES*	*17*	*3.88*	*YES*	*4.02*	*YES*
6. Close and secure relationships	15	3.63	NO	17	3.35	YES	3.48	NO
7. My close friends/family members: dislike my qualities TO appreciate my qualities	16	3.06	NO	19	2.41	NO	2.71	NO
Factor 3								
1. Sometimes fate or God can help	*16*	*3.53*	*YES*	*16*	*2.53*	*YES*	*3.03*	*YES*
2. My personal problems: Are unsolvable TO I know how to solve	16	4.12	NO	16	3.94	NO	4.03	NO
3. Strong sense of purpose	*16*	*3.94*	*YES*	*17*	*3.65*	*YES*	*3.79*	*YES*
4. My life has meaning	*16*	*3.88*	*YES*	*16*	*3.53*	*YES*	*3.71*	*YES*
5. I seldom wonder what the point of it all is	*16*	*3.00*	*YES*	*16*	*2.76*	*YES*	*2.88*	*YES*
6. Things happen for a reason	*16*	*3.41*	*YES*	*16*	*2.71*	*YES*	*3.06*	*YES*
7. Have to act on a hunch	13	2.38	NO	14	1.93	NO	2.15	NO
8. My future plans are: difficult to accomplish TO possible to accomplish	16	3.53	NO	17	3.18	NO	3.35	NO
9. My future goals are: I am unsure how to accomplish TO I know how to accomplish	16	3.65	NO	17	3.29	NO	3.47	NO
10. I feel that my future looks: uncertain TO very promising	16	3.65	YES	17	3.71	NO	3.68	NO

Table 8 (Continued)

11. My goals for the future are: Unclear TO Well thought out	16	3.41	NO	17	3.12	NO	3.26	NO
12. In control of your life	16	4.12	NO	17	3.82	NO	3.97	NO
13. My judgments and decisions: I often doubt TO I trust completely	16	3.65	NO	15	3.29	NO	3.48	NO
14. You can achieve your goals	16	3.94	NO	17	3.19	NO	3.55	NO
15. I feel proud that I have accomplished things in life	16	3.50	NO	16	2.75	NO	3.13	NO
16. My daily life is full of things that keep me interested	16	3.00	NO	17	3.12	NO	3.06	NO
17. In difficult periods, I have a tendency to: view everything gloomily TO find something that helps me strive	16	4.29	NO	17	4.29	NO	4.29	NO
Factor 4								
1. I usually manage one way or another	16	4.24	NO	17	4.12	YES	4.17	NO
2. Sometimes I make myself do things whether I want to or not	15	3.41	NO	15	3.35	NO	3.38	NO
3. Keeping interested in things is important to me	16	2.76	NO	17	2.71	NO	2.73	NO
4. See the humorous side of things	16	3.47	YES	16	3.41	NO	3.44	NO
5. I can get through difficult times because I've experienced difficulty before	16	4.47	NO	17	4.35	NO	4.41	NO
6. I can usually find something to laugh about	16	3.71	YES	16	3.47	NO	3.59	NO
7. I am able to depend on myself more than anyone else	16	4.24	YES	15	3.24	YES	3.75	YES
8. I take things one day at a time	16	3.59	NO	13	2.76	NO	3.22	NO
9. I am generous with my friends	14	2.24	NO	14	2.29	NO	2.26	NO
10. When I am with others: I seldom laugh TO I easily laugh	16	2.47	NO	15	2.71	NO	2.58	NO
11. I am determined	15	4.00	NO	17	3.47	NO	3.72	NO
Factor 5								
1. I like to do new and different things	*16*	*2.94*	*YES*	*17*	*3.00*	*YES*	*2.97*	*YES*
2. I enjoy dealing with new and unusual situations	*16*	*3.41*	*YES*	*17*	*3.88*	*YES*	*3.65*	*YES*

Table 8 (Continued)

3. I am more curious than most people	*16*	*2.76*	*YES*	*16*	*2.35*	*YES*	*2.56*	*YES*
4. I like to take different paths to familiar places	*16*	*2.82*	*YES*	*16*	*2.65*	*YES*	*2.74*	*YES*
5. I enjoy trying new foods I have never tasted before	*16*	*2.41*	*YES*	*16*	*2.12*	*YES*	*2.26*	*YES*
Factor 6								
1. I am at my best when I: Can take one day at a time TO have a clear goal to strive for	14	3.18	NO	16	2.88	NO	3.02	NO
2. When I start on new things/projects: I rarely plan ahead, just go with it TO I prefer to have a thorough plan	*16*	*3.00*	*YES*	*17*	*2.88*	*YES*	*2.94*	*YES*
3. I am good at: Wasting my time TO Organizing my time	*16*	*2.94*	*YES*	*16*	*2.76*	*YES*	*2.85*	*YES*
4. Rules and regular routines: are absent in my everyday life TO simplify my everyday life	15	3.00	YES	16	2.00	NO	2.48	NO
5. Best effort no matter what	16	3.63	NO	15	3.18	NO	3.41	NO
6. I usually think carefully about something before acting	16	2.94	YES	16	2.76	NO	2.85	NO
7. You work to attain your goals	*16*	*3.59*	*YES*	*17*	*3.29*	*YES*	*3.44*	*YES*
8. When I make plans, I follow through with them	--	--	--	*17*	*3.06*	*YES*	*3.06*	*YES*
9. I have self-discipline	16	3.59	NO	16	3.47	NO	3.53	NO
Factor 7								
1. Meeting new people is: difficult for me TO something I am good at	*16*	*2.88*	*YES*	*17*	*2.82*	*YES*	*2.85*	*YES*
2. New friendships are something: I have difficulty making TO I make easily	*16*	*2.82*	*YES*	*17*	*3.06*	*YES*	*2.94*	*YES*
3. For me, thinking of good topics for conversation is: difficult TO easy	*16*	*2.41*	*YES*	*16*	*2.24*	*YES*	*2.32*	*YES*
4. I enjoy being: By myself TO Together with people	16	2.41	NO	15	2.19	NO	2.30	NO
5. I usually succeed in making a favorable impression on people	*16*	*2.88*	*YES*	*16*	*2.76*	*YES*	*2.82*	*YES*
6. I am regarded as a very energetic person	14	2.56	NO	16	2.82	NO	2.70	NO

Table 8 (Continued)

Factor 8								
1. My family is characterized by: disconnection TO healthy coherence	*16*	*3.29*	*YES*	*16*	*2.59*	*YES*	*2.94*	*YES*
2. In my family, we like to: do things on our own TO do things together	*16*	*2.76*	*YES*	*16*	*2.18*	*YES*	*2.47*	*YES*
3. My family's understanding of what's important in life is: quite different than mine TO very similar to mine	*16*	*2.65*	*YES*	*18*	*2.24*	*YES*	*2.43*	*YES*
4. When a family member experiences a crisis/emergency: It takes a while before I am told TO I am informed right away	*16*	*2.76*	*YES*	*15*	*2.25*	*YES*	*2.52*	*YES*

Note: Italicized items were retained in the final analysis. REL = Relevance to resilience and was measured on a 1 (not at all relevant) to 5 (strongly relevant) Likert scale. Also note that The Resilience Scale for Adults (Friborg et al., 2003) uses two opposing statements as anchors for its measurement scale, and they are indicated in the above table by the word "TO".

Table 9. Final Resilience Items

Item Text	Source Scale
Factor 1: Distress Tolerance and Recovery Speed	
I have a hard time making it through stressful events (R)	Brief Resilience Scale
I quickly get over from being startled	Ego Resilience Scale
I tend to bounce back quickly after hard times	Brief Resilience Scale
I tend to take a long time to get over set-backs in my life (R)	Brief Resilience Scale
It does not take me long to recover from a stressful event	Brief Resilience Scale
It is hard for me to snap back when something bad happens (R)	Brief Resilience Scale
Tend to bounce back after illness or hardship	Connor-Davidson Resilience Scale
Factor 2: Support from Others	
I can discuss personal issues with no one TO friends/family members	Resilience Scale for Adults
I get support from friends/family members TO no one	Resilience Scale for Adults
Know where to turn to for help	Connor-Davidson Resilience Scale
When needed, I have no one who can help me TO always someone who can help me	Resilience Scale for Adults
Factor 3: Faith, Purpose, and Future	
I seldom wonder what the point of it all is	The Resilience Scale
My life has meaning	Connor-Davidson Resilience Scale
Sometimes fate or God can help	Connor-Davidson Resilience Scale
Strong sense of purpose	Connor-Davidson Resilience Scale
Things happen for a reason	Connor-Davidson Resilience Scale
Factor 4: Challenge and Curiosity	
I am more curious than most people	Ego-Resilience Scale
I enjoy dealing with new and unusual situations	Ego-Resilience Scale
I enjoy trying new foods I have never tasted before	Ego-Resilience Scale
I like to do new and different things	Ego-Resilience Scale
I like to take different paths to familiar places	Ego-Resilience Scale

Table 9 (Continued)

Factor 5: Work Ethic and Organization	
I am good at organizing my time TO wasting my time	Resilience Scale for Adults
Rules and regular routines are absent in my everyday life TO simplify my everyday life	Resilience Scale for Adults
When I make plans, I follow through with them	The Resilience Scale
You work to attain your goals	Connor-Davidson Resilience Scale
Factor 6: Social Skills	
I usually succeed in making a favorable impression on people	Ego-Resilience Scale
Meeting new people is difficult for me TO something I am good at	Resilience Scale for Adults
New friendships are something I make easily TO I have difficulty making	Resilience Scale for Adults
When I am with others I easily laugh TO I seldom laugh	Resilience Scale for Adults
Factor 7: Family Coherence	
In my family, we like to do things on our own TO do things together	Resilience Scale for Adults
My family is characterized by disconnection TO healthy coherence	Resilience Scale for Adults
My family's understanding of what's important in life is quite different than mine TO very similar to mine	Resilience Scale for Adults
When a family member experiences a crisis/ emergency I am informed right away TO it takes a while before I am told	Resilience Scale for Adults

Note: Items are sorted alphabetically by content within each factor. Also note that The Resilience Scale for Adults (Friborg et al., 2003) uses two opposing statements as anchors for its measurement scale, and they are indicated in the above table by the word "TO". (R) = Reverse coded.

Table 10. Model Comparisons

	χ^2	Df	P	CFI	TLI	RMSEA	95%CI	SRMR	χ^2_{diff}	Df	P
1. Correlated Traits Model	1169.44	474	<.001	.90	.88	.06	(.055, .064)	.07	--	--	--
2. Correlated Traits Model (-1 item)	1119.22	443	<.001	.90	.88	.06	(.056, .065)	.07	--	--	--
3. Unidimensional Model	7209.16	528	<.001	.57	.55	.12	(.114, .122)	.11	6039.718	54	<.001
4. Second-Order Model	1307.94	488	<.001	.88	.87	.06	(.060, .068)	.09	138.497	14	<.001
5. Bifactor Model	1610.09	470	<.001	.83	.81	.08	(.073, .081)	.13	440.649	14	<.001
6. Higher-order (1)	1434.84	488	<.001	.86	.85	.07	(.065, .073)	.08	265.396	14	<.001
7. Select Correlations (1)	1399.68	484	<.001	.86	.85	.07	(.064, .072)	.15	230.239	10	<.001
8. Higher-order (2)	1483.01	488	<.001	.85	.84	.07	(.066, .074)	.09	313.569	14	<.001
9. Select Correlations (2)	1474.77	486	<.001	.85	.84	.07	(.066, .074)	.17	305.328	12	<.001
10. Modified Correlated Traits Model	1019.57	470	<.001	.92	.91	.05	(.049, .058)	.06	149.87	4.00	<.001

Note: Note: In cases where the χ^2 value was higher than that of the *Correlated Traits Model*, a significant χ^2_{diff} indicates that the assessed model significantly worsened the fit as compared to the *Correlated Traits Model*. Models 1 and Models 2 were not nested, so χ^2_{diff} test was not conducted.

Table 11. Descriptive Statistics for Resilience Factors, Overall Resilience, Correlates, and Outcomes

	N	α	*M*	Med	SD	SEM	Skew	Kurtosis	Range	(Min, Max)
Resilience										
G: Global Resilience Composite	166	.94	7.06	7.21	1.91	.11	-0.40	-0.25	7.26	(2.74, 10.00)
F1: Distress Tolerance and Recovery Speed	166	.94	7.12	7.64	3.57	.15	-0.50	-0.61	7.64	(2.36, 10.00)
F2: Support from Others	166	.90	7.85	8.00	3.87	.15	-0.78	-0.38	7.50	(2.50, 10.00)
F3: Faith, Purpose, and Future	166	.73	6.79	6.97	3.76	.15	-0.47	-0.33	8.23	(1.77, 10.00)
F4: Challenge and Curiosity	166	.81	7.01	7.00	3.29	.14	-0.28	-0.51	7.50	(2.50, 10.00)
F5: Work Ethic and Organization	166	.73	7.77	8.14	2.38	.12	-0.45	-0.61	6.29	(3.71, 10.00)
F6: Social Skills	166	.86	6.26	6.19	4.46	.16	0.09	-0.94	7.88	(2.13, 10.00)
F7: Family Coherence	166	.83	6.87	7.00	4.07	.16	-0.36	-0.67	8.00	(2.00, 10.00)
Personality										
Neuroticism	166	.95	2.58	2.50	.74	.07	0.31	-0.67	3.60	(1.00, 4.60)
Volatility	166	.93	2.54	2.30	.81	.07	0.41	-0.68	3.80	(1.00, 4.80)
Withdrawal	166	.93	2.63	2.50	.91	.07	0.33	-0.61	4.00	(1.00, 5.00)
Agreeableness	166	.85	3.74	3.80	.25	.04	-0.43	-0.47	2.15	(2.45, 4.60)
Compassion	166	.83	3.75	3.80	.39	.05	-0.73	0.18	2.70	(1.90, 4.60)
Politeness	166	.68	3.72	3.80	.25	.04	-0.57	0.30	2.50	(2.10, 4.60)
Conscientiousness	166	.91	3.70	3.70	.38	.05	-0.22	-0.48	2.80	(2.10, 4.90)
Industriousness	166	.92	3.68	3.80	.59	.06	-0.28	-0.67	3.00	(2.00, 5.00)
Orderliness	166	.82	3.71	3.71	.40	.05	-0.28	0.06	3.20	(1.80, 5.00)
Extraversion	166	.93	3.17	3.15	.56	.06	0.05	-0.29	3.70	(1.20, 4.90)
Enthusiasm	166	.90	3.25	3.30	.70	.07	-0.06	-0.56	3.70	(1.30, 5.00)
Assertiveness	166	.91	3.09	3.00	.78	.07	0.01	-0.65	3.90	(1.00, 4.90)
Openness to Experience	166	.66	3.44	3.45	.16	.03	-0.23	-0.50	1.70	(2.50, 4.20)
Intellect	166	.67	3.42	3.50	.27	.04	-0.48	-0.39	2.30	(2.00, 4.30)
Openness	166	.58	3.45	3.47	.26	.04	-0.10	-0.43	2.30	(2.30, 4.60)
Negative Affectivity	165	.93	1.60	1.40	.52	.06	1.50	1.71	3.00	(1.00, 4.00)
Positive Affectivity	165	.94	3.16	3.20	.91	.07	-0.25	-0.46	4.00	(1.00, 5.00)
Optimism	166	.94	3.57	3.83	1.29	.09	-0.50	-0.81	4.00	(1.00, 5.00)

Table 11 (Continued)

Physical and Mental Health										
Anxiety	165	.94	1.54	1.29	.43	.05	1.56	1.91	3.12	(1.00, 4.12)
Depression	166	.96	1.74	1.50	.41	.05	0.98	-0.06	2.60	(1.00, 3.60)
Physical Health Symptoms	166	--	1.83	1.69	.44	.05	0.92	0.23	3.00	(1.00, 4.00)
Health Related Behaviors										
Total Drinks, Typical Week	165	--	8.61	1.00	285.20	1.31	2.69	8.37	105.00	(.00, 105.00)
Total Drinks, Heavy Week	162	--	9.05	1.00	345.27	1.46	3.01	9.95	105.00	(.00, 105.00)
Well-Being										
Satisfaction with Life	165	.95	4.17	4.60	3.17	.14	-0.30	-1.24	6.00	(1.00, 7.00)
Vitality	166	.92	3.44	3.50	1.68	.10	-0.16	-1.01	5.00	(1.00, 6.00)
Job Attitudes										
Burnout	115	.97	2.75	2.50	2.21	.14	0.67	-0.34	6.00	(1.00, 7.00)
Fatigue	115	.96	2.99	2.67	2.64	.15	0.57	-0.69	6.00	(1.00, 7.00)
Cognitive Weariness	115	.96	2.68	2.20	2.65	.15	0.77	-0.44	6.00	(1.00, 7.00)
Emotional Exhaustion	115	.93	2.39	2.00	2.23	.14	0.93	0.20	6.00	(1.00, 7.00)
Job Satisfaction	115	.91	5.26	5.40	3.06	.16	-0.63	-0.30	6.60	(1.00, 7.60)
Job Performance										
Counterproductive Work Behavior	115	.85	1.49	1.20	.43	.06	2.29	6.63	3.80	(1.00, 4.80)
Organizational Citizenship Behavior	115	.90	3.17	3.11	1.37	.11	0.33	-.292	5.00	(1.00, 6.00)
Task Performance	115	.91	4.38	4.56	1.07	.10	-0.97	1.19	5.00	(1.00, 6.00)
Proficiency	115	.90	5.14	5.33	.99	.09	-2.27	6.26	5.00	(1.00, 6.00)
Adaptability	115	.80	4.29	4.67	1.40	.11	-0.86	0.31	5.00	(1.00, 6.00)
Proactivity	115	.91	3.71	4.00	2.09	.13	-0.40	-0.94	5.00	(1.00, 6.00)

Notes: Cronbach's α α is not reported for frequency variables (Physical Health Symptoms; Total Drinks, Typical Week; Total Drinks, Heavy Week).

Table 12. Correlations between Resilience Factors and Overall Resilience

	G	F1	F2	F3	F4	F5	F6	F7
G: Global Resilience Composite	(.94)							
F1: Distress Tolerance and Recovery Speed	.84**	(.94)						
F2: Support from Others	.75**	.50**	(.90)					
F3: Faith, Purpose, and Future	.72**	.55**	.50**	(.73)				
F4: Challenge and Curiosity	.61**	.47**	.32**	.25**	(.81)			
F5: Work Ethic and Organization	.73**	.56**	.54**	.51**	.31**	(.73)		
F6: Social Skills	.75**	.56**	.55**	.45**	.44**	.44**	(.86)	
F7: Family Coherence	.66**	.38**	.57**	.37**	.23**	.50**	.38**	(.83)

** = $p < .01$. All values within the table are from Data Collection 2: Wave 2. Cronbach's α in presented in parentheses.

Table 13. Relationships between Resilience and Correlates / Outcomes

	F1	F2	F3	F4	F5	F6	F7	G	R^2
Personality									
Neuroticism	-.77**	-.55**	-.55**	-.38**	-.56**	-.62**	-.41**	-.77**	.67***
Volatility	-.65**	-.42**	-.42**	-.29**	-.45**	-.51**	-.33**	-.62**	.47***
Withdrawal	-.77**	-.59**	-.59**	-.42**	-.59**	-.63**	-.43**	-.80**	.70***
Agreeableness	.29**	.31**	.30**	.22**	.35**	.26**	.26**	.38**	.16***
Compassion	.30**	.36**	.33**	.31**	.35**	.36**	.32**	.45**	.22***
Politeness	.21**	.19*	.20*	.06	.26**	.07	.12	.21**	.09*
Conscientiousness	.49**	.46**	.45**	.21**	.81**	.43**	.47**	.63**	.68***
Industriousness	.62**	.55**	.52**	.33**	.82**	.55**	.51**	.75**	.74***
Orderliness	.20*	.22**	.24**	.00	.58**	.17*	.29**	.31**	.40***
Extraversion	.61**	`	.42**	.58**	.50**	.80**	.48**	.78**	.76***
Enthusiasm	.55**	.64**	.43**	.50**	.43**	.77**	.42**	.73**	.68***
Assertiveness	.52**	.40**	.30**	.52**	.45**	.64**	.41**	.64**	.54***
Openness to Experience	.35**	.24**	.17*	.56**	.34**	.28**	.23**	.43**	.35***
Intellect	.48**	.32**	.25**	.54**	.44**	.44**	.31**	.55**	.42***
Openness	.06	.04	.01	.33**	.07	-.01	.04	.11	.14**
Negative Affectivity	-.60**	-.53**	-.45**	-.28**	-.55**	-.49**	-.34**	-.63**	.47***
Positive Affectivity	.53**	.45**	.49**	.44**	.51**	.50**	.35**	.65**	.44***
Optimism	.67**	.56**	.63**	.33**	.54**	.57**	.44**	.75**	.60***
Mental Health and Physical Health									
Anxiety	-.46**	-.40**	-.35**	-.18*	-.36**	-.43**	-.28**	-.48**	.29***
Depression	-.64**	-.61**	-.54**	-.31**	-.55**	-.53**	-.43**	-.71**	.55***
Physical Health Symptoms	-.46**	-.40**	-.33**	-.18	-.33**	-.43**	-.28**	-.46**	.30***
Health-Related Behaviors									
Total Drinks, Typical Week	-.09	.08	-.07	-.11	-.09	-.05	-.06	-.11	0.02
Total Drinks, Heavy Week	-.06	-.04	-.10	-.07	-.10	-.03	-.07	-.09	0.02
Well-Being									
Satisfaction with Life	.48**	.54**	.55**	.21**	.47**	.33**	.44**	.59**	.42***
Vitality	.51**	.44**	.43**	.24**	.44**	.54**	.37**	.58**	.39***

Table 13 (Continued)

Job Attitudes									
Burnout	-.52**	-.47**	-.45**	-.29**	-.54**	-.46**	-.40**	-.62**	.42***
Fatigue Sub-Factor	-.51**	-.45**	-.45**	-.27**	-.51**	-.47**	-.38**	-.60**	.39***
Cognitive Weariness	-.48**	-.43**	-.38**	-.24**	-.53**	-.42**	-.35**	-.55**	.37***
Emotional Exhaustion	-.45**	-.42**	-.43**	-.31**	-.47**	-.36**	-.39**	-.56**	.33***
Job Satisfaction	.49**	.35**	.47**	.30**	.49**	.35**	.33**	.56**	.35***
Job Performance									
Counterproductive Work Behavior	-.46**	-.27**	-.27**	-.22*	-.40**	-.29**	-.35**	-.45**	.26***
Organizational Citizenship Behavior	.24**	.17	.17	.26**	.27**	.24*	.22*	.31**	.12+
Task Performance	.27**	.26**	.12	.24**	.33**	.22*	.18*	.31**	.15*
Proficiency	.03	.09	.01	.01	.23*	.01	.09	.07	0.08
Adaptability	.26**	.21*	.10	.22*	.26**	.15	.16	.27**	0.11
Proactivity	.33**	.30**	.17	.34**	.35**	.33**	.21*	.41**	.20**

Notes: + = $p < .1$, * = $p < .05$; ** = $p < .01$, *** $p < .001$. All values within the table are from Data Collection 2: Wave 2. Pearson's correlations are presented for G and F1-F7. See Table 2 for full predictor names. Cumulative effect of regressing variables F1-F7 on a given correlate/outcome is presented at the end of the table as R^2.

Table 14. Relative Weights Summary Table: Explained Variance in Correlates and Outcomes by Resilience Factors

		% R_2						
	R^2	F1	F2	F3	F4	F5	F6	F7
Personality								
Neuroticism	.67***	38.17•	10.43•	10.05•	5.19•	12.33•	18.55•	5.28•
Volatility	.47***	43.48•	7.97•	8.36•	4.23	11.28•	19.71•	4.97
Withdrawal	.70***	33.83•	12.54•	11.48•	6.21•	13.01•	17.42•	5.50•
Agreeableness	.16***	11.09	15.87	18.29•	9.94	24.41•	8.72	11.69
Compassion	.22***	6.62	14.29	15.35	18.22	13.55	17.25	14.74
Politeness	.09*	20.26	12.73	16.02	1.71	40.36	4.45	4.46
Conscientiousness	.68***	9.37	6.91	7.52	1.33	57.44•	7.52	9.91
Industriousness	.74***	14.56•	8.72•	8.08•	2.86	44.70•	11.63•	9.46•
Orderliness	.40***	5.02	4.59	5.94	3.34	69.15•	2.90	9.05
Extraversion	.76***	12.75•	11.91•	3.82	17.25•	6.64•	39.63•	7.99•
Enthusiasm	.68***	10.83•	20.65•	5.43•	12.65•	4.39•	39.80•	6.24•
Assertiveness	.54***	14.18•	5.68	2.78	21.39•	9.98•	35.99•	10.00•
Openness to Experience	.35***	10.50	2.96	1.46	63.62•	11.88	5.75	3.83
Intellect	.42***	17.99•	4.18	2.49	36.74•	17.06•	15.27•	6.25
Openness	.14**	4.26	1.68	.64	82.18•	2.39	8.16	.69
Negative Affectivity	.47***	29.17•	18.07•	9.43•	3.34•	20.30•	15.14•	4.53•
Positive Affectivity	.44***	16.19•	9.30	17.53•	17.53•	17.18•	16.79•	5.49
Optimism	.60***	24.19•	16.23•	22.12•	3.73	10.99•	15.61•	7.13
Mental Health and Physical Health								
Anxiety	.29***	31.00•	16.61	8.61	2.76	11.92	23.45•	5.65
Depression	.55***	25.92•	21.36•	12.94•	3.25	15.47•	13.34•	7.73•
Physical Health Symptoms	.30***	32.16•	16.69	7.28	3.61	9.33	24.69	6.23
Health-Related Behaviors								
Total Drinks, Typical Week	0.02	16.95	13.25	3.73	45.46	11.28	3.57	5.77
Total Drinks, Heavy Week	0.02	5.22	4.33	29.31	15.04	33.22	2.65	10.23
Well-Being								
Satisfaction with Life	.42***	16.03•	23.14•	25.52•	1.87	14.55•	4.61•	14.28•
Vitality	.39***	20.95•	11.76	11.79	2.81	13.09	30.33•	9.26

Table 14 (Continued)

Job Attitudes								
Burnout	.42***	20.68•	13.55•	13.14•	3.83	24.46•	14.33•	10.01•
Fatigue Sub-Factor	.39***	20.58•	14.24	8.78	2.95	30.92•	14.53	8.00
Cognitive Weariness	.37***	21.95•	12.55•	14.40	3.59	21.15•	16.75•	9.60
Emotional Exhaustion	.33***	16.31•	13.53•	19.55•	8.27	19.06•	8.20	15.08•
Job Satisfaction	.35***	23.36•	6.88	23.91•	6.39	24.19•	6.92	8.35
Job Performance								
Counterproductive Work Behavior	.26***	36.86•	5.02	5.20	4.30	21.89•	7.38	19.36
Organizational Citizenship Behavior	.12+	12.08	3.80	5.77	25.04	23.01	14.75	15.56
Task Performance	.15*	15.88	13.61	3.59	15.33	37.89	7.79	5.91
Proficiency	.08	6.08	6.76	8.62	1.45	67.99	2.94	6.16
Adaptability	.11	24.41	15.14	3.70	18.38	27.93	4.38	6.06
Proactivity	.20**	15.96	12.60	2.47	24.41	22.42•	17.57	4.57

Note: Adjusted bootstrapping methods (Tonidandel & LeBreton, 2011) were used to determine statistical significance of relative weights, where • = significant (significance level cannot be determined using this method). Model R^2 significance was determined with an F test, where + = $p < .10$, • = $p < .05$, •• = $p < .01$, and ••• = $p < .001$. See Table 2 for full predictor names.

Table 15. Relative Weights of Resilience Predicting Big Five Neuroticism and Lower-Order Factors

	Neuroticism			Volatility			Withdrawal		
	Raw	CI	% R^2	Raw	CI	% R^2	Raw	CI	% R^2
F1	.25	(.18, .33)	38.17•	.20	(.12, .29)	43.48•	.24	(.17, .31)	33.83•
F2	.07	(.04, .11)	10.43•	.04	(.01, .07)	7.97•	.09	(.05, .13)	12.54•
F3	.07	(.03, .11)	10.05•	.04	(.02, .08)	8.36•	.08	(.04, .12)	11.48•
F4	.03	(.01, .07)	5.19•	.02	(.01, .05)	4.23	.04	(.02, .07)	6.21•
F5	.08	(.05, .12)	12.33•	.05	(.02, .10)	11.28•	.09	(.05, .13)	13.01•
F6	.12	(.07, .18)	18.55•	.09	(.04, .15)	19.71•	.12	(.07, .17)	17.42•
F7	.04	(.01, .06)	5.28•	.02	(.01, .06)	4.97	.04	(.02, .07)	5.50•
R^2	. 67***			.47***			.70***		

Note: See Table 2 for full predictor names. • = Significant but no value for *p*; + = $p < .10$, * = $p < .05$, ** = $p < .01$, and *** = $p < .001$.

Table 16. Relative Weights of Resilience Predicting Big Five Agreeableness and Lower-Order Factors

	Agreeableness			Compassion			Politeness		
	Raw	CI	% R^2	Raw	CI	% R^2	Raw	CI	% R^2
F1	.02	(.00, .05)	11.09	.01	(.00, .04)	6.62	.02	(.00, .06)	20.26
F2	.03	(.00, .07)	15.87	.03	(.01, .09)	14.29	.01	(.00, .04)	12.73
F3	.03	(.01, .09)	18.29•	.03	(.01, .09)	15.35	.01	(.00, .06)	16.02
F4	.02	(.00, .06)	9.94	.04	(.00, .11)	18.22	.00	(.00, .00)	1.71
F5	.04	(.01, .10)	24.41•	.03	(.01, .08)	13.55	.03	(.01, .09)	40.36
F6	.01	(.00, .05)	8.72	.04	(.01, .09)	17.25	.00	(.00, .01)	4.45
F7	.02	(.00, .06)	11.69	.03	(.01, .09)	14.74	.00	(.00, .01)	4.46
R^2	.16***			.22***			.09*		

Note: See Table 2 for full predictor names. • = Significant but no value for *p*; + = $p < .10$, * = $p < .05$, ** = $p < .01$, and *** = $p < .001$.

Table 17. Relative Weights of Resilience Predicting Big Five Conscientiousness and Lower-Order Factors

	Conscientiousness			Industriousness			Orderliness		
	Raw	CI	% R^2	Raw	CI	% R^2	Raw	CI	% R^2
F1	.06	(.03, .10)	9.37	.11	(.06, .16)	14.56•	.02	(.01, .03)	5.02
F2	.05	(.02, .08)	6.91	.06	(.03, .10)	8.72•	.02	(.01, .03)	4.59
F3	.05	(.02, .09)	7.52	.06	(.03, .10)	8.08•	.02	(.01, .06)	5.94
F4	.01	(.00, .02)	1.33	.02	(.01, .05)	2.86	.01	(.00, .05)	3.34
F5	.39	(.32, .48)	57.44•	.33	(.26, .41)	44.70•	.27	(.19, .37)	69.15•
F6	.05	(.02, .10)	7.52	.09	(.05, .13)	11.63•	.01	(.00, .03)	2.90
F7	.07	(.02, .12)	9.91	.07	(.03, .11)	9.46•	.04	(.01, .09)	9.05
R^2	.68***			.74***			40***		

Note: See Table 2 for full predictor names. • = Significant but no value for *p*; + = $p < .10$, * = $p < .05$, ** = $p < .01$, and *** = $p < .001$.

Table 18. Relative Weights of Resilience Predicting Big Five Extraversion and Lower-Order Factors

	Extraversion			Enthusiasm			Assertiveness		
	Raw	CI	% R^2	Raw	CI	% R^2	Raw	CI	% R^2
F1	.10	(.06, .14)	12.75•	.07	(.04, .12)	10.83•	.07	(.04, .12)	10.83•
F2	.09	(.05, .13)	11.91•	.14	(.09, .20)	20.65•	.14	(.09, .20)	20.65•
F3	.03	(.01, .05)	3.82	.04	(.02, .07)	5.43•	.04	(.02, .07)	5.43•
F4	.13	(.08, .18)	17.25•	.09	(.04, .14)	12.65•	.09	(.04, .14)	12.65•
F5	.05	(.03, .08)	6.64•	.03	(.01, .05)	4.39•	.03	(.01, .05)	4.39•
F6	.30	(.24, .37)	39.63•	.27	(.21, .35)	39.80•	.27	(.21, .35)	39.80•
F7	.06	(.03, .10)	7.99•	.04	(.01, .08)	6.24•	.04	(.01, .08)	6.24•
R^2	.76***			68***			.54***		

Note: See Table 2 for full predictor names. • = Significant but no value for *p*; + = $p < .10$, * = $p < .05$, ** = $p < .01$, and *** = $p < .001$.

Table 19. Relative Weights of Resilience Predicting Big Five Openness to Experience and Lower-Order Factors

	Openness			Intellect			Optimism		
	Raw	CI	% R^2	Raw	CI	% R^2	Raw	CI	% R^2
F1	.04	(.01, .08)	10.50	.08	(.03, .14)	17.99•	.01	(.00, .01)	4.26
F2	.01	(.00, .03)	2.96	.02	(.01, .04)	4.18	.00	(.00, .00)	1.68
F3	.01	(.00, .01)	1.46	.01	(.00, .02)	2.49	.00	(.00, .00)	.64
F4	.22	(.12, .33)	63.62•	.15	(.08, .24)	36.74•	.11	(.03, .22)	82.18•
F5	.04	(.01, .10)	11.88	.07	(.03, .13)	17.06•	.00	(.00, .01)	2.39
F6	.02	(.01, .05)	5.75	.06	(.03, .12)	15.27•	.01	(.00, .04)	8.16
F7	.01	(.00, .05)	3.83	.03	(.01, .07)	6.25	.00	(.00, .00)	.69
R^2	.35***			42***			14**		.

Note: See Table 2 for full predictor names. • = Significant but no value for *p*; + = $p < .10$, * = $p < .05$, ** = $p < .01$, and *** = $p < .001$.

Table 20. Relative Weights of Resilience Factors and the Big Five Predicting Negative Affectivity

	1. Resilience			2. Big 5_{HO}			3. Big 5_{LO}			4. Resilience $^{+}$ Big 5_{HO}			5. Resilience $^{+}$ Big 5_{LO}		
	Raw	CI	% R^2	Raw	CI	% R^2	Raw	CI	% R^2	Raw	CI_{sig}	% R^2	Raw	CI	% R^2
F1	.14	(.07, .21)	29.17$^{\bullet}$	-	-	-	-	-	-	.08	(.05, .13)	13.74$^{\bullet}$	.06	(.03, .09)	9.59$^{\bullet}$
F2	.09	(.04, .14)	18.07$^{\bullet}$	-	-	-	-	-	-	.06	(.03, .11)	10.57$^{\bullet}$	.06	(.03, .10)	8.96$^{\bullet}$
F3	.04	(.02, .08)	9.43$^{\bullet}$	-	-	-	-	-	-	.03	(.01, .06)	4.91$^{\bullet}$	.02	(.01, .05)	4.03
F4	.02	(.01, .04)	3.34$^{\bullet}$	-	-	-	-	-	-	.01	(.00, .02)	1.70	.01	(.00, .02)	1.37$^{\bullet}$
F5	.10	(.05, .16)	20.30$^{\bullet}$	-	-	-	-	-	-	.05	(.02, .08)	8.52$^{\bullet}$	.04	(.02, .07)	6.35$^{\bullet}$
F6	.07	(.04, .12)	15.14$^{\bullet}$	-	-	-	-	-	-	.05	(.03, .08)	8.41$^{\bullet}$	.04	(.02, .06)	6.42
F7	.02	(.01, .04)	4.53$^{\bullet}$	-	-	-	-	-	-	.01	(.01, .03)	2.37	.01	(.00, .02)	1.85$^{\bullet}$
N	-	-	-	.32	(.23, .41)	56.18$^{\bullet}$	-	-	-	.17	(.12, .24)	27.73$^{\bullet}$	-	-	-
A	-	-	-	.06	(.02, .13)	11.43$^{\bullet}$	-	-	-	.04	(.01, .10)	7.10$^{\bullet}$	-	-	-
C	-	-	-	.11	(.06, .16)	18.81$^{\bullet}$	-	-	-	.05	(.03, .09)	8.55$^{\bullet}$	-	-	-
E	-	-	-	.05	(.03, .09)	9.34$^{\bullet}$	-	-	-	.02	(.01, .03)	3.90$^{\bullet}$	-	-	-
O	-	-	-	.02	(.00, .06)	4.24	-	-	-	.02	(.00, .04)	2.51	-	-	-
N_V	-	-	-	-	-	-	.16	(.11, .23)	27.75$^{\bullet}$	-	-	-	.12	(.07, .17)	18.76$^{\bullet}$
N_W	-	-	-	-	-	-	.14	(.10, .18)	23.37$^{\bullet}$	-	-	-	.07	(.05, .10)	12.07$^{\bullet}$
A_C	-	-	-	-	-	-	.02	(.01, .04)	2.86$^{\bullet}$	-	-	-	.01	(.00, .02)	1.86
A_P	-	-	-	-	-	-	.06	(.02, .13)	10.99$^{\bullet}$	-	-	-	.06	(.02, .12)	9.03$^{\bullet}$
C_I	-	-	-	-	-	-	.08	(.05, .11)	13.96$^{\bullet}$	-	-	-	.04	(.03, .06)	7.20$^{\bullet}$
C_O	-	-	-	-	-	-	.02	(.01, .05)	3.67$^{\bullet}$	-	-	-	.01	(.01, .03)	2.20
E_E	-	-	-	-	-	-	.03	(.01, .06)	5.94$^{\bullet}$	-	-	-	.02	(.01, .03)	2.84$^{\bullet}$
E_A	-	-	-	-	-	-	.02	(.01, .04)	4.24$^{\bullet}$	-	-	-	.02	(.01, .02)	2.48
O_I	-	-	-	-	-	-	.04	(.02, .08)	6.90$^{\bullet}$	-	-	-	.03	(.01, .06)	4.76$^{\bullet}$
O_O	-	-	-	-	-	-				-	-	-	.00	(.00, .00)	.22
R^2	.47***			.57***			.58***			.60***			.62***		
									ΔR^2_{M1}	.13***		ΔR^2_{M1}	.15***		
									ΔR^2_{M2}	.04		ΔR^2_{M3}	.04^{+}		

Note: See Table 2 for full predictor names. $^{\bullet}$ = Significant but no value for *p*; $^{+}$ = $p < .10$, * = $p < .05$, ** = $p < .01$, and *** = $p < .001$.

Table 21. Relative Weights of Resilience Factors and the Big Five Predicting Positive Affectivity

	1. Resilience			2. Big 5_{HO}			3. Big 5_{LO}			4. Resilience $^{+}$ Big 5_{HO}			5. Resilience $^{+}$ Big 5_{LO}		
	Raw	CI	% R^2	Raw	CI	% R^2	Raw	CI_{sig}	% R^2	Raw	CI_{sig}	% R^2	Raw	CI	% R^2
F1	.07	(.03, .12)	16.19$^{\bullet}$	-	-	-	-	-	-	.04	(.02, .07)	8.53$^{\bullet}$	.04	(.01, .06)	6.75$^{\bullet}$
F2	.04	(.02, .08)	9.30	-	-	-	-	-	-	.03	(.01, .05)	5.44	.02	(.01, .04)	4.36$^{\bullet}$
F3	.08	(.03, .14)	17.53$^{\bullet}$	-	-	-	-	-	-	.06	(.02, .12)	12.82$^{\bullet}$	.06	(.02, .11)	10.61
F4	.08	(.03, .14)	17.53$^{\bullet}$	-	-	-	-	-	-	.04	(.01, .09)	8.95$^{\bullet}$	.03	(.01, .07)	6.66
F5	.07	(.04, .12)	17.18$^{\bullet}$	-	-	-	-	-	-	.04	(.02, .07)	7.94$^{\bullet}$	.03	(.01, .05)	5.91$^{\bullet}$
F6	.07	(.03, .13)	16.79$^{\bullet}$	-	-	-	-	-	-	.04	(.02, .07)	8.45$^{\bullet}$	.03	(.01, .05)	5.60$^{\bullet}$
F7	.02	(.01, .05)	5.49	-	-	-	-	-	-	.01	(.01, .03)	2.89	.01	(.00, .02)	2.02
N	-	-	-	.09	(.04, .15)	19.77$^{\bullet}$	-	-	-	.04	(.01, .06)	7.18$^{\bullet}$	-	-	-
A	-	-	-	.03	(.01, .09)	7.46$^{\bullet}$	-	-	-	.02	(.00, .07)	4.02	-	-	-
C	-	-	-	.09	(.04, .15)	19.67$^{\bullet}$	-	-	-	.04	(.02, .08)	8.78$^{\bullet}$	-	-	-
E	-	-	-	.18	(.11, .25)	40.28$^{\bullet}$	-	-	-	.09	(.05, .13)	17.74$^{\bullet}$	-	-	-
O	-	-	-	.06	(.02, .11)	12.82$^{\bullet}$	-	-	-	.04	(.01, .08)	7.25$^{\bullet}$	-	-	-
N_V	-	-	-	-	-	-	.03	(.01, .05)	5.73	-	-	-	.02	(.01, .03)	2.95
N_W	-	-	-	-	-	-	.08	(.04, .13)	16.68$^{\bullet}$	-	-	-	.04	(.02, .07)	7.57$^{\bullet}$
A_C	-	-	-	-	-	-	.06	(.02, .14)	13.15$^{\bullet}$	-	-	-	.05	(.01, .13)	9.19$^{\bullet}$
A_P	-	-	-	-	-	-	.01	(.01, .02)	2.69	-	-	-	.01	(.00, .02)	1.98
C_I	-	-	-	-	-	-	.07	(.03, .10)	13.31$^{\bullet}$	-	-	-	.04	(.02, .06)	6.87$^{\bullet}$
C_O	-	-	-	-	-	-	.02	(.00, .06)	4.18	-	-	-	.01	(.00, .04)	2.69
E_E	-	-	-	-	-	-	.06	(.03, .10)	11.72$^{\bullet}$	-	-	-	.03	(.01, .06)	5.85$^{\bullet}$
E_A	-	-	-	-	-	-	.10	(.06, .16)	21.26$^{\bullet}$	-	-	-	.07	(.04, .11)	13.62$^{\bullet}$
O_I	-	-	-	-	-	-	.04	(.02, .08)	8.60$^{\bullet}$	-	-	-	.03	(.01, .05)	5.61$^{\bullet}$
O_O	-	-	-	-	-	-	.01	(.00, .04)	2.68	-	-	-	.01	(.00, .03)	1.75
R^2	.44***			.45***			.49***			.49***			.52***		
									ΔR^2_{M1}	.06**		ΔR^2_{M1}	.08**		
									ΔR^2_{M2}	.04^{+}		ΔR^2_{M3}	.03		

Note: See Table 2 for full predictor names. $^{\bullet}$ = Significant but no value for *p*; $^{+}$ = $p < .10$, * = $p < .05$, ** = $p < .01$, and *** = $p < .001$.

Table 22. Relative Weights of Resilience Factors and the Big Five Predicting Optimism

	1. Resilience			2. Big 5_{HO}			3. Big 5_{LO}			4. Resilience $^{+}$ Big 5_{HO}			5. Resilience $^{+}$ Big 5_{LO}		
	Raw	CI	% R^2	Raw	CI	% R^2	Raw	CI	% R^2	Raw	CI_{sig}	% R^2	Raw	CI	% R^2
F1	.15	(.08, .21)	24.19$^{\bullet}$	-	-	-	-	-	-	.10	(.06, .15)	16.18$^{\bullet}$	.09	(.05, .12)	13.48$^{\bullet}$
F2	.10	(.05, .15)	16.23$^{\bullet}$	-	-	-	-	-	-	.08	(.04, .12)	12.18$^{\bullet}$	.06	(.03, .11)	10.19$^{\bullet}$
F3	.13	(.08, .19)	22.12$^{\bullet}$	-	-	-	-	-	-	.11	(.07, .16)	17.75$^{\bullet}$	.10	(.06, .15)	15.87$^{\bullet}$
F4	.02	(.01, .05)	3.73	-	-	-	-	-	-	.02	(.01, .04)	3.07	.02	(.01, .03)	2.57$^{\bullet}$
F5	.07	(.03, .11)	10.99$^{\bullet}$	-	-	-	-	-	-	.05	(.02, .08)	7.57	.04	(.02, .07)	6.48$^{\bullet}$
F6	.09	(.05, .14)	15.61$^{\bullet}$	-	-	-	-	-	-	.06	(.04, .09)	10.03$^{\bullet}$	.05	(.03, .08)	8.04
F7	.04	(.02, .09)	7.13	-	-	-	-	-	-	.03	(.01, .07)	5.36	.03	(.01, .07)	4.72
N	-	-	-	.23	(.15, .32)	47.91$^{\bullet}$	-	-	-	.09	(.05, .13)	13.94$^{\bullet}$	-	-	-
A	-	-	-	.02	(.00, .06)	4.02	-	-	-	.01	(.00, .02)	1.16	-	-	-
C	-	-	-	.08	(.04, .14)	16.97$^{\bullet}$	-	-	-	.03	(.01, .05)	4.68	-	-	-
E	-	-	-	.14	(.07, .21)	29.02$^{\bullet}$	-	-	-	.04	(.02, .07)	7.01	-	-	-
O	-	-	-	.01	(.00, .02)	2.08	-	-	-	.01	(.00, .01)	1.07	-	-	-
N_V	-	-	-	-	-	-	.08	(.04, .12)	14.70$^{\bullet}$	-	-	-	.04	(.02, .07)	6.68$^{\bullet}$
N_W	-	-	-	-	-	-	.18	(.12, .24)	33.46$^{\bullet}$	-	-	-	.08	(.05, .11)	11.93$^{\bullet}$
A_C	-	-	-	-	-	-	.02	(.01, .04)	3.46	-	-	-	.01	(.00, .01)	1.33
A_P	-	-	-	-	-	-	.01	(.00, .01)	1.30	-	-	-	.00	(.00, .00)	.55
C_I	-	-	-	-	-	-	.07	(.04, .11)	13.15$^{\bullet}$	-	-	-	.03	(.02, .05)	4.70$^{\bullet}$
C_O	-	-	-	-	-	-	.02	(.00, .05)	3.32	-	-	-	.01	(.00, .02)	1.44
E_E	-	-	-	-	-	-	.10	(.05, .16)	18.76$^{\bullet}$	-	-	-	.04	(.02, .07)	6.72$^{\bullet}$
E_A	-	-	-	-	-	-	.04	(.02, .07)	7.75	-	-	-	.02	(.01, .03)	2.82
O_I	-	-	-	-	-	-	.02	(.01, .03)	3.23	-	-	-	.01	(.00, .01)	1.42
O_O	-	-	-	-	-	-	.00	(.00, .02)	.87	-	-	-	.01	(.00, .03)	1.06
R^2	.60***			.49***			.53***			.62***			.02		
									ΔR^2_{M1}	.02		ΔR^2_{M1}	.03		
									ΔR^2_{M2}	.13***		ΔR^2_{M3}	.10***		

Note: See Table 2 for full predictor names. $^{\bullet}$ = Significant but no value for *p*; $^{+}$ = $p < .10$, * = $p < .05$, ** = $p < .01$, and *** = $p < .001$.

Table 23. Relative Weights of Resilience Factors and the Big Five Predicting Anxiety

	1. Resilience			2. Big 5_{HO}			3. Big 5_{LO}			4. Resilience $^{+}$ Big 5_{HO}			5. Resilience $^{+}$ Big 5_{LO}		
	Raw	CI	% R^2	Raw	CI	% R^2	Raw	CI	% R^2	Raw	CI_{sig}	% R^2	Raw	CI	% R^2
F1	.09	(.03, .17)	31.00$^{\bullet}$	-	-	-	-	-	-	.05	(.03, .10)	13.66$^{\bullet}$	.03	(.02, .06)	7.29
F2	.05	(.02, .11)	16.61	-	-	-	-	-	-	.03	(.01, .08)	8.76	.03	(.01, .06)	5.60$^{\bullet}$
F3	.02	(.01, .06)	8.61	-	-	-	-	-	-	.02	(.01, .04)	4.53	.02	(.01, .04)	3.29
F4	.01	(.00, .01)	2.76	-	-	-	-	-	-	.01	(.00, .01)	1.47	.01	(.00, .01)	1.66$^{\bullet}$
F5	.03	(.01, .08)	11.92	-	-	-	-	-	-	.02	(.01, .04)	5.16	.02	(.01, .03)	3.63$^{\bullet}$
F6	.07	(.03, .13)	23.45$^{\bullet}$	-	-	-	-	-	-	.04	(.02, .08)	10.71	.03	(.01, .06)	6.55
F7	.02	(.00, .05)	5.65	-	-	-	-	-	-	.01	(.00, .03)	2.86	.01	(.00, .03)	2.14$^{\bullet}$
N	-	-	-	.24	(.14, .33)	64.40$^{\bullet}$	-	-	-	.14	(.08, .21)	36.19$^{\bullet}$	-	-	-
A	-	-	-	.03	(.00, .09)	7.39	-	-	-	.02	(.00, .07)	4.47	-	-	-
C	-	-	-	.04	(.01, .09)	11.50$^{\bullet}$	-	-	-	.02	(.01, .04)	5.06	-	-	-
E	-	-	-	.05	(.03, .10)	14.64$^{\bullet}$	-	-	-	.02	(.01, .04)	5.94	-	-	-
O	-	-	-	.01	(.00, .02)	2.08	-	-	-	.00	(.00, .01)	1.20	-	-	-
N_V	-	-	-	-	-	-	.08	(.04, .14)	17.83$^{\bullet}$	-	-	-	.06	(.03, .11)	12.49$^{\bullet}$
N_W	-	-	-	-	-	-	.12	(.07, .17)	25.84$^{\bullet}$	-	-	-	.08	(.04, .11)	16.34$^{\bullet}$
A_C	-	-	-	-	-	-	.01	(.00, .02)	2.46	-	-	-	.01	(.00, .01)	1.94
A_P	-	-	-	-	-	-	.04	(.01, .11)	9.46$^{\bullet}$	-	-	-	.04	(.01, .11)	8.56$^{\bullet}$
C_I	-	-	-	-	-	-	.05	(.03, .08)	10.98$^{\bullet}$	-	-	-	.03	(.01, .05)	6.33$^{\bullet}$
C_O	-	-	-	-	-	-	.00	(.00, .01)	.93	-	-	-	.00	(.00, .01)	.76
E_E	-	-	-	-	-	-	.05	(.02, .10)	11.63$^{\bullet}$	-	-	-	.03	(.01, .06)	6.41$^{\bullet}$
E_A	-	-	-	-	-	-	.02	(.01, .03)	4.30	-	-	-	.01	(.00, .02)	2.88
O_I	-	-	-	-	-	-	.05	(.02, .11)	11.97$^{\bullet}$	-	-	-	.05	(.02, .10)	10.31$^{\bullet}$
O_O	-	-	-	-	-	-	.02	(.00, .08)	4.60	-	-	-	.02	(.00, .06)	3.82
R^2	.29***			.37***			.45***			.38***			.46***		
									ΔR^2_{M1}	.09***		ΔR^2_{M1}	.18***		
									ΔR^2_{M2}	.01		ΔR^2_{M3}	.01		

Note: See Table 2 for full predictor names. $^{\bullet}$ = Significant but no value for *p*; $^{+}$ = $p < .10$, * = $p < .05$, ** = $p < .01$, and *** = $p < .001$.

Table 24. Relative Weights of Resilience Factors and the Big Five Predicting Depression

	1. Resilience			2. Big 5_{HO}			3. Big 5_{LO}			4. Resilience $^{+}$ Big 5_{HO}			5. Resilience $^{+}$ Big 5_{LO}		
	Raw	CI	% R^2	Raw	CI	% R^2	Raw	CI	% R^2	Raw	CI_{sig}	% R^2	Raw	CI	% R^2
F1	.14	(.07, .21)	29.17$^{\bullet}$	-	-	-	-	-	-	.08	(.05, .13)	13.80$^{\bullet}$	.06	(.04, .10)	9.48$^{\bullet}$
F2	.09	(.04, .14)	18.07$^{\bullet}$	-	-	-	-	-	-	.09	(.05, .14)	14.38$^{\bullet}$	.07	(.04, .12)	11.10$^{\bullet}$
F3	.04	(.02, .08)	9.43$^{\bullet}$	-	-	-	-	-	-	.05	(.02, .09)	8.59$^{\bullet}$	.05	(.02, .08)	7.22$^{\bullet}$
F4	.02	(.01, .04)	3.34$^{\bullet}$	-	-	-	-	-	-	.01	(.00, .02)	1.76	.01	(.01, .02)	1.61$^{\bullet}$
F5	.10	(.05, .16)	20.30$^{\bullet}$	-	-	-	-	-	-	.05	(.03, .08)	7.71$^{\bullet}$	.04	(.02, .06)	5.78$^{\bullet}$
F6	.07	(.04, .12)	15.14$^{\bullet}$	-	-	-	-	-	-	.04	(.02, .06)	7.11$^{\bullet}$	.03	(.02, .05)	5.03
F7	.02	(.01, .04)	4.53$^{\bullet}$	-	-	-	-	-	-	.03	(.01, .06)	4.74$^{\bullet}$	.03	(.01, .06)	3.92$^{\bullet}$
N	-	-	-	.30	(.22, .37)	52.54$^{\bullet}$	-	-	-	.14	(.10, .20)	23.47$^{\bullet}$	-	-	-
A	-	-	-	.03	(.01, .07)	5.50$^{\bullet}$	-	-	-	.01	(.00, .04)	2.41	-	-	-
C	-	-	-	.11	(.06, .17)	19.92$^{\bullet}$	-	-	-	.05	(.02, .08)	8.01$^{\bullet}$	-	-	-
E	-	-	-	.10	(.06, .16)	18.39$^{\bullet}$	-	-	-	.04	(.02, .06)	6.09$^{\bullet}$	-	-	-
O	-	-	-	.02	(.00, .06)	3.65	-	-	-	.01	(.00, .04)	1.94	-	-	-
N_V	-	-	-	-	-	-	.09	(.06, .14)	15.07$^{\bullet}$	-	-	-	.06	(.03, .09)	9.09$^{\bullet}$
N_W	-	-	-	-	-	-	.19	(.14, .25)	30.26$^{\bullet}$	-	-	-	.10	(.07, .14)	15.37$^{\bullet}$
A_C	-	-	-	-	-	-	.01	(.01, .02)	2.15$^{\bullet}$	-	-	-	.01	(.00, .01)	1.28
A_P	-	-	-	-	-	-	.03	(.01, .07)	4.73$^{\bullet}$	-	-	-	.02	(.01, .06)	3.61$^{\bullet}$
C_I	-	-	-	-	-	-	.09	(.06, .13)	14.69$^{\bullet}$	-	-	-	.05	(.03, .07)	7.09$^{\bullet}$
C_O	-	-	-	-	-	-	.02	(.01, .04)	2.95$^{\bullet}$	-	-	-	.01	(.00, .02)	1.53
E_E	-	-	-	-	-	-	.08	(.05, .13)	13.32$^{\bullet}$	-	-	-	.04	(.02, .07)	6.25$^{\bullet}$
E_A	-	-	-	-	-	-	.03	(.02, .06)	5.49$^{\bullet}$	-	-	-	.02	(.01, .03)	2.76$^{\bullet}$
O_I	-	-	-	-	-	-	.07	(.03, .12)	10.35$^{\bullet}$	-	-	-	.05	(.02, .10)	7.90$^{\bullet}$
O_O	-	-	-	-	-	-	.01	(.00, .03)	.98	-	-	-	.01	(.00, .03)	.98
R^2	.55***			.56***			.63***			.62***			.67***		
									ΔR^2_{M1}	.06***		ΔR^2_{M1}	.11***		
									ΔR^2_{M2}	.05**		ΔR^2_{M3}	.04*		

Note: See Table 2 for full predictor names. $^{\bullet}$ = Significant but no value for *p*; $^{+}$ = $p < .10$, * = $p < .05$, ** = $p < .01$, and *** = $p < .001$.

Table 25. Relative Weights of Resilience Factors and the Big Five Predicting Physical Health Symptoms

	1. Resilience			2. Big 5_{HO}			3. Big 5_{LO}			4. Resilience $^{+}$ Big 5_{HO}			5. Resilience $^{+}$ Big 5_{LO}		
	Raw	CI	% R^2	Raw	CI	% R^2	Raw	CI	% R^2	Raw	CI_{sig}	% R^2	Raw	CI	% R^2
F1	.10	(.04, .18)	32.16$^{\bullet}$	-	-	-	-	-	-	.06	(.03, .10)	15.01	.04	(.02, .07)	9.11
F2	.05	(.02, .12)	16.69	-	-	-	-	-	-	.04	(.01, .09)	9.31	.03	(.01, .07)	7.22
F3	.02	(.01, .05)	7.28	-	-	-	-	-	-	.02	(.01, .04)	3.97	.01	(.01, .03)	3.05
F4	.01	(.00, .02)	3.61	-	-	-	-	-	-	.01	(.00, .01)	1.90	.01	(.00, .02)	1.92$^{\bullet}$
F5	.03	(.01, .07)	9.33	-	-	-	-	-	-	.02	(.01, .04)	4.52	.01	(.01, .02)	3.03$^{\bullet}$
F6	.07	(.03, .14)	24.69	-	-	-	-	-	-	.05	(.02, .09)	11.93	.03	(.01, .07)	8.12
F7	.02	(.00, .05)	6.23	-	-	-	-	-	-	.01	(.00, .03)	3.46	.01	(.00, .03)	2.63
N	-	-	-	.24	(.15, .33)	65.68$^{\bullet}$	-	-	-	.13	(.07, .21)	35.00$^{\bullet}$	-	-	-
A	-	-	-	.02	(.00, .06)	5.07	-	-	-	.01	(.00, .05)	2.67	-	-	-
C	-	-	-	.04	(.01, .09)	12.01$^{\bullet}$	-	-	-	.02	(.01, .04)	5.13	-	-	-
E	-	-	-	.05	(.02, .10)	15.15$^{\bullet}$	-	-	-	.02	(.01, .04)	6.03	-	-	-
O	-	-	-	.01	(.00, .02)	2.09	-	-	-	.00	(.00, .01)	1.08	-	-	-
N_V	-	-	-	-	-	-	.10	(.05, .15)	24.06$^{\bullet}$	-	-	-	.07	(.03, .12)	16.02$^{\bullet}$
N_W	-	-	-	-	-	-	.11	(.06, .16)	27.47$^{\bullet}$	-	-	-	.07	(.04, .11)	16.12$^{\bullet}$
A_C	-	-	-	-	-	-	.01	(.00, .01)	1.94	-	-	-	.01	(.00, .01)	1.42
A_P	-	-	-	-	-	-	.03	(.01, .08)	7.28$^{\bullet}$	-	-	-	.03	(.00, .07)	6.20
C_I	-	-	-	-	-	-	.04	(.02, .07)	9.61$^{\bullet}$	-	-	-	.02	(.01, .04)	5.12
C_O	-	-	-	-	-	-	.00	(.00, .01)	.91	-	-	-	.00	(.00, .00)	.47
E_E	-	-	-	-	-	-	.03	(.01, .07)	8.06$^{\bullet}$	-	-	-	.02	(.01, .03)	4.01
E_A	-	-	-	-	-	-	.02	(.01, .05)	5.26$^{\bullet}$	-	-	-	.01	(.01, .02)	3.24
O_I	-	-	-	-	-	-	.03	(.01, .06)	6.72$^{\bullet}$	-	-	-	.02	(.01, .06)	5.42
O_O	-	-	-	-	-	-	.03	(.00, .10)	8.68	-	-	-	.03	(.00, .08)	6.90
R^2	.30***			.36***			.40***			.38***			.42***		
									ΔR^2_{M1}	.09**		ΔR^2_{M1}	.12**		
									ΔR^2_{M2}	.02		ΔR^2_{M3}	.03		

Note: See Table 2 for full predictor names. $^{\bullet}$ = Significant but no value for *p*; $^{+}$ = $p < .10$, * = $p < .05$, ** = $p < .01$, and *** = $p < .001$.

Table 26. Relative Weights of Resilience Factors and the Big Five Predicting Total Drinks, Typical Week

	1. Resilience			2. Big 5_{HO}			3. Big 5_{LO}			4. Resilience $^{+}$ Big 5_{HO}			5. Resilience $^{+}$ Big 5_{LO}		
	Raw	CI	% R^2	Raw	CI	% R^2	Raw	CI	% R^2	Raw	CI_{sig}	% R^2	Raw	CI	% R^2
F1	.00	(.00, .01)	16.95	-	-	-	-	-	-	.00	(.00, .00)	2.65	.00	(.00, .00)	1.54
F2	.00	(.00, .01)	13.25	-	-	-	-	-	-	.00	(.00, .00)	2.32	.00	(.00, .00)	1.27
F3	.00	(.00, .00)	3.73	-	-	-	-	-	-	.00	(.00, .00)	1.33	.00	(.00, .00)	.59
F4	.01	(.00, .04)	45.46	-	-	-	-	-	-	.01	(.00, .04)	8.72	.01	(.00, .03)	7.17
F5	.00	(.00, .01)	11.28	-	-	-	-	-	-	.01	(.00, .01)	6.65	.00	(.00, .01)	3.89
F6	.00	(.00, .00)	3.57	-	-	-	-	-	-	.00	(.00, .00)	1.22	.00	(.00, .00)	1.22
F7	.00	(.00, .00)	5.77	-	-	-	-	-	-	.00	(.00, .00)	1.34	.00	(.00, .00)	.70$^{\bullet}$
N	-	-	-	.00	(.00, .01)	3.77	-	-	-	.00	(.00, .00)	2.34	-	-	-
A	-	-	-	.04	(.01, .10)	66.81$^{\bullet}$	-	-	-	.04	(.00, .10)	47.44	-	-	-
C	-	-	-	.01	(.00, .09)	24.21	-	-	-	.02	(.00, .08)	22.46	-	-	-
E	-	-	-	.00	(.00, .00)	1.87	-	-	-	.00	(.00, .00)	1.46	-	-	-
O	-	-	-	.00	(.00, .01)	3.33	-	-	-	.00	(.00, .00)	2.06	-	-	-
N_V	-	-	-	-	-	-	.00	(.00, .00)	2.41	-	-	-	.00	(.00, .00)	1.91
N_W	-	-	-	-	-	-	.00	(.00, .00)	1.57	-	-	-	.00	(.00, .00)	1.37
A_C	-	-	-	-	-	-	.01	(.00, .02)	8.88	-	-	-	.01	(.00, .02)	6.87
A_P	-	-	-	-	-	-	.05	(.01, .10)	53.04	-	-	-	.05	(.01, .10)	43.03$^{\bullet}$
C_I	-	-	-	-	-	-	.00	(.00, .01)	4.76	-	-	-	.01	(.00, .02)	5.75
C_O	-	-	-	-	-	-	.01	(.00, .06)	11.28	-	-	-	.01	(.00, .06)	11.93
E_E	-	-	-	-	-	-	.01	(.00, .04)	6.61	-	-	-	.00	(.00, .01)	4.13
E_A	-	-	-	-	-	-	.00	(.00, .01)	4.48	-	-	-	.00	(.00, .01)	4.03
O_I	-	-	-	-	-	-	.01	(.00, .03)	6.33	-	-	-	.00	(.00, .01)	3.70
O_O	-	-	-	-	-	-	.00	(.00, .00)	.63	-	-	-	.00	(.00, .00)	.89
R^2	.02			.06^{+}			.09			.08			.11		
									ΔR^2_{M1}	.07^{+}		ΔR^2_{M1}	.09		
									ΔR^2_{M2}	.02		ΔR^2_{M3}	.02		

Note: See Table 2 for full predictor names. $^{\bullet}$ = Significant but no value for *p*; $^{+}$ = $p < .10$, * = $p < .05$, ** = $p < .01$, and *** = $p < .001$.

Table 27. Relative Weights of Resilience Factors and the Big Five Total Drinks, Heavy Week

	1. Resilience			2. Big 5_{HO}			3. Big 5_{LO}			4. Resilience $^{+}$ Big 5_{HO}			5. Resilience $^{+}$ Big 5_{LO}		
	Raw	CI	% R^2	Raw	CI	% R^2	Raw	CI	% R^2	Raw	CI_{sig}	% R^2	Raw	CI	% R^2
F1	.00	(.00, .00)	5.22	-	-	-	-	-	-	.00	(.00, .00)	2.09	.00	(.00, .00)	1.65
F2	.00	(.00, .00)	4.33	-	-	-	-	-	-	.00	(.00, .00)	1.84	.00	(.00, .00)	1.07
F3	.01	(.00, .02)	29.31	-	-	-	-	-	-	.00	(.00, .01)	3.08	.00	(.00, .01)	2.32
F4	.00	(.00, .02)	15.04	-	-	-	-	-	-	.00	(.00, .01)	2.48	.00	(.00, .01)	2.32
F5	.01	(.00, .04)	33.22	-	-	-	-	-	-	.01	(.00, .02)	8.13	.01	(.00, .01)	4.76
F6	.00	(.00, .00)	2.65	-	-	-	-	-	-	.00	(.00, .00)	1.81	.00	(.00, .00)	.90
F7	.00	(.00, .01)	10.23	-	-	-	-	-	-	.00	(.00, .00)	1.79	.00	(.00, .00)	.98
N	-	-	-	.01	(.00, .01)	5.75	-	-	-	.01	(.00, .01)	4.47	-	-	-
A	-	-	-	.04	(.01, .11)	46.60	-	-	-	.04	(.01, .10)	35.85	-	-	-
C	-	-	-	.03	(.00, .11)	34.76	-	-	-	.04	(.00, .10)	30.93	-	-	-
E	-	-	-	.01	(.00, .03)	7.24	-	-	-	.00	(.00, .01)	3.76	-	-	-
O	-	-	-	.01	(.00, .02)	5.65	-	-	-	.00	(.00, .02)	3.78	-	-	-
N_V	-	-	-	-	-	-	.00	(.00, .01)	3.12	-	-	-	.00	(.00, .01)	2.74
N_W	-	-	-	-	-	-	.00	(.00, .00)	1.98	-	-	-	.00	(.00, .00)	2.00
A_C	-	-	-	-	-	-	.01	(.00, .03)	8.62	-	-	-	.01	(.00, .03)	6.52
A_P	-	-	-	-	-	-	.05	(.01, .10)	41.40$^{\bullet}$	-	-	-	.05	(.02, .10)	35.29
C_I	-	-	-	-	-	-	.01	(.00, .04)	9.06	-	-	-	.01	(.00, .04)	9.84
C_O	-	-	-	-	-	-	.02	(.00, .07)	15.55	-	-	-	.02	(.00, .07)	14.77
E_E	-	-	-	-	-	-	.00	(.00, .00)	1.87	-	-	-	.00	(.00, .00)	1.25
E_A	-	-	-	-	-	-	.01	(.00, .01)	5.87	-	-	-	.01	(.00, .01)	4.61
O_I	-	-	-	-	-	-	.01	(.00, .06)	11.80	-	-	-	.01	(.00, .05)	8.41
O_O	-	-	-	-	-	-	.00	(.00, .00)	.73	-	-	-	.00	(.00, .00)	.57
R^2	.02			.09**			.12*			.12^{+}			.14		
									ΔR^2_{M1}	.10**		ΔR^2_{M1}	.13*		
									ΔR^2_{M2}	.03		ΔR^2_{M3}	.03		

Note: See Table 2 for full predictor names. $^{\bullet}$ = Significant but no value for *p*; $^{+}$ = $p < .10$, * = $p < .05$, ** = $p < .01$, and *** = $p < .001$.

Table 28. Relative Weights of Resilience Factors and the Big Five Predicting Satisfaction with Life

	1. Resilience			2. Big 5_{HO}			3. Big 5_{LO}			4. Resilience $^{+}$ Big 5_{HO}			5. Resilience $^{+}$ Big 5_{LO}		
	Raw	CI	% R^2	Raw	CI	% R^2	Raw	CI	% R^2	Raw	CI_{sig}	% R^2	Raw	CI	% R^2
F1	.07	(.03, .12)	16.03$^{\bullet}$	-	-	-	-	-	-	.04	(.02, .07)	9.37$^{\bullet}$	.03	(.02, .06)	6.18$^{\bullet}$
F2	.10	(.05, .16)	23.14$^{\bullet}$	-	-	-	-	-	-	.08	(.04, .13)	17.22$^{\bullet}$	.06	(.03, .11)	12.34
F3	.11	(.05, .19)	25.52$^{\bullet}$	-	-	-	-	-	-	.09	(.04, .16)	20.41$^{\bullet}$	.09	(.04, .16)	17.17$^{\bullet}$
F4	.01	(.00, .02)	1.87	-	-	-	-	-	-	.01	(.00, .01)	1.20	.01	(.00, .01)	1.29
F5	.06	(.03, .11)	14.55$^{\bullet}$	-	-	-	-	-	-	.04	(.02, .07)	8.50$^{\bullet}$	.03	(.02, .06)	6.65$^{\bullet}$
F6	.02	(.01, .04)	4.61$^{\bullet}$	-	-	-	-	-	-	.01	(.01, .02)	3.27	.02	(.01, .02)	3.09
F7	.06	(.02, .12)	14.28$^{\bullet}$	-	-	-	-	-	-	.05	(.01, .10)	10.51$^{\bullet}$	.05	(.01, .10)	8.88
N	-	-	-	.14	(.07, .23)	45.47$^{\bullet}$	-	-	-	.06	(.03, .11)	14.09$^{\bullet}$	-	-	-
A	-	-	-	.02	(.00, .07)	6.92	-	-	-	.01	(.00, .04)	2.11	-	-	-
C	-	-	-	.08	(.03, .15)	25.57$^{\bullet}$	-	-	-	.03	(.01, .06)	6.86$^{\bullet}$	-	-	-
E	-	-	-	.06	(.02, .12)	19.58$^{\bullet}$	-	-	-	.02	(.01, .05)	5.59$^{\bullet}$	-	-	-
O	-	-	-	.01	(.00, .02)	2.45	-	-	-	.00	(.00, .01)	.88	-	-	-
N_V	-	-	-	-	-	-	.05	(.02, .09)	11.99	-	-	-	.03	(.01, .07)	5.88
N_W	-	-	-	-	-	-	.09	(.04, .14)	22.72$^{\bullet}$	-	-	-	.04	(.02, .06)	7.41$^{\bullet}$
A_C	-	-	-	-	-	-	.01	(.00, .02)	2.84	-	-	-	.01	(.00, .01)	1.77
A_P	-	-	-	-	-	-	.01	(.00, .05)	3.77	-	-	-	.01	(.00, .04)	2.07
C_I	-	-	-	-	-	-	.07	(.03, .12)	19.12$^{\bullet}$	-	-	-	.03	(.02, .06)	6.54
C_O	-	-	-	-	-	-	.01	(.00, .04)	3.56	-	-	-	.01	(.00, .01)	1.29
E_E	-	-	-	-	-	-	.08	(.03, .14)	20.02$^{\bullet}$	-	-	-	.05	(.02, .09)	9.50$^{\bullet}$
E_A	-	-	-	-	-	-	.02	(.01, .02)	4.61	-	-	-	.01	(.01, .01)	1.91
O_I	-	-	-	-	-	-	.04	(.01, .08)	9.47	-	-	-	.03	(.01, .07)	6.19
O_O	-	-	-	-	-	-	.01	(.00, .04)	1.91	-	-	-	.01	(.00, .04)	1.85
R^2	.42***			.31***			.38***			.45***			.52***		
									ΔR^2_{M1}	.02		ΔR^2_{M1}	.09**		
									ΔR^2_{M2}	.13***		ΔR^2_{M3}	.13***		

Note: See Table 2 for full predictor names. $^{\bullet}$ = Significant but no value for *p*; $^{+}$ = $p < .10$, * = $p < .05$, ** = $p < .01$, and *** = $p < .001$.

Table 29. Relative Weights of Resilience Factors and the Big Five Predicting Vitality

	1. Resilience			2. Big 5_{HO}			3. Big 5_{LO}			4. Resilience $^{+}$ Big 5_{HO}			5. Resilience $^{+}$ Big 5_{LO}		
	Raw	CI	% R^2	Raw	CI	% R^2	Raw	CI	% R^2	Raw	CI_{sig}	% R^2	Raw	CI	% R^2
F1	.08	(.04, .15)	20.95$^{\bullet}$	-	-	-	-	-	-	.05	(.02, .08)	10.55$^{\bullet}$	.03	(.02, .06)	7.40$^{\bullet}$
F2	.05	(.02, .09)	11.76	-	-	-	-	-	-	.03	(.01, .06)	6.67$^{\bullet}$	.02	(.01, .05)	5.18$^{\bullet}$
F3	.05	(.02, .09)	11.79	-	-	-	-	-	-	.03	(.01, .07)	7.23$^{\bullet}$	.03	(.01, .06)	6.02
F4	.01	(.00, .02)	2.81	-	-	-	-	-	-	.01	(.00, .01)	1.75	.01	(.00, .01)	1.46$^{\bullet}$
F5	.05	(.02, .10)	13.09	-	-	-	-	-	-	.03	(.01, .05)	6.40$^{\bullet}$	.02	(.01, .04)	4.69$^{\bullet}$
F6	.12	(.06, .19)	30.33$^{\bullet}$	-	-	-	-	-	-	.07	(.03, .12)	15.17$^{\bullet}$	.05	(.02, .09)	11.30
F7	.04	(.01, .08)	9.26	-	-	-	-	-	-	.02	(.01, .06)	5.49$^{\bullet}$	.02	(.01, .06)	4.50
N	-	-	-	.21	(.12, .29)	48.24$^{\bullet}$	-	-	-	.11	(.06, .17)	24.49$^{\bullet}$	-	-	-
A	-	-	-	.02	(.00, .08)	5.43	-	-	-	.01	(.00, .06)	2.78	-	-	-
C	-	-	-	.08	(.03, .14)	18.48$^{\bullet}$	-	-	-	.04	(.01, .07)	8.36$^{\bullet}$	-	-	-
E	-	-	-	.11	(.06, .18)	25.87$^{\bullet}$	-	-	-	.05	(.02, .08)	10.22$^{\bullet}$	-	-	-
O	-	-	-	.01	(.00, .01)	1.97	-	-	-	.00	(.00, .01)	.90	-	-	-
N_V	-	-	-	-	-	-	.07	(.04, .12)	15.77$^{\bullet}$	-	-	-	.05	(.02, .08)	10.01$^{\bullet}$
N_W	-	-	-	-	-	-	.14	(.08, .19)	29.74$^{\bullet}$	-	-	-	.08	(.05, .13)	17.61$^{\bullet}$
A_C	-	-	-	-	-	-	.02	(.01, .05)	3.38$^{\bullet}$	-	-	-	.01	(.00, .02)	1.88
A_P	-	-	-	-	-	-	.01	(.00, .03)	2.91	-	-	-	.01	(.00, .03)	2.22
C_I	-	-	-	-	-	-	.06	(.02, .10)	12.30$^{\bullet}$	-	-	-	.03	(.01, .05)	6.52$^{\bullet}$
C_O	-	-	-	-	-	-	.02	(.00, .05)	3.79	-	-	-	.01	(.00, .03)	2.25
E_E	-	-	-	-	-	-	.07	(.03, .12)	15.35$^{\bullet}$	-	-	-	.04	(.02, .07)	7.99$^{\bullet}$
E_A	-	-	-	-	-	-	.04	(.01, .07)	8.01$^{\bullet}$	-	-	-	.02	(.01, .04)	4.43$^{\bullet}$
O_I	-	-	-	-	-	-	.02	(.01, .05)	5.21$^{\bullet}$	-	-	-	.02	(.01, .04)	3.54
O_O	-	-	-	-	-	-	.02	(.00, .05)	3.54	-	-	-	.01	(.00, .05)	3.00
R^2	.39***			.43***			.45***			.45***			.47***		
									ΔR^2_{M1}	.06**		ΔR^2_{M1}	.08		
									ΔR^2_{M2}	.02		ΔR^2_{M3}	.02		

Note: See Table 2 for full predictor names. $^{\bullet}$ = Significant but no value for *p*; $^{+}$ = $p < .10$, * = $p < .05$, ** = $p < .01$, and *** = $p < .001$.

Table 30. Relative Weights of Resilience Factors and the Big Five Predicting Burnout

	1. Resilience			2. Big 5_{HO}			3. Big 5_{LO}			4. Resilience $^{+}$ Big 5_{HO}			5. Resilience $^{+}$ Big 5_{LO}		
	Raw	CI	% R^2	Raw	CI	% R^2	Raw	CI	% R^2	Raw	CI_{sig}	% R^2	Raw	CI	% R^2
F1	.09	(.03, .18)	20.68$^{\bullet}$	-	-	-	-	-	-	.05	(.02, .10)	9.06	.07	(.03, .11)	38.17*
F2	.06	(.02, .11)	13.55$^{\bullet}$	-	-	-	-	-	-	.03	(.01, .07)	6.43	.07	(.03, .11)	38.17*
F3	.05	(.01, .12)	13.14$^{\bullet}$	-	-	-	-	-	-	.03	(.01, .08)	6.47	.07	(.03, .11)	38.17*
F4	.02	(.01, .05)	3.83	-	-	-	-	-	-	.01	(.00, .02)	1.81	.07	(.03, .11)	38.17*
F5	.10	(.03, .17)	24.46$^{\bullet}$	-	-	-	-	-	-	.04	(.02, .08)	8.20	.07	(.03, .11)	38.17*
F6	.06	(.02, .11)	14.33$^{\bullet}$	-	-	-	-	-	-	.03	(.01, .05)	5.59	.07	(.03, .11)	38.17*
F7	.04	(.01, .11)	10.01$^{\bullet}$	-	-	-	-	-	-	.03	(.01, .08)	4.78	.07	(.03, .11)	38.17*
N	-	-	-	.18	(.08, .28)	34.88$^{\bullet}$	-	-	-	.10	(.05, .17)	19.13$^{\bullet}$	-	-	-
A	-	-	-	.12	(.05, .27)	22.71$^{\bullet}$	-	-	-	.09	(.03, .27)	16.72$^{\bullet}$	-	-	-
C	-	-	-	.12	(.04, .19)	22.06$^{\bullet}$	-	-	-	.06	(.02, .12)	12.00	-	-	-
E	-	-	-	.09	(.04, .14)	16.35$^{\bullet}$	-	-	-	.04	(.02, .07)	7.61	-	-	-
O	-	-	-	.02	(.01, .07)	4.01	-	-	-	.01	(.00, .04)	2.20	-	-	-
N_V	-	-	-	-	-	-	.11	(.06, .17)	18.29$^{\bullet}$	-	-	-	.08	(.05, .14)	13.32$^{\bullet}$
N_W	-	-	-	-	-	-	.08	(.03, .12)	13.75$^{\bullet}$	-	-	-	.05	(.02, .07)	7.77$^{\bullet}$
A_C	-	-	-	-	-	-	.05	(.02, .15)	8.82	-	-	-	.04	(.01, .14)	6.11$^{\bullet}$
A_P	-	-	-	-	-	-	.04	(.01, .09)	7.52$^{\bullet}$	-	-	-	.04	(.01, .08)	6.09$^{\bullet}$
C_I	-	-	-	-	-	-	.08	(.02, .14)	13.44$^{\bullet}$	-	-	-	.05	(.01, .09)	8.03$^{\bullet}$
C_O	-	-	-	-	-	-	.03	(.01, .08)	6.00	-	-	-	.02	(.01, .07)	4.00$^{\bullet}$
E_E	-	-	-	-	-	-	.11	(.07, .18)	19.87$^{\bullet}$	-	-	-	.08	(.05, .16)	13.87$^{\bullet}$
E_A	-	-	-	-	-	-	.02	(.01, .03)	3.80	-	-	-	.01	(.01, .02)	2.39
O_I	-	-	-	-	-	-	.05	(.01, .09)	8.02$^{\bullet}$	-	-	-	.03	(.01, .07)	5.83$^{\bullet}$
O_O	-	-	-	-	-	-	.00	(.00, .00)	.48	-	-	-	.00	(.00, .00)	.50
R^2	.42***			.53***			.58***			.54***			.60***		
									ΔR^2_{M1}	.12***		ΔR^2_{M1}	.18***		
									ΔR^2_{M2}	.01		ΔR^2_{M3}	.02		

Note: See Table 2 for full predictor names. $^{\bullet}$ = Significant but no value for *p*; $^{+}$ = $p < .10$, * = $p < .05$, ** = $p < .01$, and *** = $p < .001$.

Table 31. Relative Weights of Resilience Factors and the Big Five Predicting Burnout, Fatigue

	1. Resilience			2. Big 5_{HO}			3. Big 5_{LO}			4. Resilience $^{+}$ Big 5_{HO}			5. Resilience $^{+}$ Big 5_{LO}		
	Raw	CI	% R^2	Raw	CI	% R^2	Raw	CI	% R^2	Raw	CI_{sig}	% R^2	Raw	CI	% R^2
F1	.09	(.03, .18)	21.95$^{\bullet}$	-	-	-	-	-	-	.05	(.02, .10)	10.06	.04	(.02, .08)	7.13$^{\bullet}$
F2	.05	(.01, .10)	12.55$^{\bullet}$	-	-	-	-	-	-	.03	(.01, .07)	6.20	.03	(.01, .05)	4.68$^{\bullet}$
F3	.06	(.01, .13)	14.40	-	-	-	-	-	-	.04	(.01, .09)	7.72	.03	(.01, .08)	6.11
F4	.01	(.00, .04)	3.59	-	-	-	-	-	-	.01	(.00, .02)	1.80	.01	(.00, .01)	1.60$^{\bullet}$
F5	.08	(.02, .15)	21.15$^{\bullet}$	-	-	-	-	-	-	.04	(.01, .07)	7.77	.03	(.01, .06)	5.36$^{\bullet}$
F6	.07	(.02, .13)	16.75$^{\bullet}$	-	-	-	-	-	-	.03	(.02, .06)	6.88	.03	(.01, .05)	5.06$^{\bullet}$
F7	.04	(.01, .10)	9.60	-	-	-	-	-	-	.02	(.01, .07)	4.96	.02	(.01, .07)	4.10$^{\bullet}$
N	-	-	-	.20	(.10, .31)	42.03$^{\bullet}$	-	-	-	.11	(.06, .20)	22.93$^{\bullet}$	-	-	-
A	-	-	-	.09	(.03, .22)	18.44	-	-	-	.06	(.02, .21)	12.82$^{\bullet}$	-	-	-
C	-	-	-	.09	(.03, .16)	18.64	-	-	-	.05	(.01, .09)	9.29	-	-	-
E	-	-	-	.08	(.04, .14)	17.53$^{\bullet}$	-	-	-	.04	(.02, .07)	7.84	-	-	-
O	-	-	-	.02	(.00, .05)	3.36	-	-	-	.01	(.00, .02)	1.72	-	-	-
N_V	-	-	-	-	-	-	.11	(.06, .17)	19.97$^{\bullet}$	-	-	-	-	-	-
N_W	-	-	-	-	-	-	.09	(.04, .15)	17.25$^{\bullet}$	-	-	-	.08	(.04, .15)	14.28$^{\bullet}$
A_C	-	-	-	-	-	-	.03	(.01, .11)	6.57	-	-	-	.05	(.03, .09)	9.74$^{\bullet}$
A_P	-	-	-	-	-	-	.04	(.01, .08)	7.23	-	-	-	.02	(.01, .10)	4.25$^{\bullet}$
C_I	-	-	-	-	-	-	.07	(.02, .12)	12.29	-	-	-	.03	(.01, .07)	5.81$^{\bullet}$
C_O	-	-	-	-	-	-	.02	(.01, .07)	4.22	-	-	-	.04	(.01, .07)	6.98$^{\bullet}$
E_E	-	-	-	-	-	-	.11	(.06, .18)	20.50$^{\bullet}$	-	-	-	.01	(.00, .04)	2.60
E_A	-	-	-	-	-	-	.02	(.01, .03)	4.00	-	-	-	.08	(.04, .14)	13.92$^{\bullet}$
O_I	-	-	-	-	-	-	.04	(.01, .08)	7.44	-	-	-	.01	(.01, .02)	2.45
O_O	-	-	-	-	-	-	.00	(.00, .00)	.53	-	-	-	.03	(.01, .07)	5.32$^{\bullet}$
R^2	.39***			.48***			.53***			.49***			.55***		
									ΔR^2_{M1}	.10**		ΔR^2_{M1}	.15**		
									ΔR^2_{M2}	.01		ΔR^2_{M3}	.02		

Note: See Table 2 for full predictor names. $^{\bullet}$ = Significant but no value for *p*; $^{+}$ = $p < .10$, * = $p < .05$, ** = $p < .01$, and *** = $p < .001$.

Table 32. Relative Weights of Resilience Factors and the Big Five Predicting Burnout, Cognitive Weariness

	1. Resilience			2. Big 5_{HO}			3. Big 5_{LO}			4. Resilience $^{+}$ Big 5_{HO}			5. Resilience $^{+}$ Big 5_{LO}		
	Raw	CI	% R^2	Raw	CI	% R^2	Raw	CI	% R^2	Raw	CI_{sig}	% R^2	Raw	CI	% R^2
F1	.08	(.02, .16)	20.58$^{\bullet}$	-	-	-	-	-	-	.04	(.02, .09)	8.88$^{\bullet}$	.03	(.01, .07)	6.29
F2	.05	(.02, .11)	14.24	-	-	-	-	-	-	.03	(.01, .08)	7.01$^{\bullet}$	.03	(.01, .06)	5.24
F3	.03	(.01, .09)	8.78	-	-	-	-	-	-	.02	(.01, .06)	4.12	.02	(.00, .05)	3.10
F4	.01	(.00, .02)	2.95	-	-	-	-	-	-	.01	(.00, .01)	1.47	.01	(.00, .01)	1.43
F5	.11	(.04, .20)	30.92$^{\bullet}$	-	-	-	-	-	-	.05	(.02, .09)	10.57$^{\bullet}$	.04	(.01, .07)	6.89
F6	.05	(.02, .10)	14.53	-	-	-	-	-	-	.03	(.01, .05)	5.55	.02	(.01, .03)	4.01
F7	.03	(.01, .08)	8.00	-	-	-	-	-	-	.02	(.00, .05)	3.62	.01	(.00, .05)	2.76
N	-	-	-	.15	(.06, .25)	33.16$^{\bullet}$	-	-	-	.09	(.04, .16)	18.73$^{\bullet}$	-	-	-
A	-	-	-	.06	(.01, .18)	13.46	-	-	-	.04	(.01, .18)	9.38$^{\bullet}$	-	-	-
C	-	-	-	.16	(.07, .25)	34.13$^{\bullet}$	-	-	-	.10	(.04, .17)	20.84$^{\bullet}$	-	-	-
E	-	-	-	.07	(.03, .13)	16.03$^{\bullet}$	-	-	-	.04	(.02, .07)	7.99$^{\bullet}$	-	-	-
O	-	-	-	.01	(.00, .05)	3.22	-	-	-	.01	(.00, .03)	1.84	-	-	-
N_V	-	-	-	-	-	-	.08	(.03, .14)	14.67$^{\bullet}$	-	-	-	.06	(.02, .12)	10.70
N_W	-	-	-	-	-	-	.07	(.03, .12)	14.03$^{\bullet}$	-	-	-	.04	(.02, .07)	8.42
A_C	-	-	-	-	-	-	.02	(.01, .08)	4.79$^{\bullet}$	-	-	-	.02	(.01, .06)	3.27
A_P	-	-	-	-	-	-	.03	(.01, .07)	5.92$^{\bullet}$	-	-	-	.03	(.01, .06)	4.85
C_I	-	-	-	-	-	-	.10	(.03, .18)	19.68$^{\bullet}$	-	-	-	.07	(.02, .13)	13.05
C_O	-	-	-	-	-	-	.05	(.01, .11)	8.87$^{\bullet}$	-	-	-	.03	(.01, .09)	6.49
E_E	-	-	-	-	-	-	.09	(.04, .15)	16.67$^{\bullet}$	-	-	-	.06	(.03, .13)	11.86
E_A	-	-	-	-	-	-	.02	(.01, .03)	4.09	-	-	-	.01	(.01, .02)	2.57
O_I	-	-	-	-	-	-	.05	(.01, .11)	10.18$^{\bullet}$	-	-	-	.04	(.01, .09)	7.91
O_O	-	-	-	-	-	-	.01	(.00, .03)	1.09	-	-	-	.01	(.00, .03)	1.16
R^2	.37***			.46***			.51***			.47***			.53***		
									ΔR^2_{M1}	.11**		ΔR^2_{M1}	.16***		
									ΔR^2_{M2}	.01		ΔR^2_{M3}	.04		

Note: See Table 2 for full predictor names. $^{\bullet}$ = Significant but no value for *p*; $^{+}$ = $p < .10$, * = $p < .05$, ** = $p < .01$, and *** = $p < .001$.

Table 33. Relative Weights of Resilience Factors and the Big Five Predicting Burnout, Emotional Exhaustion

	1. Resilience			2. Big 5_{HO}			3. Big 5_{LO}			4. Resilience $^{+}$ Big 5_{HO}			5. Resilience $^{+}$ Big 5_{LO}		
	Raw	CI	% R^2	Raw	CI	% R^2	Raw	CI	% R^2	Raw	CI_{sig}	% R^2	Raw	CI	% R^2
F1	.05	(.01, .14)	16.31$^{\bullet}$	-	-	-	-	-	-	.03	(.01, .08)	5.72	.03	(.01, .07)	4.97
F2	.04	(.01, .11)	13.53$^{\bullet}$	-	-	-	-	-	-	.03	(.01, .07)	4.83	.02	(.01, .06)	3.90
F3	.06	(.02, .13)	19.55$^{\bullet}$	-	-	-	-	-	-	.04	(.01, .09)	7.78	.04	(.01, .08)	5.87
F4	.03	(.00, .09)	8.27	-	-	-	-	-	-	.02	(.00, .06)	3.09	.02	(.00, .05)	2.85
F5	.06	(.01, .12)	19.06$^{\bullet}$	-	-	-	-	-	-	.03	(.01, .05)	4.89	.02	(.01, .04)	3.66
F6	.03	(.01, .06)	8.20	-	-	-	-	-	-	.02	(.00, .02)	2.79	.02	(.01, .03)	3.30$^{\bullet}$
F7	.05	(.01, .15)	15.08$^{\bullet}$	-	-	-	-	-	-	.03	(.01, .11)	5.94	.03	(.01, .09)	4.99
N	-	-	-	.10	(.03, .17)	18.84$^{\bullet}$	-	-	-	.05	(.02, .11)	9.40	-	-	-
A	-	-	-	.27	(.17, .44)	52.31$^{\bullet}$	-	-	-	.22	(.13, .44)	41.48$^{\bullet}$	-	-	-
C	-	-	-	.05	(.01, .12)	10.10	-	-	-	.03	(.01, .06)	4.84	-	-	-
E	-	-	-	.06	(.02, .12)	11.60$^{\bullet}$	-	-	-	.03	(.01, .06)	5.16	-	-	-
O	-	-	-	.04	(.01, .09)	7.14	-	-	-	.02	(.00, .06)	4.07	-	-	-
N_V	-	-	-	-	-	-	.10	(.05, .16)	17.26$^{\bullet}$	-	-	-	.08	(.04, .14)	12.69
N_W	-	-	-	-	-	-	.03	(.01, .06)	6.00$^{\bullet}$	-	-	-	.02	(.01, .03)	3.38
A_C	-	-	-	-	-	-	.15	(.09, .27)	26.87$^{\bullet}$	-	-	-	.12	(.06, .26)	20.20$^{\bullet}$
A_P	-	-	-	-	-	-	.06	(.02, .11)	9.86$^{\bullet}$	-	-	-	.05	(.02, .10)	7.72
C_I	-	-	-	-	-	-	.03	(.01, .07)	5.76	-	-	-	.02	(.01, .04)	3.16
C_O	-	-	-	-	-	-	.03	(.00, .08)	4.38	-	-	-	.02	(.00, .06)	2.73
E_E	-	-	-	-	-	-	.11	(.07, .18)	19.92$^{\bullet}$	-	-	-	.09	(.05, .16)	13.90$^{\bullet}$
E_A	-	-	-	-	-	-	.02	(.01, .02)	2.62	-	-	-	.01	(.01, .02)	2.05
O_I	-	-	-	-	-	-	.03	(.01, .06)	4.59	-	-	-	.02	(.00, .04)	2.94
O_O	-	-	-	-	-	-	.02	(.00, .05)	2.73	-	-	-	.01	(.00, .03)	1.69
R^2	.33***			.51***			.57***			.54***			.62***		
									ΔR^2_{M1}	.22***		ΔR^2_{M1}	.29***		
									ΔR^2_{M2}	.03		ΔR^2_{M3}	.09**		

Note: See Table 2 for full predictor names. $^{\bullet}$ = Significant but no value for *p*; $^{+}$ = $p < .10$, * = $p < .05$, ** = $p < .01$, and *** = $p < .001$.

Table 34. Relative Weights of Resilience Factors and the Big Five Predicting Job Satisfaction

	1. Resilience			2. Big 5_{HO}			3. Big 5_{LO}			4. Resilience $^{+}$ Big 5_{HO}			5. Resilience $^{+}$ Big 5_{LO}		
	Raw	CI	% R^2	Raw	CI	% R^2	Raw	CI	% R^2	Raw	CI_{sig}	% R^2	Raw	CI	% R^2
F1	.08	(.03, .17)	23.36$^{\bullet}$	-	-	-	-	-	-	.05	(.02, .11)	9.63$^{\bullet}$	.05	(.02, .10)	7.98$^{\bullet}$
F2	.02	(.01, .06)	6.88	-	-	-	-	-	-	.01	(.01, .03)	2.64	.02	(.01, .02)	2.55$^{\bullet}$
F3	.08	(.02, .20)	23.91$^{\bullet}$	-	-	-	-	-	-	.06	(.02, .15)	11.37$^{\bullet}$	.05	(.02, .13)	9.12
F4	.02	(.00, .08)	6.39	-	-	-	-	-	-	.01	(.00, .04)	2.50	.01	(.00, .04)	2.30$^{\bullet}$
F5	.08	(.02, .16)	24.19$^{\bullet}$	-	-	-	-	-	-	.04	(.01, .07)	7.00$^{\bullet}$	.03	(.01, .06)	5.06$^{\bullet}$
F6	.02	(.01, .06)	6.92	-	-	-	-	-	-	.02	(.00, .02)	2.97	.02	(.01, .03)	3.50$^{\bullet}$
F7	.03	(.01, .10)	8.35	-	-	-	-	-	-	.02	(.00, .06)	3.16	.02	(.00, .06)	2.56$^{\bullet}$
N	-	-	-	.08	(.03, .15)	17.10$^{\bullet}$	-	-	-	.04	(.01, .08)	7.38$^{\bullet}$	-	-	-
A	-	-	-	.22	(.11, .37)	46.62$^{\bullet}$	-	-	-	.18	(.09, .36)	34.89$^{\bullet}$	-	-	-
C	-	-	-	.07	(.02, .15)	14.65$^{\bullet}$	-	-	-	.03	(.01, .08)	6.70	-	-	-
E	-	-	-	.07	(.02, .13)	14.32$^{\bullet}$	-	-	-	.04	(.01, .08)	7.74$^{\bullet}$	-	-	-
O	-	-	-	.03	(.01, .09)	7.32	-	-	-	.02	(.00, .06)	4.02	-	-	-
N_V	-	-	-	-	-	-	.05	(.02, .10)	9.91$^{\bullet}$	-	-	-	.04	(.01, .07)	6.06$^{\bullet}$
N_W	-	-	-	-	-	-	.04	(.01, .07)	7.65$^{\bullet}$	-	-	-	.02	(.01, .04)	3.91$^{\bullet}$
A_C	-	-	-	-	-	-	.11	(.05, .22)	21.98$^{\bullet}$	-	-	-	.09	(.04, .20)	15.42$^{\bullet}$
A_P	-	-	-	-	-	-	.06	(.02, .12)	12.47$^{\bullet}$	-	-	-	.05	(.02, .10)	8.83$^{\bullet}$
C_I	-	-	-	-	-	-	.03	(.01, .07)	6.65	-	-	-	.02	(.01, .04)	3.54
C_O	-	-	-	-	-	-	.03	(.00, .10)	6.29	-	-	-	.02	(.00, .07)	3.62
E_E	-	-	-	-	-	-	.11	(.05, .17)	21.09$^{\bullet}$	-	-	-	.10	(.05, .17)	15.95$^{\bullet}$
E_A	-	-	-	-	-	-	.02	(.01, .02)	3.35	-	-	-	.01	(.01, .02)	2.35
O_I	-	-	-	-	-	-	.05	(.01, .10)	9.47$^{\bullet}$	-	-	-	.04	(.01, .08)	6.55$^{\bullet}$
O_O	-	-	-	-	-	-	.01	(.00, .01)	1.14	-	-	-	.00	(.00, .01)	.67
R^2	.35***			.53***			.58***			.54***			.60***		
									ΔR^2_{M1}	.12***		ΔR^2_{M1}	.18***		
									ΔR^2_{M2}	.01		ΔR^2_{M3}	.08^{+}		

Note: See Table 2 for full predictor names. $^{\bullet}$ = Significant but no value for *p*; $^{+}$ = $p < .10$, * = $p < .05$, ** = $p < .01$, and *** = $p < .001$.

Table 35. Relative Weights of Resilience Factors and the Big Five Predicting Counterproductive Work Behavior

	1. Resilience			2. Big 5_{HO}			3. Big 5_{LO}			4. Resilience $^{+}$ Big 5_{HO}			5. Resilience $^{+}$ Big 5_{LO}		
	Raw	CI	% R^2	Raw	CI	% R^2	Raw	CI	% R^2	Raw	CI_{sig}	% R^2	Raw	CI	% R^2
F1	.10	(.03, .22)	36.86$^{\bullet}$	-	-	-	-	-	-	.07	(.02, .17)	22.66$^{\bullet}$	.07	(.02, .16)	19.29
F2	.01	(.00, .03)	5.02	-	-	-	-	-	-	.01	(.00, .01)	2.50	.01	(.00, .01)	2.06
F3	.01	(.00, .04)	5.20	-	-	-	-	-	-	.01	(.00, .02)	2.69	.01	(.00, .02)	2.30
F4	.01	(.00, .03)	4.30	-	-	-	-	-	-	.01	(.00, .01)	2.23	.01	(.00, .01)	1.93
F5	.06	(.02, .15)	21.89$^{\bullet}$	-	-	-	-	-	-	.03	(.01, .07)	9.66$^{\bullet}$	.03	(.01, .06)	7.42
F6	.02	(.00, .06)	7.38	-	-	-	-	-	-	.01	(.00, .02)	3.55	.01	(.00, .01)	2.46
F7	.05	(.01, .20)	19.36	-	-	-	-	-	-	.04	(.01, .17)	12.04	.03	(.01, .15)	10.01
N	-	-	-	.05	(.02, .12)	22.53$^{\bullet}$	-	-	-	.02	(.01, .05)	7.75	-	-	-
A	-	-	-	.08	(.02, .19)	34.50$^{\bullet}$	-	-	-	.07	(.01, .16)	20.64$^{\bullet}$	-	-	-
C	-	-	-	.03	(.00, .12)	14.28	-	-	-	.02	(.00, .05)	4.98	-	-	-
E	-	-	-	.04	(.01, .09)	16.19$^{\bullet}$	-	-	-	.02	(.01, .04)	5.55	-	-	-
O	-	-	-	.03	(.00, .09)	12.50	-	-	-	.02	(.00, .06)	5.75	-	-	-
N_V	-	-	-	-	-	-	.04	(.01, .08)	14.70	-	-	-	.03	(.01, .06)	7.68
N_W	-	-	-	-	-	-	.02	(.01, .04)	7.06	-	-	-	.01	(.01, .02)	4.30
A_C	-	-	-	-	-	-	.05	(.01, .13)	20.50$^{\bullet}$	-	-	-	.04	(.01, .11)	12.02
A_P	-	-	-	-	-	-	.03	(.01, .13)	12.21	-	-	-	.02	(.00, .11)	6.59
C_I	-	-	-	-	-	-	.03	(.01, .07)	10.59	-	-	-	.02	(.01, .04)	5.02
C_O	-	-	-	-	-	-	.01	(.00, .02)	2.36	-	-	-	.00	(.00, .01)	1.19
E_E	-	-	-	-	-	-	.02	(.01, .05)	8.02	-	-	-	.02	(.01, .03)	4.34
E_A	-	-	-	-	-	-	.02	(.01, .05)	7.39	-	-	-	.01	(.00, .02)	3.39
O_I	-	-	-	-	-	-	.04	(.01, .11)	16.07$^{\bullet}$	-	-	-	.03	(.01, .09)	9.37
O_O	-	-	-	-	-	-	.00	(.00, .00)	1.09	-	-	-	.00	(.00, .00)	.63
R^2	.26***			.24***			.26***			.32***			.35***		
									ΔR^2_{M1}	.05		ΔR^2_{M1}	.08		
									ΔR^2_{M2}	.08		ΔR^2_{M3}	.02		

Note: See Table 2 for full predictor names. $^{\bullet}$ = Significant but no value for *p*; $^{+}$ = $p < .10$, * = $p < .05$, ** = $p < .01$, and *** = $p < .001$.

Table 36. Relative Weights of Resilience Factors and the Big Five Predicting Organizational Citizenship Behavior

	1. Resilience			2. Big 5_{HO}			3. Big 5_{LO}			4. Resilience $^{+}$ Big 5_{HO}			5. Resilience $^{+}$ Big 5_{LO}		
	Raw	CI	% R^2	Raw	CI	% R^2	Raw	CI	% R^2	Raw	CI_{sig}	% R^2	Raw	CI	% R^2
F1	.01	(.00, .05)	12.08	-	-	-	-	-	-	.01	(.00, .02)	4.54	.01	(.00, .01)	3.33
F2	.00	(.00, .01)	3.80	-	-	-	-	-	-	.00	(.00, .00)	1.66	.00	(.00, .00)	1.32
F3	.01	(.00, .03)	5.77	-	-	-	-	-	-	.00	(.00, .01)	2.09	.00	(.00, .00)	1.48
F4	.03	(.00, .11)	25.04	-	-	-	-	-	-	.02	(.00, .08)	11.32	.02	(.00, .07)	9.00
F5	.03	(.00, .08)	23.01	-	-	-	-	-	-	.01	(.00, .02)	6.12	.01	(.00, .01)	3.69
F6	.02	(.00, .07)	14.75	-	-	-	-	-	-	.01	(.00, .04)	5.73	.01	(.00, .02)	4.04
F7	.02	(.00, .07)	15.56	-	-	-	-	-	-	.01	(.00, .05)	6.65	.01	(.00, .05)	4.95
N	-	-	-	.03	(.00, .09)	16.78	-	-	-	.02	(.00, .05)	8.52	-	-	-
A	-	-	-	.04	(.00, .12)	25.00	-	-	-	.03	(.00, .11)	19.23	-	-	-
C	-	-	-	.04	(.01, .12)	25.85	-	-	-	.03	(.01, .08)	16.48	-	-	-
E	-	-	-	.01	(.00, .05)	9.27	-	-	-	.01	(.00, .01)	3.63	-	-	-
O	-	-	-	.04	(.00, .11)	23.10	-	-	-	.03	(.00, .08)	14.03	-	-	-
N_V	-	-	-	-	-	-	.02	(.00, .07)	13.07	-	-	-	-	-	-
N_W	-	-	-	-	-	-	.01	(.00, .03)	5.66	-	-	-	.02	(.00, .05)	8.88
A_C	-	-	-	-	-	-	.05	(.01, .12)	25.21	-	-	-	.01	(.00, .01)	3.45
A_P	-	-	-	-	-	-	.01	(.00, .02)	4.05	-	-	-	.04	(.01, .11)	20.26
C_I	-	-	-	-	-	-	.01	(.00, .04)	7.96	-	-	-	.01	(.00, .01)	3.16
C_O	-	-	-	-	-	-	.03	(.00, .09)	14.29	-	-	-	.01	(.00, .02)	5.34
E_E	-	-	-	-	-	-	.01	(.00, .02)	4.76	-	-	-	.02	(.00, .08)	11.77
E_A	-	-	-	-	-	-	.01	(.00, .02)	3.83	-	-	-	.01	(.00, .01)	3.00
O_I	-	-	-	-	-	-	.03	(.01, .10)	17.67	-	-	-	.00	(.00, .00)	2.09
O_O	-	-	-	-	-	-	.01	(.00, .03)	3.49	-	-	-	.02	(.00, .07)	11.59
R^2	.12			$.16^{**}$			$.19^{*}$			$.18^{+}$			.20		
									ΔR^2_{M1}	.06		ΔR^2_{M1}	.08		
									ΔR^2_{M2}	.02		ΔR^2_{M3}	.04		

Note: See Table 2 for full predictor names. $^{\bullet}$ = Significant but no value for *p*; $^{+}$ = $p < .10$, * = $p < .05$, ** = $p < .01$, and *** = $p < .001$.

Table 37. Relative Weights of Resilience Factors and the Big Five Predicting Task Performance

	1. Resilience			2. Big 5_{HO}			3. Big 5_{LO}			4. Resilience $^{+}$ Big 5_{HO}			5. Resilience $^{+}$ Big 5_{LO}		
	Raw	CI	% R^2	Raw	CI	% R^2	Raw	CI	% R^2	Raw	CI_{sig}	% R^2	Raw	CI	% R^2
F1	.02	(.00, .08)	15.88	-	-	-	-	-	-	.01	(.00, .04)	5.56	.01	(.00, .02)	3.71
F2	.02	(.00, .08)	13.61	-	-	-	-	-	-	.01	(.00, .05)	5.19	.01	(.00, .04)	3.82
F3	.01	(.00, .01)	3.59	-	-	-	-	-	-	.01	(.00, .03)	3.70	.01	(.00, .04)	3.17
F4	.02	(.00, .10)	15.33	-	-	-	-	-	-	.01	(.00, .07)	6.55	.01	(.00, .06)	4.35
F5	.06	(.01, .15)	37.89	-	-	-	-	-	-	.02	(.01, .06)	9.40	.02	(.00, .04)	5.00
F6	.01	(.00, .04)	7.79	-	-	-	-	-	-	.01	(.00, .01)	2.87	.01	(.00, .01)	2.05$^{\bullet}$
F7	.01	(.00, .03)	5.91	-	-	-	-	-	-	.00	(.00, .01)	1.94	.00	(.00, .00)	1.29
N	-	-	-	.04	(.00, .10)	18.27	-	-	-	.02	(.00, .06)	10.74	-	-	-
A	-	-	-	.07	(.01, .23)	36.78	-	-	-	.07	(.01, .23)	29.34	-	-	-
C	-	-	-	.04	(.01, .11)	22.17	-	-	-	.03	(.01, .07)	13.78	-	-	-
E	-	-	-	.02	(.00, .07)	12.55	-	-	-	.01	(.00, .03)	5.72	-	-	-
O	-	-	-	.02	(.00, .08)	10.23	-	-	-	.01	(.00, .05)	5.22	-	-	-
N_V	-	-	-	-	-	-	.02	(.00, .07)	13.07	-	-	-	.01	(.00, .02)	3.46
N_W	-	-	-	-	-	-	.01	(.00, .03)	5.66	-	-	-	.03	(.01, .07)	10.51
A_C	-	-	-	-	-	-	.05	(.01, .12)	25.21	-	-	-	.09	(.02, .26)	28.39$^{\bullet}$
A_P	-	-	-	-	-	-	.01	(.00, .02)	4.05	-	-	-	.02	(.00, .05)	6.41
C_I	-	-	-	-	-	-	.01	(.00, .04)	7.96	-	-	-	.01	(.00, .02)	4.60
C_O	-	-	-	-	-	-	.03	(.00, .09)	14.29	-	-	-	.02	(.00, .08)	6.48
E_E	-	-	-	-	-	-	.01	(.00, .02)	4.76	-	-	-	.01	(.00, .01)	3.53
E_A	-	-	-	-	-	-	.01	(.00, .02)	3.83	-	-	-	.01	(.00, .03)	3.87
O_I	-	-	-	-	-	-	.03	(.01, .10)	17.67	-	-	-	.02	(.00, .08)	7.81
O_O	-	-	-	-	-	-	.01	(.00, .03)	3.49	-	-	-	.00	(.00, .01)	1.55
R^2	.15*			.19***			.26***			.23**			.30**		
									ΔR^2_{M1}	.08^{+}		ΔR^2_{M1}	.16*		
									ΔR^2_{M2}	.03		ΔR^2_{M3}	.05		

Note: See Table 2 for full predictor names. $^{\bullet}$ = Significant but no value for *p*; $^{+}$ = $p < .10$, * = $p < .05$, ** = $p < .01$, and *** = $p < .001$.

Table 38. Relative Weights of Resilience Factors and the Big Five Predicting Task Performance, Proficiency

	1. Resilience			2. Big 5_{HO}			3. Big 5_{LO}			4. Resilience $^{+}$ Big 5_{HO}			5. Resilience $^{+}$ Big 5_{LO}		
	Raw	CI	% R^2	Raw	CI	% R^2	Raw	CI	% R^2	Raw	CI_{sig}	% R^2	Raw	CI	% R^2
F1	.00	(.00, .01)	6.08	-	-	-	.07	(.03, .11)	38.17*	.01	(.00, .01)	2.78	.01	(.00, .01)	2.28
F2	.01	(.00, .02)	6.76	-	-	-	-	-	-	.00	(.00, .01)	1.89	.01	(.00, .01)	1.95
F3	.01	(.00, .03)	8.62	-	-	-	-	-	-	.01	(.00, .06)	6.38	.02	(.00, .06)	5.59
F4	.00	(.00, .00)	1.45	-	-	-	-	-	-	.00	(.00, .00)	.61	.00	(.00, .00)	.81
F5	.05	(.00, .17)	67.99	-	-	-	-	-	-	.02	(.01, .09)	11.56	.02	(.00, .07)	7.31
F6	.00	(.00, .00)	2.94	-	-	-	-	-	-	.00	(.00, .01)	2.11	.01	(.00, .01)	2.20$^{\bullet}$
F7	.00	(.00, .02)	6.16	-	-	-	-	-	-	.00	(.00, .00)	1.44	.00	(.00, .00)	1.15
N	-	-	-	.01	(.00, .04)	4.98	-	-	-	.01	(.00, .03)	5.85	-	-	-
A	-	-	-	.13	(.03, .30)	78.61	-	-	-	.13	(.03, .32)	58.00$^{\bullet}$	-	-	-
C	-	-	-	.01	(.00, .05)	8.10	-	-	-	.01	(.00, .02)	5.19	-	-	-
E	-	-	-	.01	(.00, .02)	3.41	-	-	-	.00	(.00, .00)	1.10	-	-	-
O	-	-	-	.01	(.00, .05)	4.89	-	-	-	.01	(.00, .03)	3.09	-	-	-
N_V	-	-	-				.01	(.00, .02)	3.75	-	-	-	.01	(.00, .03)	4.10
N_W	-	-	-				.00	(.00, .01)	1.85	-	-	-	.01	(.00, .01)	2.72
A_C	-	-	-				.12	(.03, .31)	53.28$^{\bullet}$	-	-	-	.12	(.03, .31)	42.53$^{\bullet}$
A_P	-	-	-				.04	(.01, .10)	18.78	-	-	-	.04	(.01, .09)	14.04
C_I	-	-	-				.01	(.00, .01)	3.31	-	-	-	.01	(.00, .01)	2.92
C_O	-	-	-				.01	(.00, .02)	2.70	-	-	-	.01	(.00, .01)	2.13
E_E	-	-	-				.02	(.01, .08)	10.77	-	-	-	.02	(.00, .03)	5.93
E_A	-	-	-				.00	(.00, .00)	1.42	-	-	-	.00	(.00, .00)	1.17
O_I	-	-	-				.00	(.00, .01)	1.77	-	-	-	.00	(.00, .00)	1.23
O_O	-	-	-				.01	(.00, .01)	2.37	-	-	-	.01	(.00, .01)	1.93
R^2	.08			.16**			.22**			.22*			.27*		
									ΔR^2_{M1}	.14**		ΔR^2_{M1}	.15*		
									ΔR^2_{M2}	.05		ΔR^2_{M3}	.03		

Note: See Table 2 for full predictor names. $^{\bullet}$ = Significant but no value for *p*; $^{+}$ = $p < .10$, * = $p < .05$, ** = $p < .01$, and *** = $p < .001$.

Table 39. Relative Weights of Resilience Factors and the Big Five Predicting Task Performance, Adaptability

	1. Resilience			2. Big 5_{HO}			3. Big 5_{LO}			4. Resilience $^{+}$ Big 5_{HO}			5. Resilience $^{+}$ Big 5_{LO}		
	Raw	CI	% R^2	Raw	CI	% R^2	Raw	CI	% R^2	Raw	CI_{sig}	% R^2	Raw	CI	% R^2
F1	.03	(.00, .10)	24.41	-	-	-	-	-	-	.02	(.00, .06)	9.78	.01	(.00, .04)	6.63
F2	.02	(.00, .07)	15.14	-	-	-	-	-	-	.01	(.00, .05)	6.44	.01	(.00, .03)	4.46
F3	.00	(.00, .01)	3.70	-	-	-	-	-	-	.01	(.00, .02)	3.74	.01	(.00, .03)	3.45
F4	.02	(.00, .08)	18.38	-	-	-	-	-	-	.01	(.00, .06)	8.95	.01	(.00, .06)	5.86
F5	.03	(.00, .10)	27.93	-	-	-	-	-	-	.01	(.00, .04)	8.24	.01	(.00, .03)	4.97
F6	.00	(.00, .01)	4.38	-	-	-	-	-	-	.00	(.00, .01)	3.08	.01	(.00, .01)	2.64$^{\bullet}$
F7	.01	(.00, .03)	6.06	-	-	-	-	-	-	.00	(.00, .01)	2.29	.00	(.00, .00)	1.53
N	-	-	-	.03	(.00, .10)	24.41	-	-	-	.02	(.00, .06)	12.41	-	-	-
A	-	-	-	.05	(.01, .18)	39.88	-	-	-	.05	(.01, .19)	28.91$^{\bullet}$	-	-	-
C	-	-	-	.01	(.00, .06)	11.32	-	-	-	.01	(.00, .02)	5.82	-	-	-
E	-	-	-	.02	(.00, .06)	13.24	-	-	-	.01	(.00, .02)	5.82	-	-	-
O	-	-	-	.01	(.00, .07)	11.15	-	-	-	.01	(.00, .03)	4.53	-	-	-
N_V	-	-	-	-	-	-	.01	(.00, .02)	5.73	-	-	-	.01	(.00, .01)	3.77
N_W	-	-	-	-	-	-	.04	(.01, .10)	23.04	-	-	-	.03	(.01, .07)	15.17
A_C	-	-	-	-	-	-	.06	(.01, .19)	30.81	-	-	-	.06	(.01, .20)	25.04$^{\bullet}$
A_P	-	-	-	-	-	-	.02	(.00, .05)	8.65	-	-	-	.01	(.00, .04)	6.61
C_I	-	-	-	-	-	-	.01	(.00, .02)	5.67	-	-	-	.01	(.00, .01)	3.59
C_O	-	-	-	-	-	-	.01	(.00, .03)	3.18	-	-	-	.01	(.00, .02)	2.55
E_E	-	-	-	-	-	-	.01	(.00, .02)	5.79	-	-	-	.01	(.00, .01)	3.78
E_A	-	-	-	-	-	-	.01	(.00, .03)	6.02	-	-	-	.01	(.00, .01)	3.40
O_I	-	-	-	-	-	-	.02	(.00, .07)	9.78	-	-	-	.01	(.00, .05)	5.37
O_O	-	-	-	-	-	-	.00	(.00, .01)	1.35	-	-	-	.00	(.00, .00)	1.17
R^2	.11			.13*			.19*			.16^{+}			.22^{+}		
									ΔR^2_{M1}	.05		ΔR^2_{M1}	.11		
									ΔR^2_{M2}	.04		ΔR^2_{M3}	.03		

Note: See Table 2 for full predictor names. $^{\bullet}$ = Significant but no value for *p*; $^{+}$ = $p < .10$, * = $p < .05$, ** = $p < .01$, and *** = $p < .001$.

Table 40. Relative Weights of Resilience Factors and the Big Five Predicting Task Performance, Proactivity

	1. Resilience			2. Big 5_{HO}			3. Big 5_{LO}			4. Resilience $^{+}$ Big 5_{HO}			5. Resilience $^{+}$ Big 5_{LO}		
	Raw	CI	% R^2	Raw	CI	% R^2	Raw	CI	% R^2	Raw	CI_{sig}	% R^2	Raw	CI	% R^2
F1	.03	(.01, .09)	15.96	-	-	-	-	-	-	.02	(.01, .05)	6.54	.02	(.01, .04)	4.48
F2	.03	(.00, .08)	12.60	-	-	-	-	-	-	.02	(.00, .06)	6.00	.01	(.00, .05)	4.18
F3	.00	(.00, .01)	2.47	-	-	-	-	-	-	.00	(.00, .01)	1.81	.00	(.00, .01)	1.33
F4	.05	(.01, .14)	24.41	-	-	-	-	-	-	.03	(.00, .09)	11.91	.03	(.00, .08)	8.03
F5	.04	(.01, .12)	22.42$^{\bullet}$	-	-	-	-	-	-	.02	(.01, .04)	7.52	.01	(.00, .02)	3.68
F6	.04	(.01, .09)	17.57	-	-	-	-	-	-	.02	(.00, .04)	6.52	.01	(.00, .02)	3.50
F7	.01	(.00, .03)	4.57	-	-	-	-	-	-	.01	(.00, .01)	1.94	.00	(.00, .01)	1.21
N	-	-	-	.04	(.01, .10)	16.99	-	-	-	.02	(.01, .06)	8.48	-	-	-
A	-	-	-	.02	(.00, .10)	9.79	-	-	-	.02	(.00, .10)	7.42	-	-	-
C	-	-	-	.08	(.02, .16)	33.92$^{\bullet}$	-	-	-	.07	(.02, .13)	23.99	-	-	-
E	-	-	-	.07	(.02, .14)	27.19$^{\bullet}$	-	-	-	.03	(.01, .06)	11.23	-	-	-
O	-	-	-	.03	(.00, .10)	12.11	-	-	-	.02	(.00, .07)	6.65	-	-	-
N_V	-	-	-	-	-	-	.01	(.00, .03)	4.13	-	-	-	.01	(.00, .01)	2.63
N_W	-	-	-	-	-	-	.05	(.01, .10)	14.49	-	-	-	.03	(.01, .07)	9.83
A_C	-	-	-	-	-	-	.05	(.01, .16)	16.45$^{\bullet}$	-	-	-	.05	(.01, .16)	13.84
A_P	-	-	-	-	-	-	.01	(.00, .02)	2.55	-	-	-	.01	(.00, .01)	2.10
C_I	-	-	-	-	-	-	.03	(.01, .06)	8.86	-	-	-	.02	(.01, .04)	6.37
C_O	-	-	-	-	-	-	.04	(.01, .13)	13.32	-	-	-	.04	(.01, .12)	12.26
E_E	-	-	-	-	-	-	.02	(.01, .05)	6.37	-	-	-	.01	(.00, .02)	3.57
E_A	-	-	-	-	-	-	.04	(.01, .08)	11.03	-	-	-	.02	(.01, .05)	6.64
O_I	-	-	-	-	-	-	.07	(.02, .15)	21.12$^{\bullet}$	-	-	-	.05	(.01, .12)	14.53$^{\bullet}$
O_O	-	-	-	-	-	-	.01	(.00, .02)	1.67	-	-	-	.01	(.00, .02)	1.81
R^2	.20**			.24***			.32***			.27***			.35***		
									ΔR^2_{M1}	.07^{+}		ΔR^2_{M1}	.15*		
									ΔR^2_{M2}	.03		ΔR^2_{M3}	.03		

Note: See Table 2 for full predictor names. $^{\bullet}$ = Significant but no value for *p*; $^{+}$ = $p < .10$, * = $p < .05$, ** = $p < .01$, and *** = $p < .001$.

Table 41. Relationships between Resilience Factors and Latent Outcomes

	β_{STDYX}	χ^2	Df	P	CFI	TLI	RMSEA	95%CI	SRMR
1. Health from F1	-3.10***	1068.31	566	<.001	.87	.86	.07	(.066, .080)	.08
Health from F2	-1.75								
Health from F3	-1.40								
Health from F4	1.57								
Health from F5	.66								
Health from F6	-2.21*								
Health from F7	-.28								
2. Well-Being from F1	.23*	4293.59	595	<.001	.88	.86	.07	(.065, .079)	.07
Well-Being from F2	.16								
Well-Being from F3	.65***								
Well-Being from F4	-.06								
Well-Being from F5	-.27								
Well-Being from F6	.01								
Well-Being from F7	.24**								
3. Job Attitudes from F1	.25*	949.33	532	<.001	.89	.87	.07	(.062, .076)	.07
Job Attitudes from F2	.09								
Job Attitudes from F3	.20								
Job Attitudes from F4	-.04								
Job Attitudes from F5	.21								
Job Attitudes from F6	.06								
Job Attitudes from F7	.06								
4. Job Performance from F1	.09	1053	566	<.001	.87	.85	.07	(.065, .079)	.08
Job Performance from F2	.07								
Job Performance from F3	-.43								
Job Performance from F4	.04								
Job Performance from F5	.77*								
Job Performance from F6	.11								
Job Performance from F7	-.11								

Note: All factors correlated with one another; paths were also entered between all factors and outcome variable simultaneously.

Table 42. Summary Table: Variance Explained by Resilience and the Big Five

	1	2	3	4	5	6	7	8	9
Resilience									
G: Global Resilience Composite		.79***	.82***						
F1: Distress Tolerance and Recovery Speed		.63***	.65***						
F2: Support from Others		.44***	.51***						
F3: Faith, Purpose, and Future		.33***	.40***						
F4: Challenge and Curiosity		.46***	.47***						
F5: Work Ethic and Organization		.71***	.74***						
F6: Social Skills		.69***	.70***						
F7: Family Coherence		.31***	.32***						
Personality									
Neuroticism	.67***								
Volatility	.47***								
Withdrawal	.70***								
Agreeableness	.16***								
Compassion	.22***								
Politeness	.09*								
Conscientiousness	.68***								
Industriousness	.74***								
Orderliness	.40***								
Extraversion	.76***								
Enthusiasm	.68***								
Assertiveness	.54***								
Openness to Experience	.35***								
Intellect	.42***								
Openness	.14**								
Negative Affectivity	.47***	.57***	.58***	.60***	.62***	.13***	.04+	.15***	.04+
Positive Affectivity	.44***	.45***	.49***	.49***	.52***	.06**	.04+	.08**	.03
Optimism	.60***	.49***	.53***	.62***	.63***	.02	.13***	.03	.10***

Table 42 (Continued)

Physical and Mental Health									
Anxiety	.29***	.37***	.45***	.38***	.46***	.09***	.01	.18***	.01
Depression	.55***	.56***	.63***	.62***	.67***	.06***	.05**	.11***	.04*
Physical Health Symptoms	.30***	.36***	.40***	.38***	.42***	.09**	.02	.12**	.03
Health Related Behaviors									
Total Drinks, Typical Week	.02	.06+	.09	.08	.11	.07+	.02	.09	.09
Total Drinks, Heavy Week	.02	.09**	.12*	.12+	.14	.10**	.03	.13*	.13*
Well-Being									
Satisfaction with Life	.42***	.31***	.38***	.45***	.52***	.02	.13***	.09**	.02
Vitality	.39***	.43***	.45***	.45***	.47***	.06**	.02	.08*	.03
Job Attitudes									
Burnout	.42***	.53***	.58***	.54***	.60***	.12***	.01	.18***	.13***
Fatigue	.39***	.48***	.53***	.49***	.55***	.10**	.01	.15**	.02
Cognitive Weariness	.37***	.46***	.51***	.47***	.53***	.11**	.01	.16***	.02
Emotional Exhaustion	.33***	.51***	.57***	.54***	.62***	.22***	.03	.29***	.02
Job Satisfaction	.42***	.53***	.58***	.54***	.60***	.12***	.01	.18***	.02
Job Performance	.35***	.47***	.51***	.52***	.60***	.17***	.05	.25***	.04
Counterproductive Work Behavior	.26***	.24***	.26***	.32***	.35***	.05	.08	.08	.08+
Organizational Citizenship Behavior	.12+	.16**	.19*	.18+	.20	.06	.02	.08	.02
Task Performance	.15*	.19***	.26***	.23**	.30**	.08+	.03	.16*	.04
Proficiency	.08	.16**	.22**	.22*	.27*	.14**	.05	.19**	.05
Adaptability	.11+	.13*	.19*	.16+	.22+	.05	.04	.11	.03
Proactivity	.20***	.24***	.32***	.27***	.35***	.07+	.03	.15*	.03

Note: All values in table are R^2. + = $p < .10$, * = $p < .05$, ** = $p < .01$, and *** = $p < .001$. Models are labeled in row 1, such that 1 = Resilience only; 2 = Big Five$_{HO}$ only; 3 = Big Five$_{LO}$; 4 = Resilience + Big 5$_{HO}$; 5 = Resilience + Big 5$_{LO}$; 6 = ΔR^2 Big Five$_{HO}$ above Resilience; 7 = ΔR^2 Resilience above Big Five$_{HO}$; 8 = ΔR^2 Big Five$_{LO}$ above Resilience; 9 = ΔR^2 Resilience above Big Five$_{LO}$.

Table 43. Relative Weights Summary Table: Explained Variance in Resilience by Big Five Personality

		G	F1	F2	F3	F4	F5	F6	F7
Higher-Order Factors ($\%R^2_{HO}$)									
N:	Neuroticism	32.02˙	53.17˙	28.29˙	40.77˙	11.50˙	16.16˙	23.94˙	18.37˙
A:	Agreeableness	5.92˙	3.75	9.07	12.53˙	3.21	5.15	3.09	8.27
C:	Conscientiousness	19.11˙	13.02˙	17.63˙	25.78˙	2.74	62.47˙	8.78˙	34.32˙
E:	Extraversion	35.67˙	23.89˙	41.75˙	19.11˙	41.20˙	10.75˙	60.34˙	34.64˙
O:	Openness to Experience	7.28˙	6.17˙	3.25	1.81	41.35˙	5.47	3.84	4.39
	Model R^2	.79***	.63***	.44***	.33***	.46***	.71***	.69***	.31***
Lower-Order Factors ($\%R^2_{LO}$)									
N_V:	Volatility	10.46˙	19.58˙	7.25	10.65˙	3.07	5.70˙	9.53˙	6.30
N_W:	Withdrawal	22.61˙	31.19˙	21.67˙	32.90˙	10.09	13.47˙	12.83˙	14.03˙
A_C:	Compassion	5.69˙	2.23	6.83	9.57˙	4.92	2.89	5.92˙	10.71
A_P:	Politeness	2.15˙	2.87˙	1.66	2.39	1.66	3.09˙	1.90	2.50
C_I:	Industriousness	15.40˙	12.75˙	15.05˙	18.40˙	5.19	33.47˙	7.79˙	20.37˙
C_O:	Orderliness	3.71˙	1.45	3.00	5.42	1.12	22.60˙	.99	10.62
E_E:	Enthusiasm	18.55˙	11.07˙	33.40˙	11.56˙	16.04	4.05˙	35.84˙	13.45˙
E_A:	Assertiveness	13.40˙	11.06˙	7.35	5.33	20.76˙	7.34˙	19.24˙	16.14˙
O_I:	Intellect	6.86˙	7.18˙	3.23	3.16	22.20˙	5.91˙	5.33˙	5.21
O_O:	Openness	1.17	.61	.56	.61	14.94	1.48	.63	.67
	Model R^2	.82***	.65***	.51***	.40***	.47***	.74***	.70***	.32***

Note: Adjusted bootstrapping methods (Tonidandel & LeBreton, 2011) were used to determine statistical significance of relative weights, where ˙ = significant (significance level cannot be determined using this method). Two sets of models were run for each outcome variable: (1) Higher-order Big Five personality factors as predictors, (2) Lower order Big Five personality factors as predictors. Model R^2 significance was determined with an F test, where + = $p < .10$, ˙ = $p < .05$, ¨ = $p < .01$, and ⃛ = $p < .001$. See Table 2 for full predictor names.

Table 44: Relative Weights Analyses for Big Five Personality Factors Predicting Global Resilience Composite

	Big 5_{HO}			Big 5_{LO}		
	Raw	CI	% R^2	Raw	CI	% R^2
N	.25	(.21, .30)	32.02•	-	-	-
A	.05	(.01, .09)	5.92•	-	-	-
C	.15	(.10, .21)	19.11•	-	-	-
E	.28	(.24, .34)	35.67•	-	-	-
O	.06	(.02, .10)	7.28•	-	-	-
N_V	-	-	-	.09	(.05, .12)	10.46•
N_W	-	-	-	.18	(.15, .23)	22.61•
A_C	-	-	-	.05	(.02, .08)	5.69•
A_P	-	-	-	.02	(.01, .03)	2.15•
C_I	-	-	-	.13	(.10, .16)	15.40•
C_O	-	-	-	.03	(.01, .06)	3.71•
E_E	-	-	-	.15	(.11, .20)	18.55•
E_A	-	-	-	.11	(.08, .14)	13.40•
O_I	-	-	-	.06	(.03, .08)	6.86•
O_O	-	-	-	.01	(.00, .02)	1.17
R^2	.79***			.82***		

Note: See Table 2 for full predictor names. • = Significant but no value for *p*; + = $p < .10$, * = $p < .05$, ** = $p < .01$, and *** = $p < .001$.

Table 45. Relative Weights Analyses for Big Five Personality Factors Predicting Distress Tolerance and Recovery Speed

	Big 5_{HO}			Big 5_{LO}		
	Raw	CI	% R^2	Raw	CI	% R^2
N	.34	(.26, .43)	53.17•	-	-	
A	.02	(.00, .06)	3.75	-	-	
C	.08	(.04, .14)	13.02•	-	-	
E	.15	(.09, .21)	23.89•	-	-	
O	.04	(.01, .08)	6.17•	-	-	
N_V	-	-	-	.13	(.08, .18)	19.58•
N_W	-	-	-	.20	(.15, .27)	31.19•
A_C	-	-	-	.01	(.01, .04)	2.23
A_P	-	-	-	.02	(.01, .04)	2.87•
C_I	-	-	-	.08	(.05, .12)	12.75•
C_O	-	-	-	.01	(.00, .03)	1.45
E_E	-	-	-	.07	(.04, .12)	11.07•
E_A	-	-	-	.07	(.04, .11)	11.06•
O_I	-	-	-	.05	(.02, .09)	7.18•
O_O	-	-	-	.00	(.00, .01)	.61
R^2	.63***			.65***		

Note: See Table 2 for full predictor names. • = Significant but no value for *p*; + = $p < .10$, * = $p < .05$, ** = $p < .01$, and *** = $p < .001$.

Table 46. Relative Weights Analyses for Big Five Personality Factors Predicting Support from Others

	Big 5_{HO}			Big 5_{LO}		
	Raw	CI	% R^2	Raw	CI	% R^2
N	.12	(.07, .20)	28.29•	-	-	-
A	.04	(.01, .10)	9.07	-	-	-
C	.08	(.03, .14)	17.63•	-	-	-
E	.18	(.11, .27)	41.75•	-	-	-
O	.01	(.00, .04)	3.25	-	-	-
N_V	-	-	-	.01	(.01, .03)	3.07
N_W	-	-	-	.05	(.02, .08)	10.09
A_C	-	-	-	.02	(.01, .06)	4.92
A_P	-	-	-	.01	(.00, .01)	1.66
C_I	-	-	-	.02	(.01, .04)	5.19
C_O	-	-	-	.01	(.00, .02)	1.12
E_E	-	-	-	.08	(.03, .13)	16.04
E_A	-	-	-	.10	(.05, .15)	20.76•
O_I	-	-	-	.10	(.05, .17)	22.20•
O_O	-	-	-	.07	(.02, .14)	14.94
R^2	.44***			.51***		

Note: See Table 2 for full predictor names. • = Significant but no value for *p*; + = $p < .10$, * = $p < .05$, ** = $p < .01$, and *** = $p < .001$.

Table 47. Relative Weights Analyses for Big Five Personality Factors Predicting Faith, Purpose, and Future

		Big 5_{HO}			Big 5_{LO}		
	Raw	CI	% R^2	Raw	CI	% R^2
N	.14	(.07, .22)	40.77•	-	-	-
A	.04	(.01, .11)	12.53•	-	-	-
C	.09	(.03, .16)	25.78•	-	-	-
E	.06	(.02, .12)	19.11•	-	-	-
O	.01	(.00, .01)	1.81	-	-	-
N_V	-	-	-	.04	(.02, .08)	10.65•
N_W	-	-	-	.13	(.08, .20)	32.90•
A_C	-	-	-	.04	(.01, .08)	9.57•
A_P	-	-	-	.01	(.00, .03)	2.39
C_I	-	-	-	.07	(.04, .12)	18.40•
C_O	-	-	-	.02	(.00, .07)	5.42
E_E	-	-	-	.05	(.02, .09)	11.56•
E_A	-	-	-	.02	(.01, .04)	5.33
O_I	-	-	-	.01	(.00, .02)	3.16
O_O	-	-	-	.00	(.00, .00)	.61
R^2	.33***			.40***		

Note: See Table 2 for full predictor names. • = Significant but no value for *p*; + = $p < .10$, * = $p < .05$, ** = $p < .01$, and *** = $p < .001$.

Table 48. Relative Weights Analyses for Big Five Personality Factors Predicting Challenge and Curiosity

		Big 5_{HO}			Big 5_{LO}	
	Raw	CI	% R^2	Raw	CI	% R^2
N	.05	(.02, .10)	11.50•	-	-	-
A	.01	(.00, .05)	3.21	-	-	-
C	.01	(.00, .02)	2.74	-	-	-
E	.19	(.12, .27)	41.20•	-	-	-
O	.19	(.10, .28)	41.35•	-	-	-
N_V	-	-	-	.01	(.01, .03)	3.07
N_W	-	-	-	.05	(.02, .08)	10.09
A_C	-	-	-	.02	(.01, .06)	4.92
A_P	-	-	-	.01	(.00, .01)	1.66
C_I	-	-	-	.02	(.01, .04)	5.19
C_O	-	-	-	.01	(.00, .02)	1.12
E_E	-	-	-	.08	(.03, .13)	16.04
E_A	-	-	-	.10	(.05, .15)	20.76•
O_I	-	-	-	.10	(.05, .17)	22.20•
O_O	-	-	-	.07	(.02, .14)	14.94
R^2	.46***			.47***		

Note: See Table 2 for full predictor names. • = Significant but no value for *p*; + = $p < .10$, * = $p < .05$, ** = $p < .01$, and *** = $p < .001$.

Table 49. Relative Weights Analyses for Big Five Personality Factors Predicting Work Ethic and Organization

		Big 5_{HO}			Big 5_{LO}	
	Raw	CI	% R^2	Raw	CI	% R^2
N	.11	(.07, .16)	16.16•	-	-	-
A	.04	(.01, .08)	5.15	-	-	-
C	.44	(.36, .53)	62.47•	-	-	-
E	.08	(.04, .12)	10.75•	-	-	-
O	.04	(.01, .08)	5.47	-	-	-
N_V	-	-	-	.04	(.02, .07)	5.70•
N_W	-	-	-	.10	(.07, .13)	13.47•
A_C	-	-	-	.02	(.00, .05)	2.89
A_P	-	-	-	.02	(.01, .05)	3.09•
C_I	-	-	-	.25	(.20, .32)	33.47•
C_O	-	-	-	.17	(.11, .23)	22.60•
E_E	-	-	-	.03	(.01, .05)	4.05•
E_A	-	-	-	.05	(.03, .09)	7.34•
O_I	-	-	-	.04	(.02, .07)	5.91•
O_O	-	-	-	.01	(.00, .03)	1.48
R^2	.71***			.74***		

Note: See Table 2 for full predictor names. • = Significant but no value for *p*; + = $p < .10$, * = $p < .05$, ** = $p < .01$, and *** = $p < .001$.

Table 50. Relative Weights Analyses for Big Five Personality Factors Predicting Social Skills

		Big 5_{HO}			Big 5_{LO}	
	Raw	CI	% R^2	Raw	CI	% R^2
N	.17	(.11, .23)	23.94•	-	-	-
A	.02	(.00, .06)	3.09	-	-	-
C	.06	(.02, .11)	8.78•	-	-	-
E	.42	(.34, .51)	60.34•	-	-	-
O	.03	(.01, .05)	3.84	-	-	-
N_V	-	-	-	.07	(.04, .10)	9.53•
N_W	-	-	-	.09	(.06, .13)	12.83•
A_C	-	-	-	.04	(.02, .07)	5.92•
A_P	-	-	-	.01	(.01, .02)	1.90
C_I	-	-	-	.05	(.03, .08)	7.79•
C_O	-	-	-	.01	(.00, .02)	.99
E_E	-	-	-	.25	(.20, .33)	35.84•
E_A	-	-	-	.14	(.09, .19)	19.24•
O_I	-	-	-	.04	(.02, .06)	5.33•
O_O	-	-	-	.00	(.00, .01)	.63
R^2	.69***			.70***		

Note: See Table 2 for full predictor names. • = Significant but no value for *p*; + = $p < .10$, * = $p < .05$, ** = $p < .01$, and *** = $p < .001$.

Table 51. Relative Weights Analyses for Big Five Personality Factors Predicting Family Coherence

		Big 5_{HO}			Big 5_{LO}	
	Raw	CI	% R^2	Raw	CI	% R^2
N	.06	(.02, .11)	18.37$^{\bullet}$	-	-	-
A	.03	(.00, .08)	8.27	-	-	-
C	.11	(.04, .19)	34.32$^{\bullet}$	-	-	-
E	.11	(.05, .19)	34.64$^{\bullet}$	-	-	-
O	.01	(.00, .05)	4.39	-	-	-
N_V	-	-	-	.02	(.01, .05)	6.30
N_W	-	-	-	.05	(.02, .08)	14.03$^{\bullet}$
A_C	-	-	-	.03	(.01, .08)	10.71
A_P	-	-	-	.01	(.00, .01)	2.50
C_I	-	-	-	.07	(.03, .12)	20.37$^{\bullet}$
C_O	-	-	-	.03	(.01, .09)	10.62
E_E	-	-	-	.04	(.01, .09)	13.45$^{\bullet}$
E_A	-	-	-	.05	(.02, .11)	16.14$^{\bullet}$
O_I	-	-	-	.02	(.01, .04)	5.21
O_O	-	-	-	.00	(.00, .00)	.67
R^2	.31***			.32***		

Note: See Table 2 for full predictor names. $^{\bullet}$ = Significant but no value for *p*; $^{+}$ = $p < .10$, * = $p < .05$, ** = $p < .01$, and *** = $p < .001$.

Table 52. Canonical Correlation Analysis between Resilience and the Big Five

Function	Eigenvalue	%	r_c	Wilks λ	*F*	DF	*p*
1	5.83	77.93	.92	.85	20.79	(35.00, 650.25)	< .001
2	1.08	14.41	.72	.29	9.61	(24.00, 541.94)	< .001
3	.35	4.71	.51	.60	5.77	(15.00, 421.05)	< .001
4	.20	2.65	.41	.82	4.19	(8.00, 314.00)	< .001
5	.02	.31	.15	.02	1.22	(3.00, 158.00)	*n.s.*

Note: r_c = Cannonical correlation.

Table 53. Canonical Solution for Resilience and the Big 5 for Functions 1 to 4

	Function 1			Function 2			Function 3			Function 4			
	Coef	r_s	r_s^2 (%)	Coef	r_s	r_s^2 (%)	Coef	r_s	r_s^2 (%)	Coef	r_s	r_s^2 (%)	h^2 (%)
F1	-.29	-.82	66.46	-.21	-.04	.18	-.87	-.34	11.49	-.90	-.46	21.19	99.32
F1	-.09	-.71	50.08	-.22	-.04	.14	-.18	-.10	1.04	.15	.17	3.03	54.29
F3	.03	-.58	33.96	.08	.14	1.97	-.27	-.32	9.94	.01	-.03	.10	45.97
F4	-.12	-.58	33.65	-.31	-.32	10.09	.94	.59	34.38	-.51	-.43	18.70	96.82
F5	-.28	-.76	57.65	1.14	.64	40.64	.44	.10	.96	.07	-.02	.05	99.30
F6	-.44	-.85	72.83	-.47	-.31	9.36	.03	-.01	.01	.88	.35	12.06	94.26
F7	-.10	-.59	34.58	.00	.14	1.90	.15	.07	.49	.19	.19	3.50	40.47
N	.35	.84	70.18	.17	.02	.03	1.00	.43	18.41	.80	.34	11.31	99.93
A	-.07	-.39	15.59	-.05	.12	1.50	-.09	.03	.11	.21	-.05	.25	17.45
C	-.25	-.71	50.96	1.12	.68	46.52	.24	.02	.04	.27	.15	2.26	99.78
E	-.54	-.90	80.59	-.78	-.31	9.78	.40	.22	4.66	.88	.20	4.08	99.11
O	-.04	-.46	21.07	.12	-.06	.36	.76	.63	40.10	-.86	-.60	36.51	98.04
r_c^2			85.37			51.89			26.08			16.49	

Note: Structure coefficients $|r_s| > .40$ are underlined. Communality coefficients $|h^2| > 45\%$ are underlined. Coef = Standardized canonical function coefficient; r_s = Structure coefficient; r_s^2 = Squared structure coefficient; r_c^2 = total variance explained by function; h^2 = Communality coefficient.

Table 54. Model Fit – Exploratory Formative Model Analysis

Outcome Variable	χ^2	*df*	*p*	CFI	TLI	RMSEA	95%CI	SRMR
1. Health & Well-Being	1231.00	635	<.001	.86	.85	.08	(.069, .081)	.07
2. Job Attitudes*	2545.00	1244	<.001	.81	.79	.08	(.075, .084)	.07
3. Job Performance*	3463.58	1796	<.001	.73	.72	.08	(.071, .079)	.10

Note: Models denoted with * may not be trustworthy because the product matrices were non-positive definite after running the analysis.

Figures

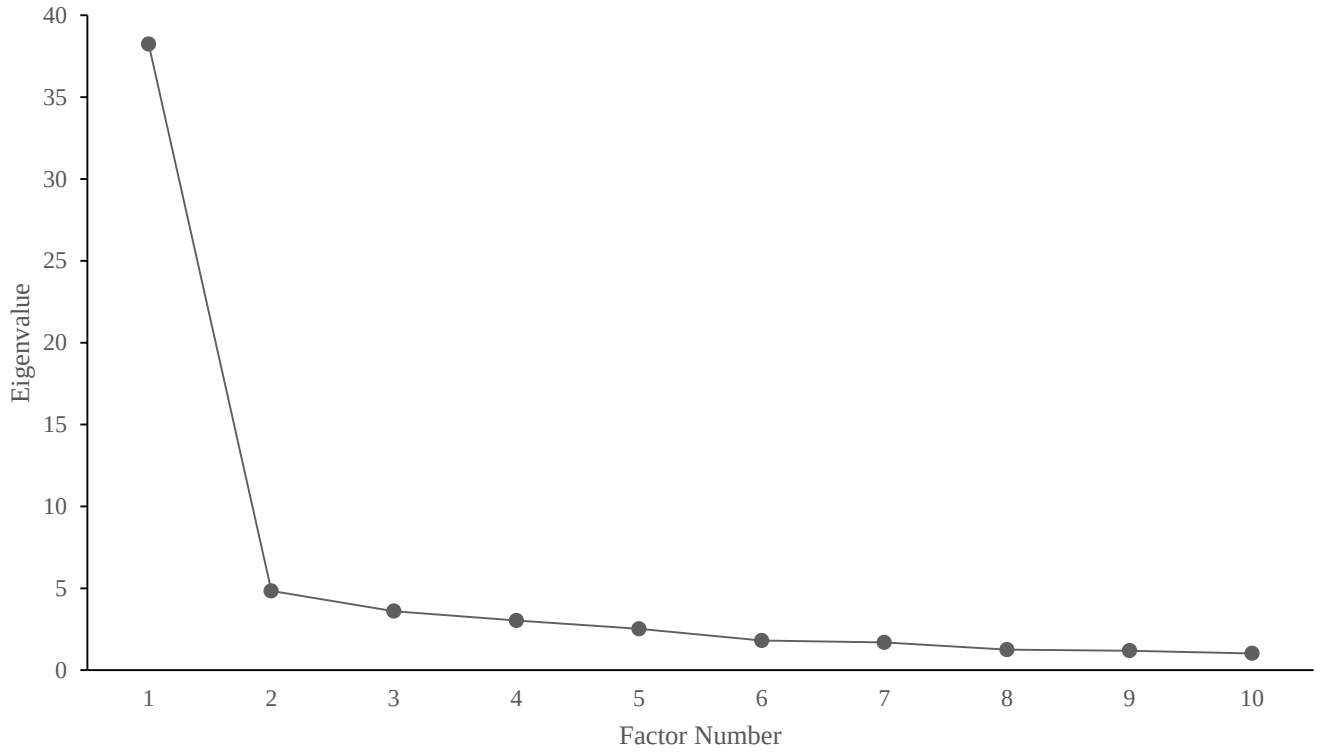

Figure 1. Scree plot

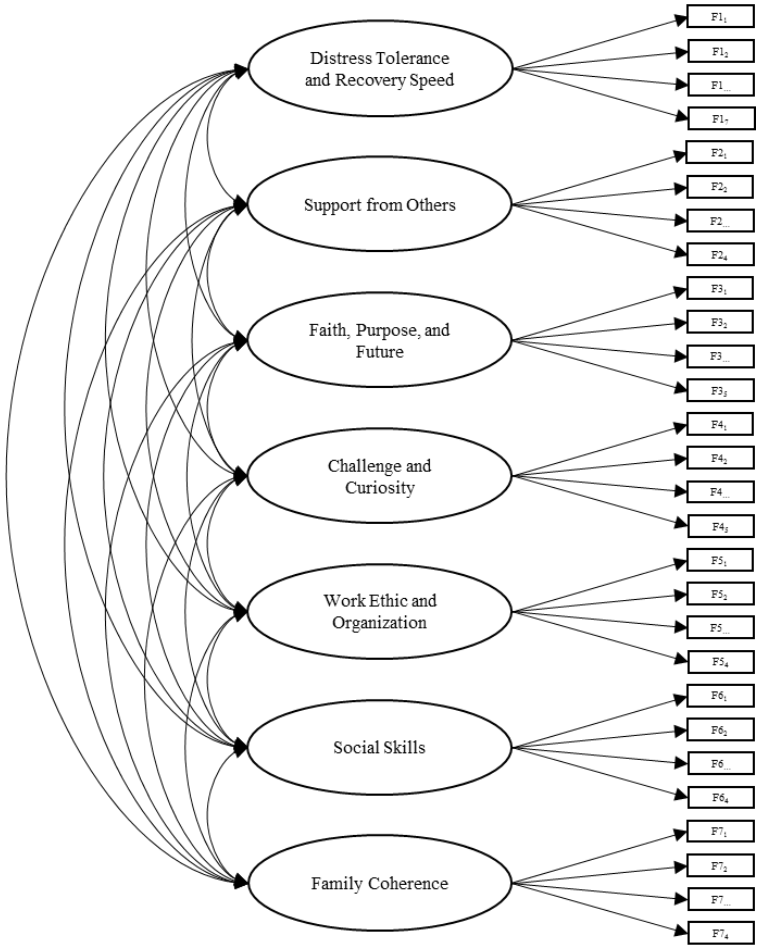

Figure 2. Correlated traits model

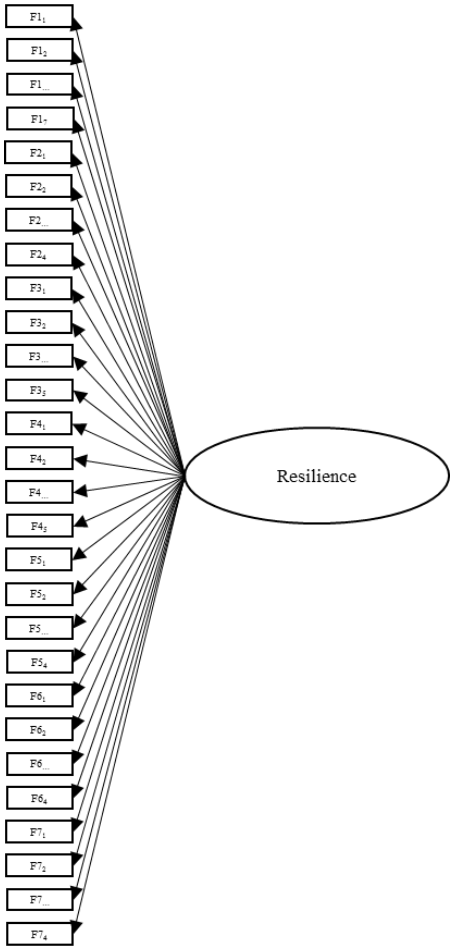

Figure 3. Unidimensional model

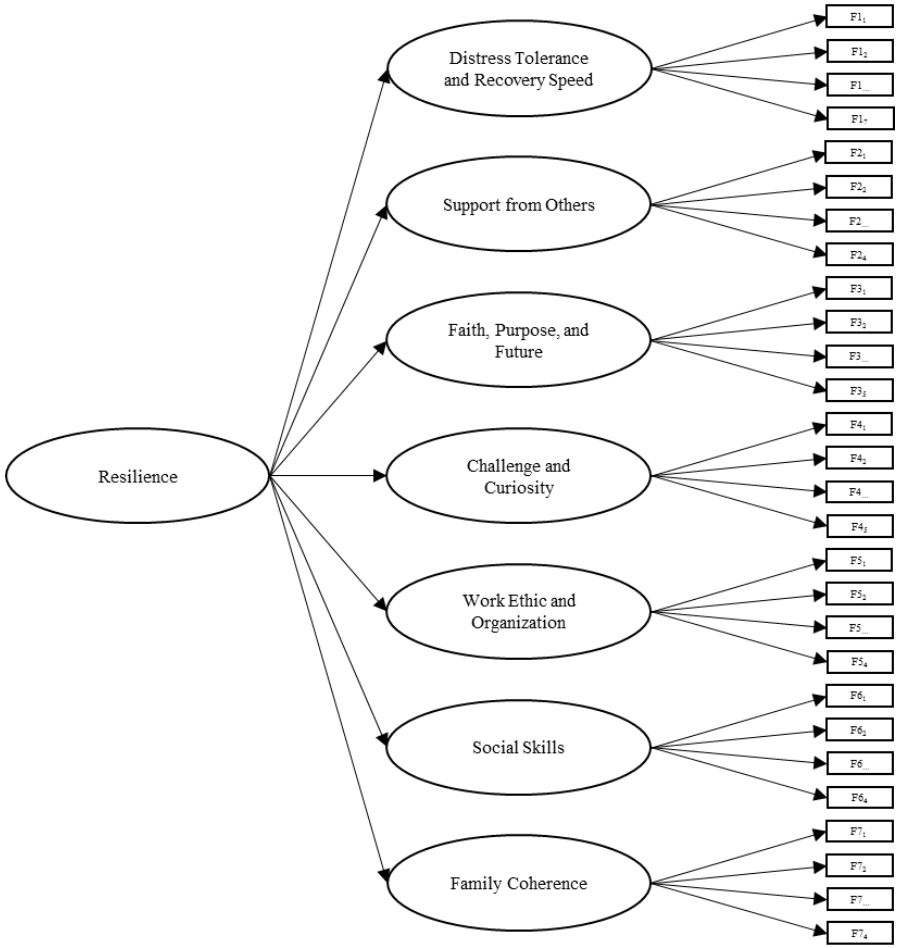

Figure 4. Second-order factor model

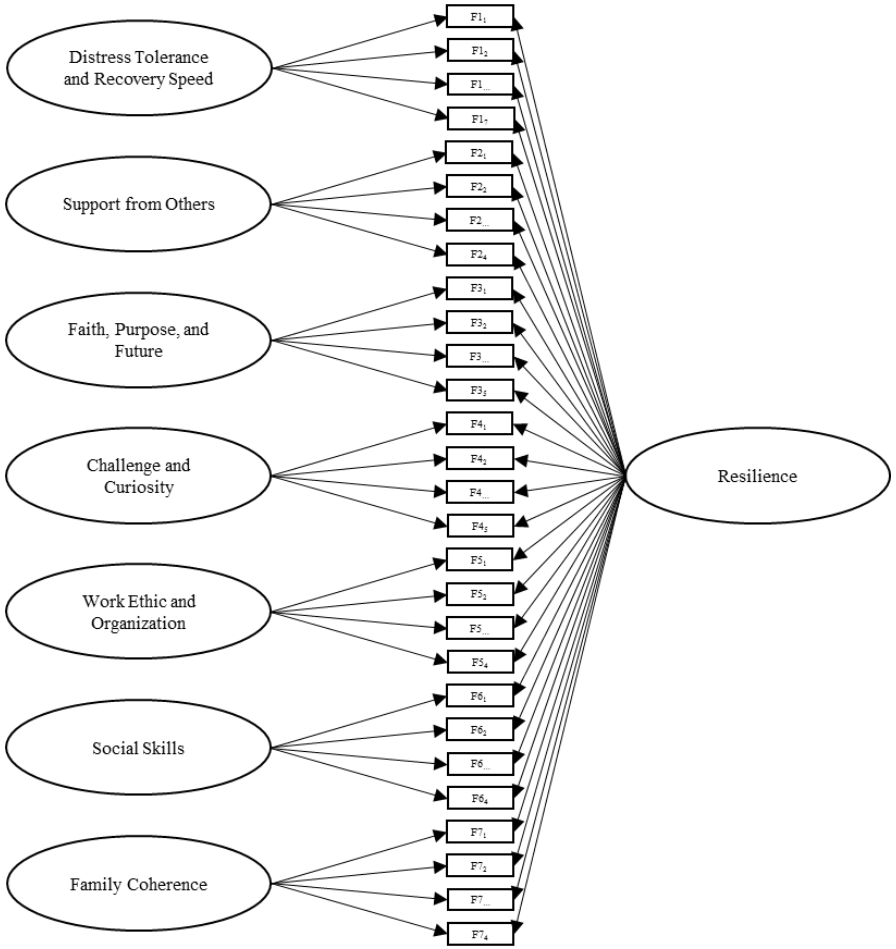

Figure 5. Bifactor model

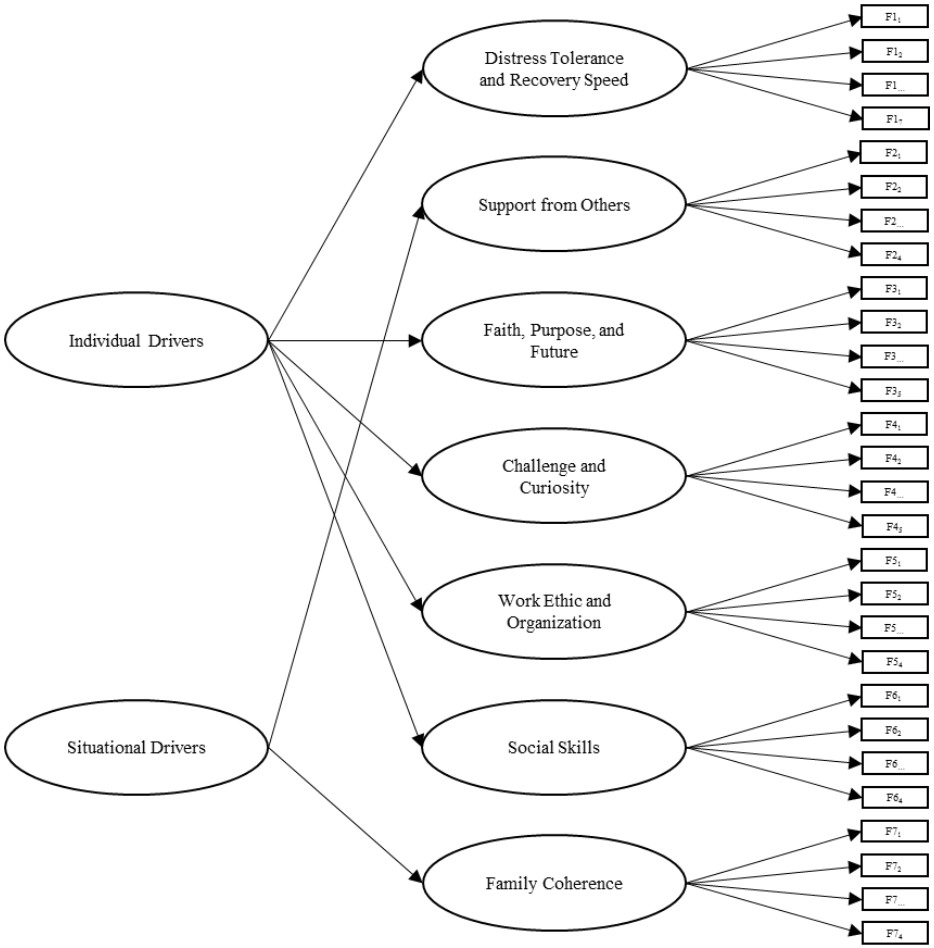

Figure 6. Higher-order factor model (1)

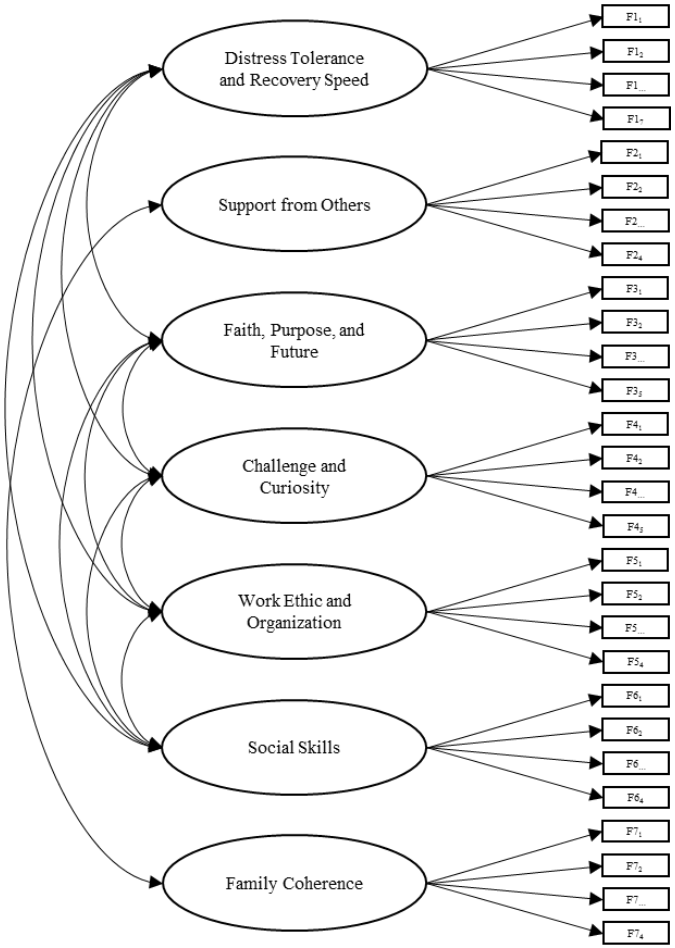

Figure 7. Select correlations (1)

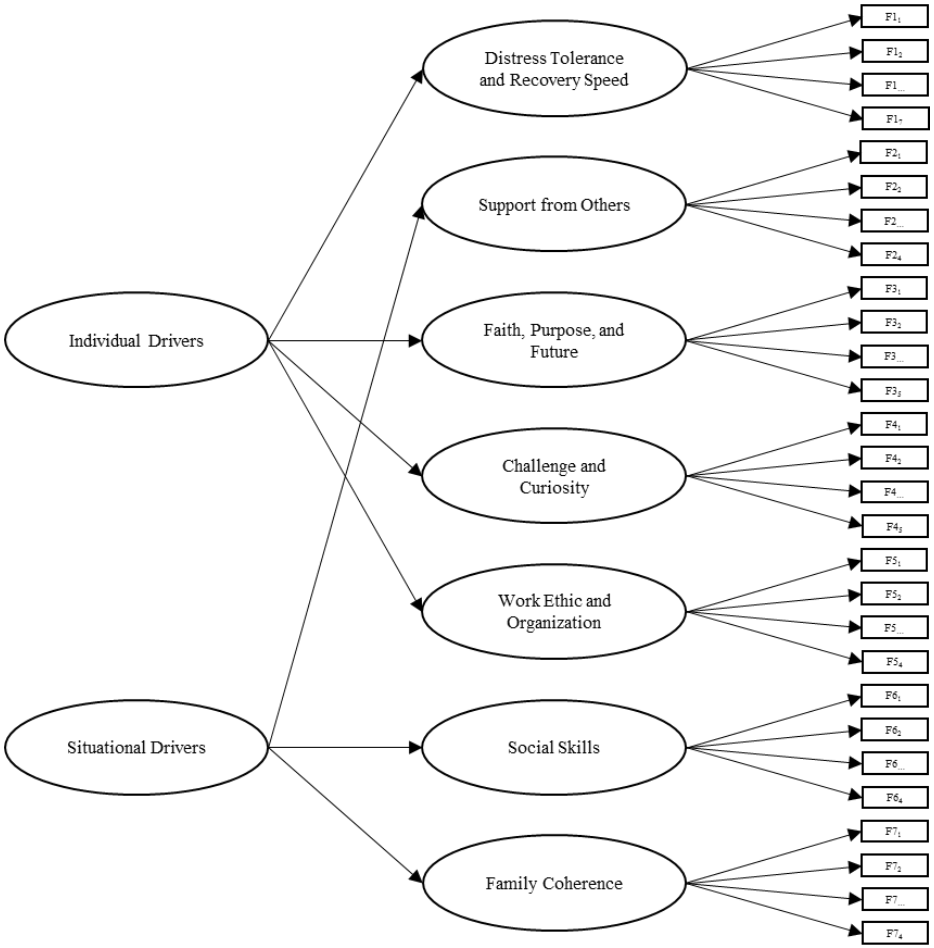

Figure 8. Higher-order factor model (2)

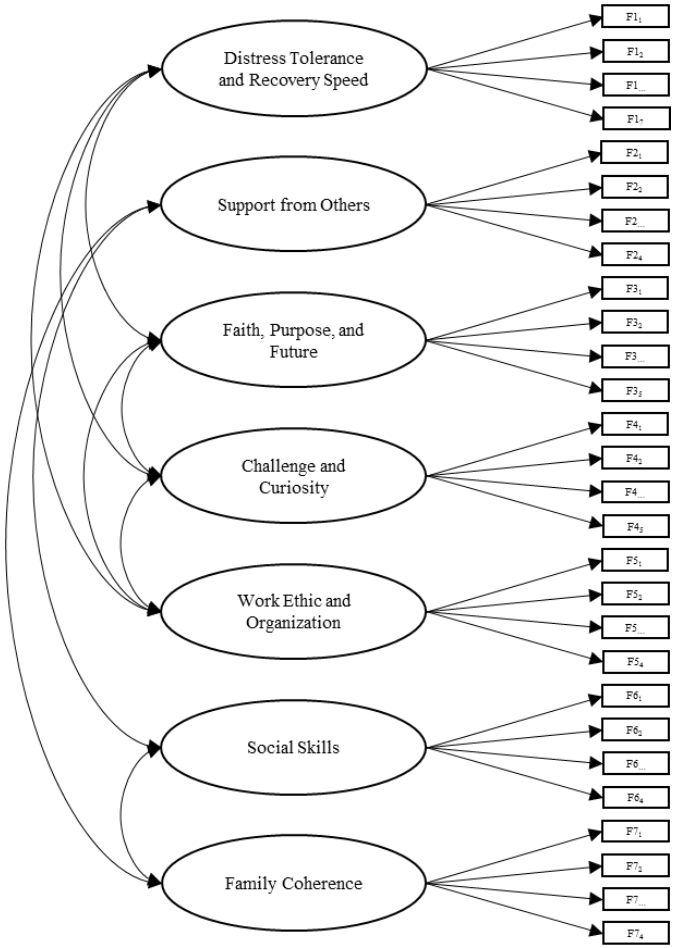

Figure 9. Select correlations (2)

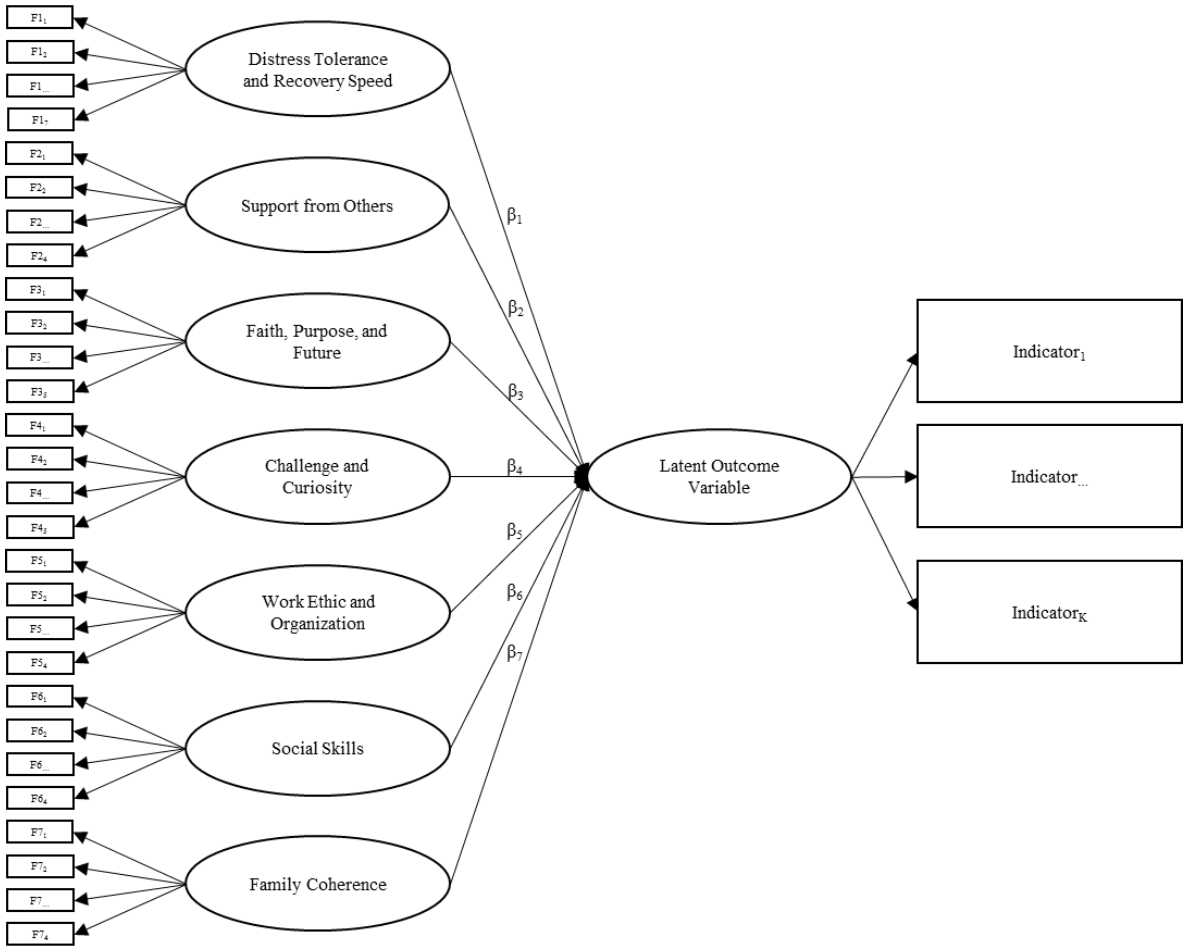

Figure 10. Criterion related validity: SEM approach

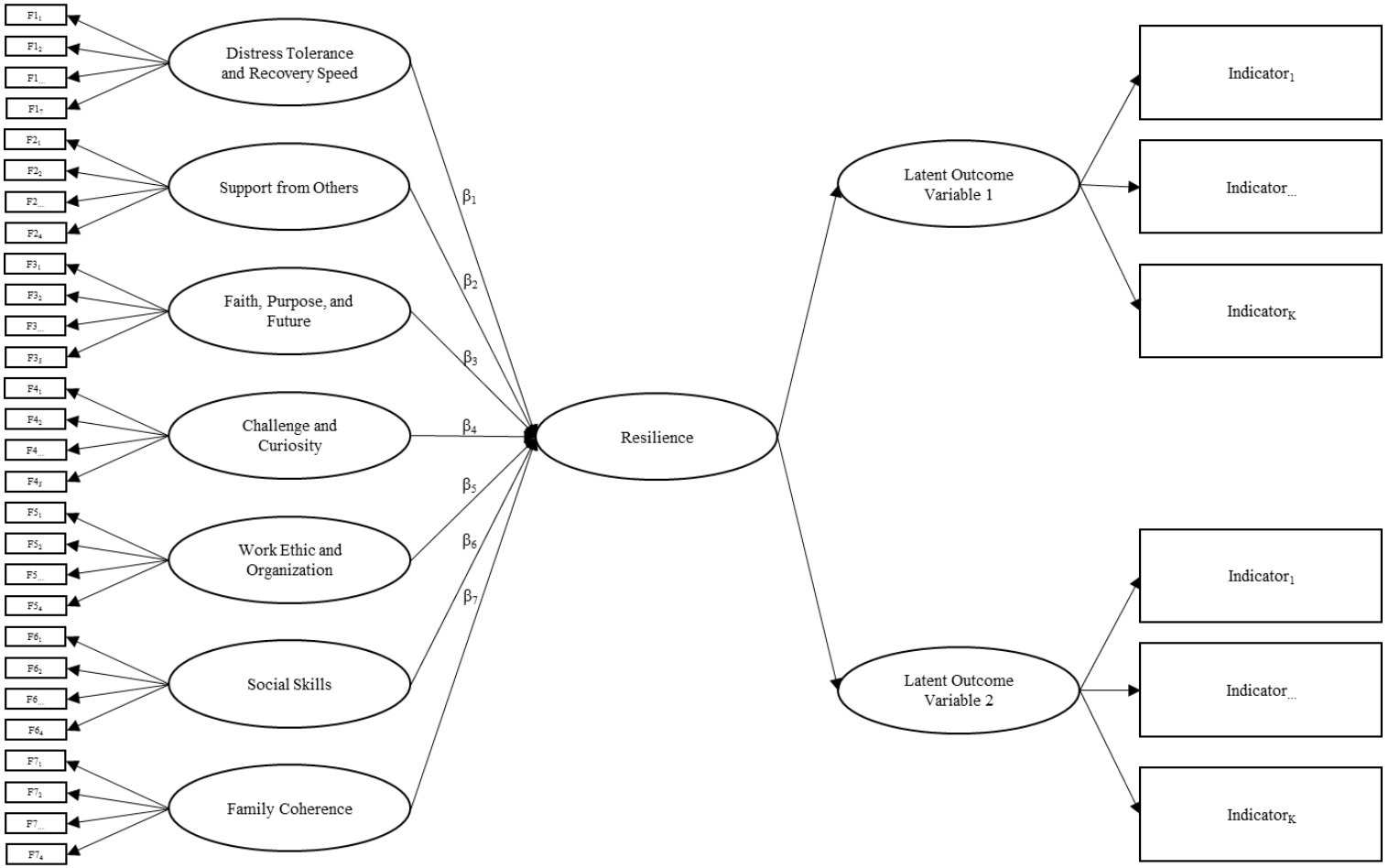

Figure 11. Sample formative model

APPENDIX A:

IRB Approval Letter

USF
UNIVERSITY OF
SOUTH FLORIDA

RESEARCH INTEGRITY AND COMPLIANCE
Institutional Review Boards, FWA No. 00001669
12901 Bruce B. Downs Blvd., MDC035 • Tampa, FL 33612-4799
(813) 974-5638 • FAX (813) 974-7091

June 3, 2015

Matthew Grossman
Psychology
Tampa, FL 33612

RE: **Exempt Certification**
IRB#: Pro00021654
Title: Understanding Personality Characteristics Study

Dear Mr. Grossman:

On 6/3/2015, the Institutional Review Board (IRB) determined that your research meets criteria for exemption from the federal regulations as outlined by 45CFR46.101(b):

(2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless:
(i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

Approved Items:

IRB Protocol for Structure of Resilience Study.docx

Informed Consent for Study 1.docx

Informed Consent for Study 2.docx

Informed Consent for Study 3.docx

As the principal investigator for this study, it is your responsibility to ensure that this research is conducted as outlined in your application and consistent with the ethical principles outlined in the Belmont Report and with USF IRB policies and procedures.

Please note, as per USF IRB Policy 303, "Once the Exempt determination is made, the application is closed in eIRB. Any proposed or anticipated changes to the study design that was previously declared exempt from IRB review must be submitted to the IRB as a new study prior to initiation of the change."

If alterations are made to the study design that change the review category from Exempt (i.e., adding a focus group, access to identifying information, adding a vulnerable population, or an intervention), these changes require a new application. However, administrative changes, including changes in research personnel, do not warrant an amendment or new application.

Given the determination of exemption, this application is being closed in ARC. This does not limit your ability to conduct your research project. Again, your research may continue as planned; only a change in the study design that would affect the exempt determination requires a new submission to the IRB.

We appreciate your dedication to the ethical conduct of human subject research at the University of South Florida and your continued commitment to human research protections. If you have any questions regarding this matter, please call 813-974-5638.

Sincerely,

John Schinka, Ph.D., Chairperson
USF Institutional Review Board