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# Clarifying the Nature of Resilience: A Meta-Analytic Approach

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Clarifying the Nature of Resilience: A Meta-Analytic Approach

by

Matthew R. Grossman

A thesis submitted in partial fulfillment  
of the requirements for the degree of  
Master of Arts  
Department of Psychology  
College of the Arts and Sciences  
University of South Florida

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## **Dedication**

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

### **Acknowledgments**

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## Abstract

Psychological resilience, conceptualized as the ability to bounce back from stress (Tugade, 2011), has garnered increased attention across various fields of psychology and related disciplines. Despite its popularity, researchers have yet to come to a consensus regarding the nomological network of this construct, as well as its distinctiveness from conceptually similar constructs (i.e., hardiness, grit). In this paper, I use meta-analytic techniques (Hunter & Schmidt, 2004) to quantitatively synthesize three decades of previous empirical work on resilience and related-constructs and their correlates, integrating findings from more than 400 studies. Results show that resilience overlaps substantially with big-five personality traits as a set and shows consistent, though more moderate, relationships with social support variables. Furthermore, results indicate that resilience and hardiness are not isomorphic constructs, as they demonstrate differential relationships with dispositional and situational correlates. Results also show that resilience and hardiness are both moderately to strongly related to health and well-being outcomes, in the anticipated directions, as well as proposed mediators in the literature (i.e., positive emotion, adaptive coping). However, incremental validity analyses consistently show that both resilience and hardiness only increment very marginally (i.e., on average 1-3% of the variance) over the big-five personality traits in predicting health and well-being outcomes. Taken together, this large-scale quantitative summary calls into question the distinctiveness of resilience from existing dispositional traits as well as its predictive utility in the health and well-

being domain. Implications for future research, theory development, and measurement issues are discussed.

## Introduction

Research on resilience, commonly defined as the ability to bounce back from stress (Klohn, 1996; Smith, Dalen, Wiggins, & Tooley, 2008; Tugade, 2011), has burgeoned in recent years across different areas of psychology, including behavior genetics (e.g., Waaktaar & Torgersen, 2012), clinical (e.g., Davydov, Stewart, Ritchie, & Chaudieu, 2010), developmental (Luthar, Cicchetti, & Becker, 2000), industrial/organizational (e.g., Gabriel, Diefendorff, & Erickson, 2011), and personality psychology (e.g., Letzring, Block, & Funder, 2004); it is also studied in other disciplines, such as medicine (e.g., Connor & Davidson, 2003). Resilience has been found to be associated with a host of beneficial outcomes, particularly in the health domain. For example, Davydov et al. (2010) found that resilience is associated with decreased incidence of stress and anxiety, Tugade and Fredrickson (2004) found that resilience is associated with improved cardiovascular recovery from stress, and Bensimon (2012) found that resilience is associated with fewer post-traumatic stress symptoms after trauma. Beyond the health domain, resilience has been positively linked to performance on a high-stakes qualification exam (i.e., Army Special Forces Exam; Bartone, Roland, Picano, & Williams, 2008).

In spite of its growing popularity across different fields of psychology and related disciplines, there remains much conceptual ambiguity surrounding the resilience construct. In this paper, I distinguish between two different approaches to resilience. The first, which I label the situational approach, developed in the clinical and developmental literatures, emphasizes contextual factors that protect an individual after the experience of adversity. For example,

researchers have examined the effect of family support (e.g., Werner, 1990) on life outcomes (e.g., academic performance; Masten, Hubbard, Gest, Tellegen, Garnezy, & Ramirez, 1999). Alternatively the second approach, which I label the individual differences approach, was developed in the personality literature. Researchers endorsing this second approach conceptualize resilience as an innate and relatively stable personality trait (Block & Block, 2006), reflecting healthy patterns of self-regulation (Gramzow, Sedikides, Panter, Sathy, Harris, & Insko, 2004). For example, personality researchers have distinguished resilience from intelligence (Block & Krehmen, 1996) and related resilience to a host of other variables (e.g., experiencing secure attachment in infancy; Arend, Gove, & Sroufe, 1979).

These approaches are sometimes at odds with one another theoretically (e.g., researchers subscribing to the situational approach arguing resilience may be more than personality; Bonanno, 2012), yet most resilience research typically does not distinguish between the two approaches. For example, studies using a measure emphasizing the individual differences approach to resilience often cite research endorsing the situational approach and vice versa. This, in turn, results in a confusing literature, and it is difficult to discern what constitutes the core of the resilience construct and what it is meaningfully related to (i.e., establish its nomological network). Practically, the debate between the two approaches is important given the emergence of training programs designed to build resilience (e.g., Comprehensive Soldier Fitness; Casey, 2011). A clarification of the predictors and nature of resilience may help practitioners to decide where to funnel resources in training (i.e., which aspects and predictors of resilience to focus on) and, conversely, a finding that resilience is redundant with existing personality constructs (i.e., big-five personality traits) may call into question the efficacy of these training programs.

This paper takes a first step towards resolving the debate concerning the nature of resilience through the use of meta-analysis. Meta-analysis is ideal for research questions of this nature, as it allows researchers to use the wealth of previously conducted research in order to provide estimates of the relationships between the latent construct of interest (i.e., resilience) and other variables. Specifically, in this paper, I use meta-analysis to answer questions about the nature of resilience at each step of the resilience process: predictors, mediators, and outcomes (see Figure 1).

In this quantitative review, I first examine antecedents to resilience. Specifically, I examine the bivariate correlations between a number of individual differences (i.e., big-five personality traits) and situational factors (i.e., social support) and resilience, respectively. I also examine the relative contributions of variables within each approach in predicting resilience. Given the aforementioned disconnect between the two approaches to resilience, these analyses make important contributions by quantifying the extent to which predictors in each approach predicts resilience.

Next, I turn to theory from the stress, coping, and positive psychology literatures to inform our understanding of the mechanisms (i.e., mediators) by which resilience is related to health and well-being outcomes. Specifically, I examine two classes of mediators: positive emotions and coping strategies. Briefly, as expanded on below, I begin to examine the assertion that resilient individuals have the capacity to experience positive emotions in the wake of adversity (e.g., Tugade, 2011), and these positive emotions may in turn enable them to engage in effective coping strategies (e.g., problem-focused coping) that are then associated with beneficial outcomes in a number of domains (e.g., overall health; Penley, Tomaka, & Wiebe, 2002).

Last, I consider three broad classes of outcomes associated with the resilience construct: physical health, mental-health, and well-being. Across the board, resilience is expected to be associated with beneficial outcomes for each of these three classes of variables. However, the effect sizes regarding the magnitude of these relationships have varied substantially across past studies (e.g., the resilience-PTSD relationship, see discussion below). In this paper, I use meta-analytic procedures (c.f., Hunter & Schmidt, 2004) to provide point estimates for construct-level relationships between resilience and outcomes of interest (i.e., physical health, mental health, well-being), examining a number of theoretical and methodological moderators and accounting for statistical artifacts such as sampling error and measurement unreliability.

Taken together, this study has important implications for resilience theory and practice. I integrate the two approaches (i.e., situational and individual differences) under a single framework (see Figure 1), using variables from both the individual differences and situational approaches to optimally predict resilience. I examine questions at each step of the resilience process using meta-analytic procedures, which allows me to test for moderators and account for methodological artifacts. I verify the mechanisms by which resilience may lead to beneficial outcomes and provide estimates for the effect sizes of relationships between resilience and a host of health and well-being outcomes. Theoretically, this is the first study of its kind to meaningfully review and integrate aspects of resilience across psychological literatures. Practically, by addressing the direction and size of relationships between resilience and outcomes of interest, this research enables practitioners to more appropriately determine whether and where to include and apply resilience in their work (e.g., resilience may be useful for predicting PTSD symptomology, but may not be related to overall subjective well-being). Below, a more detailed review of each of the relationships examined is addressed in turn.

## **Antecedents to Resilience**

As mentioned previously, modern theorizing on the resilience construct grew out of two separate research streams. The individual differences approach originated with Block and Block's (1980) two-dimensional taxonomy of ego-control and ego-resiliency representing self-regulatory processes that demonstrate rank-order stability (Block & Block, 2006; Chuang, Lamb, & Hwang, 2006) and describe aspects of behavioral inhibition and flexibility. The situational approach grew out of clinical (e.g., Rutter, 1985) and developmental (e.g., Masten, 2001) literatures and conceives of resilience as a process that can be developed over the course of the lifespan. In this framework, an individual's level of resilience is partially influenced by individual differences, but primarily determined by contextual protective factors (e.g., social support; see Werner, 1990) that shield the person from the experience of negative life outcomes. Both approaches are similar in that they conceptualize resilience as involving adaptability, yet they differ in the antecedents they focus on (i.e., personality vs. contextual factors).

## **Extant Theories of Resilience**

**Individual differences approach.** Block and Block (1980) introduced ego-resiliency within their two-dimensional personality taxonomy of ego-control and ego-resiliency. This model of personality measures patterns of self-regulation (Gramzow et al., 2004) and reflects the ways in which individuals react to environmental demands in order to regulate their own internal desires and impulses (Huey & Weisz, 1997). Ego-control specifies the degree to which individuals are capable of containing and controlling emotional and motivational instincts (Funder & Block, 1989). For example, individuals high in ego-control (i.e., overcontrolled) are described as excessively rigid, and those low in ego-control (i.e., undercontrolled) are unable to



govern behavior across situations (e.g., they are at greater risk for drug use and smoking behavior; Block, Block, & Keyes, 1988; Barefoot, Smith, Dahlstrom, & Williams, 1989).

Ego-resiliency is often discussed in terms of behavioral elasticity (Funder, Block & Block, 1983) or adjustment (Block & Kremen, 1996; Letzring et al., 2005), and it describes the way in which a person can adapt his or her level of impulse expression/suppression to the demands of the environment. Or, in specific terms related to the Block and Block (1980) model, ego-resiliency connotes the degree to which a person can modify his or her modal level of ego-control. A low level of ego-resiliency (i.e., ego-brittle) implies inflexibility (Huey & Weisz, 1997), but a high level (i.e., ego-resilient) is adaptive. Ego-resiliency is associated with experiencing secure attachment in infancy (Arend et al., 1979), being competent and resourceful (Funder & Block, 1989), and with the ability to delay gratification (Mischel, Shoda, & Peake, 1988). Thus, in this model, resilience is a personality characteristic involving flexibility and adaptability across situations.

**Situational approach.** Other researchers have emphasized that situational factors play a large role in promoting healthy reactions to adversity (Masten, Best, & Garnezy, 1990). Early research began with case studies of individuals with schizophrenia; researchers noted some patients with certain past experiences responded more adaptably than their peers (e.g., history of marriage prior to illness onset; Luthar et al., 2000). The focus however soon shifted away from those who are already mentally ill to those who were at risk for developing problems later in life (e.g., studying a sample of children with abusive or alcoholic parent(s); Rutter, 1985, 1987).

To this end, researchers initially identified personality traits such as autonomy and self-esteem as predictors of resilience (Masten & Garnezy, 1985), but soon added situational components to the model (i.e., protective factors, Baruth & Carroll, 2008, Rutter, 1987;

compensatory effects, Masten, 2001). This approach suggests that positive contextual factors of an individual's life, particularly positive social relationships, might offset the negative effects associated with personal risk factors. Indeed, Werner (1990), Luthar et al. (2000), and Friborg, Barlaug, Martinussen, Rosenvinge, and Hjemdal (2003) identify aspects of the family and characteristics of the wider social environment as the two major classes of protective factors. With regard to aspects of the family, Werner (1990) looked across developmental studies and concluded that most children identified as resilient have had the opportunity to bond with at least one person who provided stable care. Indeed, research suggests that parenting quality is associated with good outcomes in different areas (e.g., academic performance and health; Masten et al., 1999). Werner (1990) additionally suggested that characteristics of the wider social environment (i.e., less primary relations, such as those with siblings and friends) are also useful as supplements and provide critical emotional support. Primary studies support these assertions; researchers have found that social support protects against mental health problems in veterans returning from service (Hourani et al., 2012), reduces PTSD symptoms in women with a history of partner violence (Bradley, Schwartz, & Kaslow, 2005), and better predicts mood following the experience of a natural disaster (Karlin, Marrow, Weil, Baum, & Spencer, 2012). Thus, this approach suggests that situational factors are largely responsible for resilience.

### **Towards a Clarification of the Two Approaches**

**Which personality factors predict resilience?** Moving beyond the traditional self-regulatory approach to resilience, some researchers have identified lower-order factors of the resilience construct. These lower-order factors include persistence and warmth (Klohn, 1996), empowerment and comfort with change (Kobasa, 1979; Maddi, 1999, 2002), self-reliance and perseverance (Wagnild & Young, 1993), personal strength (Friborg, Barlaug, Martinussen,

Rosenvinge, & Hjemdal, 2005), goal orientation and self-esteem (Rutter, 1985), patience and ability to endure stress (Lyons, 1991), and spirituality (Connor & Davidson, 2003). These lower-order resilience factors provide a rich landscape for understanding the construct, but also forge a difficult path for researchers who seek to make meaningful comparisons across studies because the interrelationships between these lower-order factors (and their corresponding measures) have often not been established or are unclear. Unfortunately, many studies do not report the magnitude of relationships between the facets of resilience, and I am unable in this paper to test competing models of the lower-order structure of resilience.

Previous research has found that resilience is positively related to each of the personality dimensions within the five-factor model (e.g., Robins, John, Caspi, Moffit, & Stouthamer-Loeber, 1996; Friborg et al., 2005; Gramzow et al., 2004; Waaktaar & Torgersen, 2010). The five-factor model has emerged from lexical studies (e.g., Goldberg, 1990) as the dominant paradigm in personality research in recent decades. Researchers have consistently found five dimensions of personality that are replicated cross-culturally (for a review see John & Srivastava, 1999): extraversion, agreeableness, conscientiousness, neuroticism/emotional stability, and intellect/openness to experience. In line with this research, I hypothesize that resilience will be moderately related to all five of the big-five personality factors, but further argue that the relationship between resilience and emotional stability will be strongest among the big-five traits. Emotional stability reflects the ability to remain calm (John & Srivastava, 1999; DeYoung, Quilty, & Peterson, 2007). Results of a few primary studies provide empirical support for these assertions, but the magnitude of these estimates varies. For example, Huey and Weisz (1996) found that neuroticism is correlated  $-.75$  with resilience, Gramzow et al. (2004) found a correlation of  $-.45$ , and Liu, Wang, and Li (2012) found a smaller correlation of  $-.32$ . I also

expect moderately strong relationships between openness to experience, characterized by adaptability (Digman, 1990), and extraversion, characterized by positive affect (Lucas, Diener, Grob, Suh, & Shao, 2000), and resilience given that both traits are strongly related to the mechanisms purportedly associating resilience to health and well-being outcomes in previous work, the ability to bounce back and experience positive emotions in the face of adversity, respectively (e.g., Klohnen, 1996; Smith et al., 2008; Tugade, 2011).

At present the literature is unclear as to what extent resilience may simply be redundant with existing personality traits. The present study will help to bring clarity to the research domain by specifying the magnitude of relationships between big-five personality traits and resilience, after accounting for statistical artifacts (i.e., sampling error, unreliability) that may have contributed to the inconsistent results in the literature. Furthermore, the present meta-analytic approach allows examination of both theoretical and empirical moderators of the relationship between personality and resilience that may account for some of the different findings across primary studies in the literature.

In secondary analyses, I look beyond the big-five to other commonly studied individual differences variables and also examine their relationships with resilience. For example, Segovia, Moore, Linnville, Hoyt, and Hain (2012) note that resilience is positively related to optimism, Smith et al. (2008) provide evidence for positive relationships between resilience and positive affect, and Block and Krehmen (1996) argue resilience is not related to cognitive ability (see also Friborg et al., 2005). Whenever possible, I also provide meta-analytic estimates for relationships between these individual difference variables, which may be less well represented in the big-five model, and resilience.

**To what extents do situational and personality factors predict resilience?** The situational approach to resilience focuses on contextual factors, such as characteristics of the family and wider social environment (Luthar et al., 2000). This conceptualization, at times, is in contrast to the individual differences approach (c.f., Bonanno, 2012) and has serious implications for the theoretical development of the resilience construct. It is probable that both individual differences and situational factors contribute to resilience, but to my knowledge no study has adequately addressed the relationships between both classes of variables and resilience. I take a step towards settling this debate and furthering our understanding of the construct of resilience by assessing the proportion of variance in resilience accounted for by situational factors and the proportion of variance in resilience accounted for by individual differences.

**To what extent does resilience increment over individual and situational factors?** An equally important question concerns the usefulness of the resilience construct in predicting criteria of interest over and above existing established predictors, such as the big-five personality traits. To address this issue, I consider the incremental validity of the resilience construct in predicting various outcomes, mostly in the health domain, over and above existing predictors (i.e., big-five personality traits and social support, wherever possible). Currently, there is little research in this area, and the results of primary studies can be described as mixed at best. For example, Waaktaar and Torgersen (2010) assessed the incremental validity of two resilience measures in predicting adaptive behavior over the big-five and found no evidence of incremental validity, whereas Hjemdal, Friborg, and Stiles (2012) demonstrated that resilience uniquely predicts mental health over and above personality and situational factors (i.e., big-five and stressful life events). These analyses also have serious implications for the viability of resilience as a construct. For example, if resilience fails to increment over existing personality (i.e., big-

five) and situational factors in predicting key outcomes, then this calls into the question the fundamental value and uniqueness of the resilience construct. This clarity is critical given the explosion of research on resilience in different areas of psychology and related disciplines as well as the increased resources being devoted to programs designed to build resilience (e.g., Casey, 2011).

### **Mediators of the Resilience-Outcome Relationship**

Of theoretical importance are not only the components that constitute the resilience construct and its antecedents, but also the mechanisms by which resilience influences outcomes. In this study, I consider one promising line of research that situates resilience in the stress and coping literature (Tugade, 2002, 2011) and suggests that resilience is characterized by the experience of positive emotions that in turn leads to the use of adaptive coping strategies (i.e., problem-focused coping) in the aftermath of adversity. These coping strategies are then, in turn, associated with health and well-being benefits. In this study, I test propositions put forth in previous theorizing from positive psychology that the relationships between resilience and positive health and well-being outcomes are mediated by the experience of positive emotions and the use of adaptive coping strategies (Tugade, 2011).

**Resilience and positive emotions.** Though common wisdom suggests that individuals mainly experience negative emotions when faced with stress, several studies suggest that individuals with high levels of trait resilience also experience positive emotions in the face of adversity (Folkman, 2008). For example, resilience was positively associated with reports of positive emotions after the September 11<sup>th</sup> attacks (Fredrickson, Tugade, Waugh, & Larkin, 2003) and reports of positive emotions after laboratory inductions of stress (Tugade & Fredrickson, 2004). Daily diary studies examining within-person variation from a sample of

individuals who experience chronic pain further suggest that resilient individuals experience positive emotions more frequently than those lower in resilience (Ong, Zautra, & Reid, 2010; Ong, Bergeman, Bisconti, & Wallace, 2006). Additionally, resilient individuals report greater positive emotional granularity, or the ability to discriminate between different positive emotions, and as expanded on below, the ability to experience distinct positive emotions is related to more effective coping (Tugade, Fredrickson, & Barrett, 2004). Thus, primary studies suggest that resilience is characterized by the consistent experience of positive emotion, even in the wake of adversity.

**Positive emotions and adaptive coping strategies.** The cognitive theory of stress and coping suggests that individuals engage in a two-stage process when coping with adversity (Lazarus & Folkman, 1984; Lazarus, 1993). Events are first appraised for their personal relevance, and those appraised as personally relevant are accompanied by the experience of emotion. Traditionally, this model only accounted for negative emotions (Folkman, 2008). Negative emotions narrow an individual's field of focus and serve to arouse and prepare the body to engage in specific courses of action (Frijda, 1987), chiefly a fight-or-flight response (Tugade, 2011). Thus, in the traditional model, an individual engages in coping to ameliorate the experience of negative emotions, regulating and returning the body to baseline levels of arousal (Folkman & Lazarus, 1988).

However, a new line of research expands the traditional model by arguing that individuals have the capacity to experience positive emotions, in addition to negative emotions, when faced with adversity (Keltner & Bonanno, 1997; Folkman & Moskowitz, 2000; Folkman 2008), and the aforementioned research demonstrates that this may particularly be the case for individuals high in resilience. Positive emotions, unlike negative emotions, relax the body; they

in turn counteract the effect of negative emotions (Fredrickson & Levenson, 1998; Fredrickson, Mancuso, Brannigan, & Tugade, 2000). Positive emotions are also associated with a different thought pattern than negative emotions (Isen, Johnson, Mertz, & Robinson, 1985); for example, the ability to delay gratification and engage in forward thinking (Pyone & Isen, 2011).

In the traditional view, coping can take one of two forms: problem-focused coping and emotion-focused coping. Problem-focused coping reflects an effort to change the conditions associated with psychological stress, such as directly addressing the original basis of harm, whereas emotion-focused coping influences the way events are interpreted. For example, an individual might simply avoid thinking about an event. Lazarus (1993) suggests the choice of coping strategy is dependent on the appraisal of whether or not one has agency in altering the situation; emotion-focused coping dominates when problem-focused coping is not an option. However, a recent meta-analysis demonstrated that big-five personality traits predict preferred coping style (e.g., extraversion and conscientiousness were predictors of problem-focused coping; Connor-Smith & Flachsbart, 2007), and a separate meta-analysis found that engagement in problem-focused coping is typically associated with better health outcomes (Penley et al., 2002). The present study expands on these meta-analyses by considering coping strategies and positive emotions as mediators of the resilience-health relationship.

The experience of positive emotion when faced with adverse events (which has been posited to be associated with resilience) quells the effect of negative emotions and regulates the body down to baseline levels of arousal (Fredrickson & Levenson, 1998; Fredrickson, et al., 2000). Thus, resilient individuals may experience stress in a unique way. There is less of a need to engage in coping processes that ameliorate the physical discomfort associated with adversity, and the resilient individual may be of a clearer mind and more able to engage in adaptive coping



processes. Specifically, this might still entail problem-focused coping (i.e., seeking to change the surrounding conditions), but might also include different processes of meaning (i.e., making sense of an event; Folkman, 1997; Davis, Nolen-Hoeksema, & Larsen, 1998; Park, 2010) and benefit finding (i.e., finding benefit in an experience; Davis et al., 1998). These two processes, though somewhat related to problem-focused coping, are unique in that the emphasis is on developing the individual rather than modifying the situation. Studies typically show that problem-focused coping, meaning-finding, and benefit-finding are related to positive health outcomes (Penley et al., 2002; Davis et al., 1998). It should be noted that the meaning-finding and benefit-finding literatures are relatively young and, although they enhance resilience theory, it is unlikely that there will be enough studies to perform direct meta-analytic tests of their relationships to resilience and outcomes. Thus, I anticipate focusing on cumulating the relationships between resilience and problem-focused and emotion-focused coping, respectively.

**Relationship between resilience and coping.** Based on the literature reviewed above, I expect problem-focused coping, meaning-focused coping, and benefit-finding to be associated with both resilience and positive emotions. Furthermore, these coping strategies and the experience of positive emotions should mediate the relationships between resilience and health and well-being outcomes (note that several primary studies support this assertion: Fredrickson et al., 2003; Tugade & Fredrickson, 2004; Ong et al., 2006, 2010). Many studies, however, do not measure emotions precisely at a time of stress but rather retrospectively through measures of positive affect. I do not discard this meaningful data in my analyses, but, whenever possible, treat trait positive affect versus state positive emotions as a moderator.

## Outcomes Associated with Resilience

In summary, resilience represents the ability to withstand stress and bounce back from adversity, and it may be characterized by the experience of positive emotions and the employment of adaptive coping strategies, particularly problem-focused, meaning-focused, and benefit-focused coping. This ability to withstand stress is not without consequences, and this study considers the role resilience plays in predicting three broad classes of outcomes: mental health, physical health, and well-being. A large body of research suggests that resilience is positively associated with desirable outcomes in each of these domains. However, a series of theoretical and methodological moderators, as well as statistical artifacts, may lead effect sizes to vary across primary studies. To address this, I use meta-analysis to provide point estimates for relationships between resilience and a variety of outcomes.

**Resilience and mental health.** Many studies consider the role resilience plays in predicting mental health. For example, studies have found negative relationships between resilience and common affective disorders, such as depression (e.g., Hjemdal et al., 2007) and anxiety (e.g., Hjemdal, Vogel, Solem, Hagen, & Stiles, 2011), and undesirable mental states, such as exhaustion (e.g., García and Calvo, 2012), fatigue (e.g., Saksvik-Lehouillier et al., 2012), and hopelessness (e.g., Rew, Taylor-Sheehafer, Thomas, & Yockey, 2001). I examine a number of mental health variables, but pay special attention to the relationship between resilience and posttraumatic stress disorder (PTSD). Both resilience and PTSD are similar in that they reflect responses to trauma, yet they differ in terms of valence. Namely, resilience is characterized by successful adaptation to stress (i.e., finding meaning in and growing from adversity; Tugade & Fredrickson, 2004), whereas PTSD reflects the converse (DSM IV-TR, 2000). Interestingly, some studies have reported correlations as low as  $-.15$  (Bensimon, 2012) between resilience and

PTSD, and this study seeks to clarify the extent to which high levels of resilience predicts low levels of PTSD by accounting for moderators and statistical artifacts. A clarification of this relationship is especially important given the influx of resilience training programs that claim to help protect individuals from PTSD (e.g., Comprehensive Soldier Fitness; Casey, 2011). Thus, I consider PTSD and other related mental health outcomes in my analyses.

**Resilience and physical health.** There is considerable research demonstrating that psychological variables can influence physical health, and both resilience and related factors are no exception. For example, Danner, Snowdon, and Friesen (2001) demonstrated that positive affect, hypothesized to be associated with resilience, early in life is related to successful aging and longevity, and other studies directly demonstrate that resilience is related to desirable aspects of physical health (e.g., Smith, 2006; Nygren et al., 2005) and health behaviors, such as abstention from substance use (Block et al., 1988; Barefoot et al., 1989). Thus, this study seeks to aggregate these findings and clarify the relationship between resilience and physical health.

**Resilience and well-being.** Folk wisdom suggests that the ability to withstand stress is positively associated with well-being variables, and research typically supports these assertions. However, the magnitudes of the effects are also quite variable. For example, correlations between resilience and life satisfaction have been observed to be as high as .54 (White, Driver, & Warren, 2012) and as low as .32 (Liu et al., 2012). I provide point estimates of relationships between resilience and life satisfaction and other well-being variables, respectively, taking into consideration moderators and statistical artifacts that may cause the effects to vary across studies.

### **Moderators of the Resilience-Outcome Relationship**

The effect sizes of the relationships between resilience and outcome variables often vary across studies, and although some of this variation is likely accounted for by statistical artifacts,

the present study also explores whether substantive moderators of the resilience-outcome relationships may exist. In this meta-analysis, I consider characteristics of the sample (i.e., target population), characteristics of the study design (i.e., single vs. multi-source, cross-sectional vs. longitudinal), and characteristics of the measures (i.e., scales) as moderators, wherever possible.

**Characteristics of the sample.** Resilience reflects the ability to bounce back from adversity and, though a surface level analysis of the research suggests that a high level of resilience is always beneficial, it may be that resilience is more important for certain groups than others. For example, Bonnano (2012) and other researchers endorsing the situational approach (e.g., Luthar et al., 2000; Masten, 2001) argue that resilience can only occur in response to an aversive event (Bonnano, Westphal, & Mancini, 2011; e.g., a sample of earthquake survivors; Wang, Shi, Zhang & Zang, 2010). Under this approach, resilience may not be particularly important in everyday life, but may increase in importance after a critical event. Similarly, resilience may be more important in clinical samples, where individuals constantly need to cope with adversity, than in non-clinical samples. However, this effect may be more difficult to detect in these samples due to statistical artifacts such as range restriction (e.g., a focus on a sample of individuals who are extremely depressed may obscure the relationships between resilience and depression through a restriction of range on either or both of the independent and dependent variables). Meta-analysis can shed light on these assertions by demonstrating whether resilience is systematically differentially related to outcomes for different groups or samples, while taking into account statistical artifacts. Thus, I consider both presence of a critical event and sample classification (i.e., clinical or not) as moderators.

**Study design.** Correlational studies are important because they provide estimates of the relationships between resilience and other variables, but they fall short in that they cannot

provide evidence for causality. One cannot assess whether resilience directly influenced the outcome of interest, whether the outcome influenced resilience, or if the observed relationship between resilience and an outcome of interest is due to a third variable. Bonanno (2012) cites this as a major shortcoming of resilience research to date. This meta-analysis does not include experimental studies (see below for rationale for exclusion), and therefore it is difficult to adequately address the causality issue here. Nonetheless, I code wherever possible for studies in which resilience and a related outcome are measured before and after the presence of an aversive event (e.g., before and after the September 11 attacks, Fredrickson et al., 2003; see Shadish, Cook, & Campbell, 2002 for an example of the pretest-posttest design), though I am unsure if there are enough studies in the literature to adequately complete this analysis.

Additionally, I assess whether there are systematic differences between estimates of the magnitude of relationships between resilience and predictors and outcomes when longitudinal designs versus cross-sectional designs are used and when data regarding resilience and outcomes variables are collected from a single or multiple sources. It is expected that cross-sectional and single-source designs may be more strongly susceptible to common method bias (see Podsakoff, MacKenzie, Lee, and Podsakoff, 2003 for a review). Moderation effects here would be important, as they would suggest that researchers should be cautious in how they interpret the results of primary studies based on the design of the study.

**Measurement characteristics.** A host of resilience scales have been developed and used in the literature, and most of these scales posit different lower-order dimensions of resilience. Some scales endorse dimensions in line with the individual differences approach (e.g., Block & Kremen, 1996), other scales measure protective factors (e.g., Baruth & Carroll, 2002), and still other scales are mixed in that they incorporate both situational and individual difference

approaches (e.g., Friborg et al., 2003). The personality construct of hardiness (Kobasa, 1979; Maddi 1999, 2002; Sinclair & Tetrick, 2000) has also emerged as a construct conceptually similar to resilience, and researchers observe similar patterns of relationships between hardiness and outcomes (for a recent meta-analysis of the hardiness construct, see Eschelmann, Bowling, & Alarcon, 2010). Researchers often use resilience and hardiness scales interchangeably, and this is potentially problematic, as research has not yet systematically addressed the extent to which resilience and hardiness overlap. Similarly, researchers often use interchangeably individual differences-based and situationally-based resilience scales, creating a challenging situation for the interested researcher who wishes to discern what constitutes resilience and what it is related to. In this study, I address this gap by treating measurement type (i.e., hardiness vs. resilience; individual differences-based resilience, situationally-based resilience, and mixed situational and individual difference-based resilience measures; see explanation below) as a moderator. Wherever possible, I also explore the effects of particular scales as moderators. Taken together, these moderation tests further specify the similarities and differences between various approaches (e.g., situational vs. individual; resilience vs. hardiness vs. grit). Additionally, these results should help researchers and practitioners to make more informed decisions when selecting resilience measures for future use.

## Method

### Database Search

To identify articles for inclusion, first I searched the PsycInfo database for peer-reviewed articles with general search terms of “Resilience” and related constructs (e.g., hardiness, grit, protective factors). I further examined the reference sections of major resilience scales in the literature (i.e., Bartone, 2007, Bartone, Smith, Dahlstrom, & Williams, 1989, Baruth & Carroll, 2002; Block & Kremen, 1996; Campbell Sills & Stein, 2007; Connor & Davidson, 2003, Duckworth, Peterson, Matthews & Kelly, 2007; Duckworth & Quinn, 2009; Friborg et al., 2003; Hystad, Eid, Johnson, Laberg, & Bartone, 2010; Jew, Green, & Kroger, 1999; King, King, Fairbank, Keane, & Adams, 1998; Letzring et al., 2005; Taft, Stern, King, & King 1999; Vaishnavi, Connor, & Davidson, 2007; Wagnild & Young, 1993) and articles that have cited these original scale development efforts for articles for inclusion. I also examined all articles in the Eschelmann et al. (2010) hardiness meta-analysis for inclusion and searched articles citing that meta-analysis.

Additionally, some research questions (i.e., mediation and incremental validity) required a full meta-analytic correlation matrix to answer these questions. Wherever possible, cells of the correlation matrix not including resilience were filled in with estimates from previously conducted meta-analyses. In some cases meta-analytic estimates did not already exist and, due to the immense size of some of these literatures and time constraints, I was unable to conduct additional searches to conduct these meta-analyses.

## **Exclusionary Criteria**

To be included in my analyses, a study must have included an individual-level measure of resilience; syllogistic studies, largely from the situational approach, defining resilience by its outcome were excluded (e.g., Banyard & Cantor, 2004 defined resilience as experiencing psychological well-being in spite of previous trauma). I excluded articles that did not report a correlation or an effect size that could be converted to a correlation (e.g.,  $t$  or  $F$  with one group). I further excluded articles making efforts to change or train resilience as the evaluation of the malleability of resilience is beyond the scope of this study (e.g., Burton, Pakenham, & Brown, 2010). I also excluded articles that did not report the entire correlation matrix (i.e., only reported statistically significant relationships) for the variables in their study, as these estimates would be upwardly biased (for a discussion of publication bias, see Hunter & Schmidt, 2004). Last, in a similar fashion to Eschelman et al. (2010), articles that studied resilience and hardiness in a specific domain (e.g., family hardiness: McCubbin, Thompson, & McCubbin, 1996, as cited by Eschelman et al., 2010) were also excluded.

## **Coding of Articles**

A team of research assistants and I coded all of the articles following a detailed coding scheme. Primarily, the effect size (converted to a correlation, if required) for the relationship between resilience and the previously specified antecedents, mediators, and outcome variables were coded. Additionally, raters coded other previously specified characteristics of the article for moderator analyses.

**Personality and situational characteristics.** A number of dispositional (e.g., big-five) and situational (e.g., family support) factors were coded; researchers recorded the names of all variables as identified by the study authors, as well as the measures that the authors used to



assess these variables, their reliabilities, and the sample sizes that the analyses were based on. It should be noted that, in a few cases, authors used variables for unconventional purposes (e.g., Sinclair and Tetrick, 2000 used the PANAS negative affect subscale as an analog for neuroticism; Watson et al., 1988). In such cases, variable classification was based on the original intent of the measure, rather than the purpose specified by the authors who used the measure. Also, two studies (Maddi & Khoshaba, 1994; Maddi, Khoshaba, Persico, Lu, Harvey, & Bleecker, 2002) used MMPI subscales (e.g., social introversion) that substantially overlapped with traits in the big-five taxonomy (e.g., extraversion). So as not to discard this potentially meaningful information, these variables were reclassified into their respective big-five traits, following recommendations by Hough and Ones (2001).

**Emotions.** Coders included all measures of positive emotions and positive affect, as well as negative emotions and negative affect. They also recorded the specific measure used (e.g., PANAS: Watson et al., 1988) and the time interval specified in the instructions (e.g., past week, past two weeks, in general). A coder who was not involved in the original classification and I then used this information to classify the measures as “state” and “trait” based measures. State measures or positive emotions were operationally defined to be experiences of positive emotions within the past two weeks, whereas longer experiences of positivity were deemed more indicative of dispositional affect (i.e., trait positive affect; see Ekman, 1994 for a discussion of this issue).

**Coping style.** Coders noted the type of coping style reported by the study authors. As expected, there were few to no studies addressing relationships between resilience and benefit and meaning finding. Furthermore, I discovered that there was substantial divergence in how researchers conceptualized the construct domain of coping. A member of the research team and I

revisited the coping literature and created a working taxonomy to adequately capture the coping construct space. We recoded and, wherever necessary composited, coping strategies into three broader dimensions of problem-focused coping (i.e., taking proactive behaviors towards resolving an issue), emotion-focused coping (i.e., taking steps to resolve or manage one's feelings about an issue), and avoidant-focused coping (i.e., taking no steps to address or avoiding an issue at hand).

**Criterion.** Coders noted the names and reliability of all criterion measures in the study, as well as the sample size used for the specific analysis. Furthermore, each of these relationships was coded into categories of physical health, mental health, or other using the following criteria: physical health refers to tangible aspects of health (e.g., presence of a backache), mental health refers to aspects of psychological health (e.g., depression), and well-being refers to variables addressing one's general level of satisfaction with life (e.g., subjective well-being).

**Population characteristics.** Coders identified whether resilience was measured in a sample that experienced a critical event (e.g., resilience measured in a sample of earthquake survivors) or not. Similarly, coders noted whether the sample was clinical (i.e., a specific mental health population) or not and recorded relevant information (e.g., sample of individuals diagnosed with depression or sample of individuals diagnosed with anxiety). They also noted whether or not the sample consisted of individuals enlisted in the military service.

**Study design.** Coders noted whether each study was cross-sectional (i.e., measured the relationship between resilience and external correlates at a single point in time) or longitudinal (i.e., variables to assess a resilience-outcome relationship were measured at different times), as well as the length of time lag in any longitudinal studies. Additionally, for those samples identified as consisting of critical events samples (see above), coders noted if the researchers

used a pretest/posttest design, measuring resilience and outcome(s) before and after an aversive event; and they coded the correlations between resilience and outcomes at each time point wherever possible. Coders also noted whether reported relationships were single-source (e.g., one individual rates resilience) or multi-source (i.e., two or more individuals report resilience) and they recorded who conducted the ratings (e.g., self, parent, spouse).

**Resilience vs. hardiness vs grit.** Coders classified whether the author identified the measure used as a resilience measure, hardiness measure, or grit measure and the specific measurement instrument used. Typically this information was noted directly in the primary study but, if necessary, the coder referred back to the primary article introducing the measurement scale. Hardiness measures were defined as those that assess the three dimensions of commitment, control, and challenge (Eschleman et al., 2010; Funk, 1992; Sinclair & Tetrick, 2000). Grit was defined as perseverance for long-term goals (Duckworth et al., 2007). Resilience was defined more generally as one's ability to bounce back from stress.<sup>1</sup>

### **Rater Training**

Three graduate research assistants and I conducted the searching and coding process. First, I provided each research assistant with a detailed document outlining each of the aforementioned exclusionary criteria and providing examples. We met as a group to discuss this document, and coders were able to ask questions. Next, we practiced determining eligibility on a

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<sup>1</sup> Coders also identified whether the scale used taps into the individual approach, the situational approach, or a mixed model approach to resilience. On the whole, individual differences-based scales ask questions directly tapping into personality and the ability to bounce back; questions about the individual environment are not included (operationally defined as a measure including 75% more items assessing individual differences). Situational measures, on the contrary, typically do not include more than a few items assessing the individual component of resilience and focus on situational factors (operationally defined as a measure including 75% or more items assessing the situation or protective factors). Last, mixed-model measures tap into both the individual and situational approaches similarly (i.e., does not meet inclusion criteria for individual differences or situational approach). Almost all scales were identified as mixed-model, so this comparison was not included in any of the analyses.

subset of 5 studies. Then coders independently evaluated 10 studies per week until 100% agreement was reached. This training process took four weeks.

After we evaluated all potential articles that resulted from the use of our search terms, the three research assistants and myself underwent another round of training, this time for coding. I provided the three coders with a codebook, and we practiced coding a subset of five studies as a group, extracting all information as per the coding guidelines above. We met as group to discuss and resolve any discrepancies, and again independently coded 10-15 articles per week until we reached 100% agreement. After 100% agreement was reached, we each coded articles independently. Finally, a researcher who was not involved in the coding process and I spot-checked approximately 75% of the articles and generally found few errors.

### **Meta-Analysis Procedures**

I used Hunter and Schmidt's (2004) psychometric meta-analysis, which uses a random-effects model. A random-effects model was chosen because the studies in the meta-analysis did not necessarily come from one population with a common effect size. Furthermore, a random-effects model allowed generalization of the results of the meta-analysis beyond the specific studies provided (Kissamore & Brannick, 2008).

A rater not involved in the initial coding process and I first inspected the coded articles for each assessed relationship in order to identify dependencies in the data, compositing as necessary to maintain independence of effects (see Webb, Shavelson, & Aertel, 2006 for a discussion of this issue). For example, Weigold and Robitsek (2011) analyzed the relationships between hardiness at the facet level and anxiety, and I composited across the three dimensions of hardiness (i.e., commitment, control, and challenge) to obtain the effect size estimate linking overall hardiness and anxiety. Similarly, Bitsika, Sharpley, and Bell (2013) reported

relationships between resilience, anxiety, and depression, and I composited across anxiety and depression to obtain the effect size between resilience and overall mental health (though these relationships were retained as independent and contributed separate estimates for the analyses for anxiety and depression, respectively). Note that whenever possible, I chose to use composites, which takes into account intercorrelations between the variables of interest. However, if intercorrelation information was not available, effects were averaged in order to maintain independence within analyses, in line with previous meta-analyses (e.g., Kuncel, Hezlett, & Ones, 2003).

Then, I assessed meta-analytic bivariate relationships between resilience and relevant correlates. I computed artifact distributions (see Table 1) to correct these meta-analytic estimates for unreliability in both the predictor and criterion to estimate construct-level relationships. In addition to meta-analytic mean estimates, I computed 95% confidence intervals and 90% credibility intervals around each estimate. I also conducted relative weights analyses, which required complete meta-correlation matrices. Cells of these matrices not assessing relationships with resilience were filled in with estimates from previously conducted meta-analyses whenever possible (see Table 2). This allowed, wherever possible, testing the hypothesis regarding incremental validity. To test moderation hypotheses, the confidence intervals around meta-analytic point estimates were compared; non-overlapping confidence intervals were indicative of moderation.

## Results

### Meta-Analytic Search

Search of the PsycInfo database resulted in an initial pool of 11,860 studies. These studies were then evaluated per the exclusionary criteria listed in the methods section and 432 studies were retained and coded for analysis.

### Individual Differences and Resilience

I first report bivariate meta-analytic relationships between overall resilience (i.e., collapsing across measures of resilience, hardiness, and grit) and a number of individual difference variables. The overall hypothesis that resilience would be positively, and at least moderately correlated, with each personality trait in the five-factor model was supported (see Table 3). Furthermore, the hypotheses that emotional stability, openness to experience, and extraversion would yield the highest correlations with overall resilience were partially supported. Resilience was highly correlated with emotional stability ( $\rho = .51$ ,  $k = 27$ ) and openness to experience ( $\rho = .55$ ,  $k = 24$ ). However, the relationship with extraversion was somewhat lower ( $\rho = .48$ ,  $k = 28$ ), though still quite substantial, and the relationship with conscientiousness was the highest among the big-five traits ( $\rho = .64$ ,  $k = 21$ ). Agreeableness also exhibited a moderate, albeit lower, correlation with overall resilience ( $\rho = .40$ ,  $k = 20$ ). Note that the 95% confidence intervals overlapped for all of relationships between each big-five personality trait and overall resilience.

Of interest, I also explored the relationships between resilience and a number of other individual difference variables, such as intelligence, optimism, locus of control, positive and negative affect and self-esteem (see Table 3). All of these correlations were in the expected direction. For example, intelligence was not associated with overall resilience ( $\rho = -.05$ ,  $k = 9$ ), whereas self-esteem ( $\rho = .69$ ,  $k = 13$ ) and optimism ( $\rho = .64$ ,  $k = 42$ ) were highly associated with overall resilience.

Relationships between the big-five personality traits as a set and overall resilience were then explored, as previous research has shown that there are small to moderate correlations between the big-five (Ones, Viswesvaran, & Reiss, 1996). I created a meta-analytic correlation matrix between resilience and the big-five, drawing on previous meta-analyses for inter-correlations between the five traits (Ones et al., 1996; see Table 1), and used relative weights analysis to examine the relative contribution of each personality trait in predicting overall resilience (Johnson, 2000; see Table 4). Results show that the big-five as a set account for almost all of the variance in overall resilience (94.7%). Furthermore, although each big-five trait contributed uniquely to the prediction of overall resilience, conscientiousness, openness, and extraversion (in that order) contributed the most (i.e., 81% of the variance explained in overall resilience are due to these three traits).

**Resilience vs. hardiness.** Interestingly, it appears that resilience and hardiness are not isomorphic constructs, as results differed when they were considered separately. Note that I was unable to examine grit separately due to the small numbers of studies that focused on this construct. Consistent across the big-five, correlations were lower for measures of resilience than measures of hardiness, suggesting that resilience may be more distinct from the traits in the big-five model than hardiness. For example, the relationship between conscientiousness and

hardiness ( $\rho = .54$ ,  $k = 7$ ) was substantially higher than the relationship between resilience and conscientiousness ( $\rho = .37$ ,  $k = 11$ ).

When examining the big-five as a set in relative weights analyses, the big-five explained 56.8% of the variance in resilience and 100% of the variance in hardiness. Furthermore, the pattern of which big-five traits was most predictive shifted based on whether one was examining resilience or hardiness, such that conscientiousness, extraversion, and neuroticism explained most of the variance in resilience (i.e., 73.8% of the explained variance, see Table 4), whereas conscientiousness, openness, and extraversion explained most of the variance in hardiness (i.e., 80.9% of the variance explained, see Table 4). Thus, this suggests that the nomological networks of hardiness and resilience differ due to their differential relationships with existing personality constructs.

**Measures.** The patterns of relationships generally did not differ across resilience-specific measures, suggesting that these measures may not be meaningfully different from one another (see Table 5). However, in the case of hardiness measures, some differences emerged between the Personal Views Survey (Maddi, 1997) and the Dispositional Resilience Scale (Bartone et al., 1989). Specifically, the Personal Views Survey was not related to either agreeableness ( $\rho = -.03$ ,  $k = 4$ ) or conscientiousness ( $\rho = -.02$ ,  $k = 4$ ), whereas the Dispositional Resilience Scale was consistently associated with all of the big-five traits. Furthermore, the credibility intervals for both the Personal Views Survey-agreeableness and Personal Views Survey-conscientiousness relationships included zero, suggesting the presence of heterogeneity and other unaccounted for moderators. Note that these analyses generally relied on small numbers of studies and may therefore be influenced by second order sampling error.



**Characteristics of the sample.** Wherever possible, relationships with overall resilience were broken down by sample type (i.e., clinical/non-clinical; military/civilian; critical event/non-critical event; see Table 6). However, analyses could not be conducted for all of these subcategories due to a lack of studies in certain categories. The preliminary trend suggests that there were neither significant differences between clinical and non-clinical samples nor critical event and non-critical event samples, though there were generally very few military or critical events studies in the database, making these results tentative. In contrast, correlations with individual differences were generally higher for military samples than non-military samples, though the confidence intervals often overlapped for these estimates. For example, extraversion was strongly associated with overall resilience ( $\rho = .62$ ,  $k = 2$ ) in military samples and only moderately associated with overall resilience in civilian samples ( $\rho = .39$ ,  $k = 26$ ).

### **Situational Factors and Resilience**

I also provide meta-analytic estimates of the relationship between social support and resilience, reporting results by narrower dimensions of social support (i.e., friend, family, work) whenever possible (see Table 7). Overall social support was moderately related to resilience ( $\rho = .29$ ,  $k = 56$ ), accounting for 8% of variance in resilience. Additionally, support from friends ( $\rho = .29$ ,  $k = 7$ ), family ( $\rho = .40$ ,  $k = 11$ ), and individuals in the workplace (e.g., co-workers, supervisors;  $\rho = .35$ ,  $k = 7$ ) all demonstrated moderate relationships with resilience. The confidence intervals for each of these estimates overlapped, suggesting that the magnitude of these effects may not be different from one another. Unfortunately, I was unable to find intercorrelations between the various types of social support in the literature and, therefore, could not perform a relative weights analysis regarding differential impact of different types of social

support in predicting resilience. Thus, it is currently unclear whether support from certain sources is more important in predicting or promoting resilience.

**Resilience vs. hardiness.** Relationships with overall social support were not the same for hardiness and resilience (see Table 7). Social support was more strongly related to hardiness ( $\rho = .40$ ,  $k = 30$ ) than resilience ( $\rho = .16$ ,  $k = 26$ ), and the confidence intervals for these estimates did not overlap. However, there were insufficient studies to examine whether these moderating effects held for friend, family, and workplace social support. Nevertheless, these initial results suggest that social support is more strongly correlated with hardiness than resilience, further highlighting that the two constructs may not be equivalent.

**Measures.** The magnitude of correlations with overall social support was similar across different hardiness and resilience measures (see Table 8). However, the small number of studies available for each measure makes these results tentative. Unfortunately, there were not enough studies to explore differential relationships between friend support, family support, and workplace support and particular measures of resilience and hardiness.

**Characteristics of the sample.** The correlation between overall resilience and social support was higher in military ( $\rho = .43$ ,  $k = 5$ ) than civilian samples ( $\rho = .24$ ,  $k = 51$ ), and the confidence intervals for these two estimates did not overlap. Similarly, the correlation was higher for critical event-samples ( $\rho = .37$ ,  $k = 4$ ) than non-critical event samples. ( $\rho = .52$ ,  $k = 26$ ), though the confidence interval for these estimates did overlap slightly (see Table 9). Again, there were not enough studies to consider how characteristics of the sample may differentially influence the relationships between friend, family support, and workplace support and resilience.

## **Incremental Validity of Situational and Personality Factors in Predicting Resilience**

At present, the meta-analytic relationship between each big-five personality dimension and social support is unknown in the research literature. Thus, I could not create a meta-analytic correlation matrix to assess the predictive power of situational versus personality factors in predicting resilience. Results do show that bivariate relationships between resilience and personality traits are much stronger than relationships between resilience and social support. However, without understanding the relationships between big-five personality traits and social support, the extent to which social support increments over personality in predicting resilience remains unclear.

## **Processes Associated with Resilience**

Previous research has highlighted the important role emotions play in linking resilience with outcomes (e.g., Ong et al., 2006, 2010). I examined relationships between emotional states (i.e., experiences of positive and negative emotions within the past two weeks) and coping strategies with resilience, respectively (see Table 10). First, it should be noted that the estimates of relationships with resilience were somewhat lower for emotions than dispositional affect (the confidence intervals did not overlap for positivity, and they only slightly overlapped for negativity). Furthermore, as expected, overall resilience was positively associated with the experience of positive emotions ( $\rho = .46$ ,  $k = 13$ ) and negatively associated with the experience of negative emotions ( $\rho = -.35$ ,  $k = 15$ ). Overall resilience was negatively related to avoidant coping ( $\rho = -.30$ ,  $k = 26$ ), positively associated with problem-focused coping ( $\rho = .42$ ,  $k = 36$ ), and not related to emotion-focused coping ( $\rho = .06$ ,  $k = 27$ ). However, the 90% credibility interval for the relationship between overall resilience and emotion-focused coping contained zero, and an examination of the primary studies demonstrated that there were numerous positive

and negative correlations between emotion-focused coping and overall resilience. These results indicate heterogeneity, such that other unexamined variables may moderate the relationship between emotion-focused coping and overall resilience.

I initially theorized that positive emotions and subsequent problem-focused coping behaviors would mediate the relationships between resilience and outcomes of interest (i.e., mental health, physical health, and well-being). Unfortunately, due to the size of these literatures, time constraints prohibited me from searching, coding, and obtaining meta-analytic correlations between positive emotions and various outcomes of interest as well as meta-analytic estimates between problem-focused coping and most outcomes of interest. Thus, in the current study, I did not perform tests of mediation, using meta-analytic estimates, for these relationships.

**Resilience vs. hardiness.** With the exception of positive emotions, where resilience ( $\rho = .61$ ,  $k = 8$ ) demonstrated a stronger relationship than hardiness ( $\rho = .36$ ,  $k = 5$ ), there were no substantive differences in correlations between hardiness and resilience and proposed mediators (i.e., negative emotions, coping strategies; see Table 10).

**Measures.** There were generally no differences in the magnitudes of correlations between resilience and negative emotions, problem-focused coping, and avoidant coping, respectively, across different measurement tools (see Table 11). Interestingly, positive emotions was more strongly associated with the Connor-Davidson Resilience Scale ( $\rho = .61$ ,  $k = 2$ ) than the Ego-Resiliency Scale ( $\rho = .52$ ,  $k = 6$ ). Furthermore, both the Connor-Davidson Resilience Scale ( $\rho = .41$ ,  $k = 2$ ) and the Brief Resilience Coping Inventory ( $\rho = .29$ ,  $k = 4$ ) exhibited moderate correlations with emotion-focused coping, but the Resilience Scale ( $\rho = .05$ ,  $k = 3$ ) was not found to be associated with emotion-focused coping.

**Characteristics of the sample.** There were no differences across sample types (i.e., clinical/non-clinical, military/civilian, critical event/non-critical event) in the magnitudes of relationships between overall resilience and negative emotions, positive emotions, avoidant-focused coping, and problem-focused coping, respectively (see Table 12). However, emotion-focused coping was moderately negatively related to overall resilience in military samples ( $\rho = -.44$ ,  $k = 3$ ) and positively related to overall resilience in civilian samples ( $\rho = .11$ ,  $k = 23$ ), and the 95% confidence intervals for these two estimates did not overlap. Furthermore, emotion-focused coping was positively related to resilience in critical events samples ( $\rho = .37$ ,  $k = 2$ ), but was unrelated in non-critical events samples ( $\rho = .05$ ,  $k = 25$ ). There were insufficient studies to examine whether the relationship between emotion-focused coping and overall resilience varied for clinical versus non-clinical samples.

### **Resilience and Health and Well-Being Outcomes**

I also examined the bivariate relationships between overall resilience and mental health, physical health, and well-being (see Table 13). As expected, overall resilience was moderately and negatively associated with overall mental health ( $\rho = -.45$ ,  $k = 120$ ), anxiety ( $\rho = -.43$ ,  $k = 39$ ), depression ( $\rho = -.50$ ,  $k = 68$ ), and PTSD ( $\rho = -.38$ ,  $k = 22$ ). Additionally, overall resilience was negatively associated with overall physical health ( $\rho = -.36$ ,  $k = 69$ ) and positively associated with overall subjective well-being ( $\rho = .45$ ,  $k = 48$ ). Resilience was also related to specific aspects of well-being, such as subjective happiness ( $\rho = .34$ ,  $k = 3$ ), burnout ( $\rho = -.37$ ,  $k = 16$ ), and sense of purpose in life ( $\rho = .59$ ,  $k = 14$ ).

**Incremental validity of resilience in predicting outcomes.** I next explored the extent to which resilience increments over the big-five personality traits to predict mental-health and well-being outcomes, drawing upon correlations from previous meta-analyses (i.e., inter-correlations

among big-five personality traits and correlations between outcomes and the big-five personality traits: DeNeve & Cooper, 1996; Kotov, Gammet, Schmidt, & Watson, 2010; Ones et al., 1996; see Table 1). Results show that overall resilience (i.e., combining across resilience, hardiness, and grit) increments very little over the big-five personality traits as a set in predicting outcomes (average  $\Delta R^2 = .01$ ; see Table 14 for a summary and Table 15-22 for specific analyses), with  $\Delta R^2$  estimates ranging from .00 to .05 depending on the outcome. For example, overall resilience provided the least incremental validity over the big-five personality traits in predicting PTSD ( $\Delta R^2 = .00$ ; See Table 14 and 20) and subjective happiness ( $\Delta R^2 = .00$ ; see Table 14 and 16) and the most incremental validity in predicting overall subjective well-being ( $\Delta R^2 = .05$ ; see Table 14 and 19).

I also performed these analyses in reverse, assessing the incremental validity of the big-five personality traits as a set in predicting outcomes over and above overall resilience. The big-five always provided incremental validity in predicting outcomes above overall resilience ( $\Delta R^2$  ranged from .01 to .18, average  $\Delta R^2 = .10$ ; see Table 14 for a summary and see Table 15-22 for specific analyses), though the increment was small in the overall subjective well-being analysis ( $\Delta R^2 = .01$ ; see Table 14 and 19). It should be noted that there are currently no meta-analytic estimates of the relationships between social support and outcomes of interest; therefore, I could not assess the incremental validity of resilience over social support (and vice-versa) in predicting outcomes of interest.

**Resilience vs. hardiness.** With the exception of PTSD, where hardiness ( $\rho = -.50$ ,  $k = 5$ ) was more strongly related to PTSD than resilience ( $\rho = -.33$ ,  $k = 17$ ), there were no appreciable differences between the relationships between hardiness and resilience and health and overall subjective well-being (see Table 13), though it should be noted that not there were not enough

studies to analyze differential relationships between resilience and hardiness and more specific well-being outcomes (i.e., dispositional happiness, dispositional hope, purpose in life, and spirituality). I also explored the incremental validities of resilience and hardiness in predicting outcomes over and above the big-five personality traits, separately, and results were generally consistent with the overall resilience analyses. On average, hardiness provided slightly more incremental validity over the big-five (average  $\Delta R^2 = .03$ ; see Table 14 and Table 31-38) than did resilience (average  $\Delta R^2 = .02$ ; see Table 14 and Tables 15-22), though in both cases the incremental validity estimates were relatively small in magnitude (see Table 14 and Table 15-22). I also explored the incremental validity of the big-five as a set in predicting outcomes over and above hardiness (average  $\Delta R^2 = .09$ ; see Table 14 and Table 15-22) and resilience (average  $\Delta R^2 = .12$ ; see Table 14 and Table 15-22); results were consistent with the overall resilience analyses, the big-five consistently incremented in prediction over resilience and hardiness.

**Measures.** There were generally no differences in the relationships between overall mental health and resilience based on the measure used, though in some cases studies using Friborg et al.'s (2003) conceptualization yielded higher estimates ( $\rho = -.66$ ,  $k = 5$ ) than other measures. Regarding PTSD, estimates were higher for studies based on the Personal Views Survey ( $\rho = -.56$ ,  $k = 2$ ) than the Dispositional Resilience Scale ( $\rho = -.41$ ,  $k = 3$ ), though these results should be interpreted tentatively given the small numbers of studies involved. There were also no differences in relationships with depression or physical health based on the measure used (see Table 38).

Differences in relationships between hardiness and overall subjective well-being were found by measure for the Cognitive Hardiness Inventory ( $\rho = .81$ ,  $k = 2$ ), the Dispositional Resilience Scale ( $\rho = .54$ ,  $k = 4$ ), and the Personal Views Survey ( $\rho = .41$ ,  $k = 8$ ). However,

generally these estimates are based on a modest number of studies. There were also some differences in the magnitude of relationships between different resilience measures and well-being, though these differences did not appear to be systematic (see Table 23).

**Characteristics of the sample.** Characteristics of the sample did not influence the magnitude of relationships between resilience and overall mental health. However, relationships did vary for specific aspects of mental health (see Table 24). Resilience was more strongly, negatively associated with PTSD in military ( $\rho = -.45$ ,  $k = 11$ ) than civilian ( $\rho = -.27$ ,  $k = 11$ ) samples and was also more strongly, negatively associated with depression in military ( $\rho = -.56$ ,  $k = 5$ ) than civilian samples ( $\rho = -.48$ ,  $k = 63$ ). Interestingly, there were no meaningful differences in the relationship between overall resilience and anxiety for military and civilian samples. However, resilience was more strongly associated with anxiety in clinical samples ( $\rho = -.63$ ,  $k = 2$ ) than non-clinical samples ( $\rho = -.42$ ,  $k = 37$ ).

In contrast to results for overall mental health, overall physical health was less strongly associated with resilience in military samples ( $\rho = -.12$ ,  $k = 5$ ) than civilian samples ( $\rho = -.43$ ,  $k = 64$ , see Table 24). There were also no differences between clinical and non-clinical samples in the relationships between overall resilience and physical health. Unfortunately, there were not enough studies to examine differences between critical event and non-critical event samples in the relationship between overall resilience and physical health.

There were also no differences in the relationship between overall resilience and overall subjective well-being based on the type of sample (i.e., military vs. civilian, clinical vs. non-clinical, and critical event vs. non-critical event). Furthermore, there were not enough studies to examine the differences in the magnitudes of correlations based on sample characteristics for



specific well-being outcomes (i.e., dispositional happiness, dispositional hope, purpose in life, and spirituality).

## **Discussion**

In this paper, I reviewed three decades of resilience, hardiness, and grit research quantitatively. First, I meta-analytically explored issues of construct redundancy between resilience and big-five personality traits. Second, I meta-analytically synthesized situational predictors (i.e., social support) of resilience. Third, I explored relationships between resilience and important health and well-being criteria of interest (i.e., physical health, mental-health, and well-being) and potential mediators of the relationship between resilience and outcomes (i.e., emotions, coping strategies). I was unable to test mediation directly due to lack of meta-analytic estimates of certain relationships. Finally, I assessed whether resilience demonstrated incremental validity in predicting outcomes of interest above and beyond existing personality traits (i.e., big-five). These analyses are especially important, helping us to frame how we think about resilience (i.e., its location within the nomological network) and its practical utility.

### **Fundamental Nature of Resilience**

Overall, resilience appears to overlap quite substantially with extant personality characteristics. The big-five personality traits explains nearly all (i.e., 94.7%) of the variance in overall resilience (i.e., combining resilience, hardiness, and grit). However, the extent of this overlap differs based on whether one is looking at measures of resilience only (56.9%) versus hardiness only (100%), with hardiness measures demonstrating greater overlap with the big-five. Results clearly demonstrate that resilience and hardiness are not isomorphic, and the nomological networks surrounding the constructs are not identical. Specifically, when the big-

five as a set are considered as predictors of the two constructs, they explain all of the variance in hardiness, whereas although the big-five explains a little over half of the variance in resilience (i.e., 56.8%). Thus, hardiness is more strongly related to big-five personality traits than resilience and may be no more than a linear combination and repackaging of extant personality traits. In contrast, resilience seems to be more distinct. Unfortunately, there were not enough studies to conduct meta-analytic investigations focused on grit. Thus, at present, it still remains unclear how conceptually and empirically distinct grit is from both hardiness and resilience.

Results also suggest that resilience and hardiness are highly associated with other aspects of one's disposition, including positive affect, optimism, and self-esteem. Situational factors (i.e., overall social support) demonstrated less overlap with resilience and hardiness. Although I could not perform incremental validity analyses due to lack of inter-correlation information, and thus the exact extent to which social support increments over the big-five personality traits in predicting overall resilience (and resilience versus hardiness) remains unknown at present, I cautiously conclude that resilience and hardiness appear to be more of a trait-like disposition than a situationally dependent state.

### **Processes Associated with Resilience**

I initially drew from existing theory (e.g., Fredrickson et al., 2000; Keltner & Bonanno, 1997; Tugade, 2011) to outline a framework linking resilience to positive emotions, the engagement of adaptive coping strategies, and health and well-being outcomes. Specifically, I suggested that resilient individuals experience positive emotions in the wake of adversity, which in turn broaden one's scope of awareness and enable an individual to engage in adaptive coping strategies. I further argued that these adaptive coping strategies would lead to beneficial health

and well-being outcomes. In other words, I proposed that positive emotions and problem-focused coping would mediate the relationships between resilience and health and well-being outcomes.

I examined relationships between overall resilience and positive affect, differentiating between “state” and “trait” measures. Both positive emotions and positive affect were strongly and positively related to overall resilience, though the relationship was somewhat stronger for positive affect compared to positive emotions. These results provide initial evidence those individuals high in resilience also generally experience more positive emotions.

Problem-focused coping was positively associated with overall resilience, avoidant-focused coping was negatively related to overall resilience, and there was no overall relationship between emotion-focused coping and overall resilience. However, there was substantial heterogeneity in the relationship between overall resilience and emotion-focused coping. This was indexed by the large credibility interval around this relationship that included zero (i.e., there were both positive and negative correlations in the population of correlations between emotion-focused coping and overall resilience) and suggests the presence of additional moderators of this relationship. For example, positively focused emotion-focused coping strategies (e.g., coping through humor) may be qualitatively different from negatively emotion-focused strategies (e.g., venting to a friend), and future research in this domain might consider the valence of emotion-focused coping strategies as a moderator. Unfortunately, it was not feasible to recode and composite each of the emotion-focused coping strategies by valence due to time constraints, but I plan to examine this potential moderating effect in the future.

Interestingly, results showed similar patterns of correlations between resilience and hardiness and positive emotions and coping strategies, respectively, in spite of the differential relationships between resilience and hardiness and dispositional characteristics.

When conducting meta-analytic path analyses, one needs to estimate all inter-correlations between all constructs of interest, and I was unable to obtain inter-correlations for some of these relationships (e.g., the meta-analytic correlation between positive emotions and problem-focused coping). Such meta-analytic effect sizes have not previously been estimated in the literature, and the large sizes of these literatures prohibited my team and me from searching for, coding, and analyzing these correlations at this time. Thus, I could not conduct formal tests of mediation, as proposed. I plan to do so in future work.

### **Utility of Resilience in Predicting Outcomes**

As anticipated, overall resilience was moderately associated with overall physical health, mental health, and subjective well-being in the expected direction. Furthermore, when resilience and hardiness were analyzed separately, they exhibited similar patterns of relationships with health and well-being, although effect sizes were, on average, smaller for resilience than hardiness. Results also demonstrate that overall resilience increments very little above the big-five personality traits as a set in predicting health and well-being outcomes (average  $\Delta R^2 = .01$ ). When hardiness and resilience were considered separately, hardiness (average  $\Delta R^2 = .03$ ) provided slightly more incremental validity over the big-five in comparison to resilience (average  $\Delta R^2 = .02$ ). These results suggest that resilience demonstrates limited utility in predicting outcomes over established personality constructs. Thus, as a general rule, researchers should prefer big-five personality measures to resilience measures.

### **Psychological Resilience in Unique Samples**

Some argue that resilience cannot occur without the presence of an aversive stimulus (e.g., Bonanno et al., 2011; Bonanno, 2012; Luthar et al., 2000; Masten, 2001). Thus, I examined the moderating effect of sample type by comparing three different situations by which an

individual might be faced with adversity. First, I considered the roles of critical events; analyzing samples in which an aversive event (e.g., a natural disaster) occurred separately from those sampled from the general population. There were generally few differences in the pattern of relationships between these two types of samples. Next, I considered whether relationships between resilience and its correlates differed between clinical and non-clinical samples, as clinical samples arguably are experiencing an aversive event. Again, there were generally no meaningful patterns of differences, suggesting that the clinical vs. non-clinical sample distinction did not moderate the magnitude of most relationships. Finally, I also examined whether military vs. non-military sample moderated relationships between resilience and external correlates. Among military samples, resilience was more strongly related to personality and mental health and less strongly related to physical health than in civilian samples, and these confidence intervals generally did not overlap.

In light of the inconsistent results across the three sample types, I cautiously conclude that the experience of adversity does not uniformly alter the relationships between correlates and resilience. It should be noted that I was unable to correct for range restriction in any of these analyses. Individuals in the military, with clinical diagnoses, and who experienced a critical event may be more likely to experience a mental or physical health complaint, and some of these effects may actually be downwardly biased. Also, there were relatively few studies in each of the subcategories, and I could not examine moderating effects by sample types for every outcome of interest or for resilience and hardiness separately. Thus, future work should further explore the differential effects of resilience and hardiness in these unique populations (i.e., critical event, clinical, and military samples).

## Measurement Issues in Resilience

It should be noted that in contrast to the individual differences approach, researchers endorsing the situational approach often syllogistically define resilience and operationalize resilience using differences in outcome measures. For example, Masten (1999) defines resilience as the presence of having experienced adversity early on in life and later performing well in academic and social situations. Unfortunately, because these sorts of studies typically did not measure the construct of resilience directly, I excluded them from the analysis and could not meta-analytically synthesize this aspect of the literature.

It should also be noted that some of the resilience-specific measures are contaminated with items that conceptually overlap with situational predictors of the construct, namely aspects of social support. For example, one item in the Connor-Davidson Resilience Scale (i.e., “I have close and secure relationships”) appears similar to overall social support items (Connor & Davidson, 2003), and an item in the Resilience Scale for Adults (Friborg et al., 2003) taps into family support (i.e., “In my family we are loyal to each other). Although these sorts of items are not present in all resilience measures (e.g., The Resilience Scale has no items reflecting aspects of support; Wagnild & Young, 1993) and type of resilience measure did not moderate the relationships between resilience and overall social support, there were not enough studies to assess the moderating effect of measure on specific aspects of social support (i.e., family support, friends support, and workplace support). Thus, at present, I cannot determine whether the differential relationships between resilience, hardiness, and aspects of social support are due to measurement artifacts or true variation. In other words, the exact extent to which resilience overlaps with aspects of the situation remains unclear due to construct contamination in some of the measurement tools. Nevertheless, results suggest that it is inappropriate to consider resilience

and hardiness as identical constructs, and it is further inappropriate to use measures of these constructs interchangeably.

In contrast to the hardiness literature, which has converged upon a tripartite model (e.g., Eschleman et al., 2010), there is still debate in the literature regarding the underlying factor structure of resilience (Windle, Bennett, & Noyes, 2011); different measures of resilience define the construct space differently and assess different lower-order dimensions (e.g., Burns & Antsey, 2010; Connor & Davidson, 2003; Campbell-Sills & Stein, 2007; Friborg et al., 2005; Gucciardi, Jackson, Coulter, & Mallett, 2011; Jowkar, Friborg, & Hjemdal, 2010; Khoshouei, 2009; Karaimak, 2010; Klohnen, 1996; Letzring et al., 2005; Smith et al., 2008; Wang et al., 2010; Yu & Zhang, 2007). Unfortunately, I was not able to extract sufficient data to meta-analyze the relationships among lower-order dimensions of resilience, due in large part to differences in subscales across measures. Therefore, at present, the precise structure of the construct of resilience remains unclear and requires additional research. However, results also show that there was no clear pattern of differences among resilience measures when examining relationships with external correlates. Although there were a small number of studies for each measure, and therefore these results may be influenced by second-order sampling error, results tentatively suggest that substantive conclusions generally remain unchanged regardless of what resilience-specific measure is used.

Given the greater consensus among hardiness researchers about its underlying structure (i.e., commitment, control, and challenge; Eschleman et al., 2010; Funk, 1992; Sinclair & Tetrick, 2000), it stands to reason that different measures of hardiness should tap into these same underlying dimensions and should exhibit similar patterns of relationships with external correlates. However, results indicate that this was not the case. Specifically, the different forms



of the Dispositional Resilience Scale (Bartone et al., 1989) exhibited, on average, higher correlations with individual differences variables (e.g., extraversion) than different forms of the Personal Views Survey (Maddi, 1997). However, I note that these analyses were based on very few studies. Thus, unaccounted for moderators and second order sampling error may be influencing these estimates. Nevertheless, these preliminary results indicate that different measures of hardiness are not interchangeable, and researchers should thus take special care when choosing a measure of hardiness to employ in their research.

### **Overall Limitations and Implications**

It should be noted there were some analyses I did not conduct as proposed. For example, although I initially proposed to use meta-regression to examine potential moderating effects of sample gender and age on relationships between resilience and outcomes, I realized this analysis would not meaningfully answer my question as to whether or not one's level of resilience is related to one's gender or age. A more appropriate response would have been to focus on direct estimates of these relationships (i.e., the resilience-age and resilience-gender correlations at the individual level of analysis, rather than at the sample or study level of analysis), but I was not able to collect sufficient data to complete these analyses. Thus, these questions remain unanswered, and researchers are encouraged to conduct more studies on these important issues.

I also initially proposed to analyze differences between self -vs. other-report, single- vs. and multi-source data, and cross-sectional vs. longitudinal, but resilience was generally retrospectively, cross-sectionally reported by a single-source, which was the self, in almost every case. Thus, although I was able to delineate the magnitude and direction of the relationships between resilience and a number of theoretically related constructs, taking into account theoretical moderators and statistical artifacts, I was not able to establish temporal precedence for

these relationships. Thus, directionality is not clear, and I cannot definitively state that the constructs I framed as predictors, outcomes, and processes functioned as such. For example, it is not clear whether or not the presence of social support bolsters psychological resilience, or vice-versa, and it is additionally unclear whether or not resilience leads to positive emotions and adaptive coping or the converse. Researchers are encouraged to explore the relationships between resilience and related constructs through a variety of research designs in future work. For example, studies using multiple sources to assess resilience and its correlates (e.g., personality, social support) may help reduce common method bias and in turn provide additional clarity to the relationships between resilience and constructs of interest.

Nevertheless, this is the first study of its kind to establish a nomological network for the resilience construct, bridging and synthesizing three decades of research and over 400 studies. Results show that, as currently measured, there is substantial overlap between resilience and hardiness and extant dispositional characteristics, particularly the big-five personality traits, and less overlap between resilience and hardiness and aspects of the situation, namely social support. Furthermore, although resilience and hardiness are related to positive emotions and adaptive coping strategies, resilience and hardiness offers almost no incremental validity above personality in predicting health or well-being outcomes. The implications of these results cannot be understated. Put simply, results suggest that resilience and hardiness may be nothing more than repackaging of existing constructs. For those psychological researchers interested in health and well-being, resilience and hardiness may not warrant further study.

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## Tables

**Table 1. Artifact Distributions**

	K	Mean Reliability	SD
<b>Resilience Measures</b>			
Overall Resilience	235	.82	.07
Resilience-Specific Measures	112	.85	.07
BRS	9	.81	.08
CDRISC	30	.89	.05
ER89	24	.77	.05
RSA	7	.90	.04
TRS	28	.85	.16
Hardiness-Specific Measures	110	.80	.66
DRS	36	.78	.06
PVS	67	.80	.07
<b>Dispositional Predictors</b>			
Agreeableness	12	.81	.06
Conscientiousness	14	.84	.08
Emotional Stability	22	.86	.06
Extraversion	18	.84	.05
Intelligence	2	.83	.00
Locus of Control	2	.77	.07
Mindfulness	3	.88	.03
Negative Affect	15	.86	.04
Openness to Experience	14	.82	.07
Optimism	28	.80	.06
Positive Affect	11	.83	.10
Self-Esteem	5	.84	.01
<b>Situational Predictors</b>			
Overall Social Support	37	.88	.06
Family	7	.83	.07
Friend	4	.90	.05
Work	6	.87	.08
<b>Processes</b>			
Emotions			
Negative	9	.86	.08
Positive	7	.88	.06
Coping			

**Table 1 (Continued)**

Avoidant-Focused Coping	12	.79	.07
Emotion-Focused Coping	11	.83	.07
Problem-Focused Coping	21	.92	.03
<b>Outcomes</b>			
Burnout	12	.87	.04
Overall Mental Health	49	.88	.06
Anxiety	23	.85	.07
Depression	32	.85	.06
PTSD	10	.92	.03
Overall Subjective Well-Being	29	.85	.09
Happiness	1	.70	.00
Hope	8	.81	.05
Purpose in Life	9	.76	.11
Spirituality	7	.87	.09
Overall Physical Health	17	.83	.05

NOTE: CDRISC = Connor-Davidson Resilience Scale (Connor & Davidson, 2003), BRS = Brief Resilience Scale (Smith et al., 2008); CHS = Cognitive Hardiness Scale (Nowack, 1990); DRS = Dispositional Resilience Scale (Bartone et al., 1989); ER89 = Ego-Resiliency Scale (Block & Kremen, 1996); TRS = The Resilience Scale (Wagnild & Young, 1993); RSA = Resilience Scale for Adults/Adolescents (Friborg et al., 2003; Hjemdal et al., 2006); PVS = Personal Views Survey (Maddi, 1997).

**Table 2. Extant Correlations Used for Relative Weights Analyses**

	1	2	3	4	5
1. Extraversion <sup>a</sup>					
2. Agreeableness <sup>a</sup>	.17				
3. Conscientiousness <sup>a</sup>	.00	.27			
4. Neuroticism <sup>a</sup>	-.19	-.25	-.26		
5. Openness to Experience <sup>a</sup>	.17	.11	.06	-.16	
6. Generalized Anxiety Disorder <sup>b</sup>	-.18	.05	-.29	.34	-.09
7. Happiness <sup>c</sup>	.18	.27	.19	-.25	.06
8. Major Depression <sup>b</sup>	-.25	-.06	-.36	.47	-.08
9. Overall Mental-Health <sup>b</sup>	-.24	.02	-.30	.39	-.09
10. Overall Well-Being <sup>c</sup>	.17	.17	.21	-.22	.11
11. Post-Traumatic stress Disorder <sup>b</sup>	-.29	-.25	-.27	.49	-.07
12. Satisfaction with Life <sup>c</sup>	.33	.17	.16	-.24	.14
13. Unipolar Depression <sup>b</sup>	-.28	-.06	-.35	.42	-.04

Note: From: <sup>a</sup>Ones, Viswesvaran, & Reiss (1996); <sup>b</sup>Kotov et al. (2010), <sup>c</sup>DeNeve & Cooper (1996)

**Table 3. Dispositional Predictors of Resilience**

	k	N	r	%Var Sampling Error	$\rho$	SD $\rho$	95% Confidence Interval	90% Credibility Interval
<b>Agreeableness</b>	20	14618	.33	0.00	.40	.22	.30, .50	.11, .69
<i>Resilience</i>	11	4713	.27	16.53	.32	.12	.24, .40	.16, .49
<i>Hardiness</i>	7	7661	.39	1.38	.49	.27	.28, .69	.13, .84
<b>Conscientiousness</b>	21	15926	.53	1.08	.64	.30	.51, .77	.23, 1.00*
<i>Resilience</i>	11	4713	.37	7.02	.45	.18	.34, .56	.20, .69
<i>Hardiness</i>	7	7661	.54	.53	.66	.35	.39, .92	.18, 1.00*
<b>Emotional Stability</b>	37	17720	.43	11.79	.51	.12	.47, .55	.33, .70
<i>Resilience</i>	22	7017	.41	11.19	.48	.15	.41, .54	.26, .69
<i>Hardiness</i>	14	8743	.47	16.21	.56	.08	.51, .61	.41, .72
<b>Extraversion</b>	28	15725	.40	5.51	.48	.17	.41, .55	.24, .73
<i>Resilience</i>	17	5652	.36	8.02	.43	.19	.34, .53	.18, .69
<i>Hardiness</i>	10	8113	.48	11.10	.58	.09	.53, .65	.42, .75
<b>Intelligence</b>	9	2572	-.04	37.26	-.05	.09	-.13, .03	-.15, .05
<i>Resilience</i>	6	1093	-.01	30.65	-.02	.13	-.15, .11	-.17, .14
<i>Hardiness</i>	1	122	-.01					
<b>Locus of Control</b>	4	6257	.70	2.02	.88	.10	.77, 1.00	.68, 1.00*
<i>Resilience</i>	1	284	.54					
<i>Hardiness</i>	4	6247	.70	1.85	.79	.11	.78, 1.00*	.67, 1.00*
<b>Mindfulness</b>	3	716	.42	37.56	.49	.08	.37, .61	.35, .63
<i>Resilience</i>	2	382	.34	100.00*	.39	.00	.37, .40	.36, .42
<i>Hardiness</i>	1	384	.51					
<b>Negative Affect</b>	23	14411	-.44	5.37	-.53	.16	-.59, -.46	-.66, -.39
<i>Resilience</i>	15	5763	-.33	11.48	-.39	.15	-.48, -.31	-.53, -.25
<i>Hardiness</i>	9	8932	-.51	8.97	-.62	.08	-.69, -.56	-.70, -.59
<b>Openness to Experience</b>	24	19867	.45	1.76	.55	.25	.44, .65	.21, .89
<i>Resilience</i>	15	5077	.32	8.08	.38	.19	.28, .49	.12, .64
<i>Hardiness</i>	6	6896	.49	3.36	.61	.14	.49, .73	.38, .84
<b>Optimism</b>	42	15620	.52	5.96	.64	.18	.58, .70	.37, .91
<i>Resilience</i>	31	6232	.48	11.35	.58	.18	.51, .65	.32, .84
<i>Hardiness</i>	11	9388	.54	2.74	.68	.17	.57, .79	.41, .95
<b>Positive Affect</b>	20	13108	.58	3.42	.70	.16	.62, .77	.45, .95
<i>Resilience</i>	15	5937	.52	14.69	.62	.10	.56, .68	.46, .78
<i>Hardiness</i>	6	7455	.61	1.29	.76	.18	.60, .91	.47, 1.00*
<b>Self-Esteem</b>	13	9456	.58	4.98	.69	.12	.62, .77	.48, .90
<i>Resilience</i>	9	3491	.50	10.42	.59	.13	.50, .68	.39, .79
<i>Hardiness</i>	4	5965	.62	4.62	.76	.07	.67, .85	.59, .94

\*Interval truncated at upper bound of 100% or 1.00.



**Table 4. Relative Weights analysis of the Big-Five Predicting Overall Resilience, Resilience-Specific Measures, and Hardiness**

	Overall Resilience		Resilience		Hardiness	
	+/-	% R <sup>2</sup>	+/-	% R <sup>2</sup>	+/-	% R <sup>2</sup>
Emotional Stability	+	12.7	+	28.2	+	12.3
Extraversion	+	16.9	+	6.7	+	20.7
Openness to Experience	+	27.0	+	19.5	+	26.6
Agreeableness	+	6.3	+	6.7	+	8.8
Conscientiousness	+	27.1	+	28.2	+	31.6
Total R <sup>2</sup>		.947		.568		1.000

**Table 5. Dispositional Predictors of Resilience, by Measure**

	k	N	r	%Var Sampling Error	$\rho$	SD $\rho$	95% Confidence Interval	90% Credibility Interval
<b>Agreeableness</b>	20	14618	.33	0.00	.40	.22	.30, .50	.11, .69
<i>Resilience</i>	11	4713	.27	16.53	.32	.12	.24, .40	.16, .49
<i>CDRISC</i>	2	692	.32	34.31	.38	.08	.24, .51	.26, .49
<i>ER89</i>	6	2674	.26	58.45	.33	.04	.27, .38	.23, .42
<i>BRS</i>	0							
<i>TRS</i>	1	404	.10					
<i>RSA</i>	2	943	.33	5.95	.38	.19	.11, .66	.14, .63
<i>Hardiness</i>	7	7661	.39	1.38	.49	.27	.28, .69	.13, .84
<i>CHS</i>	0							
<i>DRS</i>	2	6012	.49	8.53	.61	.05	.53, .70	.49, .74
<i>PVS</i>	4	1449	-.02	8.12	-.03	.22	-.25, .20	-.27, .22
<b>Conscientiousness</b>	21	15926	.53	1.08	.64	.30	.51, .77	.23, 1.00*
<i>Resilience</i>	11	4713	.37	7.02	.45	.18	.34, .56	.20, .69
<i>CDRISC</i>	2	692	.61	22.23	.70	.06	.59, .82	.59, .81
<i>ER89</i>	6	2674	.26	54.37	.33	.05	.27, .39	.24, .42
<i>BRS</i>	0							
<i>TRS</i>	1	404	.35					
<i>RSA</i>	2	943	.53	12.28	.61	.09	.46, .76	.47, .76
<i>Hardiness</i>	7	7661	.54	.53	.66	.35	.39, .92	.18, 1.00*
<i>CHS</i>	0							
<i>DRS</i>	2	6012	.68	1.40	.84	.08	.70, .98	.65, 1.00*
<i>PVS</i>	4	1449	-.01	8.25	-.02	.21	-.24, -.20	-.26, .22
<b>Emotional Stability</b>	37	17720	.43	11.79	.51	.12	.47, .55	.33, .70
<i>Resilience</i>	22	7017	.41	11.19	.48	.15	.41, .54	.26, .69
<i>CDRISC</i>	2	692	.50	32.22	.58	.06	.46, .69	.47, .68
<i>ER89</i>	11	3327	.39	22.23	.48	.11	.41, .56	.30, .66
<i>BRS</i>	1	49	.40					
<i>TRS</i>	5	1942	.32	7.16	.37	.19	.20, .54	.12, .62
<i>RSA</i>	2	943	.55	100.00*	.63	.00	.62, .64	.60, .66
<i>Hardiness</i>	14	8743	.47	16.21	.56	.08	.51, .61	.41, .72
<i>CHS</i>	0							
<i>DRS</i>	3	6142	.50	22.55	.60	.02	.56, .65	.51, .70
<i>PVS</i>	9	2181	.40	41.11	.48	.07	.42, .55	.35, .62
<b>Extraversion</b>	28	15725	.40	5.51	.48	.17	.41, .55	.24, .73
<i>Resilience</i>	17	5652	.36	8.02	.43	.19	.34, .53	.18, .69
<i>CDRISC</i>	2	692	.46	35.66	.54	.06	.42, .65	.43, .64
<i>ER89</i>	9	2364	.41	56.56	.52	.05	.46, .57	.39, .64
<i>BRS</i>	0							
<i>TRS</i>	3	1589	.11	9.30	.12	.15	-.06, .30	-.07, .32
<i>RSA</i>	2	943	.55	66.72	.63	.14	.56, .69	.58, .67

**Table 5 (Continued)**

<i>Hardiness</i>	10	8113	.48	11.10	.58	.09	.53, .65	.42, .75
<i>CHS</i>	0							
<i>DRS</i>	2	6012	.51	26.36	.63	.00	.59, .68	.56, .71
<i>PVS</i>	8	2101	.38	25.20	.49	.10	.38, .54	.30, .62
<b>Intelligence</b>	9	2572	-.04	37.26	-.05	.09	-.13, .03	-.15, .05
<i>Resilience</i>	6	1093	-.01	30.65	-.02	.13	-.15, .11	-.17, .14
<i>CDRISC</i>	1	493	-.04					
<i>ER89</i>	3	162	.28	100.00*	.35	.00	.18, .52	.31, .39
<i>BRS</i>	0							
<i>TRS</i>	1	75	-.12					
<i>RSA</i>	1	363	-.09					
<i>Hardiness</i>	1	122	-.01					
<i>CHS</i>	0							
<i>DRS</i>	0							
<i>PVS</i>	1	122	-.01					
<b>Locus of Control</b>	4	6257	.70	2.02	.88	.10	.77, 1.00	.68, 1.00*
<i>Resilience</i>	1	284	.54					
<i>CDRISC</i>	0							
<i>ER89</i>	1	284	.54					
<i>BRS</i>	0							
<i>TRS</i>	0							
<i>RSA</i>	0							
<i>Hardiness</i>	4	6247	.70	1.85	.79	.11	.78, 1.00*	.67, 1.00*
<i>CHS</i>	0							
<i>DRS</i>	1							
<i>PVS</i>	3	607	.42	65.59	.53	.04	.43, .64	.43, .64
<b>Mindfulness</b>	3	716	.42	37.56	.49	.08	.37, .61	.35, .63
<i>Resilience</i>	2	382	.34	100.00*	.39	.00	.37, .40	.36, .42
<i>CDRISC</i>	0							
<i>ER89</i>	0							
<i>BRS</i>	2	382	.34	100.00*	.41	.00	.40, .41	.37, .45
<i>TRS</i>	0							
<i>RSA</i>	0							
<i>Hardiness</i>	1	384	.51					
<i>CHS</i>	0							
<i>DRS</i>	1	384	.51					
<i>PVS</i>	0							
<b>Negative Affect</b>	23	14411	-.44	5.37	-.53	.16	-.59, -.46	-.66, -.39
<i>Resilience</i>	15	5763	-.33	11.48	-.39	.15	-.48, -.31	-.53, -.25
<i>CDRISC</i>	5	3069	-.29	12.30	-.34	.10	-.44, -.23	-.45, -.22
<i>ER89</i>	5	1832	-.33	12.07	-.40	.15	-.54, -.26	-.52, -.28
<i>BRS</i>	4	354	-.44	10.48	-.53	.15	-.71, -.35	-.65, -.41
<i>TRS</i>	0							
<i>RSA</i>	1	28	-.11					

**Table 5 (Continued)**

<i>Hardiness</i>	9	8932	-.51	8.97	-.62	.08	-.69, -.56	-.70, -.59
<i>CHS</i>	0							
<i>DRS</i>	5	8044	-.52	5.89	-.64	.08	-.71, -.55	-.66, -.62
<i>PVS</i>	4	888	-.43	77.02	-.52	.02	-.60, -.45	-.55, -.50
<b>Openness to Experience</b>	24	19867	.45	1.76	.55	.25	.44, .65	.21, .89
<i>Resilience</i>	15	5077	.32	8.08	.38	.19	.28, .49	.12, .64
<i>CDRISC</i>	2	692	.26	100*	.30	.00	.26, .34	.28, .32
<i>ER89</i>	10	3038	.42	13.76	.53	.13	.43, .63	.30, .76
<i>BRS</i>	0							
<i>TRS</i>	1	404	-.02					
<i>RSA</i>	2	943	.19	31.38	.22	.07	.09, .35	.12, .32
<i>Hardiness</i>	6	6896	.49	3.36	.61	.14	.49, .73	.38, .84
<i>CHS</i>	0							
<i>DRS</i>	2	6012	.53	13.48	.66	.01	.60, .72	.57, .75
<i>PVS</i>	2	420	.37	100.00*	.46	.00	.44, .48	.41, .51
<b>Optimism</b>	42	15620	.52	5.96	.64	.18	.58, .70	.37, .91
<i>Resilience</i>	31	6232	.48	11.35	.58	.18	.51, .65	.32, .84
<i>CDRISC</i>	3	1095	.50	100.00*	.60	.00	.56, .65	.56, .64
<i>ER89</i>	10	2215	.38	47.57	.49	.07	.43, .56	.35, .64
<i>BRS</i>	11	1248	.56	25.89	.65	.13	.57, .74	.47, .84
<i>TRS</i>	5	1569	.57	3.12	.67	.25	.45, .90	.33, 1*
<i>RSA</i>	2	171	.33	54.18	.39	.10	.17, .60	.24, .53
<i>Hardiness</i>	11	9388	.54	2.74	.68	.17	.57, .79	.41, .95
<i>CHS</i>	0							
<i>DRS</i>	3	6229	.64	15.86	.81	.00	.77, .86	.71, .91
<i>PVS</i>	8	3159	.35	28.55	.44	.08	.37, .52	.30, .59
<b>Positive Affect</b>	20	13108	.58	3.42	.70	.16	.62, .77	.45, .95
<i>Resilience</i>	15	5937	.52	14.69	.62	.10	.56, .68	.46, .78
<i>CDRISC</i>	5	3063	.55	9.91	.64	.08	.55, .73	.50, .79
<i>ER89</i>	5	1832	.52	24.82	.66	.07	.58, .74	.50, .82
<i>BRS</i>	4	354	.48	24.95	.59	.17	.39, .79	.34, .84
<i>TRS</i>	0							
<i>RSA</i>	0							
<i>Hardiness</i>	6	7455	.61	1.29	.76	.18	.60, .91	.47, 1.00*
<i>CHS</i>	0							
<i>DRS</i>	3	6630	.65	100.00	.81	.14	.63, .98	.56, 1.00*
<i>PVS</i>	3	825	.33	36.75	.41	.08	.28, .53	.27, .54
<b>Self-Esteem</b>	13	9456	.58	4.98	.69	.12	.62, .77	.48, .90
<i>Resilience</i>	9	3491	.50	10.42	.59	.13	.50, .68	.39, .79
<i>CDRISC</i>	2	806	.50	100.00*	.58	.00	.55, .61	.55, .61
<i>ER89</i>	3	1865	.54	6.36	.67	.13	.51, .83	.44, .90
<i>BRS</i>	0							
<i>TRS</i>	5	1066	.41	24.10	.48	.11	.36, .59	.31, .64

**Table 5 (Continued)**

<i>RSA</i>	0								
<i>Hardiness</i>	4	5965	.62	4.62	.76	.07	.67, .85	.59, .94	
<i>CHS</i>	0								
<i>DRS</i>	2	56911	.64	100.00*	.79	.00	.78, .80	.70, .88	
<i>PVS</i>	2	274	.29	100.00*	.35	.00	.32, .39	.32, .39	

NOTE: CDRISC = Connor-Davidson Resilience Scale (Connor & Davidson, 2003), BRS = Brief Resilience Scale (Smith et al., 2008); CHS = Cognitive Hardiness Scale (Nowack, 1990); DRS = Dispositional Resilience Scale (Bartone et al., 1989); ER89 = Ego-Resiliency Scale (Block & Kremen, 1996); TRS = The Resilience Scale (Wagnild & Young, 1993); RSA = Resilience Scale for Adults/Adolescents (Friborg et al., 2003; Hjemdal et al., 2006); PVS = Personal Views Survey (Maddi, 1997).

\*Interval truncated at upper bound of 100% or 1.00.

**Table 6. Dispositional Predictors of Resilience, by Sample Type**

	k	N	r	%Var Sampling Error	$\rho$	SD $\rho$	95% Confidence Interval	90% Credibility Interval
<b>Agreeableness</b>	20	14618	.33	0.00	.40	.22	.30, .50	.11, .69
<i>Clinical</i>	0							
<i>Non-Clinical</i>	20	14618	.33	0.00	.40	.22	.30, .50	.11, .69
<i>Critical Event</i>	0							
<i>Non-Critical Event</i>	20	14618	.33	0.00	.40	.22	.30, .50	.11, .69
<i>Military</i>	3	6261	.50	48.69	.61	.00	.58, .64	.55, .67
<i>Civilian</i>	17	8357	.20	9.70	.24	.16	.16, .32	.03, .45
<b>Conscientiousness</b>	21	15926	.53	1.08	.64	.30	.51, .77	.23, 1.00*
<i>Clinical</i>	0							
<i>Non-Clinical</i>	21	15926	.53	1.08	.64	.30	.51, .77	.23, 1.00*
<i>Critical Event</i>	0							
<i>Non-Critical Event</i>	21	15926	.53	1.08	.64	.30	.51, .77	.23, 1.00*
<i>Military</i>	3	6261	.68	2.69	.83	.06	.73, .92	.68, .98
<i>Civilian</i>	18	9665	.43	1.66	.51	.32	.36, .67	.09, .94
<b>Emotional Stability</b>	37	17720	.43	11.79	.51	.12	.47, .55	.33, .70
<i>Clinical</i>	0							
<i>Non-Clinical</i>	37	17720	.43	11.79	.51	.12	.47, .55	.33, .70
<i>Critical Event</i>	2	785	.32	10.66	.38	.15	.15, .61	.16, .59
<i>Non-Critical Event</i>	35	16935	.44	12.26	.52	.11	.47, .56	.34, .70
<i>Military</i>	3	6261	.49	8.88	.59	.05	.51, .66	.47, .71
<i>Civilian</i>	34	11459	.40	15.6	.47	.12	.43, .52	.28, .69
<b>Extraversion</b>	28	15725	.40	5.51	.48	.17	.41, .55	.24, .73
<i>Clinical</i>	0							
<i>Non-Clinical</i>	28	15725	.40	5.51	.48	.17	.41, .55	.24, .73
<i>Critical Event</i>	1	565	.23					
<i>Non-Critical Event</i>	28	15725	.40	4.95	.48	.18	.41, .55	.22, .74
<i>Military</i>	2	6061	.52	100.00*	.62	0	.62, .63	.57, .68
<i>Civilian</i>	26	9664	.33	9.45	.39	.17	.32, .46	.16, .63
<b>Intelligence</b>	9	2572	-.04	37.26	-.05	.09	-.13, .03	-.15, .05
<i>Clinical</i>	0							
<i>Non-Clinical</i>	9	2572	-.04	37.26	-.05	.09	-.13, .03	-.15, .05
<i>Critical Event</i>	0							
<i>Non-Critical Event</i>	9	2572	-.04	37.26	-.05	.09	-.13, .03	-.15, .05
<i>Military</i>	1	363	-.09					
<i>Civilian</i>	8	2209	-.03	34.60	-.04	.09	-.13, .05	-.15, .07
<b>Locus of Control</b>	4	6257	.70	2.02	.88	.10	.77, 1.00	.68, 1.00*
<i>Clinical</i>	0							
<i>Non-Clinical</i>	4	6257	.70	2.02	.88	.10	.77, 1.00	.68, 1.00*
<i>Critical Event</i>	0							
<i>Non-Critical Event</i>	4	6257	.70	2.02	.88	.10	.77, 1.00	.68, 1.00*

**Table 6 (Continued)**

	<i>Military</i>	1	5650	.73					
	<i>Civilian</i>	3	607	.44	35.26	.56	.08	.42, .69	.40, .71
<b>Mindfulness</b>		3	716	.42	37.56	.49	.08	.37, .61	.35, .63
	<i>Clinical</i>	0							
	<i>Non-Clinical</i>	3	716	.42	37.56	.49	.08	.37, .61	.35, .63
	<i>Critical Event</i>	0							
	<i>Non-Critical Event</i>	3	716	.42	37.56	.49	.08	.37, .61	.35, .63
	<i>Military</i>	0							
	<i>Civilian</i>	3	716	.42	37.56	.49	.08	.37, .61	.35, .63
<b>Negative Affect</b>		23	14411	-.44	5.37	-.53	.16	-.59, -.46	-.66, -.39
	<i>Clinical</i>	1	126	-.22					
	<i>Non-Clinical</i>	22	14285	-.44	5.34	-.53	.16	-.60, -.45	-.66, -.40
	<i>Critical Event</i>	4	1040	-.35	19.40	-.42	.13	-.56, -.28	-.53, -.31
	<i>Non-Critical Event</i>	19	13371	-.45	4.90	-.54	.15	-.61, -.46	-.66, -.41
	<i>Military</i>	3	7195	-.52	2.46	-.63	.11	-.75, -.50	-.69, -.53
	<i>Civilian</i>	20	7216	-.36	13.79	-.43	.13	-.49, -.37	-.54, -.32
<b>Openness to Experience</b>		24	19867	.45	1.76	.55	.25	.44, .65	.21, .89
	<i>Clinical</i>	0							
	<i>Non-Clinical</i>	24	19867	.45	1.76	.55	.25	.44, .65	.21, .89
	<i>Critical Event</i>	0							
	<i>Non-Critical Event</i>	24	19867	.45	1.76	.55	.25	.44, .65	.21, .89
	<i>Military</i>	4	11911	.57	1.11	.70	.13	.56, .84	.45, .92
	<i>Civilian</i>	20	7956	.26	7.10	.32	.20	.22, .41	.05, .58
<b>Optimism</b>		42	15620	.52	5.96	.64	.18	.58, .70	.37, .91
	<i>Clinical</i>	1	32	.71					
	<i>Non-Clinical</i>	41	15588	.52	5.85	.63	.18	.57, .69	.37, .89
	<i>Critical Event</i>	3	408	.59	54.33	.72	.05	.62, .82	.61, .83
	<i>Non-Critical Event</i>	39	15212	.52	5.64	.63	.18	.57, .69	.36, .89
	<i>Military</i>	1	5650	.65					
	<i>Civilian</i>	41	9970	.44	11.95	.54	.17	.48, .59	.30, .78
<b>Positive Affect</b>		20	13108	.58	3.42	.70	.16	.62, .77	.45, .95
	<i>Clinical</i>	1	120	.27					
	<i>Non-Clinical</i>	19	12988	.57	3.37	.70	.16	.63, .78	.45, .95
	<i>Critical Event</i>	5	1107	.56	13.07	.69	.13	.55, .82	.46, .90
	<i>Non-Critical Event</i>	15	12001	.57	2.74	.70	.16	.61, .79	.44, .95
	<i>Military</i>	3	7195	.64	1.04	.78	.13	.62, .93	.56, 1.00*
	<i>Civilian</i>	17	5913	.49	11.09	.60	.13	.52, .67	.39, .81
<b>Self-Esteem</b>		13	9456	.58	4.98	.69	.12	.62, .77	.48, .90
	<i>Clinical</i>	1	9	.84					
	<i>Non-Clinical</i>	12	9447	.58	4.62	.69	.12	.62, .77	.48, .90
	<i>Critical Event</i>	1	246	.54					
	<i>Non-Critical Event</i>	12	9210	.58	4.50	.70	.13	.62, .77	.48, .91
	<i>Military</i>	1	5650	.64					

**Table 6 (Continued)**

<i>Civilian</i>	12	3806	.48	11.35	.58	.13	.50, .67	.37, .80
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\*Interval truncated at upper bound of 100% or 1.00.



**Table 7. Situational Predictors of Resilience**

	K	N	r	%Var Sampling Error	$\rho$	SD $\rho$	95% Confidence Interval	90% Credibility Interval
<b>Social Support</b>	56	27775	.25	8.55	.29	.16	.25, .34	.08, .51
<i>Resilience</i>	26	12406	.14	14.62	.16	.12	.11, .21	.00, .32
<i>Hardiness</i>	30	15369	.33	15.98	.40	.10	.36, .44	.24, .56
<b>Family</b>	11	2420	.33	44.15	.40	.08	.34, .46	.27, .55
<i>Resilience</i>	4	677	.29	100.00*	.35	.00	.30, .39	.32, .37
<i>Hardiness</i>	7	1743	.35	31.59	.43	.10	.34, .52	.27, .59
<b>Friend</b>	7	1299	.26	43.28	.31	.09	.22, .40	.17, .44
<i>Resilience</i>	5	1170	.26	47.31	.30	.07	.31, .39	.19, .41
<i>Hardiness</i>	2	129	.29	35.87	.35	.18	.03, .66	.11, .59
<b>Work</b>	7	2103	.29	71.74	.35	.03	.29, .40	.27, .42
<i>Resilience</i>	2	672	.28	26.28	.33	.10	.17, .49	.19, .47
<i>Hardiness</i>	5	1431	.29	100.00*	.36	.00	.32, .39	.32, .39

\*Interval truncated at upper bound of 100% or 1.00.

**Table 8. Situational Predictors of Resilience, by Measure**

	k	N	r	%Var Sampling Error	$\rho$	SD $\rho$	95% Confidence Interval	90% Credibility Interval
<b>Social Support</b>	56	27775	.25	8.55	.29	.16	.25, .34	.08, .51
<i>Resilience</i>	26	12406	.14	14.62	.16	.12	.11, .21	.00, .32
<i>BRS</i>	11	1247	.25	100.00*	.29	.00	.24, .34	.26, .32
<i>CDRISC</i>	6	1285	.35	27.02	.42	.10	.32, .53	.25, .60
<i>ER89</i>	0							
<i>RSA</i>	0							
<i>TRS</i>	6	1093	.28	62.68	.33	.06	.25, .41	.23, .42
<i>Hardiness</i>	30	15369	.33	15.98	.40	.10	.36, .44	.24, .56
<i>CHS</i>	3	853	.43	32.05	.51	.07	.40, .63	.36, .66
<i>DRS</i>	10	7779	.35	29.81	.42	.05	.37, .46	.31, .53
<i>PVS</i>	18	6855	.32	11.99	.38	.15	.30, .45	.17, .59
<b>Family</b>	11	2420	.33	44.15	.40	.08	.34, .46	.27, .55
<i>Resilience</i>	4	677	.29	100.00*	.35	.00	.30, .39	.32, .37
<i>BRS</i>	0							
<i>CDRISC</i>	1	154	.22					
<i>ER89</i>	0							
<i>RSA</i>	0							
<i>TRS</i>	2	343	.31	100.00*	.37	.00	.35, .38	.34, .39
<i>Hardiness</i>	7	1743	.35	31.59	.43	.10	.34, .52	.27, .59
<i>CHS</i>	0							
<i>DRS</i>	3	332	.27	99.38	.33	.00	.21, .46	.29, .37
<i>PVS</i>	3	270	.19	100.00*	.23	.00	.15, .31	.20, .25
<b>Friend</b>	7	1299	.26	43.28	.31	.09	.22, .40	.17, .44
<i>Resilience</i>	5	1170	.26	47.31	.30	.07	.31, .39	.19, .41
<i>BRS</i>	0							
<i>CDRISC</i>	2	647	.22	68.53	.25	.04	.15, .35	.19, .31
<i>ER89</i>	0							
<i>RSA</i>	0							
<i>TRS</i>	2	343	.37	100.00*	.42	.00	.38, .46	.39, .45
<i>Hardiness</i>	2	129	.29	35.87	.35	.18	.03, .66	.11, .59
<i>CHS</i>	0							
<i>DRS</i>	1	38	.59					
<i>PVS</i>	1	91	.17					
<b>Work</b>	7	2103	.29	71.74	.35	.03	.29, .40	.27, .42
<i>Resilience</i>	2	672	.28	26.28	.33	.10	.17, .49	.19, .47
<i>BRS</i>	0							
<i>CDRISC</i>	1	272	.40					
<i>ER89</i>	0							
<i>RSA</i>	0							
<i>TRS</i>	1	400	.20					

**Table 8 (Continued)**

<i>Hardiness</i>	5	1431	.29	100.00*	.36	.00	.32, .39	.32, .39
<i>CHS</i>	0							
<i>DRS</i>	3	1233	.30	100.00*	.36	.00	.33, .40	.32, .41
<i>PVS</i>	2	198	.27	100.00*	.32	.00	.22, .42	.29, .35

NOTE: CDRISC = Connor-Davidson Resilience Scale (Connor & Davidson, 2003), BRS = Brief Resilience Scale (Smith et al., 2008); CHS = Cognitive Hardiness Scale (Nowack, 1990); DRS = Dispositional Resilience Scale (Bartone et al., 1989); ER89 = Ego-Resiliency Scale (Block & Kremen, 1996); TRS = The Resilience Scale (Wagnild & Young, 1993); RSA = Resilience Scale for Adults/Adolescents (Friborg et al., 2003; Hjemdal et al., 2006); PVS = Personal Views Survey (Maddi, 1997).

\*Interval truncated at upper bound of 100% or 1.00.

**Table 9. Situational Predictors of Resilience, by Sample Type**

	k	N	r	%Var Sampling Error	$\rho$	SD $\rho$	95% Confidence Interval	90% Credibility Interval
<b>Social Support</b>	56	27775	.25	8.55	.29	.16	.25, .34	.08, .51
<i>Clinical</i>	1	32	.41					
<i>Non-Clinical</i>	55	27743	.25	8.41	.29	.16	.25, .34	.08, .51
<i>Critical Event</i>	4	367	.32	100.00*	.37	.00	.33, .42	.34, .41
<i>Non-Critical Event</i>	52	27408	.25	7.98	.29	.16	.24, .34	.08, .51
<i>Military</i>	5	7591	.36	39.45	.43	.02	.39, .47	.37, .49
<i>Civilian</i>	51	20184	.20	11.03	.24	.15	.19, .29	.03, .45
<b>Family</b>	11	2420	.33	44.15	.40	.08	.34, .46	.27, .55
<i>Clinical</i>	0							
<i>Non-Clinical</i>	11	2420	.33	44.15	.40	.08	.34, .46	.27, .55
<i>Critical Event</i>	0							
<i>Non-Critical Event</i>	11	2420	.33	44.15	.40	.08	.34, .46	.27, .55
<i>Military</i>	0							
<i>Civilian</i>	11	2420	.33	44.15	.40	.08	.34, .46	.27, .55
<b>Friend</b>	7	1299	.26	43.28	.31	.09	.22, .40	.17, .44
<i>Clinical</i>	0							
<i>Non-Clinical</i>	7	1299	.26	43.28	.31	.09	.22, .40	.17, .44
<i>Critical Event</i>	0							
<i>Non-Critical Event</i>	7	1299	.26	43.28	.31	.09	.22, .40	.17, .44
<i>Military</i>	0							
<i>Civilian</i>	7	1299	.26	43.28	.31	.09	.22, .40	.17, .44
<b>Work</b>	7	2103	.29	71.74	.35	.03	.29, .40	.27, .42
<i>Clinical</i>	0							
<i>Non-Clinical</i>	7	2103	.29	71.74	.35	.03	.29, .40	.27, .42
<i>Critical Event</i>	0							
<i>Non-Critical Event</i>	7	2103	.29	71.74	.35	.03	.29, .40	.27, .42
<i>Military</i>	1	272	.40					
<i>Civilian</i>	6	1831	.27	100.00*	.33	.00	.28, .37	.30, .36

\*Interval truncated at upper bound of 100% or 1.00.

**Table 10. Proposed Processes Associated with Resilience**

	k	N	r	%Var Sampling Error	$\rho$	SD $\rho$	95% Confidence Interval	90% Credibility Interval
<b>Coping Behaviors</b>								
<b>Avoidant</b>	26	8459	-.24	5.19	-.30	.28	-.41, -.19	-.59, -.01
<i>Resilience</i>	7	1409	-.17	14.48	-.20	-.20	-.37, -.04	-.43, .02
<i>Hardiness</i>	19	7050	-.25	4.26	-.32	.26	-.46, -.19	-.62, -.03
<b>Emotion</b>	27	6034	.05	4.91	.06	.35	-.07, .20	-.35, .48
<i>Resilience</i>	11	2450	.14	8.67	.17	.25	.01, .32	-.14, .48
<i>Hardiness</i>	17	3868	-.03	4.11	-.03	.39	-.22, .16	-.47, .41
<b>Problem</b>	36	8353	.33	16.37	.42	.17	.36, .48	.19, .66
<i>Resilience</i>	14	1886	.28	79.53	.36	.04	.30, .42	.29, .44
<i>Hardiness</i>	23	6751	.33	10.88	.43	.19	.34, .52	.17, .70
<b>Emotions</b>								
<b>Negative</b>	15	1836	-.29	37.36	-.35	.12	-.43, -.27	-.46, -.23
<i>Resilience</i>	9	735	-.25	70.26	-.29	.07	-.39, -.20	-.36, -.22
<i>Hardiness</i>	6	1101	-.32	25.55	-.39	.14	-.52, -.26	-.51, -.28
<b>Positive</b>	13	1678	.39	24.39	.46	.15	.37, .56	.24, .68
<i>Resilience</i>	8	707	.52	50.20	.61	.08	.52, .70	.46, .75
<i>Hardiness</i>	5	971	.30	45.20	.36	.08	.25, .46	.22, .49

\*Interval truncated at upper bound of 100% or 1.00.

**Table 11. Processes Associated with Resilience, by Measure**

	k	N	r	%Var Sampling Error	$\rho$	SD $\rho$	95% Confidence Interval	90% Credibility Interval
<b>Coping Behaviors</b>								
<b>Avoidant</b>	26	8459	-.24	5.19	-.30	.28	-.41, -.19	-.59, -.01
<i>Resilience</i>	7	1409	-.17	14.48	-.20	-.20	-.37, -.04	-.43, .02
<i>BRS</i>	4	512	-.32	79.12	-.39	.40	-.51, -.28	-.41, -.38
<i>CDRISC</i>	0							
<i>ER89</i>	0							
<i>RSA</i>	0							
<i>TRS</i>	2	764	-.15	100.00*	-.18	.00	-.25, -.10	-.19, -.17
<i>Hardiness</i>	19	7050	-.25	4.26	-.32	.26	-.46, -.19	-.62, -.03
<i>CHS</i>	2	905	.05	2.53	.07	.37	-.45, .59	-.36, .49
<i>DRS</i>	8	1555	-.23	16.51	-.29	.19	-.44, -.14	-.47, -.10
<i>PVS</i>	8	4472	-.31	3.76	-.40	.24	-.57, -.22	-.63, -.16
<b>Emotion</b>	27	6034	.05	4.91	.06	.35	-.07, .20	-.35, .48
<i>Resilience</i>	11	2450	.14	8.67	.17	.25	.01, .32	-.14, .48
<i>BRS</i>	4	512	.24	100.00*	.29	.00	.23, .35	.26, .32
<i>CDRISC</i>	2	342	.36	14.37	.41	.19	.13, .70	.16, .66
<i>ER89</i>	0							
<i>RSA</i>	0							
<i>TRS</i>	3	1396	.04	3.91	.05	.27	-.26, .37	-.27, .37
<i>Hardiness</i>	17	3868	-.03	4.11	-.03	.39	-.22, .16	-.47, .41
<i>CHS</i>	0							
<i>DRS</i>	8	1472	-.12	3.52	-.15	.45	-.48, .19	-.66, .37
<i>PVS</i>	8	2507	.09	3.74	.11	.35	-.14, .35	-.30, .51
<b>Problem</b>	36	8353	.33	16.37	.42	.17	.36, .48	.19, .66
<i>Resilience</i>	14	1886	.28	79.53	.36	.04	.30, .42	.29, .44
<i>BRS</i>	10	1356	.30	100.00*	.39	.00	.34, .45	.35, .43
<i>CDRISC</i>	1	40	.28					
<i>ER89</i>	1	284	.15					
<i>RSA</i>	0							
<i>TRS</i>	1	73	.21					
<i>Hardiness</i>	23	6751	.33	10.88	.43	.19	.34, .52	.17, .70
<i>CHS</i>	2	541	.22	100.00*	.28	.00	.22, .35	.25, .32
<i>DRS</i>	7	1216	.32	100.00*	.42	.00	.36, .48	.37, .47
<i>PVS</i>	11	4752	.35	5.52	.45	.22	.32, .59	.15, .76
<b>Emotions</b>								
<b>Negative</b>	15	1836	-.29	37.36	-.35	.12	-.43, -.27	-.46, -.23
<i>Resilience</i>	9	735	-.25	70.26	-.29	.07	-.39, -.20	-.36, -.22
<i>BRS</i>	0							
<i>CDRISC</i>	2	385	-.27	32.63	-.31	.11	-.49, -.12	-.42, -.19
<i>ER89</i>	6	322	-.21	100.00*	-.26	.00	-.38, -.13	-.27, -.24
<i>RSA</i>	1	28	-.35					

**Table 11 (Continued)**

<i>TRS</i>	0								
<i>Hardiness</i>	6	1101	-.32	25.55	-.39	.14	-.52, -.26	-.51, -.28	
<i>CHS</i>	2	692	-.39	20.49	-.46	.11	-.63, .30	-.53, -.39	
<i>DRS</i>	4	409	-.21	73.34	-.26	.07	-.39, -.13	-.31, -.21	
<i>PVS</i>	0								
<b>Positive</b>	13	1678	.39	24.39	.46	.15	.37, .56	.24, .68	
<i>Resilience</i>	8	707	.52	50.20	.61	.08	.52, .70	.46, .75	
<i>BRS</i>	0								
<i>CDRISC</i>	2	385	.60	100.00*	.72	.00	.64, .79	.64, .80	
<i>ER89</i>	6	322	.43	100.00*	.52	.00	.43, .61	.46, .59	
<i>RSA</i>	0								
<i>TRS</i>	0								
<i>Hardiness</i>	5	971	.30	45.20	.36	.08	.25, .46	.22, .49	
<i>CHS</i>	1	439	.22						
<i>DRS</i>	3	371	.42	100.00*	.51	.00	.48, .53	.45, .57	
<i>PVS</i>	1	161	.23						

NOTE: CDRISC = Connor-Davidson Resilience Scale (Connor & Davidson, 2003), BRS = Brief Resilience Scale (Smith et al., 2008); CHS = Cognitive Hardiness Scale (Nowack, 1990); DRS = Dispositional Resilience Scale (Bartone et al., 1989); ER89 = Ego-Resiliency Scale (Block & Kremen, 1996); TRS = The Resilience Scale (Wagnild & Young, 1993); RSA = Resilience Scale for Adults/Adolescents (Friborg et al., 2003; Hjemdal et al., 2006); PVS = Personal Views Survey (Maddi, 1997).

\*Interval truncated at upper bound of 100% or 1.00.

**Table 12. Processes Associated with Resilience, by Sample Type**

	k	N	r	%Var Sampling Error	$\rho$	SD $\rho$	95% Confidence Interval	90% Credibility Interval
<b>Coping Behaviors</b>								
<b>Avoidant</b>	26	8459	-.24	5.19	-.30	.28	-.41, -.19	-.59, -.01
<i>Clinical</i>	0							
<i>Non-Clinical</i>	26	8459	-.24	5.19	-.30	.28	-.41, -.19	-.59, -.01
<i>Critical Event</i>	3	470	-.08	68.68	-.10	.07	-.23, .04	-.17, -.03
<i>Non-Critical Event</i>	23	7989	-.25	4.72	-.31	.28	-.43, -.19	-.50, -.02
<i>Military</i>	2	715	-.24	100.00*	-.30	.00	-.32, -.29	-.33, -.27
<i>Civilian</i>	24	7744	-.24	4.79	-.30	.29	-.42, -.18	-.61, .01
<b>Emotion</b>	27	6034	.05	4.91	.06	.35	-.07, .20	-.35, .48
<i>Clinical</i>	0							
<i>Non-Clinical</i>	27	6034	.05	4.91	.06	.35	-.07, .20	-.35, .48
<i>Critical Event</i>	2	209	.31	88.01	.37	.03	.21, .53	.30, .44
<i>Non-Critical Event</i>	25	5825	.04	4.68	.05	.35	-.09, .20	-.36, .47
<i>Military</i>	3	483	-.37	61.69	-.44	.06	-.56, -.33	-.47, -.42
<i>Civilian</i>	24	4441	.09	5.23	.11	.33	-.03, .25	-.29, .50
<b>Problem</b>	36	8353	.33	16.37	.42	.17	.36, .48	.19, .66
<i>Clinical</i>	1							
<i>Non-Clinical</i>	35	8321	.33	15.92	.41	.16	.35, .48	.19, .64
<i>Critical Event</i>	1							
<i>Non-Critical Event</i>	35	8249	.33	15.93	.42	.16	.35, .48	.19, .64
<i>Military</i>	4	922	.16	24.63	.20	.14	.04, .36	.02, .38
<i>Civilian</i>	32	7431	.35	18.88	.44	.15	.38, .50	.23, .65
<b>Emotions</b>								
<b>Negative</b>	15	1836	-.29	37.36	-.35	.12	-.43, -.27	-.46, -.23
<i>Critical Event</i>	1	47	-.25					
<i>Non-Critical Event</i>	14	1789	-.29	34.90	-.35	.13	-.44, -.27	-.47, -.23
<i>Clinical</i>	0							
<i>Non-Clinical</i>	15	1836	-.29	37.36	-.35	.12	-.43, -.27	-.46, -.23
<i>Military</i>	2	767	-.31	100.00*	-.38	0	-.38, -.37	-.41, -.34
<i>Civilian</i>	13	1069	-.27	33.67	-.33	.17	-.45, -.22	-.50, -.17
<b>Positive</b>	13	1678	.39	24.39	.46	.15	.37, .56	.24, .68
<i>Critical Event</i>	0							
<i>Non-Critical Event</i>	13	1678	.39	24.39	.46	.15	.37, .56	.24, .68
<i>Clinical</i>	0							
<i>Non-Clinical</i>	13	1678	.39	24.39	.46	.15	.37, .56	.24, .68
<i>Military</i>	2	767	.39	4.79	.46	.22	.14, .78	.16, .76
<i>Civilian</i>	11	911	.40	95.13	.47	.00	.40, .53	.42, .51

\*Interval truncated at upper bound of 100% or 1.00.



**Table 13. Outcomes Associated with Resilience**

	k	N	r	%Var Sampling Error	$\rho$	SD $\rho$	95% Confidence Interval	90% Credibility Interval
<b>Burnout</b>	16	5455	-.31	0.00	-.37	.31	-.52, -.21	-.70, -.03
<i>Resilience</i>	3	1348	-.33	10.49	-.39	.14	-.56, -.22	-.52, -.25
<i>Hardiness</i>	14	4540	-.32	3.39	-.39	.32	-.56, -.22	-.71, -.07
<b>Mental Health</b>	120	37127	-.38	10.59	-.45	.16	-.48, -.41	-.59, -.30
<i>Resilience</i>	73	24779	-.37	8.09	-.45	.18	-.50, -.41	-.61, -.29
<i>Hardiness</i>	46	12197	-.39	20.57	-.48	.11	-.52, -.44	-.55, -.41
<b>Anxiety</b>	39	11970	-.36	17.05	-.43	.13	-.47, -.38	-.54, -.32
<i>Resilience</i>	22	6160	-.38	12.85	-.45	.15	-.52, -.38	-.59, -.30
<i>Hardiness</i>	17	5810	-.33	30.02	-.41	.09	-.46, -.36	-.46, -.35
<b>Depression</b>	68	22743	-.42	13.64	-.50	.13	-.53, -.46	-.60, -.39
<i>Resilience</i>	41	15617	-.40	10.72	-.47	.14	-.51, -.42	-.60, -.33
<i>Hardiness</i>	26	6975	-.46	34.15	-.56	.07	-.60, -.52	-.59, -.54
<b>PTSD</b>	22	11013	-.33	13.28	-.38	.13	-.43, -.32	-.47, -.27
<i>Resilience</i>	17	8398	-.29	14.12	-.33	.11	-.39, -.27	-.44, -.23
<i>Hardiness</i>	5	2615	-.43	20.25	-.50	.08	-.58, -.42	-.54, -.47
<b>Physical Health</b>	69	40783	-.30	4.88	-.36	.18	-.41, -.31	-.55, -.17
<i>Resilience</i>	29	22064	-.41	7.05	-.49	.13	-.54, -.44	-.60, -.38
<i>Hardiness</i>	44	19003	-.16	14.62	-.20	.13	-.24, -.15	-.33, -.07
<b>Overall Well-Being</b>	48	13946	.37	11.61	.45	.16	.40, .50	.22, .68
<i>Resilience</i>	34	10686	.36	11.78	.43	.15	.37, .48	.21, .64
<i>Hardiness</i>	14	3260	.42	12.44	.52	.17	.42, .61	.27, .77
<b>Happiness</b>	3	620	.25	29.23	.34	.13	.15, .52	.15, .52
<i>Resilience</i>	2	351	.18	37.74	.24	.12	.02, .45	.07, .40
<i>Hardiness</i>	1	269	.35					
<b>Hope</b>	11	4679	.56	28.46	.68	.05	.64, .73	.56, .81
<i>Resilience</i>	11	4679	.56	28.46	.67	.05	.63, .72	.56, .79
<i>Hardiness</i>	0							
<b>Purpose in Life</b>	14	1751	.46	13.89	.58	.20	.45, .70	.28, .89
<i>Resilience</i>	14	1751	.46	13.89	.57	.21	.45, .70	.28, .87
<i>Hardiness</i>	0							
<b>Satisfaction with Life</b>	21	8290	.32	18.54	.40	.11	.34, .45	.23, .56
<i>Resilience</i>	17	7358	.33	17.60	.39	.11	.33, .45	.24, .55
<i>Hardiness</i>	4	932	.31	24.66	.38	.13	.24, .53	.20, .57
<b>Spirituality</b>	11	1711	.15	19.69	.19	.17	.06, .30	-.05, .41
<i>Resilience</i>	11	1711	.15	19.69	.18	.18	.05, .30	-.05, .41
<i>Hardiness</i>	0							

\*Interval truncated at upper bound of 100% or 1.00.

**Table 14. Variance Explained by Relative Weights Analyses**

	1	2	3	4	5	6	7	8	9	10	11	12	13
<b>Mental Health</b>													
GAD	.223	.130	.144	.109	.239	.250	.239	.016	.027	.016	.109	.106	.130
MDD	.334	.176	.160	.212	.342	.348	.354	.008	.014	.020	.116	.188	.142
OMH	.253	.144	.137	.152	.263	.270	.262	.010	.017	.009	.119	.133	.110
PTSD	.291	.109	.084	.185	.291	.291	.321	.000	.000	.021	.182	.207	.127
UDD	.305	.176	.160	.212	.321	.325	.339	.016	.020	.034	.145	.165	.127
Mean:	.281	.147	.137	.174	.291	.297	.303	.010	.016	.020	.134	.160	.127
<b>Well-Being</b>													
HAP	.133	.063	.032	.123	.133	.133	.164	.000	.000	.030	.070	.101	.041
OSWB	.102	.137	.130	.176	.147	.146	.202	.045	.044	.100	.010	.016	.026
SWL	.115	.102	.102	.096	.124	.124	.117	.009	.023	.002	.022	.030	.021
Mean:	.112	.101	.088	.132	.135	.134	.161	.018	.022	.044	.034	.049	.029
Overall Mean:	.220	.130	.119	.158	.233	.236	.250	.013	.018	.029	.097	.118	.091

All values within table are  $R^2$ . GAD = generalized anxiety disorder, MDD = major depressive disorder; OMH = overall mental health; PTSD = posttraumatic stress disorder; UDD = unipolar depression; HAP = happiness; OSWB = overall subjective well-being; SWL = satisfaction with life. Models reported: 1 = big-five; 2 = overall resilience; 3 = resilience specific; 4 = hardiness specific; 5 = overall resilience and big-five; 6 = resilience specific and big-five; 7 = hardiness specific and big-five; 8 = overall resilience above big-five; 9 = resilience specific above big-five; 10 = hardiness specific above big-five; 11 = big-five above overall resilience; 12 = big-five above resilience specific measure; 13 = big-five above hardiness.

**Table 15. Relative Weights of the Big-Five and Resilience and Hardiness Predicting Generalized Anxiety**

	1. Big Five		2. Overall Resilience + Big-Five		3. Resilience Only + Big Five		4. Hardiness Only + Big Five	
	+/-	% R <sup>2</sup>	+/-	% R <sup>2</sup>	+/-	% R <sup>2</sup>	+/-	% R <sup>2</sup>
Resilience/Hardiness			+	25.8	+	27.6	+	25.6
Emotional Stability	+	41.2	+	7.8	+	29.8	+	31.5
Extraversion	+	9.8	+	7.8	+	7.5	+	7.4
Openness to Experience	+	34.4	+	2.2	+	1.6	+	2.6
Agreeableness	+	12.0	+	10.8	+	10.1	+	11.9
Conscientiousness	+	34.4	+	21.3	+	23.4	+	21.0
Model R <sup>2</sup>		.223		.239		.250		.239
$\Delta R^2$ from Model 1				.016		.027		.016
Resilience R <sup>2</sup>				.130 <sup>a</sup>		.144 <sup>b</sup>		.109 <sup>c</sup>
$\Delta R^2$ from Resilience				.109		.106		.130

Note: <sup>a</sup> Overall Resilience; <sup>b</sup> Resilience Only; <sup>c</sup> Hardiness Only

**Table 16. Relative Weights of the Big-Five and Resilience and Hardiness Predicting Happiness**

	1. Big Five		2. Overall Resilience + Big-Five		3. Resilience Only + Big Five		4. Hardiness Only + Big Five	
	+/-	% R <sup>2</sup>	+/-	% R <sup>2</sup>	+/-	% R <sup>2</sup>	+/-	% R <sup>2</sup>
Resilience/Hardiness			+	14.2	+	5.7	+	38.1
Emotional Stability	+	29.6	+	25.9	+	27.8	+	18.2
Extraversion	+	44.1	+	38.1	+	14.8	+	23.8
Openness to Experience	+	.9	+	1.1	+	.8	+	4.6
Agreeableness	+	13.7	+	13.3	+	13.1	+	8.8
Conscientiousness	+	11.6	+	8.4	+	10.8	+	4.6
Model R <sup>2</sup>		.133		.133		.133		.164
$\Delta R^2$ from Model 1				.000		.000		.030
Resilience R <sup>2</sup>				.063 <sup>a</sup>		.032 <sup>b</sup>		.123 <sup>c</sup>
$\Delta R^2$ from Resilience				.070		.101		.041

Note: <sup>a</sup> Overall Resilience; <sup>b</sup> Resilience Only; <sup>c</sup> Hardiness Only

**Table 17. Relative Weights of the Big-Five and Resilience and Hardiness Predicting Major Depressive Disorder**

	1. Big Five		2. Overall Resilience + Big-Five		3. Resilience Only + Big Five		4. Hardiness Only + Big Five	
	+/-	% R <sup>2</sup>	+/-	% R <sup>2</sup>	+/-	% R <sup>2</sup>	+/-	% R <sup>2</sup>
Resilience/Hardiness			+	20.2	+	19.9	+	25.7
Emotional Stability	+	51.5	+	43.7	+	42.4	+	40.3
Extraversion	+	14.4	+	10.6	+	10.7	+	9.9
Openness to Experience	+	1.1	+	1.5	+	.9	+	2.6
Agreeableness	+	2.1	+	2.4	+	2.3	+	3.1
Conscientiousness	+	31.0	+	43.7	+	23.9	+	19.0
Model R <sup>2</sup>		.334		.342		.348		.354
$\Delta R^2$ from Model 1				.008		.014		.020
Resilience R <sup>2</sup>				.176 <sup>a</sup>		.160 <sup>b</sup>		.212 <sup>c</sup>
$\Delta R^2$ from Resilience				.116		.188		.142

Note: <sup>a</sup> Overall Resilience; <sup>b</sup> Resilience Only; <sup>c</sup> Hardiness Only

**Table 18. Relative Weights of the Big-Five and Resilience and Hardiness Predicting Overall Mental Health**

	1. Big Five		2. Overall Resilience + Big-Five		3. Resilience Only + Big Five		4. Hardiness Only + Big Five	
	+/-	% R <sup>2</sup>	+/-	% R <sup>2</sup>	+/-	% R <sup>2</sup>	+/-	% R <sup>2</sup>
Resilience/Hardiness			+	22.8	+	23.5	+	23.4
Emotional Stability	+	46.4	+	28.2	+	36.4	+	37.5
Extraversion	+	18.4	+	13.3	+	13.2	+	12.5
Openness to Experience	+	1.9	+	1.9	+	1.3	+	2.3
Agreeableness	+	3.5	+	4.2	+	3.9	+	4.9
Conscientiousness	+	29.8	+	19.6	+	21.7	+	19.3
Model R <sup>2</sup>		.253		.263		.270		.262
$\Delta R^2$ from Model 1				.010		.017		.009
Resilience R <sup>2</sup>				.144 <sup>a</sup>		.137 <sup>b</sup>		.152 <sup>c</sup>
$\Delta R^2$ from Resilience				.119		.133		.110

Note: <sup>a</sup> Overall Resilience; <sup>b</sup> Resilience Only; <sup>c</sup> Hardiness Only

**Table 19. Relative Weights of the Big-Five and Resilience and Hardiness Predicting Overall Subjective Well-Being**

	1. Big Five		2. Overall Resilience + Big-Five		3. Resilience Only + Big Five		4. Hardiness Only + Big Five	
	+/-	% R <sup>2</sup>	+/-	% R <sup>2</sup>	+/-	% R <sup>2</sup>	+/-	% R <sup>2</sup>
Resilience/Hardiness			+	53.0	+	52.5	+	60.8
Emotional Stability	+	27.4	+	14.1	+	13.5	+	10.2
Extraversion	+	19.7	+	8.6	+	8.9	+	7.1
Openness to Experience	+	7.8	+	4.4	+	3.4	+	6.4
Agreeableness	+	13.2	+	7.4	+	7.5	+	5.5
Conscientiousness	+	31.9	+	12.5	+	3.4	+	10.1
Model R <sup>2</sup>		.102		.147		.146		.202
$\Delta R^2$ from Model 1				.045		.044		.100
Resilience R <sup>2</sup>				.137 <sup>a</sup>		.130 <sup>b</sup>		.176 <sup>c</sup>
$\Delta R^2$ from Resilience				.010		.016		.026

Note: <sup>a</sup> Overall Resilience; <sup>b</sup> Resilience Only; <sup>c</sup> Hardiness Only

**Table 20. Relative Weights of the Big-Five and Resilience and Hardiness Predicting Posttraumatic Stress Disorder**

	1. Big Five		2. Overall Resilience + Big-Five		3. Resilience Only + Big Five		4. Hardiness Only + Big Five	
	+/-	% R <sup>2</sup>	+/-	% R <sup>2</sup>	+/-	% R <sup>2</sup>	+/-	% R <sup>2</sup>
Resilience/Hardiness			+	10.8	+	8.7	+	24.8
Emotional Stability	+	64.8	+	52.9	+	60.3	+	51.1
Extraversion	+	14.7	+	12.6	+	13.1	+	9.2
Openness to Experience	+	15.5	+	.9	+	.6	+	2.8
Agreeableness	+	4.3	+	3.7	+	3.9	+	3.2
Conscientiousness	+	15.5	+	12.1	+	13.5	+	9.0
Model R <sup>2</sup>		.291		.291		.291		.312
$\Delta R^2$ from Model 1				.000		.000		.021
Resilience R <sup>2</sup>				.109 <sup>a</sup>		.084 <sup>b</sup>		.185 <sup>c</sup>
$\Delta R^2$ from Resilience				.182		.207		.127

Note: <sup>a</sup> Overall Resilience; <sup>b</sup> Resilience Only; <sup>c</sup> Hardiness Only



**Table 21. Relative Weights of the Big-Five and Resilience and Hardiness Predicting Satisfaction with Life**

	1. Big Five		2. Overall Resilience + Big-Five		3. Resilience Only + Big Five		4. Hardiness Only + Big Five	
	+/-	% R <sup>2</sup>	+/-	% R <sup>2</sup>	+/-	% R <sup>2</sup>	+/-	% R <sup>2</sup>
Resilience/Hardiness			+	32.7	+	39.6	+	26.1
Emotional Stability	+	29.9	+	22.4	+	9.7	+	24.1
Extraversion	+	16.9	+	11.2	+	6.2	+	12.1
Openness to Experience	+	12.2	+	7.4	+	18.8	+	8.5
Agreeableness	+	9.2	+	7.0	+	18.8	+	7.3
Conscientiousness	+	31.8	+	19.3	+	6.8	+	21.9
Model R <sup>2</sup>		.115		.124		.138		.117
$\Delta R^2$ from Model 1				.009		.023		.002
Resilience R <sup>2</sup>				.102 <sup>a</sup>		.110 <sup>b</sup>		.096 <sup>c</sup>
$\Delta R^2$ from Resilience				.022		.030		.021

Note: <sup>a</sup> Overall Resilience; <sup>b</sup> Resilience Only; <sup>c</sup> Hardiness Only

**Table 22. Relative Weights of the Big-Five and Resilience and Hardiness Predicting Unipolar Depression**

	1. Big Five		2. Overall Resilience + Big-Five		3. Resilience Only + Big Five		4. Hardiness Only + Big Five	
	+/-	% R <sup>2</sup>	+/-	% R <sup>2</sup>	+/-	% R <sup>2</sup>	+/-	% R <sup>2</sup>
Resilience/Hardiness			+	23.9	+	22.7	+	30.2
Emotional Stability	+	43.6	+	35.1	+	15.7	+	31.5
Extraversion	+	21.4	+	15.3	+	2.1	+	12.8
Openness to Experience	+	.5	+	2.4	+	34.3	+	4.1
Agreeableness	+	1.9	+	2.4	+	21.2	+	2.2
Conscientiousness	+	32.6	+	21.0	+	1.0	+	18.2
Model R <sup>2</sup>		.305		.321		.325		.339
$\Delta R^2$ from Model 1				.016		.020		.034
Resilience R <sup>2</sup>				.176 <sup>a</sup>		.160 <sup>b</sup>		.212 <sup>c</sup>
$\Delta R^2$ from Resilience				.145		.165		.127

Note: <sup>a</sup> Overall Resilience; <sup>b</sup> Resilience Only; <sup>c</sup> Hardiness Only

**Table 23. Outcomes Associated with Resilience, by Measure**

	k	N	r	%Var Sampling Error	$\rho$	SD $\rho$	95% Confidence Interval	90% Credibility Interval
<b>Burnout</b>	16	5455	-.31	0.00	-.37	.31	-.52, -.21	-.70, -.03
<i>Resilience</i>	3	1348	-.33	10.49	-.39	.14	-.56, -.22	-.52, -.25
<i>BRS</i>	0							
<i>CDRISC</i>	3	1348	-.33	10.49	-.38	.14	-.54, -.21	-.52, -.23
<i>ER89</i>	0							
<i>RSA</i>	0							
<i>TRS</i>	0							
<i>Hardiness</i>	14	4540	-.32	3.39	-.39	.32	-.56, -.22	-.71, -.07
<i>CHS</i>	1	295	-.52					
<i>DRS</i>	0							
<i>PVS</i>	10	3800	-.28	3.02	-.33	.32	-.53, -.13	-.66, -.00
<b>Mental Health</b>	120	37127	-.38	10.59	-.45	.16	-.48, -.41	-.59, -.30
<i>Resilience</i>	73	24779	-.37	8.09	-.45	.18	-.50, -.41	-.61, -.29
<i>BRS</i>	16	5955	-.30	16.22	-.35	.12	-.42, -.28	-.46, -.24
<i>CDRISC</i>	30	11027	-.35	12.34	-.39	.13	-.45, -.34	-.54, -.25
<i>ER89</i>	14	5627	-.30	17.79	-.36	.12	-.43, -.29	-.45, -.27
<i>RSA</i>	5	3123	-.60	2.27	-.67	.19	-.84, -.50	-.86, -.47
<i>TRS</i>	11	2507	-.36	47.54	-.41	.07	-.46, -.35	-.46, -.35
<i>Hardiness</i>	46	12197	-.39	20.57	-.48	.11	-.52, -.44	-.55, -.41
<i>CHS</i>	2	1959	-.30	18.58	-.37	.06	-.49, -.24	-.39, -.34
<i>DRS</i>	14	4061	-.43	34.45	-.53	.03	-.58, -.47	-.55, -.40
<i>PVS</i>	26	5875	-.40	18.29	-.49	.13	-.55, -.43	-.58, -.40
<b>Anxiety</b>	39	11970	-.36	17.05	-.43	.13	-.47, -.38	-.54, -.32
<i>Resilience</i>	22	6160	-.38	12.85	-.45	.15	-.52, -.38	-.59, -.30
<i>BRS</i>	5	404	-.50	100.00*	-.60	.00	-.67, -.53	-.67, -.54
<i>CDRISC</i>	9	2138	-.33	11.67	-.37	.18	-.50, -.25	-.57, -.18
<i>ER89</i>	5	925	-.33	60.02	-.40	.06	-.49, -.31	-.42, -.38
<i>RSA</i>	2	1715	-.49	8.50	-.56	.09	-.70, -.42	-.64, -.48
<i>TRS</i>	4	1284	-.32	100*	-.37	.00	-.40, -.34	-.39, -.35
<i>Hardiness</i>	17	5810	-.33	30.02	-.41	.09	-.46, -.36	-.46, -.35
<i>CHS</i>	1	1830	-.28					
<i>DRS</i>	7	2099	-.36	24.87	-.45	.10	-.53, -.35	-.51, -.38
<i>PVS</i>	9	1881	-.35	44.48	-.43	.8	-.50, -.36	-.47, -.39
<b>Depression</b>	68	22743	-.42	13.64	-.50	.13	-.53, -.46	-.60, -.39
<i>Resilience</i>	41	15617	-.40	10.72	-.47	.14	-.51, -.42	-.60, -.33
<i>BRS</i>	4	406	-.39	44.41	-.47	.11	-.62, -.32	-.55, -.39
<i>CDRISC</i>	13	6083	-.41	14.79	-.47	.10	-.53, -.41	-.57, -.37
<i>ER89</i>	12	4742	-.27	10.67	-.34	.17	-.44, -.24	-.48, -.19
<i>RSA</i>	2	1618	-.60	100.00*	-.68	.00	-.69, -.68	-.72, .65
<i>TRS</i>	7	2117	-.43	82.44	-.50	.01	-.54, -.45	-.51, .48

**Table 23 (Continued)**

<i>Hardiness</i>	26	6975	-.46	34.15	-.56	.07	-.60, -.52	-.59, -.54
<i>CHS</i>	1	129	-.56					
<i>DRS</i>	8	2715	-.45	60.81	-.54	.03	-.59, .50	-.57, -.52
<i>PVS</i>	16	4041	-.47	26.96	-.57	.09	-.63, -.52	-.62, -.53
<b>PTSD</b>	22	11013	-.33	13.28	-.38	.13	-.43, -.32	-.47, -.27
<i>Resilience</i>	17	8398	-.29	14.12	-.33	.11	-.39, -.27	-.44, -.23
<i>BRS</i>	1	102	-.29					
<i>CDRISC</i>	14	7456	-.30	12.66	-.33	.11	-.39, .26	-.45, -.21
<i>ER89</i>	0							
<i>RSA</i>	0							
<i>TRS</i>	2	840	-.28	20.90	-.32	.10	-.48, -.16	-.41, -.24
<i>Hardiness</i>	5	2615	-.43	20.25	-.50	.08	-.58, -.42	-.54, -.47
<i>CHS</i>	0							
<i>DRS</i>	3	1036	-.34	55.22	-.41	.05	-.49, -.32	-.41, -.40
<i>PVS</i>	2	1579	-.48	100.00*	-.56	.00	-.58, -.55	-.62, -.51
<b>Physical Health</b>	69	40783	-.30	4.88	-.36	.18	-.41, -.31	-.55, -.17
<i>Resilience</i>	29	22064	-.41	7.05	-.49	.13	-.54, -.44	-.60, -.38
<i>BRS</i>	6	820	-.25	12.91	-.30	.25	-.52, -.08	-.56, -.04
<i>CDRISC</i>	3	389	-.20	100.00*	-.23	.00	-.31, -.16	-.25, -.22
<i>ER89</i>	3	367	-.25	100.00*	-.31	.00	-.34, -.28	-.35, -.27
<i>RSA</i>	1	134	-.08					
<i>TRS</i>	7	1880	-.23	93.96	-.27	.01	-.32, -.22	-.28, -.26
<i>Hardiness</i>	44	19003	-.16	14.62	-.20	.13	-.24, -.15	-.33, -.07
<i>CHS</i>	2	2269	-.07	100.00*	-.08	.00	-.09, -.07	-.09, -.07
<i>DRS</i>	13	9624	-.16	7.33	-.20	.16	-.28, -.11	-.35, -.04
<i>PVS</i>	24	8714	-.17	25.72	-.21	.10	-.25, -.15	-.30, -.11
<b>Overall Well-Being</b>	48	13946	.37	11.61	.45	.16	.40, .50	.22, .68
<i>Resilience</i>	34	10686	.36	11.78	.43	.15	.37, .48	.21, .64
<i>BRS</i>	7	1102	.27	22.63	.33	.16	.19, .47	.11, .55
<i>CDRISC</i>	8	1556	.51	14.51	.59	.14	.48, .70	.39, .79
<i>ER89</i>	10	4555	.30	14.95	.38	.12	.29, .46	.19, .56
<i>RSA</i>	0							
<i>TRS</i>	5	2007	.36	30.70	.42	.07	.34, .50	.31, .53
<i>Hardiness</i>	14	3260	.42	12.44	.52	.17	.42, .61	.27, .77
<i>CHS</i>	2	541	.66	100.00*	.81	.00	.78, .84	.72, .90
<i>DRS</i>	4	478	.54	24.12	.67	.13	.51, .83	.44, .90
<i>PVS</i>	8	2241	.34	45.65	.41	.37	.35, .48	.30, .53
<b>Happiness</b>	3	620	.25	29.23	.34	.13	.15, .52	.15, .52
<i>Resilience</i>	2	351	.18	37.74	.24	.12	.02, .45	.07, .40
<i>BRS</i>	1	258	.11					
<i>CDRISC</i>	0							
<i>ER89</i>	1	93	.38					
<i>RSA</i>	0							

**Table 23 (Continued)**

<i>TRS</i>	0								
<i>Hardiness</i>	1	269	.35						
<i>CHS</i>	0								
<i>DRS</i>	0								
<i>PVS</i>	1	269	.35						
<b>Hope</b>	11	4679	.56	28.46	.68	.05	.64, .73	.56, .81	
<i>Resilience</i>	11	4679	.56	28.46	.67	.05	.63, .72	.56, .79	
<i>BRS</i>	0								
<i>CDRISC</i>	3	1095	.65	100.00*	.76	.00	.73, .79	.72, .80	
<i>ER89</i>	6	3141	.53	60.65	.67	.01	.63, .71	.57, .77	
<i>RSA</i>	0								
<i>TRS</i>	2	509	.58	100.00*	.69	.00	.68, .71	.65, .74	
<i>Hardiness</i>	0								
<i>CHS</i>	0								
<i>DRS</i>	0								
<i>PVS</i>	0								
<b>Purpose in Life</b>	14	1751	.46	13.89	.58	.20	.45, .70	.28, .89	
<i>Resilience</i>	14	1751	.46	13.89	.57	.21	.45, .70	.28, .87	
<i>BRS</i>	8	1021	.34	32.80	.44	.14	.32, .56	.24, .64	
<i>CDRISC</i>	3	435	.72	100.00*	.88	.00	.85, .90	.83, .92	
<i>ER89</i>	1	47	.44						
<i>RSA</i>	0								
<i>TRS</i>	1	115	.53						
<i>Hardiness</i>	0								
<i>CHS</i>	0								
<i>DRS</i>	0								
<i>PVS</i>	0								
<b>Satisfaction with Life</b>	21	8290	.32	18.54	.40	.11	.34, .45	.23, .56	
<i>Resilience</i>	17	7358	.33	17.60	.39	.11	.33, .45	.24, .55	
<i>BRS</i>	0								
<i>CDRISC</i>	4	1344	.43	85.13	.51	.00	.45, .56	.48, .53	
<i>ER89</i>	8	4367	.30	12.78	.38	.13	.29, .48	.19, .57	
<i>RSA</i>	0								
<i>TRS</i>	3	1260	.31	100.00*	.36	.00	.32, .40	.34, .38	
<i>Hardiness</i>	4	932	.31	24.66	.38	.13	.24, .53	.20, .57	
<i>CHS</i>	0								
<i>DRS</i>	2	294	.40	99.36	.50	.00	.38, .63	.45, .56	
<i>PVS</i>	2	638	.27	21.24	.33	.12	.14, .52	.16, .50	
<b>Spirituality</b>	11	1711	.15	19.69	.19	.17	.06, .30	-.05, .41	
<i>Resilience</i>	11	1711	.15	19.69	.18	.18	.05, .30	-.05, .41	
<i>BRS</i>	6	844	.09	100.00*	.11	.00	.07, .14	.10, .12	
<i>CDRISC</i>	4	247	.55	27.57	.62	.16	.43, .81	.39, .85	

**Table 23 (Continued)**

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<i>ER89</i>	0		
<i>RSA</i>	0		
<i>TRS</i>	1	620	.08
<i>Hardiness</i>	0		
<i>CHS</i>	0		
<i>DRS</i>	0		
<i>PVS</i>	0		

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NOTE: CDRISC = Connor-Davidson Resilience Scale (Connor & Davidson, 2003), BRS = Brief Resilience Scale (Smith et al., 2008); CHS = Cognitive Hardiness Scale (Nowack, 1990); DRS = Dispositional Resilience Scale (Bartone et al., 1989); ER89 = Ego-Resiliency Scale (Block & Kremen, 1996); TRS = The Resilience Scale (Wagnild & Young, 1993); RSA = Resilience Scale for Adults/Adolescents (Friborg et al., 2003; Hjemdal et al., 2006); PVS = Personal Views Survey (Maddi, 1997).

\*Interval truncated at upper bound of 100% or 1.00.

**Table 24. Outcomes Associated with Resilience, by Sample Type**

	k	N	r	%Var Sampling Error	$\rho$	SD $\rho$	95% Confidence Interval	90% Credibility Interval
<b>Burnout</b>	16	5455	-.31	0.00	-.37	.31	-.52, -.21	-.70, -.03
<i>Clinical</i>	0							
<i>Non-Clinical</i>	16	5455	-.31	0.00	-.37	.31	-.52, -.21	-.70, -.03
<i>Critical Event</i>	0							
<i>Non-Critical Event</i>	16	5455	-.31	0.00	-.37	.31	-.52, -.21	-.70, -.03
<i>Military</i>	0							
<i>Civilian</i>	16	5455	-.31	0.00	-.37	.31	-.52, -.21	-.70, -.03
<b>Mental Health</b>	120	37127	-.38	10.59	-.45	.16	-.48, -.41	-.59, -.30
<i>Clinical</i>	9	1745	-.41	14.03	-.49	.17	-.61, -.36	-.64, -.34
<i>Non-Clinical</i>	111	35382	-.38	10.49	-.44	.16	-.48, -.41	-.59, -.30
<i>Critical Event</i>	11	2266	-.38	59.93	-.45	.05	-.50, -.39	-.46, -.43
<i>Non-Critical Event</i>	109	34861	-.38	9.80	-.45	.17	-.48, -.41	-.60, -.29
<i>Military</i>	16	7971	-.42	24.53	-.50	.07	-.54, -.45	-.53, -.46
<i>Civilian</i>	104	29156	-.37	10.14	-.43	.18	-.47, -.40	-.60, -.27
<b>Anxiety</b>	39	11970	-.36	17.05	-.43	.13	-.47, -.38	-.54, -.32
<i>Clinical</i>	2	296	-.53	8.82	-.63	-.22	-.96, -.30	-.83, -.43
<i>Non-Clinical</i>	37	11674	-.35	18.20	-.42	.12	-.47, -.38	-.52, -.32
<i>Critical Event</i>	4	777	-.39	50.06	-.46	.07	-.56, -.36	-.50, -.43
<i>Non-Critical Event</i>	35	1193	-.36	15.74	-.43	.12	-.47, -.38	-.54, -.31
<i>Military</i>	0							
<i>Civilian</i>	39	11970	-.36	17.05	-.43	.13	-.47, -.38	-.54, -.32
<b>Depression</b>	68	22743	-.42	13.64	-.50	.13	-.53, -.46	-.60, -.39
<i>Clinical</i>	3	662	-.34	100.00*	-.41	0	-.47, -.35	-.44, -.36
<i>Non-Clinical</i>	65	22081	-.42	13.19	-.50	.13	-.54, -.46	-.61, -.39
<i>Critical Event</i>	10	1180	-.41	70.77	-.49	.05	-.56, -.42	-.50, -.48
<i>Non-Critical Event</i>	58	21563	-.42	11.97	-.50	.13	-.53, -.46	-.61, -.39
<i>Military</i>	5	4307	-.47	91.05	-.56	0	-.59, -.53	-.62, -.51
<i>Civilian</i>	63	18436	-.40	13.73	-.48	.14	-.52, -.44	-.60, -.36
<b>PTSD</b>	22	11013	-.33	13.28	-.38	.13	-.43, -.32	-.47, -.27
<i>Clinical</i>	3	430	-.29	47.38	-.34	.09	-.48, -.19	-.41, -.27
<i>Non-Clinical</i>	19	10583	-.33	10.25	-.38	.13	-.44, -.32	-.49, -.27
<i>Critical Event</i>	5	1388	-.33	14.60	-.38	.15	-.52, -.24	-.52, -.25
<i>Non-Critical Event</i>	17	9625	-.33	10.76	-.37	.12	-.44, -.31	-.48, -.27
<i>Military</i>	11	6496	-.39	18.51	-.45	.08	-.50, -.39	-.50, -.40
<i>Civilian</i>	11	4517	-.24	20.12	-.27	.10	-.34, -.20	-.37, -.18
<b>Physical Health</b>	69	40783	-.30	4.88	-.36	.18	-.41, -.31	-.55, -.17
<i>Clinical</i>	3	156	-.36	100.00*	-.43	.00	-.56, -.31	-.47, -.40
<i>Non-Clinical</i>	66	40627	-.30	4.61	-.35	.18	-.40, -.31	-.56, -.15
<i>Critical Event</i>	0							
<i>Non-Critical Event</i>	69	40783	-.30	4.88	-.36	.18	-.41, -.31	-.55, -.17
<i>Military</i>	5	9421	-.10	25.21	-.12	.05	-.17, -.08	-.17, -.08
<i>Civilian</i>	64	31362	-.36	6.85	-.43	.17	-.48, -.39	-.59, -.27

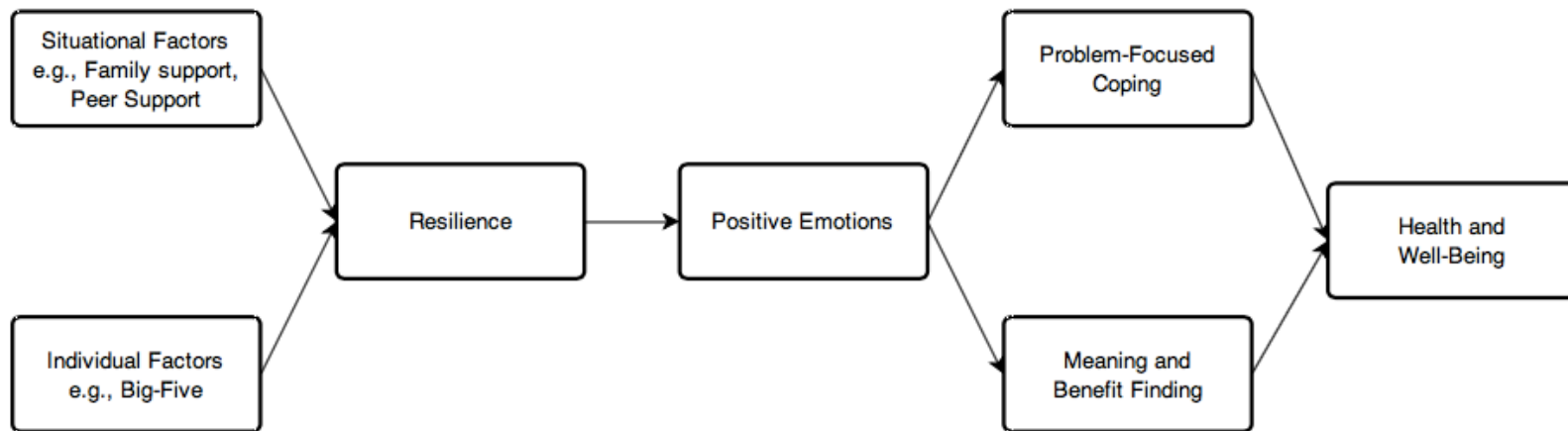
**Table 24 (Continued)**

<b>Overall Well-Being</b>	48	13946	.37	11.61	.45	.16	.40, .50	.22, .68
<i>Clinical</i>	4	368	.53	16.48	.64	.20	.42, .86	.35, .93
<i>Non-Clinical</i>	44	13578	.37	11.53	.45	.16	.39, .50	.22, .67
<i>Critical Event</i>	4	670	.28	30.60	.34	.12	.18, .49	.16, .51
<i>Non-Critical Event</i>	44	13276	.38	11.19	.46	.16	.40, .51	.22, .69
<i>Military</i>	2	393	.49	14.61	.59	.15	.35, .83	.36, .82
<i>Civilian</i>	46	13553	.37	11.71	.45	.16	.40, .50	.22, .68
<b>Happiness</b>	3	620	.25	29.23	.34	.13	.15, .52	.15, .52
<i>Clinical</i>	0							
<i>Non-Clinical</i>	3	620	.25	29.23	.34	.13	.15, .52	.15, .52
<i>Critical Event</i>	0							
<i>Non-Critical Event</i>	3	620	.25	29.23	.34	.13	.15, .52	.15, .52
<i>Military</i>	0							
<i>Civilian</i>	3	620	.25	29.23	.34	.13	.15, .52	.15, .52
<b>Hope</b>	11	4679	.56	28.46	.68	.05	.64, .73	.56, .81
<i>Clinical</i>	0							
<i>Non-Clinical</i>	11	4679	.56	28.46	.68	.05	.64, .73	.56, .81
<i>Critical Event</i>	1	246	.69					
<i>Non-Critical Event</i>	10	4433	.55	35.35	.67	.04	.63, .72	.56, .79
<i>Military</i>	0							
<i>Civilian</i>	11	4679	.56	28.46	.68	.05	.64, .73	.56, .81
<b>Purpose in Life</b>	14	1751	.46	13.89	.58	.20	.45, .70	.28, .89
<i>Clinical</i>	2	152	.75	100.00*	.95	.00	.94, .96	.86, 1.00*
<i>Non-Clinical</i>	12	1599	.43	16.12	.55	.20	.42, .67	.27, .83
<i>Critical Event</i>	1							
<i>Non-Critical Event</i>	13	1704	.46	12.88	.58	.22	.45, .72	.27, .89
<i>Military</i>	0							
<i>Civilian</i>	14	1751	.46	13.89	.58	.20	.45, .70	.28, .89
<b>Satisfaction with Life</b>	21	8290	.32	18.54	.40	.11	.34, .45	.23, .56
<i>Clinical</i>	2	216	.39	100.00*	.48	.00	.38, .58	.44, .53
<i>Non-Clinical</i>	19	8074	.32	17.16	.40	.11	.34, .45	.23, .56
<i>Critical Event</i>	2	303	.19	30.84	.23	.14	-.01, .47	.04, .42
<i>Non-Critical Event</i>	19	7987	.33	19.20	.40	.10	.35, .46	.24, .56
<i>Military</i>	0							
<i>Civilian</i>	21	8290	.32	18.54	.40	.11	.34, .45	.23, .56
<b>Spirituality</b>	11	1711	.15	19.69	.19	.17	.06, .30	-.05, .41
<i>Clinical</i>	1	32	.15					
<i>Non-Clinical</i>	10	1679	.15	17.90	.18	.17	.05, .31	-.06, .42
<i>Critical Event</i>	3	126	.40	100.00*	.48	.00	.32, .60	.43, .52
<i>Non-Critical Event</i>	8	1585	.13	17.81	.16	.14	.02, .29	-.06, .38
<i>Military</i>	0							
<i>Civilian</i>	11	1711	.15	19.69	.19	.17	.06, .30	-.05, .41



\*Interval truncated at upper bound 100% or 1.00.

## Figures



**Figure 1.** Proposed theoretical model