ABSTRACT

HOLLAND, ASHLEY MARIE. The Perks of Persistence: The Differential Effects of Hardiness on Socioemotional Outcomes in Military and Civilian Samples (Under the direction of Dr. Daniel Grühn).

Hardiness, or the combination of personality traits, dispositions, and response patterns which are typical of individuals who generally remain healthy and continue to perform well under a range of stressful conditions and reinterpret stressful life events into opportunities for personal growth, is thought to have a buffering effect on stress and is often associated with greater psychological and emotional well-being. As such, hardiness has been touted as a potentially malleable construct which can lead to improved quality of life for individuals in high-stress occupations using emotion regulation strategies. Using an integrative data analytic approach (N = 1,342), I analyzed a series of models to investigate (1) the relationship between hardiness and emotion regulation; (2) age-related and occupation-related differences in endorsement patterns; and (3) the differential effects of hardiness and emotion regulation on a variety of socioemotional and physiological outcomes, including stress frequency, stress severity, depressive symptoms, and life satisfaction. Findings showed significant relationships between hardiness and emotional expression, indicating that those who endorse positive hardiness traits at a greater rate tend to endorse more optimal emotion regulation strategies and fewer less optimal emotion regulation strategies whereas those who endorse negative hardiness traits at higher rates tend to have the opposite experience. These patterns extend to predict depressive symptoms and life satisfaction, with negative hardiness and affect predicting depressive symptoms and positive hardiness predicting life satisfaction. Furthermore, although service members and civilians had different rates of endorsement, the relationship between hardiness, regulation, stress, depressive symptoms, and life satisfaction was similar across

groups. Given the link between hardiness and emotion regulation, interventions fostering hardiness may benefit from promoting emotion regulation skills to improve overall psycho-socioemotional outcomes.

The Perks of Persistence: The Differential Effects of Hardiness on Socioemotional Outcomes in Military and Civilian Samples

by
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A dissertation submitted to the Graduate Faculty of
North Carolina State University
in partial fulfillment of the
requirements for the degree of
Doctorate of Philosophy

Psychology

Raleigh, North Carolina
2021

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DEDICATION

To my mother. I hope I have made you proud.

BIOGRAPHY

Ashley Marie Holland is the youngest daughter of two North Carolinian Air Force brats. After graduating with honors from Wake Forest- Rolesville High School, she attended North Carolina State University and graduated summa cum laude with a B.A. in Psychology. Ashley entered the Lifespan Developmental Psychology program at North Carolina State University in 2016.

During her time at NC State, Ashley served as the Psychology Departmental Representative for the North Carolina State University Libraries, was the Campus Representative for the American Psychological Association's Division 19 – Society for Military Psychology and was actively engaged in several volunteer organizations. She also worked as an Academic Advisor for Psychology Undergraduate Students throughout her graduate studies and did several internships with the Veterans Health Administration, RTI International, and the Army Public Health Center.

Ashley will continue her research in the development and promotion of service member hardiness, grit, and resiliency at the Army Public Health Center in her role as a Science Math and Research for Transformation (SMART) Scholar.

ACKNOWLEDGMENTS

It can be said that this text is the culmination of eight years of hard work. As stubborn as I am, I know that I would not have gotten where I am today without the love and support of many people.

To my advisor, Dr. Daniel Grühn. They say the best partnerships are the ones forged in adversity. I am not sure who “they” are, but we have definitely had our share of adversity. When I look back on all we have accomplished in the past four years, I am honored to have had an advisor like you who would not hesitate to tell me when I was being stupid, and yet go to bat for me time and time again. I have learned so much under your tutelage, and while I know I have so much further to go, I forge ahead confident in knowledge that the foundation on which this house will be built is solid. Thank you for giving me this opportunity and for putting up with me for eight years. Hopefully, your next graduate student will be *slightly* less hard-headed.

To my committee, Drs. Shevaun Neupert, Sarah Desmarais, Anna Behler, and Arthur Finch: words cannot truly express how grateful I am to have such wonderful people on my committee. Your extraordinary combined experience and wisdom pales in comparison to the heartfelt encouragement and compassionate guidance each of you have bestowed upon me over the past four years. If any future graduate student were to convene a committee merely half as outstanding in every way as mine has proven to be, they should consider themselves very lucky indeed.

To my dearest friends and family, specifically to my father - my number one fan – and my best friend, without whose unwavering support I would be lost. I know the past four years have been not always been a walk in the park. Thank you for your endless patience, your frequent (though not often heeded) advice, the late-night pep talks, the brainstorming sessions, the much-needed distractions, and the occasional reminders to eat. Here’s to a future in which I need them somewhat less often.

And to all those who lit the fire within and those who fanned the flames to keep it going, I will be eternally grateful. I do not know where I would be today without your endless guidance, encouragement, and words of wisdom.

Thank you.

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CHAPTER 1: INTRODUCTION

For the last several decades, a considerable body of research has concentrated on the influences on and the impacts of subjective emotional and psychological well-being (Beiser, 1974; Campbell et al.,1976; Cummins, 2002) and how one can maximize and maintain generally positive self-evaluations. For example, research has shown a significant correlation between self-regulatory, adaptive coping, and subjective well-being (Billings & Moos, 1984; Kent et al., 2015; Zeidner et al., 2016; Trompetter et al., 2016). More specifically, research by Koivumaa-Honkanen and colleagues demonstrated a correlation between one's general subjective well-being, feelings of depression and life satisfaction, and one's ability to adaptively cope with mental stressors (Koivumaa-Honkanen, 2000; Koivumaa-Honkanen, et al., 1996, 1999, 2001a, 2001b, 2004, 2008). Thus, a basic understanding of the factors influencing one's cognitive and affective perception of their own general well-being is of fundamental importance to the behavioral sciences, as a substantial body of evidence has accumulated showing that one's perception of well-being is also a significant predictor of objective measures, such as health and longevity (Diener & Chan, 2011; Conversano et al., 2010; Rius-Ottenheim et al., 2013; Stephan et al., 2013). One such factor is hardiness.

Hardiness was first articulated as a model for understanding resilient stress response patterns in individuals and groups (Kobasa, 1979). Psychological hardiness is an aggregation of personality dispositions and patterns of responses that are typical of individuals who generally remain healthy and continue to perform well under a range of stressful conditions (Bartone, 1999; Bartone et al., 2008; Gross, 2001; Kobasa et al., 1982). Previous research has shown that individual differences in hardiness endorsement are related to similar variabilities in a range of socioemotional functioning outcomes (e.g., Farber & Rosendahl, 2020; Florian et al., 1995;

Maddi, 2004, 2006, 2008, 2012; Maddi & Khoshaba, 1994; Nayyeri & Aubi, 2011; Taylor et al., 2011). Furthermore, general personality dispositions and emotionality have been associated with individual variation in hardiness and measures of socioemotional well-being (e.g., Alfred, Hammer & Good, 2014; Haga et al., 2009; Kobasa et al., 1981; Lambert et al., 1989; Maddi et al., 2002; Wallace et al., 2001). For better or worse, hardy persons tend to internalize a desire to persist in the face of challenge and view stressors as opportunities for personal growth rather than hurdles or obstacles (Averill, 1973; Eid et al., 2008; Eschleman et al., 2010; Kobasa, 1979; Lerner et al., 2002). Although generally adaptive, hardier individuals tend to be more actively engaged and involved in the world, have a greater sense of meaning and purpose in life, and have stronger beliefs that effort can influence events and outcomes. They also possess a receptivity to variety and change which can result in a variety of unhelpful or even less adaptive behaviors ranging from excessive self-reliance, rigidity and overcommitment to feelings of powerlessness and isolation (Holland et al., *in prep;* Sinclair & Oliver, 2003; Waysman et al., 2001).

Hardy dispositions are thought to permeate all aspects of an individual's life, from cognitive functioning, to socioemotional well-being, to physiological health (see: Allred & Smith, 1989; Florian et al.,1995; Maddi, 1994, 2004, 2006b; Maddi & Khoshaba, 1994; Moore et al., 2018; Sandvick et al., 2015; Soccorso et al., 2019; Taylor et al., 2011). Despite the theoretical rationale for the wide-reaching influence of hardiness, the empirical evidence for such effects is inconsistent. For example, some researchers (see: Clark & Owens, 2012; Ghorbani & Watson, 2005; Maddi et al., 2009; Shirbime & Soudani, 2009) have found significant relationships between hardiness and several components of adaptive psychological functioning (i.e., greater emotional stability, better emotional regulation, less somatization, lower anxiety, less social dysfunction, less aggression and hostility, and less depression), while others found no, or even negative relationships (Beasley et al., 2003; Erbes et al., 2011; Holland et al., in prep; Waysman et al., 2001). The inconsistency of previous research regarding the effects of hardiness on stress and health might be attributed to the neglect of the influence of variables such as emotional stability or negative affectivity. For example, in a study assessing the relationship between traumatic life stress, hardiness, coping styles, and general health, somatization, anxiety and depression, Beasley and colleagues (2003) found that hardiness not only moderated the effects of life stresses on health but also acted as a buffer for high-stress individuals who utilized less adaptive coping strategies. Given the established independent relationships between negative affect, hardiness, emotion regulation, and overall health (Hull et al., 1987; Kravetz et al., 1993; Puente-Martinez et al., 2018; Subramanian & Nithyanandan, 2008), it is entirely possible, if not probable, that emotion regulation skills are a missing piece which transform interindividual differences in hardiness into interindividual differences in coping with stress and maintaining psychological and physiological well-being .

When considering the influence and effects of emotion regulation on wellbeing, it is beneficial to remember that emotion regulation is neither inherently good nor bad; different emotion regulation strategies vary from less optimal and less adaptive to more optimal and more adaptive, depending on context and perceived effectiveness. For example, the common strategy of emotional suppression during times of stress is often regarded as one which is less optimal (Boden & Baumeister, 1997; Gross, 1998a, 1998b, Lazarus et al., 1985; Moore et al., 2008; Ochsner & Gross, 2005; Parrott, 1993), however, if the situation is one over which the individual has limited control, it could very well be the most adaptive response for that individual. Furthermore, strategies which are typically considered more adaptive – such as cognitive reappraisal – often take years to fully integrate into one's coping repertoire and, until automatization is achieve, require substantial cognitive resources that may not be available during times of great duress.

Due to emotion regulation involving heterogeneous developmental processes, individual differences in emotion regulation likely happen along multiple dimensions rather than on a single axis. For example, individuals seemingly differ in their knowledge of the need for emotion regulation, awareness of alternative strategies, flexibility in applying different regulatory strategies, and other components of emotion regulation (Calkins, 1994; Thompson, 1991, 1994, 2011). As such, optimal emotion regulation (or, conversely, emotion dysregulation) may vary for different individuals, in different situations, and with different goals (Gross, 1998a, 2015; Troy, Shallcross, & Mauss, 2013): the same strategies that permit medical professionals to operate successfully (Smith & Kleinman, 1989), for example, may also neutralize empathic distress in torturers (Bandura, 1977).

There is currently very minimal research exploring the types of emotion regulation strategies that hardier individuals use. However, the theoretical impacts of personality traits on emotion regulatory processes have been confirmed in the literature. The relationships between the “Big Five” personality traits (Costa & McCrae, 1985) and difficulties in emotion regulation have also been implicated in both the exposure and reactivity to stressful events, as well as the processes through which these traits affect health and psychological outcomes (Bolger & Zuckerman, 1995; Gentry & Kobasa, 1984; Trógolo & Medranoa, 2012). For example, in addition to differences in exposure and reactivity, differences in neuroticism endorsement aligned with both in one’s choice of coping strategies and in the effectiveness of those efforts (Bolger & Zuckerman, 1995). Similarly, extraversion was positively correlated with emotion regulation, and neuroticism negatively (Davies et al., 1998). Openness to experience was correlated with the ability to recognize emotions (Terracciano et al., 2003) and agreeableness has been related to how a person expresses their negative emotions (McCrae & Costa, 1997). In principle, the relationship between personality and emotion regulation strategies is indirect, considering that personality can result in individuals becoming more tuned toward certain emotional reactions (Kokkonen & Pulkkinen, 2001).

It seems reasonable to suggest that hardiness would be closely linked to emotional regulation, and there are three main reasons to expect this: emotional control is one of the primary dimensions of hardiness. The validity of this inclusion has been supported by a number of authors (e.g., Crust & Swann, 2011; Perry et al., 2013; St Clair-Thompson et al., 2015). The emotional control dimension of hardiness often includes items with aspects of both cognitive reappraisal and expressive suppression (e.g., Kowalski & Shermer, 2018; Mutz et al., 2017; Dhillon & Arora, 2017). Second, research has shown that hardiness is closely linked to self-regulation in a wider context, allowing tougher individuals to prosper in adverse circumstances (Nicholls et al., 2015; Kaiseler et al., 2009; Sansone et al., 1999; Wills & Bantam, 2012). Finally, research has shown that hardiness is typically associated with more frequent problem-focused or approach-oriented coping strategies aimed at reducing or eliminating the stressor, such as mental imagery, effort expenditure, thought control, and logical analysis (Abdollahi et al., 2014, 2015, 2018a, 2018b, 2019; Bansal, 2014; Maddi, 2015; Wout & Dyk, 2016), and less frequent use of avoidance coping strategies, such as distancing, mental distraction, or resignation (Bartone et al., 2017; Bartone & Homish, 2020; Boden & Baumeister, 1997; Soderstrom et al., 2000; Thomassen et al., 2018; Wadey et al., 2012). Hence, it could be argued that hardy individuals more readily use adaptive emotion regulation strategies when compared to their counterparts.

Pertinently, Aldwin (2007) has suggested that the use of cognitive reappraisal may facilitate problem-focused coping. At first glance, this might seem in contrast with Troy and colleagues (2013) who suggested that cognitive reappraisal may be less adaptive when applied to controllable situations (e.g., individuals who decrease their negative emotions through cognitive reappraisal may lose motivation to take action in situations in which action is needed, eventually leading to worse outcomes). However, I suggest that cognitive reappraisal might in some instances still be adaptive when applied to a controllable stressor, such as when reappraisal is used to alter the emotional impact of a stressor and promotes problem-solving. Indeed, reappraising the problem, or stressor, as a controllable event orients the individual to not only utilize but generate resources through which the situation can be addressed (Aldwin, 2007) and can result in greater rates of resilience and post-traumatic growth (Park et al., 2008). Thus, I propose that individuals who endorse hardy traits at higher rates tend to utilize cognitive reappraisal more often than other emotion regulation strategies (e.g., expressive suppression) when facing challenging situations. The habitual use of cognitive reappraisal has been shown to benefit affective functioning, social interactions, and well-being (Gross & John, 2003), whereas the habitual use of expressive suppression is associated with decreased positive emotions, self-esteem, and psychological adjustment (Nezlek & Kuppens, 2008). In fact, previous studies demonstrated that habitual use of cognitive reappraisal is negatively associated with depressive symptoms, whereas frequent use of expressive suppression shows a positive relationship with depressive symptoms (Haga et al., 2009; Min et al., 2013).

A small number of studies have explored the degree to which hardiness is associated with individual differences in emotional well-being. Hardier individuals generally experience few psychosomatic symptoms (Florian et al., 1995; Maddi, 2016; Maddi et al., 2006; Ng & Lee, 2020), are more likely to engage in socially supportive interactions (Lavoie et al., 2016; Maddi, 2013a; Masten & Obradovic, 2006), have more effective problem-solving skills (Abdollahi et al., 2018a; 2018b), are more engaged in beneficial self-care behaviors (Tellegen, 1985), have increased self-regulation and inhibitory capabilities (Abdollahi et al., 2018a; Maddi, 2013a; Sansone et al., 1999; Werner & Johnson, 1982), are more innovative (Sansone et al., 1999; Maddi et al., 2006), and typically have more optimal reactions to stress (Abdollahi et al., 2018a, 2018b; Epel et al., 2004; Keller et al., 2012; Mroczek et al., 2015). Together, the patterns of responding are predictive of better job performance (Bartone et al., 2008, 2009; Johnsen et al., 2013; Maddi et al., 2006), greater physical well-being (Lavoie et al., 2016; Kubzansky et al., 2001; Sandvik et al., 2013; Stern & Dhanda, 2001), greater subjective well-being, (Martin et al., 2015; Ryff, 2014; Taylor et al., 2011), generally higher levels of resilience and recovery from stressors (ten Broeke et al., 2017; Waysman et al., 2001; Vogt et al., 2018); greater life satisfaction and overall better quality of life (Diener, et al., 2003; Martin et al., 2015; Oliver, 2009).

One possible explanation for the reported association between hardiness and optimal psychological and physical outcomes is that hardier individuals are less affected by emotion-provoking stimuli, which in turn supports their perceived psychological and physiological well-being (see: Chida & Steptoe, 2008; Howell et al., 2007; Ryan & Deci, 2001). However, the idea that hardier individuals remain unaffected by competition or adversity due to experience of less intense emotions is not always supported (Crust, 2009; Lazarus, 2006). A conceivable implication of this study is that emotion regulation plays an important role in the endorsement of hardiness itself. Hardiness is theoretically linked to emotional regulation; in fact, many researchers in this field have postulated that emotional control is one of the primary dimensions of hardiness (e.g., Crust & Swann, 2011; Perry et al., 2013; St Clair-Thompson et al., 2015). Furthermore, hardiness has been linked to self-regulation and subsequent prosperity in a wider context (Nicholls et al., 2015; Kaiseler et al., 2009; Wills & Bantam, 2012). Perhaps, as more experienced copers, hardier individuals cope with their emotions differently and resort to more adaptive emotion regulation strategies, such as a more frequent use of more problem-focused or approach-oriented coping strategies aimed at reducing or eliminating the stressor (Abdollahi et al., 2014, 2015, 2018a, 2018b, 2019; Bansal, 2014; Lyons, 2009; Maddi, 1990, 2015; Wout & Dyk, 2016) To date, no studies have explicitly explored the role of lifetime experiences with coping, or age, and its relationships to hardiness, emotion regulation, and perceived well-being. These seem to be an important area of investigation because understanding potential mediator and moderator variables could be useful in developing more targeted interventions to counteract less adaptive responses and psychopathology.

Socioemotional models of aging propose that social functioning in late adulthood does not follow the same course of decline as cognitive and biological aging (Antonucci, 2001; Charles & Carstensen, 2007). Baltes and colleagues (1999) argued that as the benefits of evolutionary selection decrease with age, the need for culture increases with age to compensate. In other words, as individuals progress through normative biological declines, a greater emphasis is placed on adaptive personal and environmental traits, many of which are acquired through previous experiences and ongoing person-environment interactions. Thus, without the repertoire of coping skills and abilities from which to draw on for compensatory processes, physiological changes in late adulthood can have a detrimental impact on social functioning and on consequent social satisfaction (Khanjani et al., 2015). For example, older adults suffer social losses brought about by poor health, retirement, mobility constraints, widowhood, and so on, which can lead to greater loneliness and psychological depression and generally lower feelings of social satisfaction (Jang et al., 2004; Ng et al., 2020; Pinquart & Sorensen, 2001). Compounding the effects of reduced social contact, cognitive losses associated with normal adult aging, such as reduced cognitive empathy, might also affect older adults' social functioning by limiting their ability to negotiate complex social relationships (Cacioppo et al., 2010; von Hippel et al., 2008). Paradoxically, these losses seem to have no effect on older adult's perception of well-being, with many older adults reporting improved emotional functioning (Charles & Levine, 2018; Charles & Piazza, 2009; Luong et al., 2018; Röcke et al., 2018). Research suggests that individuals perceive a decrease in negative affect and an increase in the ability to restore positive affect with age (Kryla-Lighthall & Mather, 2009). Specifically, some research has suggested that older adults may have a 'positivity bias' in terms of attention to and memory of emotional stimuli (Charles et al., 2003; Hess et al., 2017; Knight et al., 2007; Mather & Carstensen, 2003; Mather & Carstensen, 2005; Mather & Knight, 2005; Ossenfort & Isaaccowitz, 2020). Although external factors may impact this bias (Growney & Hess, 2019; Kensinger, 2008; Knight et al., 2007; Murphy & Isaacowitz, 2008), this observed bias for positive (or against negative) information may be reflective of normative maturational processes relating to emotional stability and meaning making, and serve as a underlying mechanism for the more adaptive cognitive and emotional reappraisal and regulatory processes individuals exhibit with age (Aspinwall & Taylor, 1992; Carstensen et al., 2011; Carver et al., 2010; Madrigal, 2014).

Other research suggests that an individual's experience in dealing with such stressors may moderate the emotional and psychological damage these events may cause. These more experienced people will likely have created stress-related response patterns and schemas out of the more successful or adaptive approaches (i.e., situation selection or modification, stressor attention, stressor appraisal, response) that make them more able to resist or recover from current and future stressors (Bailey et al., 2008; Bonanno, 2004; Findlay et al., 2006; Lazarus, 2006; Kobasa et al., 1981; Maddi, 2007, 2013; Rhodewalt & Agustsdottir, 1984). Given the intertwined nature of age and experience, it is not unreasonable to further assume that these experience-related inter-individual differences in hardiness and resilience influence emotional functioning and well-being (Maddi, 2007, 2013; Magnani, 1990; Ong et al., 2009).

Moreover, it has been argued that a focus on emotionally gratifying goals leads to better emotion regulation (Gross et al., 1997) and improved emotional experiences (Carstensen et al., 2011) with age. Specifically, many proponents of socioemotional selectivity theory argue that an individual's shift from knowledge-seeking goals and motivations to emotional meaning-making driven goals with age in efforts to promote and maintain positive emotional well-being (Carstensen et al., 2002) in a form of normative subconscious emotion regulation that protects older adults' ego when their cognitive capacities begin to shrink with age. Moreover, given that it is relatively well established that age often acts as a proxy variable (i.e., future time perspective, health status, time to death, etc.; Gerstorf et al., 2013; Kotter-Gruehn et al., 2010; Mitnitski, 2001; Grühn et al., 2016) I embrace the approach that age may also act as a proxy variable for experience - particularly experience in coping with stress. Given that one of the main tenets of hardiness is the tendency to reinterpret stressful events as opportunities to learn and grow - in other words, finding meaning in difficulties [in effort to maintain positive emotional well-being] - it logically follows that as one gets older, one would (a) have more experience with and greater ability to reinterpret stress as opportunities to grow and (b) more motivation to do so.

Hardiness has also emerged as a key correlate of occupational success or resilience in a variety of high-stress environments (Bartone et al., 2013; Maddi, 2007; Westman, 1990). The moderating effects of hardiness have been explored at length in a variety of military and security groups including: American, Norwegian, and Israeli service members; casualty assistance workers and first responders; and peacekeeping forces (see: Baitch, 1992; Bartone, 1999; 2006; Fyhn et al., 2016; de la Vega, et al., 2013; Bartone et al., 2002; Thomassen et al., 2015; Vagni et al., 2020; Zaki et al., 2003). Despite the varying populations, studies examining hardiness tend to find similar patterns: although exposure to combat and other military actions was generally related to poorer physiological and psychological health outcomes, dispositional hardiness acted as a buffer to these experiences, with hardy individuals being able to effectively cope with (and at times even personally grow in the aftermath of) such stressors (Bartone, 2006; Britt et al., 2001; Escolas et al., 2017; Florian et al., 1995). For example, in several recent studies with military units performing contingency and military operations, hardiness was related to lower levels of stress (including mission stressors like boredom) on physiological and psychological symptomatology (Bartone, 1996; Bartone & Adler, 1999; Bartone et al., 1989; Cooper et al., 2020; Taylor et al., 2013). Similarly, in studies of law enforcement officers, emergency medical technicians, and fire fighters, greater hardiness – and, in particular, greater commitment, was predictive of greater emotional meaning-making, fewer psychopathological symptoms, less occupational burnout, and better recovery from stress (Andrew et al., 2008; de la Vega et al., 2013; Fyhn et al., 2016; Vagni et al., 2020). These effects were above and beyond the effects of stress exposure, social support, and state mindfulness. Given the disproportionate prevalence of stress-related disordered thinking, boredom, or other loss of meaning during military operations, hardiness has a vital role in service member readiness and fitness for duty in maintaining morale, health, psychological well-being, and mission performance (Bartone, 1999; Siebold, 1996).

Similarly, several researchers have identified emotion regulation, or rather regulatory difficulties, as a potential explanation for the persistence of acute and chronic trauma-related maladjustment and symptomology (Cloitre et al., 2002; Foa & Rothbaum, 1998; Frewen & Lanius, 2006). Given the emphasis on awareness, acceptance, and clarity of emotions when under duress, as well as one's abilities to control impulses and maintain clear goal-directed behaviors (Gratz & Roemer, 2004; Gross & Thompson, 2007) , it is not surprising that several studies have shown strong correlations between hardiness and emotional regulation and strong buffering effects of elements of the two on peritraumatic dissociative (Eid & Morgan, 2006) and emotional responses stress (Andrew et al., 2008; Eid et al., 2004). Given the disproportionate rates of PTSD and other trauma-related adjustment disorders in the service occupations (see: Breslau et al., 1998; Friedman et al., 2007; Kang et al., 2003; Kessler et al., 1995; 2005, 2012, 2014; Kessler & Usten, 2008; Kilpatrick et al., 2003; Kulka et al., 1990; National Comorbidity Survey, 2005; Tanielian & Jaycox, 2008) these findings regarding the buffering effect of hardiness and emotion regulation are particularly important in explaining why some service members develop debilitating psychological and psychosomatic symptoms and others do not (Bouton et al., 2001; Cai et al., 2017; Foa & Kozak, 1986; Gross & Jazaieri, 2014; Litz et al., 2000; Pugach et al., 2019). For example, studies have found that personnel who develop symptoms of PTSD following exposure to combat stressors are significantly lower in hardiness, compared to those who do not get PTSD (Bartone, 1999). Research on a range of trauma-exposed populations has consistently found that those with PTSD report greater overall emotion regulation difficulties and lower general hardiness in comparison to those without PTSD (Bartone 1999; Frewen et al., 2012; Holl et al., 2017; Sippel et al., 2016). These results suggest that a lack of hardy dispositions and global difficulties with emotion regulation may contribute to the maintenance of PTSD, comparatively fewer studies have investigated the unique aspects of emotion regulation involved in PTSD.

Present Study

Research on hardiness and resilience has shown that several factors may have a protective function on individuals experiencing adversity (Luthar et al., 2000; Maddi, 2002; Masten & Gramezy, 1985). These range from having caring and supportive relationships (e.g., Crosnoe & Elder, 2004; Olatunji et al., 2020; Sandler et al., 1989), to personal characteristics such as hardiness (Bartone, 2009; Bartone et al., 2008; Kobasa, 1979; Maddi, 2005). The present study aims to investigate the influence of hardiness, emotion regulation and life experiences (measured via stress experiences and age) on several measures of perceived physical and socioemotional functioning: depressive symptoms, life satisfaction, and self-reported physical health. Specifically, this study is interested in the relatively unexplored relationships between hardiness and emotion regulation.

Furthermore, despite these theoretical and empirical patterns which suggest intersecting roles of hardiness, emotion regulation, and well-being, relatively few studies have looked at the contextualization of these interactions. Thus, three supplemental aims emerge: (1) the analysis of age-related differences in endorsement patterns of hardiness and emotion; (2) the exploration of the effects stressful experience has on perceived wellbeing; and (3) the investigation of occupation-related differential effects of hardiness and emotion regulation on a variety of socioemotional and physiological outcomes, including stress frequency, stress severity, depressive symptoms, and life satisfaction.

Based on previous research, it is expected that there will be significant associations between hardiness and emotional regulation. Specifically, it is expected that positive hardiness will be associated with more optimal emotion regulation strategies, and negative hardiness will be related to less optimal emotion regulation strategies, respectively. Inverse relationships are expected between positive hardiness and less optimal regulation as well as negative hardiness and optimal regulation. In pursuit of the supplemental questions, it is further expected that age will have significant independent and moderating effects on the endorsement of specific patterns of hardiness and emotion regulation, especially for positive hardiness and optimal emotion regulation. Similarly, it is expected that there will be significant group differences in the endorsement of hardiness and emotional regulation as well as the relationships between the variables in civilians and service members. Due to the differences in stressful experiences, training, and general culture, it can be expected that service members will endorse more positive and negative hardiness than their civilian counterparts. The need for higher hardiness within these populations likely contributes to certain patterns of emotional responding. Thus, it is expected that service members will endorse more less optimal emotion regulation but less optimal emotion regulation than their civilian counterparts. Furthermore, it is expected that varying rates of endorsement and the differential relationships between hardiness and emotion regulation across groups will be reflected in differences in well-being

Finally, it is expected that stress frequency and perceived severity will be significant covariates for the relationships between hardiness, emotion regulation and well-being. Given previous research, it can be expected that greater stress frequency will be associated with significantly worse well-being. This relationship will likely be moderated by age, with younger adults being significantly more affected by stressor frequency than older adults. Greater perceived stress severity will also be associated with significantly worse well-being outcomes. Given that it is expected that service members will generally endorse less adaptive responses to stress and have less optimal regulatory abilities, it is expected that the impacts of stress perception on well-being will be enhanced in service members.

CHAPTER 2: METHODS

Participants

Participants were recruited via Amazon's Mechanical Turk from the general public (MTurk, *n* = 955) and through SONA from an Introductory Psychology class at a large Southeastern University (SONA: *n* = 468). Participants completed an online survey via Qualtrics. After implementing three data-quality checks, 80 cases were excluded (MTurk: *n* = 56; SONA: *n* = 24). First, cases were excluded if they did not complete a substantial proportion (> 70%) of the survey (Total: *n* = 54; MTurk: *n* = 31; SONA: *n* = 23). Second, cases were excluded for completing the survey in an unrealistic time (Total: *n* = 25; MTurk: *n* = 42; SONA: *n* = 23). Third, cases were excluded (Total: *n* = 11; MTurk: *n* = 36; SONA: *n* = 15) if they provided inconsistent, improbable, or nonsensical information, such as using lorem ipsum filler text, responding with the very same value throughout the survey or switching between extreme values (if these switches didn't correspond to positively and negatively framed items) or failing attention and validation checks. For example, chronological age was assessed twice on separate pages: (a) in a free format indicating the years and (b) in a dropdown menu indicating the birth year. If the age did not match, cases were excluded. Cases failing the data quality checks tended to fail more than one criterion.

The total, or pooled, sample consisted of 1,342 adults (52.6% female) ranging from 18 to 79 years (*M* = 31.2, *SD* = 12.6). The vast majority (79.9%) identified as White (Black: 1.1%, Hispanic: 6.0%, Asian: 8.0%, Middle Eastern: 1.0%, Indigenous Peoples (e.g., Native American, Aboriginal, Native Alaskan, etc.): 1.6%, Native Hawaiian/Pacific Islander: .37%) and civilian (85.1%; Service Members: 14.9%)

Expected demographic differences between the two samples, MTurk and SONA (i.e., Paolacci et al., 2010), emerged and were significant: age (F(1, 1340) = 1,146.66, p <.01, η^2 = .46), sex (F(1, 1338) = 34.798, p <.01, η^2 = .03), marital status (F(1, 1340) = 414.79, p <.01, η^2 = .24), educational attainment (F(1, 1340) = 736.10, p <.01, η^2 = .36), and service status (F(1, 1341) = 84.70, p <.01, η^2 = .06). In addition to being the larger sample, the MTurk sample was generally more representative of the US as a whole (Ipeirotis, 2009), with an older average age, a more even split between the sexes, and greater variability in terms of marital status, educational achievement, and service experiences (For sample-specific demographic information, see *Table 1*). Despite this, the retention of the SONA sample allowed for analyses of measurement invariance between subpopulations as well as provided additional degrees of freedom for multivariate analyses and structural equation models (SEMs). The impact of these differences will be discussed throughout.

Measures

Hardiness. To measure the positive and negative aspects of hardiness, I utilized a modified 18-item Dispositional Resilience Scale-II (Holland et al., *in prep*; Sinclair & Oliver, 2003), which contains two higher-order facets representing positive and negative aspects of hardiness. Items were assessed on a 7-point scale from 1 (*definitely false*) to 7 (*definitely true*). Each facet was assessed with 3 items. Internal consistencies were appropriate (MTurk: α = .88 [for positive hardiness] and α = .91 [for negative hardiness]); SONA: α = .80 and α = .85; pooled: α = .86 and α = .9. Significant differences between samples were observed for both positive hardiness (F(1, 1340) = 11.81, p <.01, η^2 = .01), and negative hardiness (F(1, 1340) = 6.82, p <.01, η^2 = .01). Although the MTurk sample did, on average endorse more hardiness (both positive and negative) than the SONA sample, the relatively large standard deviation and relatively small effect sizes of these differences suggest that these differences are not particularly meaningful.

Emotion Regulation: For emotion regulation, participants completed the Self-Regulation and Withholding of Negative Emotions scale (SRWNE; Kim et al., 2002). This is a 36-question scale that measures different optimal (integrated, identified) and less optimal (introjected, external) regulation habits. Participants rated their agreement on a scale of 1 (*strongly disagree*) to 7 (*strongly agree*). Subscale reliability across all samples was generally good (MTurk: α = . .82-.86; SONA: α = .81-.87; pooled: α = .81-.86). Significant differences between samples were observed for both optimal emotion regulation ($F(1, 1340) = 8.49$, $p <.01$, $\eta^2 = .01$), and suboptimal emotion regulation ($F(1, 1340) = 5.63$, $p = .02$, $\eta^2 < .01$). The MTurk sample, on average, endorsed more optimal and less optimal emotion regulation than the SONA sample, though, as was the case with hardiness, these differences may not be practically significant, despite their statistical significance.

Stress Experiences. To measure stress experience, I utilized a modified version of the 7-item Daily Inventory of Stressful Events (Almeida et al., 2002). Like the DISE, the Weekly Inventory of Stressful Events (WISE; Chu & Grühn, 2015) consists of a series of interdependent stem-and-branch questions regarding the occurrence and perceived severity of seven unique types stressors (i.e., argument or potential argument, home stressors, acts of discrimination) in the past seven days. Significant differences between samples were observed for both stress frequency $F(1, 1341) = 66.05$, $p <.01$, $\eta^2 = .05$), and perceived stress severity ($F(1, 1115) = 16.77$, $p < .01$, $\eta^2 = .02$). Although both samples reported relatively few stressors (MTurk: $M = 2.35$, $SD = 1.93$; SONA: $M = 3.22$, $SD = 1.67$; pooled: $M = 2.64$, $SD = 1.89$) of moderate perceived severity (MTurk: $M = 4.57$, $SD = 1.21$; SONA: $M = 4.27$, $SD = 1.12$; pooled: $M =$

4.45, *SD* = 1.19), the observed differences could be due to the different life stages the two samples represent, as some stressors may be more or less common in student samples.

Subjective Well-Being. I utilized measures of depressive symptoms and life satisfaction as proxies for subjective emotional well-being. For depressive symptoms, participants completed the Center for Epidemiological Studies - Depression Scale (CES-D; Radloff, 1977). This scale is a 20-question scale, which measures depressive symptomatology, with questions such as "I was bothered by things that don't bother me." Participants rated their agreement on a scale of 1 to 4 with 1 being "*Rarely or none of the time* (*less than one day*)" and 4 being "*Most or all of the time (5-7 days)*" Reliability was generally good for all samples (MTurk: α = . 88; SONA: α = .79; pooled: α = .86). For life satisfaction, participants answered a one-item question, "in general, how satisfied are you with your life?" Participants rated their satisfaction on a scale of 1 (*very dissatisfied*) to 7 (*very satisfied*). For physical health, participants answered a one-item question, "in general, how would you rate your physical health?" Participants also rated this on a scale of 1 (*very dissatisfied*) to 7 (*very satisfied*).There were no statistical differences between the two samples in terms of depressive symptomatology ($F(1, 1341) = .68$, $p = .41$, $\eta^2 < .01$)), life satisfaction symptomatology ($F(1, 1341) = .39$, $p = .53$, $\eta^2 < .01$)) or perceived physical health symptomatology ($F(1, 1340) = 2.69$, $p = .10$, $\eta^2 < .01$)).

CHAPTER 3: RESULTS

Preliminary Analyses

Item and Construct Correlations

To investigate the relationship between hardiness, emotion regulation, stress, and perception of general well-being, several multi-trait correlation matrices were created: one representing each of the samples and one representing the combined sample. Based on the results of previous item- and construct- correlations of positive and negative hardiness (see Holland et al., *in prep*), positive and negative hardiness was represented at a high-order level rather than at a sub-facet level. Emotion Regulation was also represented at the higher-order level, rather than the sub-facet level. Given the high degree of correlation between optimal and less optimal emotion regulation, a one-factor model was explored, but ultimately dismissed based on a confirmatory factor analysis of the scale which suggested at least two factors.

Consistent with previous research (Curtis & Chicchetti, 2007; Karreman & Vingerhoets, 2012; Trugade & Fredrickson, 2006, 2007), results of this analysis suggested significant positive relationships between the positive components of hardiness and generally adaptive outcomes (i.e., optimal emotion regulation, physical health, and overall life satisfaction) and significant inverse relationships between those same protective (positive) components of hardiness and generally less adaptive life outcomes (i.e., stress and depressive symptoms). Conversely, a lack of these protective hardiness factors (or even endorsement of risk factors) was related to less adaptive life outcomes (i.e., less optimal emotion regulation, and poorer subjective physical and emotional well-being; *see Table 2*). Despite slight differences in strength of the correlations, these patterns held true for both the MTurk and the SONA sample (*See Table 3*)

Independent and Moderating Effects

Based on the results of item and construct correlations, several confirmatory multiple regressions which analyzed the independent effects of hardiness and emotion regulation on the various outcome measures. Results of these analyses suggested that greater positive hardiness is indicative of greater optimal emotion regulation (β = -.07, p <.001; F(1, 1340) = 7.57, p =.006; $R^{2\,=}$ .02), less generally less optimal emotion regulation (β = .12, p <.001; F(1, 1339) = 29.37, p <.001; $R^{2\,=}$ .02), greater life satisfaction (β = 0.74, p <.001 F(1, 1340) = 828.92, p <.001; $R^{2\,=}$ .38), fewer stressors (β = -0.20, p <.001; F(1, 1340) = 21.49, p <.001; R^2 = .16), less severe stressors (β = -0.11, p <.001; F(1, 1114) = 12.39, p <.001; R^2 = .01), better perceived physical health (β = .46, p <.001; F(1, 1339) = 301.93, p <.001; R^2 = .18), and less depressive symptomatology (β = -0.25, p <.001; F(1, 1340) = 407.06, p <.001; R^2 = .23). Conversely, greater negative hardiness was indicative of greater optimal (β = 0.16, p <.001; F(1, 1339) = 92.07, p <.001; R^2 = .06), and less optimal emotion regulation (β = 0.34, p *<.001*; F(1, 1340) = 444.82, p *<.001*; R^2 = .25), more stressors (β = .0.46, p <.001; F(1, 1340) = 221.42, p *<.001*; R^2 = .14), more severe stressors (β = .30, p <.001; F(1, 1114) = 200.29, p <.001; R^2 = .15), worse perceived physical health (β = -0.13, p *<.001*; F(1, 1339) = 33.92, p *<.001*; R^2 = .02), worse life satisfaction (β = -0.33, p <.001; F(1, 1340) = 201.39, p <.001; R^2 = .13), and more depressive symptomatology (β = .32, p <.001; F(1, 1340) = 2298.65, p <.001; R^2 = .63). When analyzed jointly, positive and negative hardiness appear to have a synergistic effect, with regression coefficients for both variables often increasing dramatically and the amount of variance explained more than doubling.

Greater optimal emotion regulation was indicative of more stressors (β = 0.31 , p *<.001*; F(1, 1340) = 33.48, p <.001; R^2 = .02), more severe stressors (β = 0.25, p *<.001*; F(1, 1115) =

46.11, *p* <.001; R^2 = .04), better perceived physical health (β = 0.11, *p* <.001; F(1, 1340) = 8.48, *p* =.004; R^2 = .01), but also more depressive symptomatology (β = 0.14, *p <.001*; F(1, 1340) = 66.01, *p <.001*; R^2 = .05). Interestingly, greater endorsement of less optimal emotion regulation was also indicative of indicative more stressors (β = 0.43, *p <.001*; F(1, 1340) = 79.88, *p <.001*; R^2 = .06) that were, on average, more severe (β = 0.35, *p <.001*; F(1, 1115) = 114.95, *p <.001*; R^2 = .09), and greater depressive symptomatology (β = 0.26, *p <.001*; F(1, 1341) = 327.27, *p <.001*; R^2 = .20), but rather than physical health, greater endorsement of less optimal emotion regulation patterns was negatively related to worse life satisfaction (β = -0.17, *p <.001*; F(1, 1340) = 21.47, *p <.001*; R^2 = .02).

More frequent stressors were predictive of worse satisfaction with life (β = -0.05, *p <.001*; F(1, 1341) = 6.28, *p <.001*; R^2 = .23), and greater depressive symptomatology (β = 0.16, *p <.001*; F(1, 1341) = 397.08, *p =.012*; R^2 = .001). Similarly, more severe stressors were predictive of worse perceived physical health (β = -0.08 *, p <.001*; F(1, 1115) = 5.91, *p <.001*; R^2 = .01), greater depressive symptomatology (β = 0.23, *p <.001*; F(1, 1115) = 260.40, *p <.001*; R^2 = .19), and worse satisfaction with life (β = -0.15, *p <.001*; F(1, 1115) = 17.09, *p <.001*; R^2 = .02). When considered in conjunction, emotion regulation and hardiness seemed to moderate the effects of stress on depressive symptoms, life satisfaction and perceived physical health.

Next, a series of regression analyses were conducted to determine the effects of potential moderating variables: age, gender and service experience. In general, older participants reported better emotional functioning but worse well-being: older participants reported using more positive hardiness (β = 0.12, *p <.001*; F(1, 1339) = 21.87, *p <.001*; R^2 = .02) and less negative hardiness (β = -0.02, *p <.001*; F(1, 1339) = 25.28, *p <.001*; R^2 = .02) to cope with their more frequent stressors (β = -0.04, *p <.001*; F(1, 1340) = 94.53, *p <.001*; R^2 = .07). Despite these more generally more favorable patterns of coping, older adults still reported greater depressive symptomology (β = -0.01, $p < .001$; F(1, 1340) = 94.53, $p < .001$; $R^2 = .07$) and worse perceived physical health (β = -0.01, $p < .001$; F(1, 1339) = 21.59, $p < .001$; $R^2 = .02$).

There were no gender differences in emotional functioning, but female participants but did report generally worse well-being with on average greater depressive symptomology (β = .13, $p < .001$; F(1, 1338) = 15.92, $p < .001$; $R^2 = .01$) and worse perceived physical health (β = -0.22, $p = .001$; F(1, 1337) = 10.27, $p = .001$; $R^2 = .01$), possibly due in part because of their more frequent and often more severe stress experiences (β = 0.31, $p < .001$; F(1, 1338) = 9.25, $p < .001$; $R^2 = .01$ and β = 0.35, $p < .001$; F(1, 1114) = 24.01, $p < .001$; $R^2 = .02$, respectively)

Contrastingly, service-affiliated participants ("service members") reported worse emotional functioning but better well-being. Service members reported more positive and negative hardiness (β = 0.54, $p < .001$; F(1, 1340) = 33.55, $p < .001$; $R^2 = .02$ and β = 1.25, $p < .001$; F(1, 1340) = 115.86, $p < .001$; $R^2 = .08$, respectfully), more optimal and less optimal emotion regulation strategies (β = 0.40, $p < .001$; F(1, 1340) = 29.58, $p < .001$; $R^2 = .02$ and β = 0.55, $p < .001$; F(1, 1341) = 47.16, $p < .001$; $R^2 = .03$, respectively),when coping with their more frequent, more severe stress (β = 1.23, $p < .001$; F(1, 1341) = 73.76, $p < .001$; $R^2 = .05$ and β = 0.56, $p < .001$; F(1, 1115) = 32.80, $p < .001$; $R^2 = .03$, respectfully). Paradoxically, these participants reported better perceived physical health (β = 0.76, $p < .001$; F(1, 1340) = 59.80, $p < .001$; $R^2 = .04$), and better life satisfaction (β = 0.78, $p < .001$; F(1, 1341) = 50.39, $p < .001$; $R^2 = .04$), despite their greater depressive symptomology (β = 0.78 , $p < .001$; F(1, 1341) = 73.59, $p < .001$; $R^2 = .05$).

Finally, a series of moderation analyses were conducted to determine key interaction effects among the variables. Age was a significant moderator variable for many of the key relationships: positive hardiness on stress frequency (β = -0.01, $p < .001$; $F(2, 1338) = 51.67$, $p < .001$; $R^2 = .07$), depressive symptoms (β = -0.001, $p < .001$; $F(2, 1338) = 217.20$ $p < .001$; $R^2 = .25$), life satisfaction (β = -0.002, $p < .001$; $F(2, 1338) = 435.16$, $p < .001$; $R^2 = .39$), and perceived physical health (β = -0.003, $p < .001$; $F(2, 1337) = 181.14$, $p < .001$; $R^2 = .21$); negative hardiness on stress frequency (β = -0.01, $p < .001$; $F(2, 1338) = 138.47$, $p < .001$; $R^2 = .17$), depressive symptoms (β = -0.001, $p = .001$; $F(2, 1338) = 1161.75$, $p < .001$; $R^2 = .63$), life satisfaction (β = -0.004, $p < .001$; $F(2, 1338) = 110.14$, $p < .001$; $R^2 = .14$), and perceived physical health (β = -0.005, $p < .001$; $F(2, 1337) = 31.97$, $p < .001$; $R^2 = .04$); optimal regulation on stress frequency (β = -0.008, $p < .001$; $F(2, 1339) = 67.28$, $p < .001$; $R^2 = .09$), depressive symptoms (β = -0.002, $p < .001$; $F(2, 1339) = 58.26$, $p < .001$; $R^2 = .08$), and perceived physical health (β = -0.003, $p < .001$; $F(2, 1338) = 14.09$, $p < .001$; $R^2 = .02$); less optimal regulation on stress frequency (β = -0.008, $p < .001$; $F(2, 1339) = 87.34$, $p < .001$; $R^2 = .12$), depressive symptoms (β = -0.002, $p < .001$; $F(2, 1339) = 188.71$, $p < .001$; $R^2 = .22$), and perceived physical health (β = -0.003, $p < .001$; $F(2, 1338) = 9.49$, $p < .001$; $R^2 = .01$); stress frequency on life satisfaction (β = -0.002, $p = .038$; $F(2, 1340) = 5.31$, $p = .005$; $R^2 = .01$) and physical health (β = -0.004, $p < .001$; $F(2, 1339) = 8.16$, $p < .001$; $R^2 = .01$); and stress severity on depressive symptoms (β = -0.001, $p < .001$; $F(2, 1114) = 144.56$, $p < .001$; $R^2 = .21$), life satisfaction (β = -0.001, $p < .001$; $F(2, 1114) = 9.80$, $p < .001$; $R^2 = .02$) and physical health (β = -0.003, $p < .001$; $F(2, 1114) = 12.14$, $p < .001$; $R^2 = .02$). In general, the effects of dispositional attributions and coping mechanisms, both positive and negative, were greater for older (“established”) adults than for younger (“emerging”) adults. Likewise, the effects of stress frequency and severity on well-being were also stronger in the older group.

Similarly, gender was also a significant moderator variable for many of key relationships: positive hardiness on stress frequency (β = 0.05, p =.011; F(2, 1336) = 13.98, $p < .001$; R^2 = .02), stress severity (β = 0.07, p <.001; F(2, 1112) = 18.51, $p < .001$; R^2 = .03), depressive symptoms (β = 0.02, $p = .003$; F(2, 1336) = 208.64, $p < .001$; R^2 = .24) and perceived physical health (β = -0.038, $p = .003$; F(2, 1335) = 155.28, $p < .001$; R^2 = .19); negative hardiness on stress frequency (β = 0.80, $p = .004$; F(2, 1336) = 114.65, $p < .001$; R^2 = .15), stress severity (β = 0.08, $p < .001$; F(2, 1112) = 112.63, $p < .001$; R^2 = .17), depressive symptoms (β = 0.04, $p < .001$; F(2, 1336) = 1192.59, $p < .001$; R^2 = .64), and perceived physical health (β = -0.06, $p = .002$; F(2, 1335) = 21.79, $p < .001$; R^2 = .03); optimal regulation on stress frequency (β = 0.07, $p < .001$; F(2, 1337) = 22.51, $p < .001$; R^2 = .03), stress severity (β = 0.08, $p < .001$; F(2, 1113) = 37.26, $p < .001$; R^2 = .06), depressive symptoms (β = 0.03, $p < .001$; F(2, 1337) = 42.97, $p < .001$; R^2 = .06), and perceived physical health (β = -0.05, $p < .001$; F(2, 1336) = 8.91, $p < .001$; R^2 = .01); less optimal regulation on stress frequency (β = 0.07, $p = .001$; F(2, 1337) = 45.75, $p < .001$; R^2 = .06), stress severity (β = 0.07, $p < .001$; F(2, 1113) = 69.20, $p < .001$; R^2 = .11), depressive symptoms (β = -0.03, $p < .001$; F(2, 1337) = 172.37, $p < .001$; R^2 = .21), and perceived physical health (β = -0.05, $p = .003$; F(2, 1336) = 4.69, $p < .001$; R^2 = .01); stress frequency on depressive symptoms (β = 0.02, $p < .001$; F(2, 1339) = 201.06, $p < .001$; R^2 = .23) and physical health (β = -0.08, $p < .001$; F(2, 1338) = 6.76, $p = .001$; R^2 = .01); and stress severity on perceived physical health (β = -0.05, $p = .006$; F(2, 1113) = 6.80, $p = .001$; R^2 = .01). In general, the effects of more positive or adaptive dispositional attributions and coping mechanisms were greater for men than women, but the effects of more negative and less adaptive dispositional attributions and coping mechanisms were greater for women than men. In a similar vein, the effects of stress frequency and severity on well-being were also stronger for women.

Service affiliation was the greatest moderator for most relationships: positive hardiness on optimal regulation (β = 0.08, $p < .001$; F(2, 1338) = 30.83, $p < .001$; R^2 = .04), less optimal regulation (β = 0.13, $p < .001$; F(2, 1339) = 40.21, $p < .001$; R^2 = .06), stress frequency (β = 0.26, $p < .001$; F(2, 1339) = 56.45, $p < .001$; R^2 = .08), stress severity (β = 0.14, $p < .001$; F(2, 1113) = 34.97, $p < .001$; R^2 = .06), depressive symptoms (β = 0.11, $p < .001$; F(2, 1339) = 342.25, $p < .001$; R^2 = .34), life satisfaction (β = 0.07, $p < .001$; F(2, 1339) = 427.04, $p < .001$; R^2 = .39), and perceived physical health (β = 0.10, $p < .001$; F(2, 1338) = 170.97, $p < .001$; R^2 = .20); negative hardiness on optimal regulation (β = 0.07, $p < .001$; F(2, 1338) = 53.67, $p < .001$; R^2 = .07), less optimal regulation (β = 0.04, $p = .018$; F(2, 1339) = 225.97 $p < .001$; R^2 = .25), stress frequency (β = 0.20, $p < .001$; F(2, 1339) = 132.16, $p < .001$; R^2 = .17), life satisfaction (β = 0.38, $p < .001$; F(2, 1339) = 249.26, $p < .001$; R^2 = .27), and perceived physical health (β = 0.28, $p < .001$; F(2, 1338) = 94.31, $p < .001$; R^2 = .12); optimal regulation on stress frequency (β = 0.24, $p < .001$; F(2, 1339) = 50.53, $p < .001$; R^2 = .07), stress severity (β = 0.11, $p < .001$; F(2, 1114) = 38.99, $p < .001$; R^2 = .07), depressive symptoms (β = 0.07, $p < .001$; F(2, 1339) = 65.24, $p < .001$; R^2 = .09), life satisfaction (β = 0.16, $p < .001$; F(2, 1339) = 27.79, $p < .001$; R^2 = .04), and perceived physical health (β = 0.16, $p < .001$; F(2, 1338) = 35.84, $p < .001$; R^2 = .05); less optimal regulation on stress frequency (β = 0.23, $p < .001$; F(2, 1340) = 70.67, $p < .001$; R^2 = .10), stress severity (β = 0.09, $p < .001$; F(2, 1114) = 68.61, $p < .001$; R^2 = .11), depressive symptoms (β = 0.06, $p < .001$; F(2, 1340) = 190.70, $p < .001$; R^2 = .22), life satisfaction (β = 0.21, $p < .001$; F(2, 1340) = 52.14, $p < .001$; R^2 = .07), and perceived physical health (β = 0.18, $p < .001$; F(2, 1339) = 36.38, $p < .001$; R^2 = .05); stress frequency on depressive symptoms (β = 0.05, $p < .001$; F(2, 1340) = 213.25, $p < .001$; R^2 = .24) life satisfaction (β = 0.22, $p < .001$; F(2, 1340) = 33.58, $p < .001$; R^2 = .05), and physical health (β = 0.20, $p < .001$; F(2, 1339) = 33.0, $p < .001$; R^2 = .05);

and stress severity on depressive symptoms (β = 0.06, $p < .001$; F(2, 1114) = 154.21, $p < .001$; R^2 = .22) life satisfaction (β = 0.20, $p < .001$; F(2, 1114) = 47.80, $p < .001$; R^2 = .08), and perceived physical health (β = 0.19, $p < .001$; F(2, 1114) = 43.88, $p < .001$; R^2 = .07). Although I do expect gender to moderate many of these effects, the disproportionate split of genders within the already limited service population resulted in a violation of the assumption of equal groups necessary for ANOVAs. The interaction effects of service experience and dispositions on well-being, as well as that of service experience on patterns of coping on well-being were, for the most part, disordinal. In general, the effects general dispositions (both positive and negative) were greater for civilians than service members, though greater negative hardiness did have a particularly detrimental impact on perceptions of physical health. Contrastingly, emotion regulation, both adaptive and less adaptive, had greater effects on well-being for service members than civilians In a similar vein, the effects of stress frequency, though not severity, on well-being were also stronger for service members than civilians.

Other potential moderators included positive hardiness, negative hardiness, optimal emotion regulation, and less optimal emotion regulation. Positive hardiness was a significant moderator for stress frequency on depressive symptoms (β = -0.05, $p < .001$; F(2, 1339) = 303.99, $p < .001$; R^2 = .31) life satisfaction (β = 0.19, $p < .001$; F(2, 1339) = 229.0, $p < .001$; R^2 = .26), and perceived physical health (β = 0.13, $p < .001$; F(2, 1338) = 120.87, $p < .001$; R^2 = .15); and stress severity on depressive symptoms (β = -0.04, $p < .001$; F(2, 1113) = 288.13, $p < .001$; R^2 = .34), life satisfaction (β = 0.15, $p < .001$; F(2, 1113) = 342.50, $p < .001$; R^2 = .38), and perceived physical health (β = 0.10, $p < .001$; F(2, 1113) = 135.02, $p < .001$; R^2 = .19). Negative hardiness was a significant moderator for stress frequency on depressive symptoms (β = 0.07, $p < .001$; F(2, 1339) = 698.48, $p < .001$; R^2 = .51), life satisfaction (β = -0.61, $p < .001$; F(2, 1339) =

34.54, $p <.001$; $R^2 = .05$), and perceived physical health (β = -0.02, $p =.002$; F(2, 1338) = 5.0, $p =.007$; $R^2 = .01$); and stress severity on depressive symptoms (β = 0.06, $p <.001$; F(2, 1113) = 890.33, $p <.001$; $R^2 = .62$) life satisfaction (β = -0.06, $p <.001$; F(2, 1113) = 60.05, $p <.001$; $R^2 = .10$), and perceived physical health (β = -0.02, $p <.001$; F(2, 1113) = 9.81, $p <.001$; $R^2 = .02$). Optimal regulation was a significant moderator for stress frequency on depressive symptoms (β = 0.03, $p <.001$; F(2, 1340) = 225.63, $p <.001$; $R^2 = .25$) and perceived physical health (β = 0.05, $p <.001$; F(2, 1339) = 7.61, $p =.001$; $R^2 = .01$); and stress severity on depressive symptoms (β = 0.03, $p <.001$; F(2, 1114) = 159.98, $p <.001$; $R^2 = .22$) and perceived physical health (β = 0.03, $p <.001$; F(2, 1114) = 9.12, $p <.001$; $R^2 = .02$). Finally, less optimal regulation was a significant moderator for stress frequency on depressive symptoms (β = 0.05, $p <.001$; F(2, 1340) = 309.06, $p <.001$; $R^2 = .32$); and stress severity on depressive symptoms (β = 0.05, $p <.001$; F(2, 1114) = 264.99, $p <.001$; $R^2 = .32$) life satisfaction (β = -0.02, $p =.038$; F(2, 1114) = 10.73 $p <.001$; $R^2 = .02$), and perceived physical health (β = 0.02, $p =.028$; F(2, 1114) = 5.38, $p =.005$; $R^2 = .01$).

Single Group Models

Based on the results of the preliminary analyses, a series of structural equation models (SEM) were created. These models, which aimed to investigate the concurrent relationships of the aforementioned variables, were composed of a mix of latent and manifest variables and were conducted for each of the samples (MTurk and SONA) independently and jointly in a pooled model.

The first set of models simply examined the relationship between hardiness and emotion regulation. Hardiness was represented by latent variables for each dimension (positive and negative composed of representative parcels, as is appropriate in structural equation modeling to improve psychometric properties (Little, et al., 2002). Emotion Regulation were represented by manifest variables of the means for each dimension, Optimal and Less Optimal. The model (Figure 1) showed adequate fit to the data for the MTurk sample, χ^2 (16) = 19.684, p = .235; CFI = .999, TLI = .998; RMSEA = .016 [.000, .035]; $p_{RMSEA<.05}$ = .999; the SONA sample, χ^2 (16) = 27.293, p = .038; CFI = .994, TLI = .987; RMSEA = .039 [.009, .063]; $p_{RMSEA<.05}$ = .750; and the pooled sample, χ^2 (16) = 25.094, p = .068; CFI = .999, TLI = .997; RMSEA = .021 [.000, .035]; $p_{RMSEA<.05}$ = 1.00. As expected, positive and negative hardiness were inversely correlated (MTurk: r = -.49; SONA: r = -.63; pooled: r = -.55) and optimal and less optimal emotion regulation was positively correlated (MTurk: r = .83; SONA: r = .82.; pooled: r = .82). There were also significant relationships between negative hardiness and optimal regulation, as well as positive hardiness and less optimal regulation, though these relationships were relatively small and only significant in the MTurk and pooled samples (MTurk: r = .30; SONA: r = . 24; pooled: r = .27 and MTurk: r = -.04; SONA: r = -.09; pooled: r = -.08, respectively). These findings support to previous research which suggests that there may be a theoretical link between hardiness and emotion regulation (e.g., Kokkonen & Pulkkinen, 2001).

The second model examined the relationship between hardiness, emotion regulation, and the three outcome variables, depressive symptoms, life satisfaction, and perceived physical health. Depressive symptoms were represented by a composite manifest variable indicative of one's average endorsement of depressive symptomatology. The observed variables of life satisfaction and physical health were represented by manifest variables. The three outcome variables were co-varied and the latent hardiness and emotion regulation variables were predictors for all three outcome variables. I expected that positive hardiness would largely predict perceptions of positive outcomes - greater life satisfaction, and physical health and less depressive symptoms - and negative hardiness would mainly predict perceived negative outcomes, namely greater depressive symptoms, but also be related to lower life satisfaction and perceived physical health. Expectations were largely confirmed with acceptable model fit: MTurk: χ^2 (28) = 88.483, *p* <.001; CFI = .992, TLI = .981; RMSEA = .048 [.037, .059]; $p_{RMSEA<.05}$ = .619; SONA: χ^2 (28) = 37.178 *p* = .115; CFI = .997, TLI = .992; RMSEA = .026 [.000, .047]; $p_{RMSEA<.05}$ = .971; pooled: χ^2 (28) = 106.233, *p* <.001; CFI = .992, TLI = .982; RMSEA = .044 [.036, .053]; $p_{RMSEA<.05}$ = .842. To simplify the model, non-significant paths (optimal emotion regulation on depressive symptoms and life satisfaction and the correlation between positive hardiness and less optimal emotion regulation) were removed. Model fit was hardly affected by removing non-significant paths: MTurk: χ^2 (31) = 95.636, *p* <.001; CFI = .991, TLI = .982; RMSEA = .047 [.036, .058]; $p_{RMSEA<.05}$ = .675 ; SONA: χ^2 (31) = 44.871 *p* = .051; CFI = .995, TLI = .989; RMSEA = .031 [.000, .050]; $p_{RMSEA<.05}$ = .953; pooled: χ^2 (31) = 115.121, *p* <.001; CFI = .992, TLI = .982; RMSEA = .044 [.035, .052]; $p_{RMSEA<.05}$ = .882. These findings also support previous research which suggests that hardy dispositions moderate the negative effects of stress on well-being and act as buffering agents when those stresses are approached with less adaptive coping strategies (Beasley et al., 2003). However, given the limited effects of regulation, these findings also give credence to literature suggesting that the unique effects of emotion regulation may be suppressed by the overarching hardiness concept. Figure 2 shows the final model with non-significant paths removed.

In the next step, age was added to the model as a predictor for all variables. Model fit to the data was adequate for the MTurk sample, χ^2 (32) = 90.954, *p* <.001; CFI = . 992, TLI = .981; RMSEA = .044 [.033, .055]; $p_{RMSEA<.05}$ = .815; the SONA sample, χ^2 (32) = 38.602, *p* = .196; CFI = .998, TLI = .994; RMSEA = .021 [.000, .042]; $p_{RMSEA<.05}$ = .992; and the pooled sample, χ^2 (32) = 116.675, *p* <.001; CFI = .992, TLI = .980; RMSEA = .043 [.035, .052];

$p_{RMSEA<.05}$ = .905. Removing non-significant paths (less optimal emotion regulation on life satisfaction and depressive symptoms, optimal emotion regulation on life satisfaction, and the correlation between positive hardiness and less optimal emotion regulation) did not alter model fit: MTurk: χ^2 (36) = 92.729, p <.001; CFI = .993, TLI = .984; RMSEA = .041 [.031, .051]; $p_{RMSEA<.05}$ = .932; SONA: χ^2 (36) = 48.312 p = .082; CFI = .995, TLI = .990; RMSEA = .027 [.000, .045]; $p_{RMSEA<.05}$ = .983; pooled: χ^2 (36) = 119.594, p <.001; CFI = .992, TLI = .982; RMSEA = .040 [.033, .049]; $p_{RMSEA<.05}$ = .974. Age was predictive of higher positive hardiness in the MTurk and pooled samples and decreased negative hardiness less optimal emotion regulation in all samples. Age was also predictive of decreased life satisfaction and poorer perceptions of physical health in all samples but was only predictive of fewer depressive symptoms in the SONA and pooled samples. Figure 3 shows the model with age effects with non-significant predictors removed.

Given the previously established influence stress has on perception of well-being (e.g., Almeida, 2005, 2016; Folkman & Lazarus, 1980; Holland et al., *in prep*; Kotter-Gruehn et al., 2015; Hartsell & Neupert, 2017), two indices of stress were added to the model as predictors: stress frequency and perceived severity. With the addition of stress (frequency and severity), model fit did not significantly change, MTurk: χ^2 (41) = 102.477, p <.001; CFI = .992, TLI = .981; RMSEA = .040 [.030, .049]; $p_{RMSEA<.05}$ = .961; SONA: χ^2 (41) = 50.140, p = .155; CFI = .997, TLI = .992; RMSEA = .022 [.000, .040]; $p_{RMSEA<.05}$ = .996; pooled: χ^2 (41) = 127.513, p <.001; CFI = .992, TLI = .980; RMSEA = .039 [.031, .046]; $p_{RMSEA<.05}$ = .994. Removing nonsignificant predictors (age on optimal regulation and stress severity; less optimal regulation on depressive symptoms, life satisfaction and stress frequency; optimal regulation on stress severity and stress frequency; stress frequency on health and life satisfaction and stress severity on life satisfaction) improved model fit, indicating that the effects of stress are limited to depressive symptoms in both samples: MTurk: χ^2 (51) = 111.142, *p* <.001; CFI = .993, TLI = .985; RMSEA = .035 [.026, .044]; $p_{RMSEA<.05}$ = .997; SONA: χ^2 (51) = 74.288, *p* = .018; CFI = .992, TLI = .983; RMSEA = .031 [.013, .046]; $p_{RMSEA<.05}$ = .984; pooled: χ^2 (51) = 137.309, *p* <.001; CFI = .992, TLI = .984; RMSEA = .034 [.028, .042]; $p_{RMSEA<.05}$ = 1.00. Figure 4 shows the model with age effects with non-significant predictors removed.

Despite the aforementioned significant differences between the two samples (SONA and MTurk) in terms of age, gender, family status, occupational status and educational achievement, a multi-group Structural Equation Model revealed that these differences resulted in no meaningful differences in terms of structural measurement (*Table 4*) and, as such, the two samples, all 1,342 participants, were combined into a single sample for all subsequent analyses.

Group Mean Differences

To investigate expected differences between age and occupational groups, I ran two sets of ANCOVAs on the study variables: one set with age group ("Emerging Adults", or participants 30 years old and younger vs. "Established Adults", or participants older than 30) as a between-subject factor and the other with occupational group (civilians vs. service members) as a between-subject factor and age as a covariate.

There were significant main effects of age for positive hardiness, $F(1, 1338) = 11.29$, $p = .001$, $\eta^2 = .08$; negative hardiness, $F(1, 1338) = 35.22$, $p < .001$, $\eta^2 = .03$; and less optimal emotion regulation $F(1, 1339) = 9.11$, $p = .003$, η2 = .01. Specifically, established adults (aged 30+) generally endorse more positive hardiness (*M* = 4.92, *SD* = 1.28; emerging adults: *M* = 4.68, *SD* = 1.13), but less negative hardiness (M = 2.81, SD = 1.60 emerging adults: M = 3.26, SD = 1.49, and less optimal emotion regulation strategies (*M* = 4.21, *SD* = 1.02 emerging adults: *M* = 4.36, *SD* = 1.06 than their civilian counterparts.

In terms of the outcome variables, there were significant main effects of age on perceived physical health, $F(1, 1138) = 20.19$, $p < .001$, $\eta2 = .02$, and depressive symptoms, $F(1, 1339) = 43.88$, $p < .001$, $\eta2 = .03$. Emerging adults generally reported both more depressive symptoms (*M* = 1.96, *SD* = 0.59) and greater life satisfaction (*M* = 5.07, *SD* = 1.36) than their established counterparts (*M* = 1.76, *SD* = 0.64 and *M* = 4.98, *SD* = 1.52, respectively).

Finally, there were also significant main effects of age for stress frequency, $F(1, 1139) = 81.30$, $p < .001$, $\eta2 = .06$ but not stress severity, $F(1, 1114) = .135$, $p = .71$, $\eta2 < .001$). Paradoxically, established adults generally reported fewer stressors (*M* = 2.17, *SD* = 1.88), but they were, on average more severe (*M* = 4.49, S*D* = 1.21) than their emerging adult counterparts (*M* = 3.02, *SD* = 1.81 and *M* = 4.43, *SD* = 1.17, respectively). Table 5 provides additional descriptive means.

There were also significant main effects of occupational group for all predictor variables; positive hardiness, $F(1, 1338) = 29.458$, $p < .001$, $\eta^2 = .02$; negative hardiness, $F(1, 1338) = 131.432$, $p < .001$, $\eta^2 = .09$; optimal emotion regulation, $F(1, 1339) = 28.580$, $p < .001$, $\eta2 = .02$; less optimal emotion regulation $F(1, 1339) = 49.542$, $p < .001$, $\eta2 = .04$. Specifically, service members generally endorse more positive hardiness (civilian: *M* = 4.71, *SD* = 1.23; service members: *M* = 5.25, *SD* = .92), more negative hardiness (civilian: *M* = 2.88, *SD* = 1.48; service members: M = 4.13, *SD* = 1.60), more optimal emotion regulation (civilian: *M* = 4.50, *SD* = .96; service members: *M* = 4.90, *SD* = .88), and more less optimal emotion regulation strategies (civilian: *M* = 4.21, *SD* = 1.04; service members: *M* = 4.76, *SD* = .95) than their civilian counterparts. Despite potential moderating effects, age was included as a covariate due to the uneven distribution of age between the two samples. As such, age was a significant covariate for positive hardiness, negative hardiness, and optimal emotion regulation but not optimal emotion regulation.

In terms of the outcome variables, there were significant main effects of occupational group for life satisfaction, $F(1, 1339) = 53.188$, $p < .001$, $\eta 2 = .04$, perceived physical health, $F(1, 1138) = 69.244$, $p < .001$, $\eta 2 = .05$, and depressive symptoms, $F(1, 1339) = 88.883$, $p < .001$, $\eta 2 = .06$. Paradoxically, service members generally reported both more depressive symptoms (*M* = 2.22, *SD* = .63) and greater life satisfaction (*M* = 5.70, *SD* = 1.12) than their civilian counterparts (*M* = 1.81, *SD* = .60 and *M* = 4.92, *SD* = 1.45, respectively). Age was a significant covariate for all three outcome variables: life satisfaction, perceptions of physical health and depressive symptoms.

Finally, there were also significant main effects of occupational group for stress frequency, $F(1, 1139) = 99.264$, $p < .001$, $\eta 2 = .07$, and stress severity, $F(1, 1114) = 32.626$, $p < .001$, $\eta 2 = .03$), in that service members generally reported more stressors (*M* = 3.69, *SD* = 2.02) of greater perceived severity (*M* = 4.92, S*D* = 1.05) than their civilian counterparts (*M* = 2.46, *SD* = 1.81 and *M* = 4.37, *SD* = 1.19, respectively). Age was a significant covariate for stress frequency but not perceived stress severity. Table 7 provides additional descriptive means.

Multi-Group Models

Multigroup analyses comparing age groups revealed significant differences between the two groups in terms of the relationships among the hardiness, emotion regulation, and the three outcome variables (*Table 5*). Model comparisons of the multigroup model (*Model 5*), in which absolute and relative fit indices of models ranging from less to more constrained are compared, suggested that due to group differences, the measurement weights model provided the best fitting model (*Table 6*). This model assumes equal measurement between the two groups but allows all other aspects of the model, including the variance and residuals to vary from group to group. Review of the regression weights and covariances provided some insight into the qualitative composition of the two groups: on average, “established” adults had a stronger, more negative relationship between positive and negative hardiness (r = -.55 vs. r = -.43), indicating that with age may come more adaptive coping mechanisms that are discrete from less adaptive patterns and behaviors. These differences have relatively minor impacts, however, and are limited to age – indicating that there may be a certain point at which age begins to have a more substantial impact on well-being.

Multigroup analyses comparing those with service (military or first responder) experience revealed significant differences between the two groups in terms of the relationships among the hardiness, emotion regulation, and the three outcome variables (*Table 7*). Model comparisons of the multigroup model (*Model 6)* suggested that due to group differences, the fully unconstrained model provided the best fitting model (*Table 8*). This model allows all aspects, including the variance, weights, and residuals to vary from group to group. Review of the regression weights and covariances provided some insight into the qualitative composition of the two groups: on average, those without service experience had a stronger, more negative relationship between positive and negative hardiness (r = -.48 vs. r = -.26), indicating that those without service experience may endorse either positive or negative coping patterns and mindsets where those with service experience may endorse both. Furthermore, the positive and negative relationships seen in the pooled model between hardiness, emotion regulation, and the various measures of well-being seem to be exaggerated when service members are separated from the civilians; greater positive hardiness seems to predict even greater life satisfaction and even better perceptions of physical health in service members. Interestingly, although the relationships between positive and negative hardiness and optimal and less optimal emotion regulation became less favorable for service members when the two groups were separated, the differential impacts of the outcome variables between the two groups, were, with few exceptions, relatively minor and largely age-related effects. For example, the relationships between age and emotion regulation were negligible when the two groups were combined (optimal: $\beta = .08$; less optimal: $\beta = .02$), but were far more positive when the two groups were separated (optimal: $\beta = .29$; less optimal: $\beta = .25$). More drastically, the relationship between age and negative hardiness shifted from slightly negative ($\beta = -.06$) to a slightly positive correlation ($\beta = .12$) when the two groups were separated. Notable exclusions to the age-centered results are the group differences in the influence of optimal regulation (civilians: $\beta = -.06$; service members: $\beta = -.42$) and negative hardiness (civilians: $\beta = -.16$; service members: $\beta = .41$) on life satisfaction. Taken together, these results indicate that, regardless of the regulatory strategies employed in coping with life stressors, age-related differences in the efforts made to maintain emotional homeostasis have a substantial effect on perceived well-being.

CHAPTER 4: DISCUSSION

Emotion regulation skills are theoretically an integral part of the implementation of hardiness in stressful situations; greater adaptive regulation has been linked to more optimal dispositions and coping mechanisms while less adaptive regulation has been linked with less optimal patterns of coping. The goal of the present study was to investigate the role of emotion regulation in hardiness, their linkage with stress and well-being outcomes, as well as potential differences between civilians and service members as a high-stress group. The main findings were three-fold: First, hardiness and emotion regulation showed strong correlations. Second, while positive hardiness and negative hardiness were predictive of stress frequency and perceived severity, only less optimal emotion regulation was predictive of stress and that was limited to stress severity. Together, hardiness, emotion regulation, and stress were predictive of the three well-being outcomes. Specifically, both positive and hardiness was generally associated with greater life satisfaction and better perceived physical health; positive hardiness was associated with fewer depressive symptoms; and negative hardiness, stress frequency and stress severity were generally associated with more depressive symptoms. Paradoxically, negative hardiness was associated with greater depressive symptomology and optimal emotion regulation was associated with worse life satisfaction and physical health. Third, service members showed a pattern of differential stress susceptibility (i.e., Belsky & Pleuss, 2009) than civilians, in that greater adaptive dispositions (i.e., positive hardiness, optimal regulation strategies) to cope with their typically greater stress appeared to disproportionately benefit their overall well-being outcomes, but greater endorsement of less adaptive dispositions seemed to be associated with disproportionate increases in their perceived stress as well as disproportionate decreases in their overall well-being.

As expected, hardiness was strongly associated with emotion regulation. Specifically, results from this study supported previous research which has suggested that positive and negative hardiness were inversely correlated, consistently across samples (i.e., MT urk, SONA, pooled) or occupational groups (service member vs. civilian). Likewise, optimal and less optimal emotion regulation was positively correlated across all samples and occupational groups. Additional relationships were found for positive hardiness's relationship with less optimal regulation, as well as negative hardiness's relationship with optimal regulation, though these patterns were less consistently observed and seemed to play minimal roles on well-being outcomes. These findings lend empirical support to previous research suggesting a theoretical link between hardiness and emotion regulation (e.g., Kokkonen & Pulkkinen, 2001). Specifically, given the underlying necessity of autonomy and proactivity, as well as personal and emotional control for both hardiness and emotion-regulation, it is possible that, rather than being two sets of unique variables, emotion regulation represents only part of the larger hardiness whole, and is as such creating a suppression effect in both correlational analyses and regression analyses.

Contrary to expectations, though in line with the "suppression effect theory" (i.e., Funk, 1992; Funk & Houston, 1987; Tzelgov & Henik, 1991) regulation did not play a significant mediating role of well-being in this study. While positive and negative hardiness both had significant effects on life satisfaction, physical health, and depressive symptomatology; optimal regulation only had a significant effect on physical health. Less optimal regulation did have significant effects on all three well-being measures, but these effects were minimal in all samples and begin to disappear altogether when other predictors, such as age and stress were added into the model. These findings lend support to previous research which suggests that hardy dispositions moderate the negative effects of stress on well-being and act as buffering agents when those stresses are approached with less adaptive coping strategies (Beasley et al., 2003).

Age also seemed to moderate the effects of less adaptive dispositions and coping strategies as well as stress. As shown in Model 5, as well as Table 5, older participants (ages 30+) reported better emotional functioning (more positive hardiness, less negative hardiness) but worse emotional well-being (greater depressive symptoms, worse physical health, worse life satisfaction) than their younger counterparts, despite their generally less frequent stress. In fact, the moderating effects of age were significantly detrimental for the older participants, if small, for nearly every investigated relationship. These findings support previous research which suggests that with age and experience comes a more expansive repertoire of coping skills – including an increased ability to reinterpret or contextualize negative events – which allows them to mitigate some, though not all, of the psychological effects of normative life stressors (Aspinwall & Taylor, 1992; Carstensen et al., 2011; Carver et al., 2010; Charles & Piazza, 2009; Khanjani et al., 2015; Madrigal, 2014; Ng et al., 2020; Pinquart & Sorensen, 2001). A slew of developmental theories speculate at the underlying mechanisms of these effects, many of which suggest a realignment of personal goals to maximize positive emotional well-being despite limited cognitive resources (e.g., SOC, Baltes, 1997; SET; Hess, 2014; SST, Charles et al., 1999), leading one to more effectively, more adaptively, deal with challenges. On the other hand, these age effects could simply be an artifact of self-report error: although older adults frequently report more optimal dispositions and emotion regulation strategies than their younger counterparts, these age-related differences are less obvious, if existent at all, when regulation is specifically quantified or otherwise measured objectively (Allen & Windsor, 2019; Orgeta, 2009). Taken together, these findings suggest that the age-related increases in emotion-regulation are limited to older-adults greater proactive coping skills and are not existent when stressful situations cannot be avoided (Livingstone et al., 2020; Martins et al., 2018; Scheibe et al., 2015). A similar self-report bias could be at play between the service and civilian groups, in which service members, who may simply be more familiar with generally adaptive regulation skills but cannot successfully implement these skills when they are faced with an unavoidable stressor. A multi-group model comparing age groups (younger "emerging" adults vs. older "established" adults) supported these findings, with significant differences emerging in the relationships between hardiness and emotion regulation but relatively minor differences in those variables' impact on overall well-being across age groups. Although these analyses suggest that age may have a greater influence after a certain point in one's life course, be it a specific age or accumulation of successfully navigated stressful experiences, future research would benefit from a more representative sample which would allow for further exploration of the potential age-related shifts in functioning and well-being.

Finally, findings from the occupation-specific multi-group SEMs (*Model 6; Table 8*) suggested group differences between individuals who have experiences as service members (either as first responders of military) and civilians in terms of the relationship(s) between hardiness, emotion regulation, life satisfaction, perceived physical health and depressive symptomology. Service members tend to report more less adaptive outcomes, as their endorsement of negative hardiness, or hardiness related risk factors, cancel out the benefits procured from their greater endorsement of positive hardiness, or hardiness related protective factors. They also express, on average, greater levels of optimal and less optimal emotion regulation, more depressive symptoms, and greater life satisfaction. These paradoxical findings can be explained when one considers the greater sense of purpose and the increased meaning to life that military service brings to the lives of many service members (Britton et al., 2012). In fact, despite the high rates of psychological and emotional maladjustment in service members (Bryan et al., 2013; Hoge et al., 2004, 2006, 2008; Jordan et al., 1991; Kessler et al., 1995, 2005, 2012, 2014; Prigerson et al., 2002; Ritchie et al., 2006; Ursano et al., 1989), previous research has suggested that, in general, those with service experience (both military and first responder) report equivalent or better perceived quality of life and life satisfaction (Boehmer et al., 2003; Britton et al., 2012; Kazis et al., 1998). Furthermore, as can be seen in Model 5, the factor loadings vary tremendously from model to model, indicating that members of each group may vary dramatically not only in how much one endorses each variable but also in what each of these variables means to them. These differences could be a result of the vast amounts of training that military members undergo in preparation for military operations (Woodward, 2000; Gratch, & Marsella, 2003), the strong culture of emotion regulation and suppression within the military (Breslau et al., 2000; Dohrenwend et al., 2006; Hoge et al., 2008; Lorber & Garcia, 2010; Marini et al., 2017), or selection effects of individuals who choose to join the military over other vocational paths (Jackson et al., , 2012; US Army, 2007, 2010). Specifically, although there is evidence that soldiers higher in hardness and emotional regulatory capacities not only adapt better during and after operational deployments than their less hardy peers (Bardeen et al. , 2013; Britt et al., 2001; King et al., 1998), the general reluctance of service-affiliated individuals to participate in and engage with mental health services and therapies under the guise of "hardiness", "grit" or "resiliency" (Bartone et al., 2013; Maddi, 2007; Westman, 1990; Duckworth et al., 2007) may exacerbate the effects of depression, anxiety and PTSD (Hoge et al., 2004; Hoge et al., 2006). As such, it is no surprise that several researchers investigating the underlying mechanisms of trauma-related stress disorders, such as PTSD have identified both emotion regulation difficulties and a lack of dispositional hardiness as potential explanations for the persistence of these symptoms among some individuals (Andrew et al., 2008; Bartone, 1999; Cloitre et al., 2002; Eid & Morgan, 2006; Eid et al., 2004; Foa & Rothbaum, 1998; Frewen & Lanius, 2006; Frewen et al., 2012; Sippel et al., 2016). However, due to the composition of the sample, it was impossible to adequately explore the gender differences in personality dispositions, emotional functioning, and well-being within service members. Thus, in addition to addressing the stigma related to help-seeking behaviors, future research would benefit from a more diverse sample which would allow them to more thoroughly investigate the moderating role of personal control over stressors on coping efficacy as a key intervention point for improving overall well-being.

Conclusion

Hardiness can be seen as a personal resource that can help individuals to turn stressful circumstances into growth opportunities (Maddi, 2007). Results of this study indicated significant relationships between hardiness and emotional regulation, such that positive hardiness predicted greater optimal emotion regulation and negative hardiness predicted greater less optimal emotion regulation. These patterns also extend to predict depressive symptoms and life satisfaction, with negative hardiness and affect predicting depression and positive hardiness predicting life satisfaction. Findings also revealed significant age- and occupation-related effects that suggest coping experience may have a significant impact on perceived coping efficacy, such that older individuals are generally more able to cope with stress in ways that lead to less severely diminished perceptions of well-being, despite reporting more severe stressors. Service members, on the other hand, report generally worse perceptions of well-being with increased stress (particularly stress frequency), indicating that while they may perceive their stress coping to be efficient, it is rather less adaptive when it comes to their overall well-being. Given that the military (i.e., U.S. Army 2010; U.S. Marine Corps, n.d.; U.S. Navy, n.d.) places a significant emphasis on discipline [in one's actions and words], control [of one's emotions and their physical selves at all times through self-regulation], and focus [in challenging situations— where they are lacking sleep, are physically exhausted, or are under unaccustomed and extreme stress], the moderating role of personal control over stressors on coping efficacy and overall well-being could be a key to maximizing long-term mental health and thus an intervention point for preventative measures.

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APPENDICES

Appendix A

Table 1: Demographics of participants by sample and group

				Sample Comparisons						Group Comparisons					
	Total			MTurk			SONA			Service Members			Civilians		
	N	*%*	*M (SD)*	*N*	*%*	*M (SD)*	*N*	*%*	*M (SD)*	*N*	*%*	*M (SD)*	*N*	*%*	*M (SD)*
Age	1342		31.2 (12.6)	898		37.3 (11.3)	444		19.0 (1.8)	194		34.2 (11.0)	1148		30.7 (12.8)
Gender															
Male	631	47.1		472	52.7		159	35.8		118	60.8		513	44.8	
Female	707	52.8		423	47.2		284	64		76	39.2		631	55.1	
Other/ Undisclosed	2	0.1		1	0.1		1	0.2					2	0.2	
Race															
White/ European American	1072	79.8		720	80.1		352	79.3		142	73.2		930	80.9	
Black/ African American	135	10.1		104	11.6		31	7.0		36	18.6		99	8.6	
Indigenous Peoples (e.g., American Indian)	22	1.6		18	2.0		4	0.9		7	3.6		15	1.3	
Hispanic	81	6.0		54	6.0		27	6.1		11	5.7		70	6.1	
Asian/ Asian American	108	8.0		52	5.8		56	12.6		6	3.1		102	8.9	
Middle Eastern/ North African	14	1.0		4	0.4		10	2.3		0	-		14	1.2	
Pacific Islander	5	0.4		4	0.4		1	0.2		1	0.5		4	0.3	
Other	6	0.04		4	0.4		2	0.5		0	-		6	0.5	
Marital Status															
Single	740	55.1		309	34.4		431	97.1		42	21.6		698	60.7	
Married	443	33		439	48.9		4	0.9		135	69.6		308	26.8	
Civil Partnership/ Cohabitating	106	7.9		97	10.8		9	2.0		14	7.2		92	8.0	
Divorced	47	3.5		47	5.2		0	-		2	1.0		45	3.9	
Widowed	6	0.4		6	0.7		0	-		1	0.5		5	0.4	
Military Status															
Currently Serving	86	6.4		84	9.3		2	0.5		86	44.3		0	-	
Separated or Retired	59	4.4		56	6.2		3	0.7		59	30.4		0	-	
In Training (ROTC)	2	0.1		0	-		2	0.5		0	-		2	0.2	
First Responder Status															
Full-Time	55	4.1		48	5.3		7	1.6		55	28.4		0	-	
Part-Time / Volunteer	94	7.0		94	10.5		0	-		94	48.5		0	-	

Appendix B

Table 1: Overall Means and Correlations

	N	*M*	*SD*	1	2	3	4	5	6	7	8	9
1 Age	1342	31.22	12.64									
2 Positive Hardiness	1342	4.79	1.21	.13***								
3 Negative Hardiness	1342	3.06	1.56	-.13***	-.45***							
4 Optimal Regulation	1342	4.55	0.96	.04	.17***	.28***						
5 Less Optimal Regulation	1343	4.29	1.04	-.03	-.04	.51***	.83***					
6 Stressor Frequency	1343	2.64	1.89	-.25***	-.10***	.39***	.17***	.25***				
7 Perceived Stressor Severity	1117	4.45	1.19	.25	-.08**	.41***	.23***	.33***	.29***			
8 Life Satisfaction	1343	5.03	1.44	-.04	.62***	-.34***	.03*	-.10***	-.07*	-.11***		
9 Perceived Physical Health	1342	5.21	1.29	-.12***	.44***	-.14***	.10***	.04	-.01	-.06	.52***	
10 Depressive Symptoms	1343	1.87	0.62	-.17***	-.46***	.80***	.23***	.44***	.48***	.44***	-.38***	-.21***

Appendix C

Table 3: Sample Specific Means and Correlations

	N	*M*	*SD*	1	2	3	4	5	6	7	8	9
MTurk												
1 Age	898	37.26	11.28									
2 Positive Hardiness	899	4.87	1.28	.10**								
3 Negative Hardiness	899	3.14	1.68	-.29***	-.44***							
4 Optimal Regulation	898	4.61	0.96	.03	.20***	.29***						
5 Less Optimal Regulation	899	4.34	1.04	-.13***	-.04	.55***	.83***					
6 Stressor Frequency	899	2.35	1.93	-.18***	-.07*	.47***	.21***	.29***				
7 Perceived Stressor Severity	696	4.57	1.21	-.12**	-.07	.42***	.26***	.34***	.33***			
8 Life Satisfaction	899	5.01	1.56	-.05	.65***	-.29***	.08*	-.07*	-.03	-.05		
9 Perceived Physical Health	898	5.17	1.35	-.15***	.48***	-.09**	.16***	.10**	.02	.00	.55***	
10 Depressive Symptoms	899	1.86	0.66	-.25***	-.45***	.83***	.25***	.48***	.52***	.44***	-.34***	-.17***
SONA												
1 Age	444	19.02	1.82									
2 Positive Hardiness	443	4.63	1.02	-.01								
3 Negative Hardiness	443	2.90	1.26	-.02	-.53***							
4 Optimal Regulation	444	4.45	0.95	-.10*	.10*	.23***						
5 Less Optimal Regulation	444	4.19	1.06	-.09	-.08	.43***	.83***					
6 Stressor Frequency	444	3.22	1.67	-.04	-.13**	.25***	.17***	.23***				
7 Perceived Stressor Severity	421	4.27	1.12	-.02	-.16**	.33***	.14**	.29***	.25***			
8 Life Satisfaction	444	5.07	1.16	-.04	.52***	-.50***	-.09	-.21***	-.18***	-.24***		
9 Perceived Physical Health	444	5.30	1.15	.01	.33***	-.29***	-.04	-.10*	-.11*	-.15*	.45***	
10 Depressive Symptoms	444	1.89	0.52	-.05	-.50***	.70***	.17***	.37***	.39***	.43***	-.54***	-.35***

Appendix D

Table 4: Sample Invariance Model Comparison

	X^2	df	p	CFI	TLI	RMSEA	$p_{RMSEA<.05}$	ΔX^2	Δdf	p
Pooled	137.31	51	<.001	.992	.984	.034 [.028, .042]	1.00			
Unconstrained	275.39	118	<.001	.986	.975	.031 [.026, .035]	1.00			
Measurement weights	308.71	128	<.001	.984	.973	.032 [.027, .036]	1.00	33.32	10	<.001
Measurement intercepts	313.08	133	<.001	.984	.974	.031 [.026, .035]	1.00	37.69	15	.001
Structural weights	468.93	148	<.001	.971	.959	.039 [.035, .043]	1.00	193.54	30	<.001
Structural intercepts	469.26	150	<.001	.971	.959	.039 [.035, .043]	1.00	193.87	32	<.001
Structural means	1667.91	151	<.001	.862	.808	.084 [.080, .088]	<.01	1392.52	33	<.001
Structural covariances	2431.91	152	<.001	.793	.714	.103 [.099, .106]	<.01	2156.52	34	<.001
Structural residuals	2566.92	161	<.001	.781	.715	.103 [.099, .106]	<.01	2291.53	43	<.001
Measurement residuals	2598.66	170	<.001	.779	.727	.100 [.097, .104]	<.01	2323.27	52	<.001

Appendix E

Table 5: Age-group Means and Correlations

	N	*M*	*SD*	1	2	3	4	5	6	7	8	9
Emerging Adults												
1 Age	742	22.16	4.36									
2 Positive Hardiness	741	4.68	1.13	0.07								
3 Negative Hardiness	741	3.26	1.49	0.27 ***	-0.42 ***							
4 Optimal Regulation	742	4.56	0.94	0.13 **	0.12 **	0.30 ***						
5 Less Optimal Regulation	742	4.36	1.06	0.15 ***	-0.07	0.53 ***	0.82 ***					
6 Stressor Frequency	742	3.02	1.81	-0.14 ***	-0.07	0.28 ***	0.15 ***	0.21 ***				
7 Perceived Stressor Severity	663	4.43	1.17	0.16 ***	-0.09 *	0.42 ***	0.21 ***	0.35 ***	0.28 ***			
8 Life Satisfaction	742	5.07	1.36	0.02	0.61 ***	-0.33 ***	-0.01	-0.15 ***	-0.06	-0.10 **		
9 Perceived Physical Health	742	5.34	1.22	0.05	0.44 ***	-0.17 ***	0.07	0.00	-0.04	-0.05	0.52 ***	
10 Depressive Symptoms	742	1.96	0.59	0.13 ***	-0.44 ***	0.77 ***	0.22 ***	0.45 ***	0.41 ***	0.46 ***	-0.40 ***	-0.25 ***
Established Adults												
1 Age	600	42.44	10.33									
2 Positive Hardiness	600	4.92	1.28	0.10 *								
3 Negative Hardiness	600	2.81	1.60	-0.19 ***	-0.55 ***							
4 Optimal Regulation	600	4.55	0.98	0.04	0.18 ***	0.20 ***						
5 Less Optimal Regulation	600	4.21	1.02	-0.03	-0.07	0.46 ***	0.83 ***					
6 Stressor Frequency	600	2.17	1.88	-0.15 ***	-0.14 **	0.44 ***	0.17 ***	0.25 ***				
7 Perceived Stressor Severity	454	4.49	1.21	-0.11 *	-0.12 **	0.36 ***	0.18 ***	0.25 ***	0.29 ***			
8 Life Satisfaction	600	4.98	1.52	-0.05	0.64 ***	-0.41 ***	0.04	-0.11 **	-0.10 *	-0.14 **		
9 Perceived Physical Health	599	5.05	1.36	-0.12 **	0.45 ***	-0.18 ***	0.09 *	0.03	-0.05	-0.10 *	0.52 ***	
10 Depressive Symptoms	600	1.76	0.64	-0.18 ***	-0.51 ***	0.81 ***	0.22 ***	0.43 ***	0.51 ***	0.42	-0.40 ***	-0.23 ***

Appendix F

Table 6: Age Multi-group Model Comparisons

Model	X^2	df	*p*	CFI	TLI	RMSEA	$p_{RMSEA<.05}$	ΔX^2	Δdf	*p*
Pooled	137.31	51	<.001	.992	.984	.034 [.028, .042]	1.000			
Unconstrained	326.54	118	<.001	.981	.966	.036 [.031, .040]	1			
Measurement weights	334.08	128	<.001	.981	.969	.034 [.029, .038]	1	7.54	10	.67
Measurement intercepts	373.60	133	<.001	.978	.966	.036 [.032, .040]	1	47.06	15	<.001
Structural weights	421.70	148	<.001	.975	.965	.036 [.032, .040]	1	95.17	30	<.001
Structural intercepts	423.30	150	<.001	.975	.965	.036 [.032, .040]	1	96.76	32	<.001
Structural means	1387.89	151	<.001	.888	.844	.076 [.073, .080]	<.001	1061.36	33	<.001
Structural covariances	2301.51	152	<.001	.805	.730	.100 [.097, .104]	<.001	1974.97	34	<.001
Structural residuals	2328.04	161	<.001	.803	.743	.098 [.095, .102]	<.001	2001.51	43	<.001
Measurement residuals	2344.86	170	<.001	.803	.756	.096 [.092, .099]	<.001	2018.32	52	<.001

Appendix G

Table 7: Occupation-group Means and Correlations

	N	*M*	*SD*	1	2	3	4	5	6	7	8	9
Civilians												
1 Age	1148	30.72	12.84									
2 Positive Hardiness	1148	4.71	1.23	.11 ***								
3 Negative Hardiness	1148	2.88	1.48	-.15 ***	-.64 ***							
4 Optimal Regulation	1148	4.50	0.96	.02	.08 **	.19 ***						
5 Less Optimal Regulation	1149	4.21	1.04	-.05	-.16 ***	.45 ***	.82 ***					
6 Stressor Frequency	1149	2.46	1.81	-.30 ***	-.18 ***	.30 ***	.11 ***	.18 ***				
7 Perceived Stressor Severity	944	4.37	1.19	.00	-.20 ***	.37 ***	.13 ***	.25 ***	.26 ***			
8 Life Satisfaction	1149	4.92	1.45	-.05	.62 ***	-.53 ***	-.04	-.21 ***	-.13 ***	-.21 ***		
9 Perceived Physical Health	1148	5.10	1.29	-.15 ***	.42 ***	-.31 ***	.02	-.06 *	-.09 **	-.16 ***	.50 ***	
10 Depressive Symptoms	1149	1.81	0.60	-.18 ***	-.60 ***	.78 ***	.17 ***	.40 ***	.44 ***	.43 ***	-.52 ***	-.35 ***
Service Members												
1 Age	194	34.18	11.03									
2 Positive Hardiness	194	5.25	0.92	.11								
3 Negative Hardiness	194	4.13	1.60	-.34 ***	-.05							
4 Optimal Regulation	194	4.90	0.88	.02	.51 ***	.44 ***						
5 Less Optimal Regulation	194	4.76	0.95	-.09	.37 ***	.64 ***	.83 ***					
6 Stressor Frequency	194	3.69	2.02	-.25 ***	-.09	.53 ***	.24 **	.33 ***				
7 Perceived Stressor Severity	173	4.92	1.05	-.08	.38 ***	.33 ***	.53 ***	.54 ***	.18 *			
8 Life Satisfaction	194	5.70	1.12	-.14	.45 ***	.16 *	.18 *	.19 **	-.01	.23 **		
9 Perceived Physical Health	194	5.86	1.11	-.17 *	.37 ***	.25 **	.32 ***	.32 ***	.07	.24 **	.55 ***	
10 Depressive Symptoms	194	2.22	0.63	-.36 ***	-.10	.80 ***	.30 ***	.53 ***	.51 ***	.32 ***	.02	.17 *

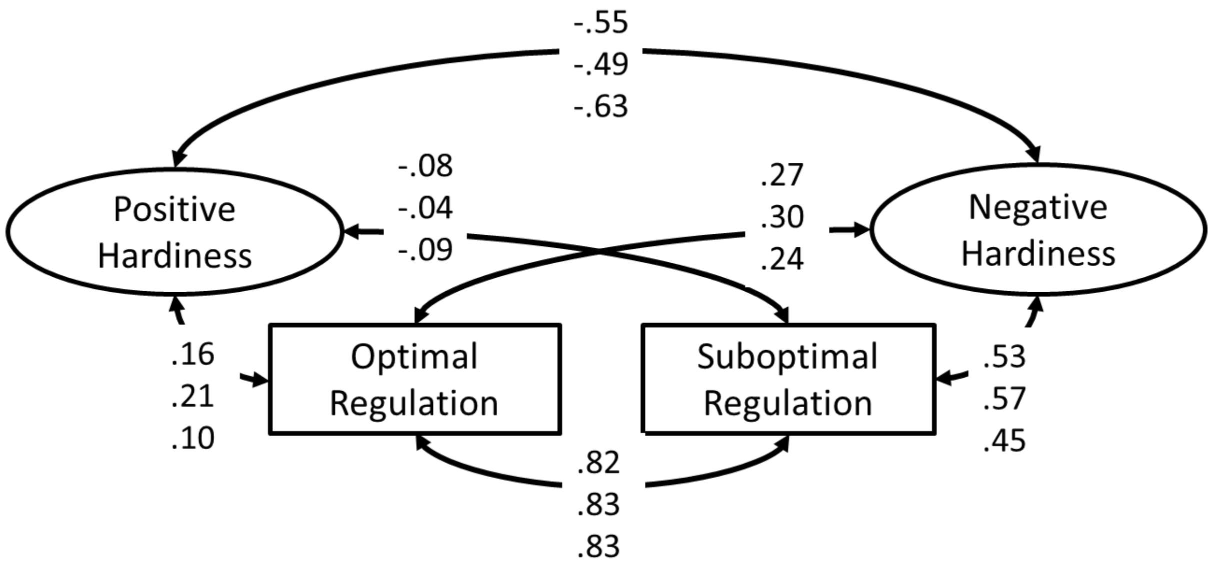
Appendix H

Table 8: Occupational Multi-group Model Comparisons

Model	X^2	df	*p*	CFI	TLI	RMSEA	$p_{RMSEA<.05}$	ΔX^2	Δdf	*p*
Pooled	137.31	51	<.001	.992	.984	.034 [.028, .042]	1.00			
Unconstrained	365.70	112	<.001	.977	.960	.039 [.034, .043]	1.00			
Measurement weights	442.32	128	<.001	.971	.953	.042 [.038, .046]	.99	76.62	16	<.001
Measurement intercepts	457.30	133	<.001	.970	.953	.042 [.038, .046]	1.00	91.60	21	<.001
Structural weights	656.56	148	<.001	.954	.934	.049 [.046, .053]	.58	290.86	36	<.001
Structural intercepts	661.04	150	<.001	.953	.935	.049 [.045, .053]	.62	295.33	38	<.001
Structural means	675.64	151	<.001	.952	.933	.050 [.046, .054]	.54	309.94	39	<.001
Structural covariances	681.68	152	<.001	.952	.933	.050 [.046, .054]	.53	315.97	40	<.001
Structural residuals	1007.42	161	<.001	.923	.899	.061 [.058, .065]	<.01	641.72	49	<.001
Measurement residuals	1044.35	170	<.001	.920	.901	.061 [.057, .064]	<.01	678.65	58	<.001

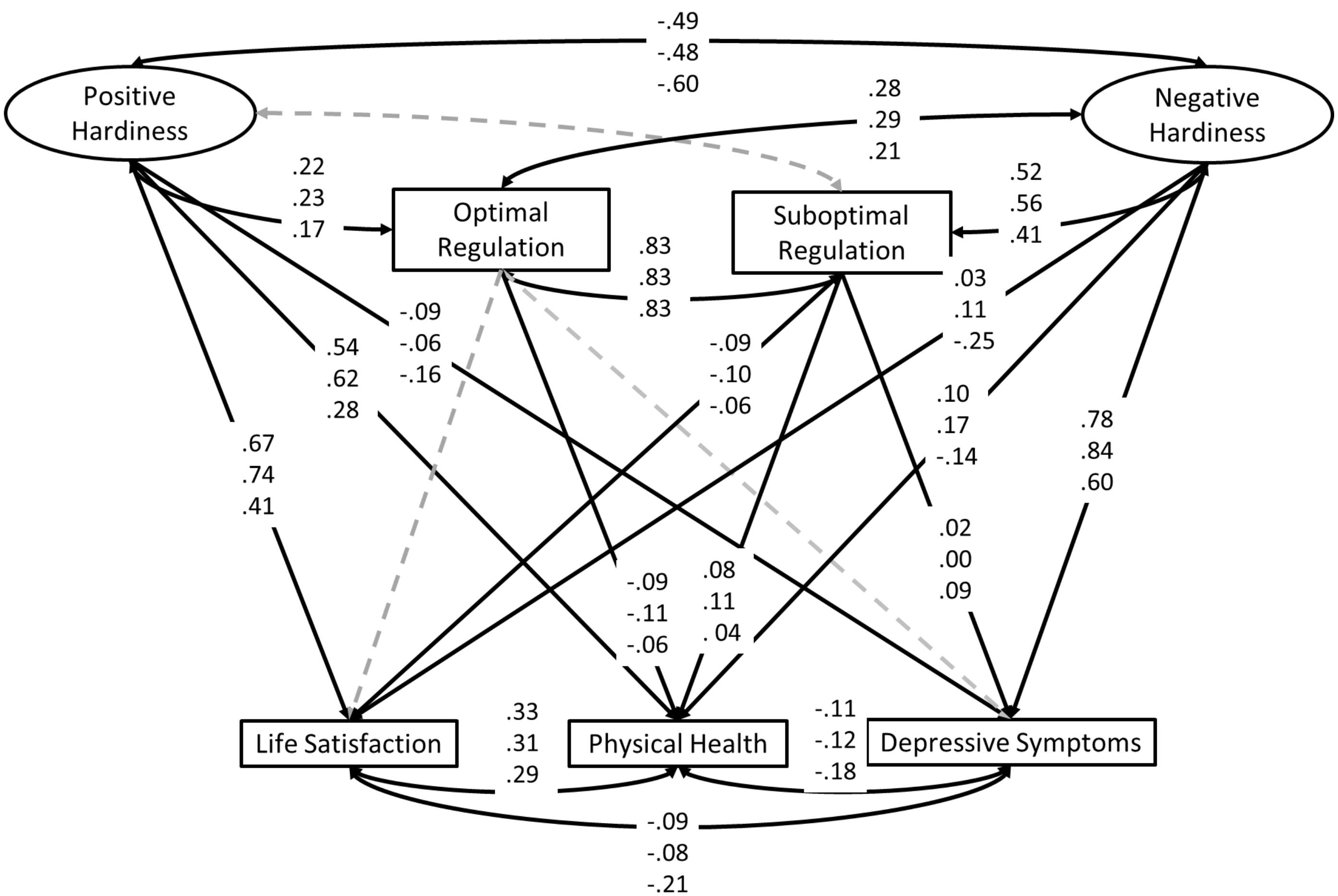
Appendix I

Figure 1. The relationships of hardiness and emotion regulation. Values are standardized and represent from top to bottom the total sample, MTurk sample, and SONA sample, respectively.



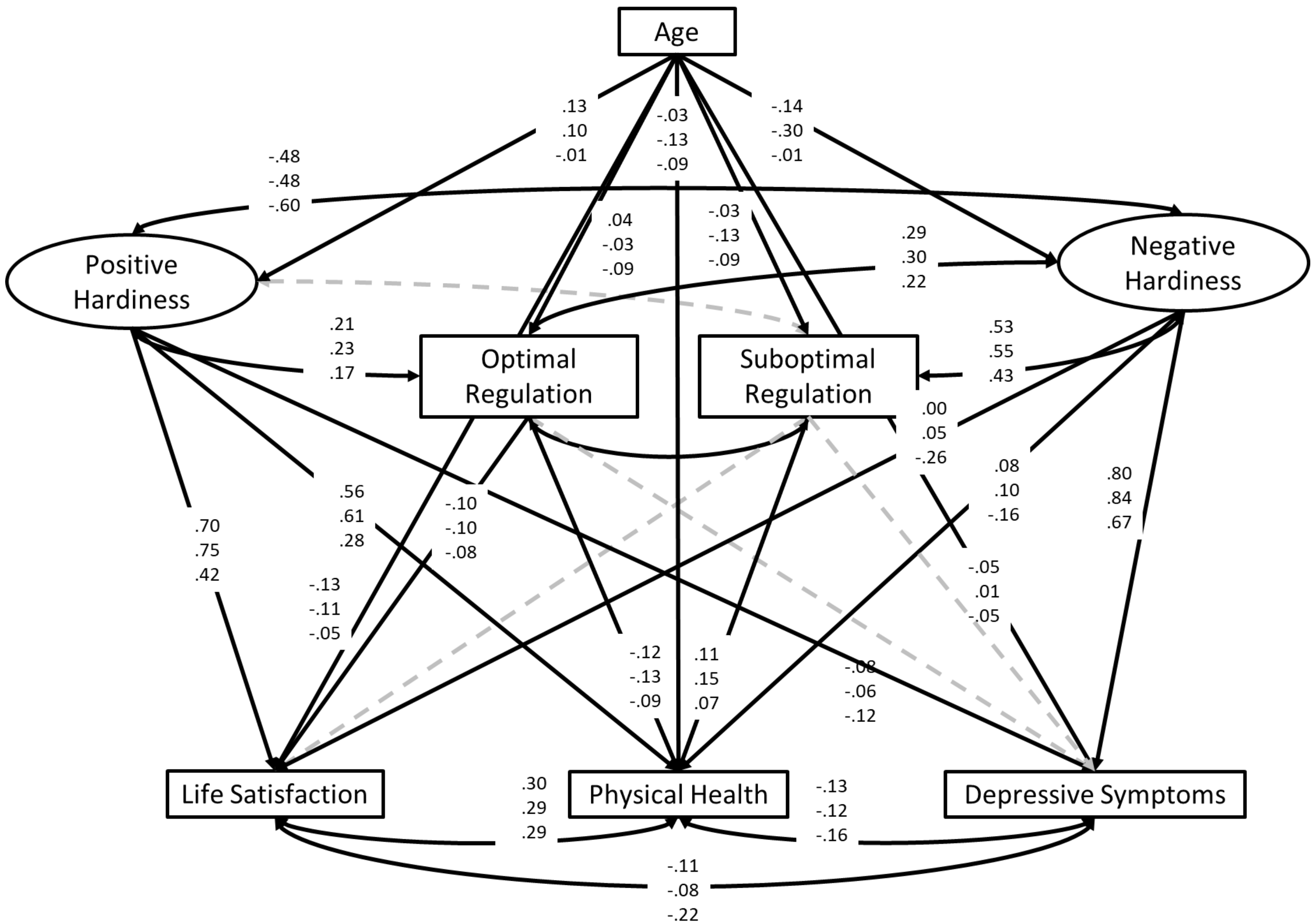
Appendix J

Figure 2. The relationships of hardiness, emotion regulation and three measures of well-being: life satisfaction, perceived physical health and depressive symptoms. Values are standardized and represent from top to bottom the total sample, MTurk sample, and SONA sample, respectively.



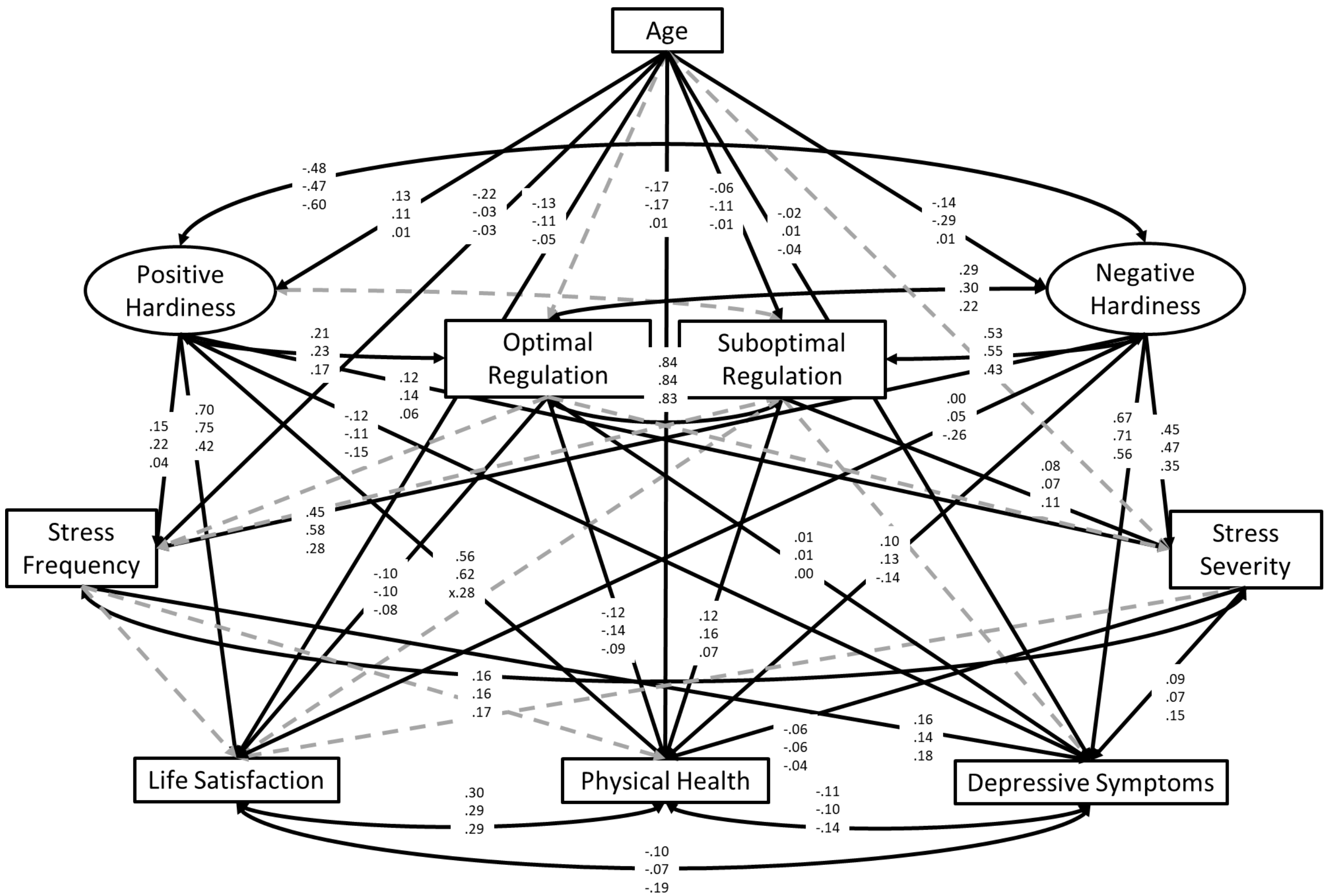
Appendix K

Figure 3. *Age effects on the relationships of hardiness, emotion regulation and three measures of well-being: life satisfaction, perceived physical health and depressive symptoms. Values are standardized and represent from top to bottom the total sample, MTurk sample, and SONA sample, respectively.*



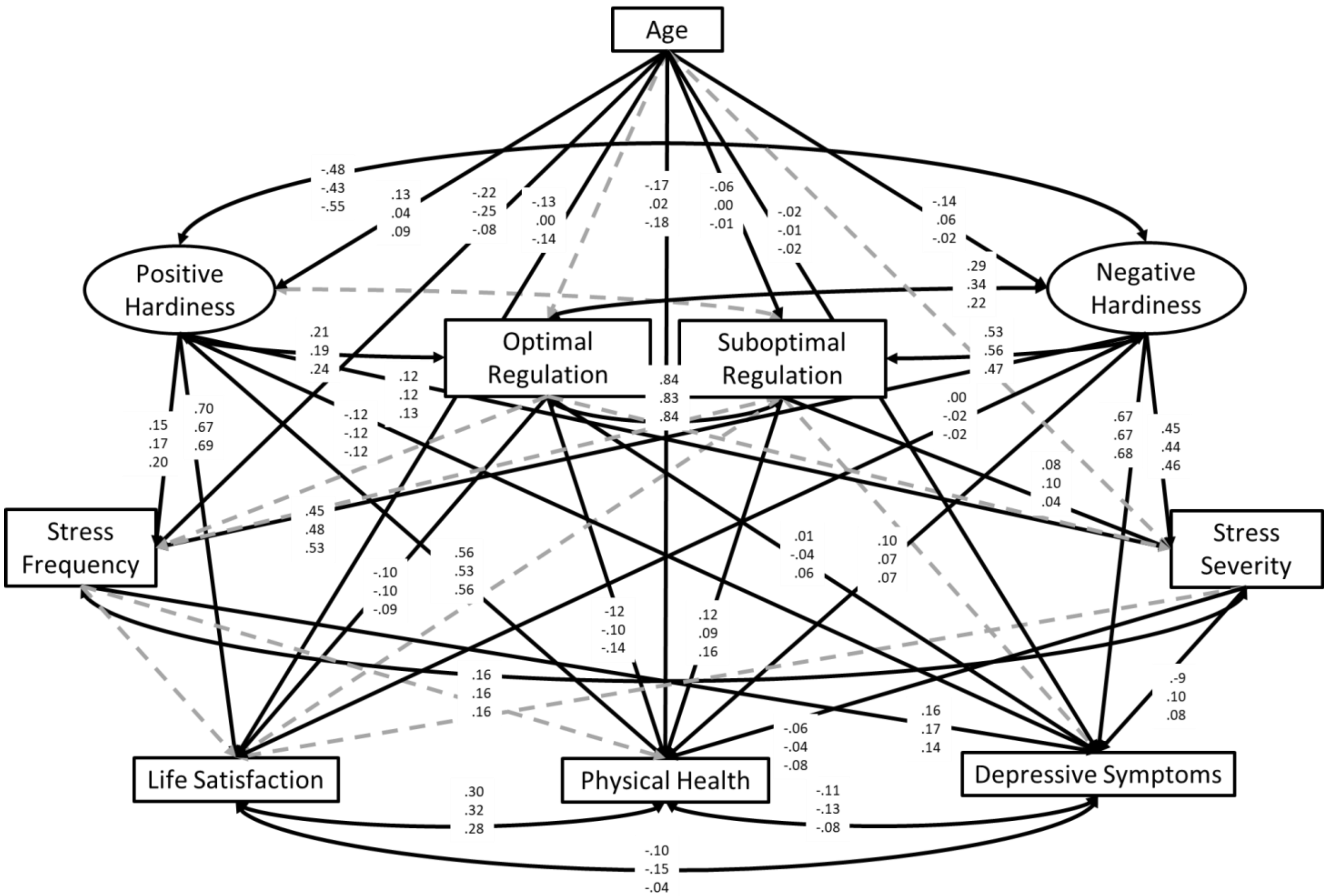
Appendix L

Figure 4. Stress effects on the age-controlled relationships of hardiness, emotion regulation and three measures of well-being: life satisfaction, perceived physical health and depressive symptoms. Values are standardized and represent from top to bottom the total sample, MTurk sample, and SONA sample, respectively.



Appendix M

Figure 5. Age-group differences in the effects of stress and age on the relationships of hardiness, emotion regulation and three measures of well-being: life satisfaction, perceived physical health and depressive symptoms. Values are standardized and represent from top to bottom the total sample, emerging adults, and established adults, respectively



Appendix N

Figure 6. Occupational Differences in Stress effects on the age-controlled relationships of hardiness, emotion regulation and three measures of well-being: life satisfaction, perceived physical health and depressive symptoms. Values are standardized and represent from top to bottom the total sample, civilian participants, and service members, respectively.