DEFINING RESILIENCE USING THE SUBSTANTIVE SCALES OF THE MMPI-2-RF

A thesis presented to the faculty of the Graduate School of
Western Carolina University in partial fulfillment of the
requirements for the degree of Master of Arts in Clinical Psychology

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March 2017

ACKNOWLEDGEMENTS

I would like to thank my committee members for their assistance and encouragement, especially Dr. McCord. You have had a big impact on my education and I appreciate having the opportunity to be your mentee.

I would like to extend a sincere thank you to the following people, without whom this thesis would not have been possible: my parents, Kent and Rosa Haugh, and my loving boyfriend Christopher. Thank you all for supporting me and believing in me when I did not believe in myself.

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ABSTRACT

DEFINING RESILIENCE USING THE SUBSTANTIVE SCALES OF THE MMPI-2-RF

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Many individuals will experience trauma at some point in their lifetime (Connor, 2006). The ability to adapt and function well post-trauma is a dimensional, adaptive trait, commonly referred to as resilience (Masten, 2001). Research on this construct is in abundance, but there is little agreement on how to conceptualize it. The current project focused on exploring the ability for resilience to be conceptualized as a personality trait. Furthermore, we hope to show that resilience can aid in an individual's ability to adjust effectively after the experience of trauma symptoms and lessen the opportunity for distress, life dissatisfaction, and dysfunctional mental health problems. Results were based on data from a sample of college students (N=199) who completed surveys on the CD-RISC, the PCL-C, and the MMPI-2-RF were used in the analyses for dimensional scales of resilience, trauma, and psychological distress (RCd). Results supported our notion that resilience could be associated to personality traits. Further analyses revealed that there was an interaction between trauma and resilience, but resilience did not seem to moderate the association between trauma and demoralization. Those who endorsed higher trauma symptoms also had higher scores on demoralization. However, there is no differences between these individuals based on their resiliency. Results supported the relationship between resilience and dysfunction in personality constructs. Future research should work to better develop the

construct working towards a universal definition and more precise measurement tools for use in

high-stress occupations.

CHAPTER 1: INTRODUCTION

The importance of protective factors, including personality traits, on a person's psychological well-being in the face of adverse events has been well established (Bonnano, 2008; Taylor, Kemeny, Reed, Bower & Gruenewald, 2000). In a competitive society, resilience is an adaptive trait, both in a person's professional and personal lives, which has been displayed in extensive research (Masten, 2011). On a broad conceptual level, the present study defines resilience as *the ability to adjust and function positively after the experience of stress or trauma*. While ability to adjust or "bounce back" is a common theme in defining this construct, much inconsistency exists in the field with regard to operational definitions, which are linked to specific measurement devices (Windle, Bennet & Noyes, 2011). Previous literature of current resilience measures indicates inconsistencies in the definition the researchers use and what they are truly measuring, which makes it essential to come to a greater consensus with operational definitions that clarify the construct, leading to measurement that is precise, clear and accurate. (Windle, et al., 2011).

In order to further identify the defining features of resilience, it is imperative for future research to examine the relationship of personality constructs that may be associated with resilience (Bonnano, 2005). The MMPI-2-RF is a widely used psychological assessment, testing a broad spectrum of personality and psychopathology constructs, but its possible associations with resilience have yet to be examined (Haber & Baum, 2014). In the restructuring of the MMPI-2-RF, this assessment went through a paradigm shift, where scores are now looked at on a dimensional scale and allow for interpretation of low scale scores similarly, to how we interpret elevation in scores. Although its focus is solely on dysfunction of an individual, its concentration

on the wide spectrum of psychological constructs allows for speculation to whether it may assess for potential individual differences in resilience.

The purpose of this current project was to develop a more comprehensive understanding of the construct of resilience and better establish its nomological network, by exploring associations between the MMPI-2-RF scales and a resilience measure. The broad spectrum of personality and psychopathology constructs assessed by the MMPI-2-RF allows a rigorous evaluation of potential individual differences associated with resilience. The Connor-Davidson Resilience Scale (Connor & Davidson, 2003), a commonly used resilience scale, was used to measure this construct. Results may allow the use of the MMPI-2-RF itself to assess resilience levels in an individual.

Furthermore, this study examined whether resilience, under the conceptualization as a personality trait, is able to moderate the effect of being predisposed to trauma and experiencing symptoms of trauma and dealing with distress and demoralization related to psychological dysfunction. This would suggest that resilience would be able to moderate the relationship between experience of post-trauma symptoms and the experience of psychological distress or demoralization. There were two alternate questionnaires administered in order to assess trauma: Posttraumatic Checklist-Civilian (Weathers, Litz, Huska & Keane, 1994), which assesses for Post-Traumatic Stress Disorder (PTSD) and common symptoms of trauma, and the Trauma History Screen (Carlson et al., 2011), which allows for the individual to report their experience with trauma. Results may provide additional insight into the relationship between resilience, personality traits and trauma.

The ability to assess for resilience in a productive effective way would be beneficial to various individuals. For one, it would give the opportunity to evaluate individuals who have

experienced trauma to assess the likelihood of difficulty or mental health problems, post-trauma. In addition, this could help in psychological assessment in high-stress occupations such as policing or military personnel.

CHAPTER 2: LITERATURE REVIEW

The following sections provides a review of the relevant literature. First, the review covers the construct of resilience, including definitions, measurement approaches, and related concepts. Next is a discussion of the MMPI-2-RF as a primary model of psychopathology, including its history and primary usage, but focusing on the broad paradigm shift reflected in the restructured form of the test. Finally, the role of trauma is considered, as this is central to most conceptualizations of resilience.

Resilience

Defining Resilience

Resilience, a deceivingly simple construct, is covered with hidden complications, contradictions, and ambiguities (Kaplan, 2005). As previously mentioned, it is a widely researched construct among many social scientists, but does not have a standard, universal definition (Korn, 2014). Additionally, many researchers hold conflicting theories when considering its origin. Some argue that resilience is an innate trait, carried across the lifespan, that does not change with development (Bonanno, 2005), while others feel it is based on a developmental model with the occurrence of adverse experiences, and the individual's ability to adjust more effectively over time (Luthar & Brown, 2007; Masten, 2001). In conjunction, conflicting theories and definitions on the origin allow for countless interpretations and conceptualizations of how resilience should be defined in research (Richardson, 2002). Within psychology, we find that the definition of this construct, derived from a synthesis of research articles, encompasses two main concepts (Masten, 2008). First, the person must be exposed to some level of risk, stress, or the threat of negative consequences. Second, the ability for the

individual to adjust in a positive manner, despite the exposure to stress or trauma, must occur (Predolin, 2008). In an extensive literature review looking at many of these conceptualizations, Windle, Bennett and Noyes (2011) produced a definition attempting to incorporate many of the differing views of resilience, as the process of "negotiating, managing, and adapting to significant sources of stress or trauma" (p. 4). Similarly, Newman (2002) offered a broad definition of resilience as "the process of being able to adapt well in the face of including situations of trauma, tragedy, threats, or significant stressors, such as family and relationship issues, serious health concerns or workplace and financial problems" (p. 3). For the purpose of this study, we define resilience as the ability to positively adjust and function well after the experience of extreme stress or trauma.

Measurements of Resilience

Research has demonstrated the need for reliable and valid measures of resilience (Windle et al., 2011). There are many measures that look specifically at resilience, but methodological defining features vary between them (Predolin, 2008). As no consensus of the definition or preferred instrument of measure exists for resilience, comparing studies on previous research can be very challenging (Korn, 2014). Typically, it is commonly discussed as a protective factor in physical, mental well-being and health, and measured under the assumption that there has been stress, trauma or some type of adverse event in the person's lifespan (Predolin, 2008).

One common method used to assess for the level of resilience is the self-report questionnaire, which has shown to be reasonably successful (Predolin, 2008). In one review study, looking at 19 measures that intend to measure resilience, results found that there is no current preferred standard for evaluating this construct (Windle et al., 2011). These measures were reviewed using both quantitative and qualitative assessment, looking into the literature on

each single measure and the development and psychometric properties that were reported. All 19 measures had some form of missing information on their psychometric properties (Windle et al., 2011). Results indicated the need for a valid, reliable measure to better identify resilience, because current measures were not adequate (Windle et al., 2011). Out of all 19 scales, there were only three that Windle et al., labeled moderate, at best, and none were seen as a superior instrument to assess the construct (2011). The three measures identified were the Resilience Scale for Adults (RS) The Connor-Davidson Resilience Scale (CD-RISC), and The Brief Resilience Scale.

The CD-RISC can be administered to any individual, and previous research indicates that the scale has solid psychometric properties and has the ability to distinguish between those with high and low resilience levels (Connor & Davidson, 2003). The measure also exemplifies fairly strong convergent validity with other measures, such as the Beck Depression Inventory (Connor, 2006). In other research, the Connor Davidson is seen as an adequate tool to assess for the individual's ability to adapt well in the face of adversity (Burns & Anstey, 2010). The Resilience Scale for Adults was originally developed in 1985 by Wagnild and Young with the intention to try to identify positive personality characteristics, that, when grouped together would help better define resilience. Previous studies report consistent, satisfactory statistics (Wagnild & Young, 1993). The same study also discussed that the major limitation to this measure was the inability to connect their definition of resilience to the constructs they use to test for its occurrence. Lastly, The Brief Resilience (Smith et al., 2008) scale measures the ability to recover from stress based on the individual's perception of their own abilities (Smith et al., 2008). A limitation of this scale is that it does not do an adequate job of explaining the resources and/or assets that may be included or absent in order to facilitate the outcome (Windle et al., 2011). A similar criticism

among all three of the resilience measures is that although they were able to successfully measure constructs like depression and life satisfaction and resilience outcomes, they were unable to successfully asses for resilience under the definitions they sought out with (Korn, 2014).

Although there are several measures of resilience that are used in literature and research, it is evident that there is not one favored measure. With that said, the Connor-Davidson has been one of the most popularly used tools in research and clinical settings because of its sound psychometric properties and its ability to reflect different levels of resilience in a variety of populations. Furthermore, with the difficulty in defining this construct, it would be most beneficial to identify the factors associated with it to best define the trait of resilience. Some studies have identified that through surveys of current functioning (e.g., self-reports), we may be able to determine if the individual demonstrates the ability to be resilient as evidenced by lack of psychopathology (Waugh, Thompson, & Gotlib, 2011). By using the MMPI-2-RF, we are attempting to do just that. The MMPI-2-RF self-report was be compared with results from the CD-RISC in order to attempt to identify which scales are positively or negatively associated with this construct. In addition, by making this connection we would also be able to identify the MMPI-2-RF as a prospective tool to assess for this undefinable construct.

Characteristics of Resilience

The construct of resilience is comprised of several different elements (Connor & Davidson, 2003; Connor, 2006; David, Payne & Connor, 2005). Characteristics of resilient individuals have been researched for many years, some suggesting that personality factors are the best way to identify a resilient individual (Kobasa, 1979). Some of these characteristics include optimism, greater hardiness, self-efficacy, strong self-esteem, patience, secure attachment to

others and the ability to adapt to change (Connor & Davidson, 2003; Kobasa, 1979; Lyons, 1991; Rutter, 1985). As previously mentioned, individual differences may be able to determine whether the individual is demonstrating resilience by a lack of psychopathology (Waugh, Thompson, & Gotlib, 2011), but this has yet to be examined in empirical research. A rigorous review (Schetter & Dolbier, 2011) looked at a variety of resilience factors and stressed the multidimensional quality of resilience. Results showed that resilience was comprised of three different categories. The study identified them as personality characteristics (optimism, self-control and secure attachment), the individual's skills, (emotional regulation and social skills), and lastly, the individual's personal systems of meaning (spiritual beliefs or a sense of purpose) (Schetter & Dolbier, 2011).

When discussing psychopathology, it appears that lack of it, is good resilience. In Schetter and Dolbier's (2011) study, they define resilience by focusing on a trait-based model, featuring the ability of an individual to adjust during times of stress and therefore the production of any distress for a prolonged period would suggest the person is not resilient. Some researchers assume that the opposite of depression, is partly resilience, and therefore the association between the two constructs should be strongly negative (Schetter & Dolbier, 2011). The authors noted that resilience contributed to an individual view of well-being and theorized that resilience may be the linkage between positive thinking and well-being (Schetter & Dolbier, 2011). Furthermore, relationships among depression, low self-esteem, low resilience, lack of social connectedness, negative family relationships and multiracial discrimination demonstrated high correlations, (between $r = .80$ and $.90$) indicating that these factors may promote harmful adversity (Schetter & Dolbier, 2011). For the present study, we chose the MMPI-2-RF as a nomological net, as it characterizes psychopathology as a hierarchically organized set of

dimensional constructs, ranging from relatively broad to relatively narrow in scope. As each

scale is interpretable throughout its range, from high to low, this model provides a logical means

of establishing both positive and negative associations with resilience.

Minnesota Multiphasic Personality Inventory-2-Restructured Form

The original Minnesota Multiphasic Personality Inventory (MMPI) was developed in

1943 and authored by Starke Hathaway and J. Charnley McKinley. It was developed for

constructing a psychological assessment that would be able to assist with the differential

diagnoses of psychiatric disorders and for use in clinical settings (Tarescavage & Ben-Porath,

2015). Hathaway and McKinley created a large range of self-report questions in hopes of using

the items to develop a concrete, valid measure of personality descriptors (Ben-Porath &

Tellegen, 2008/2011). Throughout history, this assessment has remained one of the most widely

used tools in psychometric assessment of personality and psychopathology with significant

modifications made throughout. Grounded theoretically in the Kraepelinian approach to

classification of disorders, the MMPI was comprised of 10 Clinical Scales and four Validity

scales (Welsh & Dahlstrom, 1956). The clinical scales were developed by contrasting the item

responses of previously diagnosed individuals with those who were considered "normal" (Ben-

Porath & Tellegen, 2008/2011). At the time of its release, the MMPI was revolutionary to

psychological assessment as well as personality assessment. The addition of the validity scales

made the MMPI scales more attractive because they were stated clearly and in detail settings

(Tarescavage & Ben-Porath, 2015). Current measures of personality were rationally based,

whereas the MMPI was empirically based, with data derived from groups of clinically diagnosed

and nonclinical patients (Ben-Porath, 2012). It was the first assessment that used empirical

keying as an approach to distinguish significantly different items from the two groups

(Tarescavage & Ben-Porath, 2015). This empirical approach proved to be much more effective than existing instruments and was a vital aspect to the early success of the test. As well, the MMPI measured a wider range of psychopathological syndromes recognized at that time, which varied greatly from other assessments that focused more intently on specific disorders or issues. Although the MMPI had become the most widely used assessment in psychopathology and personality at the time, it did not go without criticism (Ben-Porath, 2012). As the years progressed, the normative sample that was once used to create and validate the scales was becoming outdated. The terminology was criticized for its relevance to the particular population that it was testing, and it was becoming increasingly important that the assessment should assess for an expanded list of potential mental health problems and disorders, thus resulting in a restandardization of the MMPI.

The restandardization of the MMPI in 1989, resulting in the MMPI-2 (Butcher et al., 1989) yielded improvements of the norming sample and specific items, but important structural problems remained because the 10 Clinical Scales were untouched. Of course, there were advantages and disadvantages to this. The problems with the scales were: the low discriminant validity (which was due to the excessive scale intercorrelations and item overlap), scale heterogeneity, subtle items (items that were not related to the clinical characteristics they were supposed to be reflecting), the confusion of the repeated occurrence of "demoralization" across scales (a measurement of distress related to anxiety, depression, hopelessness, etc.), and outdated content (Ben-Porath, 2012). The advantages to leaving the 10 Clinical Scales alone through the first set of changes allowed for an easier transition with the MMPI user base as well as being able to maintain the MMPI user base; however, this decision also supported the previous concerns with some of the psychometric deficiencies of the MMPI-2.

Addressing these psychometric concerns led to a large group of MMPI researchers working together over a number of years to reform the Clinical Scales and try to correct the flaws expressed in earlier criticism of the assessment. Auke Tellegen and Yossef Ben-Porath were responsible for developing the new Restructured Clinical (RC) Scales that were added to the MMPI-2. The RC scales introduced a demoralization scale, to satisfy previous complaints of the structural issues of shared variance, and heterogeneity of the scales. The other eight scales were derived from existing constructs that provide a more focused assessment of the original scales (Tellegen et al., 2003). Their purpose was to provide more precise measurements of the key constructs throughout the MMPI (such as demoralization and low positive emotions). Research has recognized that when compared with the original Clinical Scales, the RC Scales are considerably improved in reference to discriminant validity and equal to higher in convergent validity (Ben-Porath & Tellegen, 2008/2011; Tellegen et al., 2003; Tellegen, et al., 2006). Although the RC scales exhibit stronger psychometric properties and specific interpretation, the changes made left out important aspects of clinical disorders that were not assessed. Thus, research and development continued towards modernization and transition into the MMPI-2-RF (Ben-Porath, 2012).

In 2008, five years after the addition of the RC Scales to the MMPI-2, the MMPI-2-RF was released. The authors of this revision were Yossef Ben-Porath and Auke Tellegen. They established a 338-item inventory of the psychological constructs, which were taken from the original 567-item pool in the MMPI-2. Consistent with the previous versions, this test is used for individuals 18 years and older. The RF consists of 9 Validity Scales, 3 Higher Order Scales, 9 RC Scales, 23 Special Problem Scales, 2 Interest Scales, and the 5 Personality Psychopathology Five (PSY-5) Scales, totaling to 51 scales. The PSY-5 Scales were created by Harkness and

McNulty, which provides a link to the Five Factor Model of personality (2007). The broad

spectrum of personality and psychopathology constructs assessed by the MMPI-2-RF are

consistent with its ability to assess for a wide range of psychopathological problems.

Emotional/Internalizing Dysfunction Scales

This domain is composed of 15 internalizing scales of the MMPI-2-RF. This includes the

EID (Emotional/Internalizing Dysfunction) Higher-Order scale, three RC scales; RCd, RC2,

RC7, nine Specific Problem scales; SUI (Suicidal/Death Ideation), HLP

(Helplessness/Hopelessness), SFD (Self-Doubt), NFC (Inefficacy), STW (Stress/Worry), AXY

(Anxiety), ANP (Anger Proneness), BRF (Behavior Restricting Fears), and MSF (Multiple

Specific Fears), and two PSY-5 Scales; INTR-r (Introversion-Revised) and NEGE-r (Negetive

Emotionality-Revised).

In the present study we are focusing on 6 of the 15 internalizing scales of the MMPI-2-

RF including RCd, RC2, SUI, HLP, SFD, and NFC which are described in some detail below.

EID is an overarching higher-order scale with 41 items that assess a broad range of emotion and

internalizing difficulties, specifically problems that are associated with affect and mood

(Tarescavage & Ben-Porath, 2015). Individuals that score in the clinical range on this scale are

typically experiencing significant difficulties in various areas of their emotional functioning such

as feeling sad, helpless, hopeless, anxious, low self-esteem and other areas of emotional

dysfunction (Ben-Porath, 2012).

RCd represents Demoralization, is best described as an overall measure of distress,

unhappiness and dissatisfaction of one's life (Ben-Porath, 2012). This scale has 24-items and is

reflected in SUI, HLP, SFD, and NFC. SUI (Suicidal/Death Ideation) represents the individual's

report of any suicidal ideation or suicide attempts (Tarescavage & Ben-Porath, 2015) and is

composed of five items. HLP (Helplessness/Hopelessness) assesses the individual's interpretation and belief in their ability to reach their goals or solve problems in their life (Ben-Porath, 2012) and is composed of five items. SFD (Self-Doubt) examines the individual's confidence level and feelings of usefulness that are related to insecure or inferior feelings (Ben-Porath, 2012). This scale is comprised of four items. Lastly, NFC (Inefficacy) is comprised of nine items that assess the individual's belief that they are inefficacious and unable to make decisions behavior (Tarescavage & Ben-Porath, 2015).

RC2 represents Low Positive emotions. This scale is comprised of 17 items assessing an individual's level of positive emotional responsiveness and depressive symptoms, specifically, anhedonia, social introversion and pessimism (Ben-Porath, 2012). Individuals who have elevated scores on this scale tend to be experiencing depressive mood symptoms across areas of their functioning (Ben-Porath, 2012).

In the current study, secondary analyses included RC3 and RC4 as possible moderating factors. Both of these scales fall outside of the Emotional/Internalizing Domain. RC3 falls in the Interpersonal Functioning Domain, and reflects the individuals who express distrust and have an overall negative view of other people (Ben-Porath, 2012). RC4 falls in the Behavioral Dysfunction domain, which is related to individuals that are having trouble with aggression, substance abuse and other areas of their behavior. RC4 is specifically composed of items that assess the individual's level of irresponsible, disruptive, rule-breaking behavior (Tarescavage & Ben-Porath, 2015).

Although the MMPI-2-RF is known as an assessment of dysfunction in psychopathology, as mentioned earlier, the paradigm shift from the MMPI-2 to the MMPI-2-RF scale scores can be interpreted on both the low and high ends (Ben-Porath, 2015). Moreover, resilience, known as a

protective factor that reduces the likelihood of dysfunction, may display a potential relationship with specific constructs assessed by the MMPI-2-RF, particularly the RC scales (Ben-Porath & Tellegen, 2008/2011).

Trauma

The experience of trauma is an unavoidable and common feature of life. Epidemiological studies show that most people will experience at least one potentially traumatic event throughout the course of their lifetime (Mancini & Bonanno, 2010). When these events occur, individuals will respond in a variety of ways, depending on the situation that has occured. Further implications highlight the need for additional research focusing on measuring individual differences in people's responses to the traumatic event (Mancini & Bonnano, 2010). Trauma is a widely defined topic in psychopathology that has been studied in many domains over the years (Butler et al., 2009). The general definition of trauma is an individual's emotional response to an adverse event, which may cause severe emotional or psychological distress. (Bonnano, Galea, Bucciarelli, & Vlahov, 2007). Immediately after the event has occurred, it is typical to have feelings of shock and denial. However, if there are prolonged reactions to the trauma, they may inhibit a person to adjust and function well after the event occurred, which can be debilitating. (Bonnano, 2004). Knowing that the negative outcomes of trauma can be detrimental to an individual's functioning, exemplifies the importance for researchers to gain more information about the protective traits and factors that allow an individual to prosper in such cases (Bonnano, 2005).

Previously, it was thought that resilience was an uncommon result of trauma. However, in more recent literature, it is stated that resilient behavior is actually more common than other outcomes (Bonnano, 2005). Nonetheless, there are many adverse outcomes in terms of

psychopathology related to trauma that many individuals are burdened with: including anxiety, PTSD, and depression (Gold et al.,). Many experience social maladjustment and acute psychological distress in their exposure to trauma, some never being able to recover (Gold et al., 2000). In our history, there have been a limited amount of attempts in order to differ between those developing a disorder from those who do not (Bonnano, 2005). Therefore, it can be imperative to examine the associations between the severity of trauma and the outcome behavior (resilience/psychopathological dysfunction) (Ying, Wu, Lin & Jiang, 2014).

In many cases of psychological dysfunction that is directly related to trauma, the individual is usually dealing with an overwhelming amount of distress that affects their ability to adjust and function (Gold et al., 2000). Therefore, people will have this overwhelming distress as an outcome of their experiences. Previous research indicates some support for the possibility of moderating/mediating factors that may influence the outcome feelings of distress. Cynicism and antisocial behavior consistent with rule breaking and a general disregard for safety, tend to increase the likelihood of psychological dysfunction post-trauma (Pai & Carr, 2010; Pietrzak et al., 2010; Territo & Sewell, 2007).

In the present study, we identify trauma as a preceding factor to the presentation of overwhelming distress or lack thereof (Collier, 2016). It is our intention to use experience of stressful life events and the individual's report of symptoms related to trauma to examine the moderating effect of resilience on demoralization. In order to assess for trauma we have decided to use the Post-Traumatic Stress Disorder Checklist for Civilians (PCL-C) (Weathers, et al., 1994) and the Trauma History Screen (THS) (Carlson et. al, 2005). The PCL-C has become one of the most widely studied and utilized self-report measures of PTSD (Weathers et al.). This instrument allows the opportunity for the participant to report the capacity they are affected by

the stressor/trauma. Additionally, we included the Trauma History Screen as a brief instrument that allows that allows the individual to identify their traumatic experience and explain it and the impact is has had on their emotional, physical and psychological functioning (Carlson et. al, 2005).

Statement of the Problem

As previously stated above, the need for better defining features and measurement is imperative to the study of resilience (Bonnano, 2008). The ability to be able to find associations between resilience and the MMPI-2-RF constructs would be beneficial to the expansion and more accurate understanding of the nomological network of resilience. Waugh, Thompson, and Gotlib (2011) identify lack of psychopathology as one of many indicators of resilience, and as much of the literature has identified, the MMPI-2-RF appears to be the most suitable instrument to measure this. As mentioned earlier, the MMPI-2-RF is a reliable and valid measure of personality and psychopathology (Tellegen & Ben-Porath, 2008/2011) and has a considerable amount of importance in personality and pathology testing today.

The hope is that this study will not only extend the understanding of resilience and the assessment of it, but also find construct(s) of personality and psychopathology that will help to better predict differences in individuals who exhibit resilience, from those who do not. In addition, this information would support a trait-based theory to move forward in research. This would then give employers in high-stress occupations (military, police officers, etc.) the ability to screen their potential recruits for characteristics that potentially will lead to a more resilient person and in a more general sense, add to the ongoing inquiry into the defining features of resilience. It will likely benefit clinicians and other researchers who administer this assessment tool and could utilize it in the future to assessments for possible resilience levels in individuals.

Hypotheses

Testable Hypothesis 1: It is hypothesized that individuals with higher scores on the Connor-Davidson Resilience Scale will have lower scores on scales measuring constructs related to internalizing dysfunction.

> **1a:** Previous research has identified general distress as having a negatively associated relationship with resilience (Sexton, Byrd & Von Kluge, 2010). It is hypothesized that individuals with high CD-RISC scores will have statistically significant lower scores on the scale Demoralization (RCd).

> **1b:** Bonanno (2004) resilience appears to decrease the likelihood of experiencing depressive symptoms, or depression itself, therefore it is hypothesized that the CD-RISC total score will correlate negatively with the Low Positive Emotions (RC2) scale score.

> **1c:** Resilience has been identified as an important role in many major domains (social, emotional and cognitive processes) of recovering suicidal individuals (Everall, Altrows, & Paulson, 2006). It is hypothesized that individuals with high CD-RISC scores will have statistically significant lower scores on the scale Suicidal Ideation (SUI).

> **1d:** Hope and a hopeful attitude is an essential factor to greater resilience scores (Gooding, Hurst, Johnson, & Tarrier 2012). Thus it is hypothesized that individuals with high CD-RISC scores will have statistically significant lower scores on the scale Hopelessness/Helplessness (HLP).

> **1e:** Due to the fact that high levels of confidence, promote more resilient behavior (Martin & Marsh, 2003), it is hypothesized that individuals with high CD-RISC

scores will have statistically significant lower scores on the scale Self-Doubt

(SFD).

1f: Because resilience has been associated with high self-efficacy (Hammil,

2003), it is hypothesized that the CD-RISC total score will correlate negatively

with the Inefficacy (NFC) scale score.

Research Question: Does resilience, as a personality trait, play a role in the interaction between

trauma and demoralization?

CHAPTER 3: METHODOLOGY

Participants

The aim of this study was to collect data on 199 students from Western Carolina

University, which is a midsize university, located in the southeastern region of the United States.

The sample includes 111 males and 88 females and is predominantly Caucasian (76%). The

mean age was 18 years old with a range of 18-27 years of age. The ethnicity breakdown was:

Caucasian (76%), Hispanic or Latino (7%), African American (8%), Native American or

American Indian (1%), Asian/Pacific Islander (5%), and Other (3%). Each participant voluntarily

participated and received course credit for completing all four components of this research study.

They were only be eligible to sign up for the study if they were enrolled in PSY 150, CJ 150, CJ

351 and CJ 380. Scores on the CD-RISC scale ranged from 29-100 on the scale that ranges from

25-100. The PCL-C has scores ranging from 17-85 with 80 people above the threshold for

clinical symptoms. The THS had 54 people identifying that they had significant experiences of

trauma, but only 28 people explained their experience and the significance of the effects.

Measures

The following measures were administered:

Minnesota Multiphasic Personality Inventory -2 –Restructured Form

The Minnesota Multiphasic Personality Inventory-2-Restructured Form (MMPI-2-RF), a

restructured version of the MMPI-2, is a widely used and researched assessment tool measuring

personality and psychopathology. A 338-item self-report questionnaire is measured by using a

true and false system, which can be completed by anyone 18 years and older. It has 51 scales

which are grouped into five categories: nine Validity Scales, 3 Higher Order Scales (H-O), nine

Restructured Clinical Scales (RC), 23 Special Problem Scales (SP), two Interest Scales, and five

Personality Psychopathology Five (PSY-5) Scales. These 51 scales indicate the individual's

current level of functioning in areas of personality and psychopathology. The average of each

scale lies at 50 percent. Individual scale elevations above 65 indicate elevated levels of the

particular psychopathology scale and individuals who score above this range are considered to be

in the "clinical range" of that scale (Ben-Porath, 2012). The norming sample was drawn from the

MMPI-2 normative sample, 276 women and men ranging from ages 18-80, from several regions

and communities in the United States (Ben-Porath, 2012). The MMPI-2-RF was given to them

through the Q-Global system. It has been validated in a wide variety of settings including

medical, personnel screening inpatient and outpatient mental health, forensic, personnel

screening, and nonclinical settings. The Restandardization of the MMPI-2-RF has been

extensively measured and the psychometric findings state that all 51 scales provide reliable and

valid measures of protocol validity, personality and psychopathology (Tellegan & Ben-Porath,

2008/2011).

Connor-Davidson Resilience Scale

The Connor-Davidson Resilience Scale (CD-RISC) is a brief self-report questionnaire

used to measure resilience on a quantifiable scale identifying the individuals level of resilience.

(Connor & Davidson, 2003). The scale consists of 25 items, each rated on a 5-point likert scale

(0-4). The total questionnaire ranges from 0-100 where a higher score reflects a higher level of

resilience. All participants are asked to provide their response to their feelings during the month

prior to filling out this questionnaire. Based on previous testing the CD-RISC can be given to a

wide range of populations including clinical samples such as PTSD patients. Prior research

indicates the scales have sound psychometric properties that are demonstrated by good internal

consistency and test-retest reliability and its ability to distinguish between individuals with

greater then lesser resilience (Connor & Davidson, 2003).The CD-RISC were be given through

the Qualtrics system. Use of the CD-RISC established adequate reliability (Cronbach alpha

=0.89) and the intraclass correlation coefficient (0.87) and has been established in other more

recent studies (Ahern, Kiehl, Lou Sole & Byers, 2006; Scali et al., 2012).

PTSD Symptom Checklist-Civilian

The PTSD Symptom Checklist (PCL) was originally developed to be used in the military

population and was later adapted for civilian use (Weathers et al., 1994). It is a 17-item checklist

questionnaire on PTSD symptoms, which are based on DSM-IV criteria. The items are rated on a

5-point Likert scale (1-5) where severity increases with numerical value with "1" not at all to "5"

extremely. The possible score range goes from 17-85. Participants were asked to report their

symptoms based on their experiences and feelings from the previous month (which was relevant

to the CD-RISC) (Weathers et al., 1994). The questions asked are not in reference to a specific

event, but a stressful experience of the past. Prior research indicates the checklist has very good

psychometric properties (McDonald & Calhoun, 2010; Ruggiero, Del Ben, Scotti & Rabalais,

2003). In an effort to identify a useable PTSD cutoff score, 44 was used because if it is sufficient

sensitivity and specificity than previous cutoffs (Ruggiero et. al 2003). The PCL-C was

previously used in research with undergraduate populations (Ruggiero et. al 2003). This

demonstrated excellent internal consistency (Cronbach alpha = .94) and good convergent validity

and other measures of PTSD symptom severity (Ruggiero et al., 2003; Keen, Kutter, Niles &

Krinsley, 2008).

Trauma History Screen

The trauma history screen (THS) is a self-report measure used to provide a brief and easy way to report individuals experience with events of high levels of stress (Carlson et al., 2011). It tests exposure of *high magnitude stressors* (HMS) and *persisting posttraumatic distress* (PPD) events (Carlson et al., 2011). It also helps to identify events with significant and persisting posttraumatic stress disorder. When compared to other long and complex testing measures, the THS allows for a brief and easy measure to a stressful situation (Carlson et al., 2011). It provides 14 events that the individual may have experienced and asks them to click "yes" or "no." If the participant reports that they have experienced an event, they are asked to report the number of times it has happened to them (Pai & Carr, 2010; Pietrzak et al., 2010; Territo & Sewell, 2007). The options range from a natural disaster experience (flooding, tornado, fire, tornado and earthquake) to the experience of a sudden loss of a close friend or family member. If the participant clicked "Yes" for any of the listed experiences, they were asked to describe what happened and answer particular questions about the incident that may have occurred. Internal reliability was not looked at in the original statistical analyses because it is not appropriate for measures concerning life experienced, because life events are not expected to show high internal consistency (Carlson et al., 2011). Test-retest reliability has proven to be good for both HMS (0.93) and PPD (0.73) and Construct validity was supportive in five different samples, which was evidenced by good convergent validity (Carlson et al., 2011). Evidently, the Trauma History Screen Psychometric properties are equal to other, longer measures of Trauma (Carlson et al., 2011).

Note: The Trauma History Screen was included in data collection, but was not used in the current analyses.

Procedure

Students were recruited from Western Carolina University who are enrolled in PSY 150, CJ 150, CJ 351 and CJ 380. They were able to sign up on the university's online research participation system, SONA, or were offered to complete it as an extra credit opportunity. They met at the locked computer lab Room 307, at their specified time. Testing groups consisted of one to 15 students at a time.

After arrival to the testing room, they were given a consent form to read and sign before data collection began. If they agreed to participate, they were encouraged to ask any questions they may have had at the time. Once the consent forms were signed, the investigator running the session went through the consent form and explained their tasks for the study. Each participant was asked to complete the four self-report measures via laptop computer that was provided to them, while being supervised by Dr. McCord (PI), Stephanie Haugh (OI) or Savannah Marino (OI). No identifying data were attached to the self-report measures, thereby allowing the participants to retain some anonymity.

The completion of the four self-report measures included the Minnesota Multiphasic Personality Inventory-2-Restructured Form (MMPI-2-RF) for approximately 35-40 minutes via Q-Global. Next, they moved on to The Connor Davidson Resilience scale for approximately 10 minutes. Lastly, The Posttraumatic Checklist-Civilian and the Trauma History Screen took approximately 10 minutes to complete. The last three surveys were completed on Qualtrics. The data from this study was compiled and analyzed using SPSS and excel.

Analyses

All hypotheses were tested using the Pearson correlation coefficient. Appropriate significance levels were established using the Bonferroni adjustment to protect against type one

error. In our secondary analysis, a multiple regression and simple slopes were run to examine the

possible moderation effects of trauma on demoralization, with resilience as a mitigating factor.

Results are based on a participant pool of 111 males and 88 females (N=199) with a predominantly Caucasian (76%) sample. In order to assess the association between dimensional measures of dysfunction and a dimensional measure of resilience, Pearson Correlation Coefficients were run between the all MMPI-2-RF scales and the Connor-Davidson Resilience Scale. We hypothesized that there would be significant negative correlations with the following scales: EID (Emotional/Internalizing Dysfunction), RCd (Demoralization), RC2 (Low Positive Emotions), SUI (Suicidal Ideation), HLP (Helplessness/Hopelessness), NFC (Inefficacy), and SFD (Self-Doubt). EID, RCd, RC2, SUI, HLP, NFC, and SFD all had negative correlations with resilience indicating that when individuals experience high level of dysfunction in these areas, they exhibit little to no traits of resilience and vice versa. We used a cutoff of 0.3 to satisfy a moderate correlation or above. The results for these associations are shown in Table 1.

Table 1: Correlations between the MMPI-2-RF Emotional/Internalizing Scale and related scales with the Connor Davidson Resilience Scale.

Minnesota Multiphasic Personality Inventory – 2 – Restructured Form (MMPI-2-RF)	Pearson Correlation	Sig. (2- tailed)
Emotional/Internalizing Dysfunction (EID)	-.583**	.000
Demoralization (RCd)	-.507**	.000
Suicidal Ideation (SUI)	-.445**	.000
Helplessness/Hopelessness (HLP)	-.532**	.000
Self-Doubt (SFD)	-.414**	.000
Inefficacy (NFC)	-.339**	.000
Low Positive Emotions (RC2)	-.604**	.000
Introversion/Low Positive (INTR-r)	-.553**	.000
Negative Emotions (RC7)	-.332**	.000
Anxiety (AXY)	-.346**	.000

Note: **$p<.001$.

In addition to the hypothesized scales, our results indicated that not only did the

resilience measure correlate strongly with the emotional internalizing scales, but there were also

moderate to strong correlations with Somatic Complaints and related scales including: MLS

(Malaise), HPC (Head Pain Complaints), NUC (Neurological Complaints), GIC (Gastrointestinal

Complaints), and Special Problem scales including: FML (Family Problems), IPP (Interpersonal

Passivity), SAV (Social Avoidance), and SHY (Shyness), shown in Table 2 and 3. These results

indicate that the higher the participants' score on their resilience scale, the lower their scores on

somatic symptoms of dysfunction and dysfunction within the specific problems in the table

below.

Table 2: Correlations between the MMPI-2-RF Somatic Complaints and related scales with the
Connor Davidson Resilience Scale

Minnesota Multiphasic Personality Inventory – 2 – Restructured Form (MMPI-2-RF)	Pearson Correlation	Sig. (2-tailed)
Somatic Complaints (RC1)	-.447**	.000
Malaise (MLS)	-.518**	.000
Head Pain Complaints (HPC)	-.360**	.000
Neurological Complaints (NUC)	-.309**	.000
Gastrointestinal Complaints (GIC)	-.304**	.000

Note: **$p<.001$.

Table 3: Correlations between the MMPI-2-RF Specific Problem Scales and related scales with
the Connor Davidson Resilience Scale

Minnesota Multiphasic Personality Inventory – 2 – Restructured Form (MMPI-2-RF)	Pearson Correlation	Sig. (2-tailed)
Family Problems (FML)	-.317**	.001
Interpersonal Passivity (IPP)	-.403**	.000
Social Avoidance (SAV)	-.470**	.000
Shyness (SHY)	-.358**	.000

Note: **$p<.001$.

Our secondary analysis aimed to assess the ability for resilience to moderate the

relationship between trauma and demoralization. More specifically, many individuals who

experience trauma will also experience life dissatisfaction and distress after the event. If one

holds or is able to develop this personality trait, resilience, they may be less likely to develop the

distress and life dissatisfaction. In addition, RC3 and RC4 were added for exploratory analysis as

possible moderating factors based on findings in previous literature that described them as traits

that heighten after the experience of trauma. (Frick, Marsee, & Patrick, 2006; Pai & Carr, 2010;

Pietrzak et al., 2010). The means, standard deviations, and intercorrelations for the moderation

analysis are presented in Table 4. Further analyses were focused on the relationship between

trauma and demoralization, with possible moderating factors of resilience, cynicism and

antisocial behavior. Examination of the correlation matrix with these constructs revealed that the

strongest association was between demoralization and trauma. RC4 and RCd has the weakest

correlation. In addition, resilience was negatively correlated with demoralization, which is

consistent with previous research of the presentation of protective traits on distress (Mikolajczak,

Petrides, & Hurry, 2009; Pai & Carr, 2010).

Table 4. Intercorrelations and descriptive statistics for Resilience, Trauma, and Personality
Dimensions.

	RCd	a	b	c	d	Means	Std. Deviations
RCd	1.000					62.05	11.68
a	.581**	1.000				40.33	16.08
b	-.472**	-.353**	1.000			94.88	16.08
c	.375**	.256**	-.159*	1.000		57.81	9.58
d	.274**	.280**	-.100	.261**	1.000	53.70	9.97

Note: N=199. a= Trauma; b= Resilience; c= RC3; d= RC4 *p<.05, **p<.001.

A hierarchical multiple regression was conducted to investigate whether the association

between trauma and demoralization depends on the level of resilience, in the person's ability to

adjust and function well. After centering trauma and resilience and computing the trauma-by-

resilience interaction term, the two predictors and the interactions were entered into a

hierarchical regression model. Results indicated that higher levels of Trauma ($\beta = .419$, $t = 6.9$, $p < .001$) and high ability to be Resilient ($\beta = -.289$, $t = -5.12$ $p < .001$) were associated with lower levels of RCd. A high score of RC3 and RC4 were not associated with RCd, suggesting that the effect of a high level of Cynism or Antisocial behavior does not affect a person's level of distress after the experience of trauma. The interaction between Trauma and Resilience was also significant ($\beta = -.145$, $t = -2.25$ $p < .026$), which suggests that the effect of trauma on the individual's presentation of distress depended on the level of resilience.

To further clarify this interaction effect, simple slopes procedures were conducted (Aiken & West, 1991). More specifically, simple slopes for the association between resilience and demoralization were tested for low and high levels of trauma, which is presented in Figure 2. Although an interaction emerged, simple slopes were not significant and analyses revealed a small impact that is less substantial of resilience on demoralization on high ($\beta = -.18$, $t = -1.71$ $p < .089$) or low ($\beta = -.02$, $t = -.110$ $p < .913$) trauma. However, results indicated that there were significant differences with hidden slopes on low resilience on high and low trauma ($\beta = .476$, $t = -8.150$ $p < .000$), in terms of demoralization. Additionally, there were significant differences with high resilience on both high and low trauma. This indicated that when an individual experienced trauma, they were likely to score higher on demoralization. Furthermore, these individuals were more likely to score in the clinical range, which suggests they are dealing with significant distress and life dissatisfaction to the point of it affecting their ability to function well in their daily lives. Both of the simple slope tests were not significant between level of resilience and level of demoralization, but the distance between both low and high trauma and high and low resilience were significant. This suggests that those who have experienced high levels of trauma

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have higher scores on demoralization. However, there is no differences between these individuals based on their resiliency.

Figure 1: Simple Slope Test
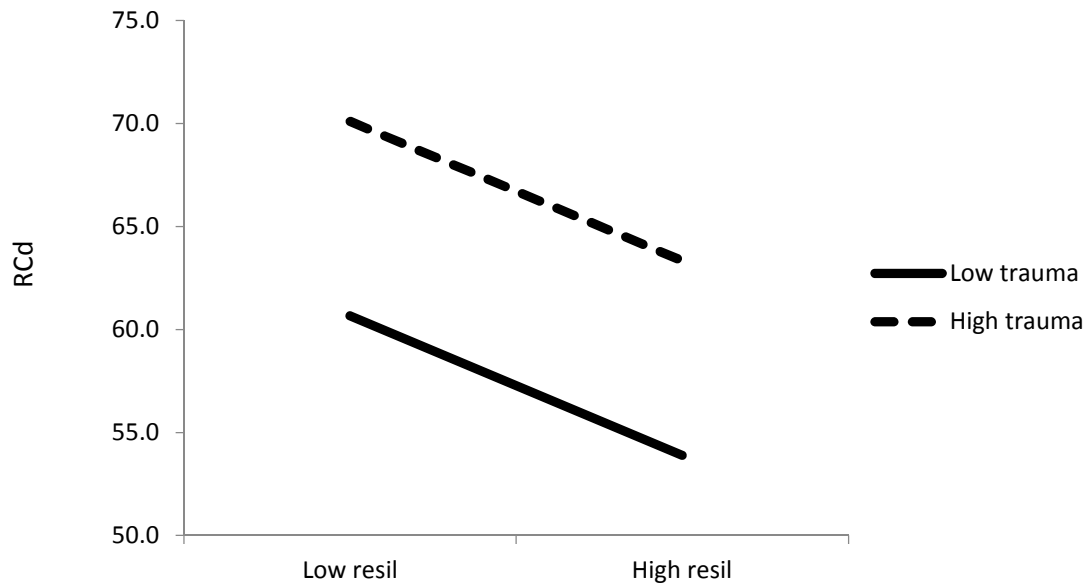
CHAPTER 5: DISCUSSION

The purpose of this study was to assess the relationship between the scales of the MMPI-2-RF and the Connor-Davidson Resilience Scale in order to help gain a better understanding and build a stronger nomological net for the complex construct, resilience. In the first collection of hypotheses, results supported our notions that the resilience scale would be negatively correlated with Emotional/Internalizing Dysfunction and related facets, including suicidal ideation and low positive emotions. This sets the foundation for more inquiry into the notion that resilience can be conceptualized as a collection of personality traits that work together to form its complex facets.

As previously mentioned, Resilience is a construct with no universal definition. Based on the findings in the correlations between the MMPI-2-RF and the Resilience Scales, these results confirm our notion that resilience may be conceptualized as a dimensional trait that may change with time and experiences (Campbell-Sills, Cohan, & Stein, 2006). Moreover, results indicate that resilience can be thought of as a complex set of traits including lack of dysfunction across areas involving emotional/internalizing problems, somatic complaints and specific problem scales on the MMPI-2-RF. The association between the resilience scale and the MMPI-2-RF scales exemplifies the relationship between the constructs, underlying the relationship between these constructs. The higher an individual scores on resilience scales, the less likely they are to experience psychological dysfunction in the reported domains.

Our secondary analysis aimed to explore the relationship between resilience and trauma on genuine psychopathology, or in this case RCd. Previous research has shown that some people who experience trauma are likely to develop dysfunction in many areas in their mental health (Ying et al., 2014). Furthermore, they may experience higher levels of stress, life dissatisfaction

and difficulty in their overall ability to adjust to changes in their lives. RC3 and RC4 were also added as possible moderating factors, but no interaction was found for either of these variables. Correlations showed that trauma and demoralization have the strongest association to one another. An interaction occurred in the analysis between resilience and trauma and their RCd scores. Simple slopes revealed that overall; those who have experienced high levels of trauma have higher scores on demoralization, but the differences in their level of resilience has less effect on their demoralization score. This means that regardless of the score of resilience the individual is still likely to experience distress post-trauma. One explanation for this is that individuals who have experienced trauma are very likely to still experience distress, whether they are likely to be resilient or not. Therefore, it is more important to whether the individuals' level of distress starts to affect their ability to function. This may indicate that individuals who experience high levels of trauma are likely to score high on RCd, which means they may have a dysphoric affect, feelings of self-inefficacy, stress and an overall feeling of giving up. Resilience, although known as a protective factor, does not seem to have much of an effect on lessening the level of distress the individual experiences.

A potential limitation of the study was the population sample. The sample is solely comprised of college students, in a small rural region, which led to lack of diversity in the predominantly Caucasian sample. In this predominantly Caucasian, freshman sample of individuals appears to have experience lower levels of stress then we would hope for in this particular study. In addition, we mention that there are problems with the current resilience scales that are available in literature, while using the CD-RISC. Our reasoning for choosing this assessment is the two-fold. Connor and Davidson (2003) view resilience as a dimensional trait where one is assessed on their ability to cope with stress and protect against psychological

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dysfunction, which is consistent with the current project. In addition, the CD-RISC is also known to have sound psychometric properties with an overall ability to produce reliable and valid results in deciphering people who are resilient from those who are not (Connor & Davidson, 2003). An additional limitation is that the individuals are asked to rate their answers on the month prior, which can limit information about their functioning, depending on when a trauma may have occurred. Due to the lower report of explanation to trauma on the THS, we decided to use the PCL-C to assess the level of trauma symptomatology. Ideally, we would like to use a sample that explicitly identifies traumatic experiences.

This information provides a more stable nomological net of information for the construct. We may be able to view resilience as a collection of personality traits, which can help us to be more productive in assessment of individuals, particularly in areas of high-pressure careers, such as police officers or members of the army. The ability to assess for resilience in these individuals gives us a way to productively screen out individuals based on their ability to be resilient in the future, promoting longevity in their careers. Furthermore, after an individual has experience trauma, it would be beneficial to not only assess their current psychological state, but also their level of resilience in order to identify their ability to adjust or function post-trauma.

Future research needs to look further into the relationship between psychological dysfunction and resilience. This could extend to specific scales and item level to see what is indicative of resilient individuals. Research would benefit from a longitudinal study looking at people after the experience of trauma and a reassessment of their adjustment after a period of time. In recent literature, the term posttraumatic growth (PTG) has become increasingly popular in literature and commonly confused with resilience (Collier, 2016). Although resilience is the ability to adapt or bounce back post-trauma, PTG is when the individual has a difficult time

being able to adjust or bounce back and challenges themselves in various areas of their life, with

the ultimate outcome of personal growth (Tsai, Sippel, Mota, Southwick, & Pietrzak, 2016).

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