10-2014

Validation of the MMPI-2_RF's RC3 Cynicism Scale

Tyler C. Polshak
Pittsburg State University

VALIDATION OF THE MMPI-2-RF'S RC3 CYNICISM SCALE

A Thesis Submitted to the Graduate School
in Partial Fulfillment of the Requirements
for the Degree of
Master of Science

Tyler C. Polshak

Pittsburg State University

Pittsburg, Kansas

October, 2014

VALIDATION OF THE MMPI-2-RF'S RC3 CYNICISM SCALE

Tyler C. Polshak

APPROVED:

Thesis Advisor _____
Dr. Janet Smith, Department of Psychology & Counseling

Committee Member _____
Dr. Sean Lauderdale, Department of Psychology & Counseling

Committee Member _____
Dr. Brad Cameron, Department of Social Sciences

VALIDATION OF THE MMPI-2-RF'S RC3 CYNICISM SCALE

ACKNOWLEDGEMENTS

I would like to deeply thank Dr. Janet Smith for her patience, guidance, and time throughout the entire process. Her support and intellectual direction greatly aided my progress and made this task attainable. I would also like to thank Dr. Lauderdale for his advice and time on all drafts of my research. In addition Dr. Cameron's assistance, time, and encouragement was extremely valuable.

VALIDATION OF THE MMPI-2-RF'S RC3 CYNICISM SCALE

An Abstract of the Thesis by
Tyler C. Polshak

In the current investigation RC3 was correlated with the 16 Personality Factor's (16PF) Vigilance Scale (L) (Conn & Reike, 1994) in an effort to provide additional evidence of validity of the scale. To further understand the construct of cynicism, as measured by RC3, the scale was also correlated with the 16PF's global factor scales, Independence and Anxiety. The study incorporated archival data from 74 college participants from undergraduate psychology classes. Results showed that RC3 was positively correlated with the 16PF's Vigilance scale and had a significantly stronger correlation with the 16PF's Independence global factor than with the Anxiety global factor. The results of the analysis indicated that the 16PF's Vigilance scale and the MMPI-2-RF's RC3 scale may assess for similar characteristics. Further analysis of the data showed the individuals who elevate the RC3 scale may be aggressive, skeptical, emotionally unstable, and bold. The results of this study may help therapists and clinicians better understand individuals who elevate RC3 and individuals who are identified as cynical.

TABLE OF CONTENTS

LIST OF TABLES

TABLE PAGE

CHAPTER I

INTRODUCTION

Purpose of Study

With the release of the MMPI-2 Restructured Clinical (RC) scales in 2003 (Tellegen et al., 2003), a shift in personality assessment occurred. Despite being the most widely used and most frequently researched personality assessment in the field of psychology, the MMPI-2 had several faults (Graham, 2012). In creating the RC scales, the author's intent was to improve the psychometric properties of the MMPI-2 and improve the validity of the measure of personality. While some are in favor of the addition, the RC scales have been surrounded by controversy since their conception. One of the leading concerns is the "construct drift" of the measure. Nichols (2006) stated that the RC scales are such a dramatic change that the MMPI has moved too far away from the roots of its Clinical Scales. At the focus of this controversy is the RC3 scale, intended to measure cynicism. RC3 is a revised version of the clinical scale Hysteria, which assessed emotional states and somatic complaints. Shortly after Nichols' (2006) criticisms, Ben-Porath and Tellegen (2008) stressed the need for more research on the RC scales, particularly the

RC3 scale. Since the release of the RC scales, studies have attempted to validate or disprove RC3. Many of the criticisms surrounding the RC3 scale have been answered. However, skepticism surrounding the validity of the RC scales and RC3 remain. The intention of the current study is to assess the relationship between the 16 Personality Factor's (16PF) Vigilance (L) scale (Conn & Rieke, 1994) and RC3 through a correlational analysis. Such an analysis has the potential to create a better understanding of the relationship between the two scales and contribute to a great understanding of the construct assessed by RC3.

CHAPTER II

REVIEW OF THE LITERATURE

The Minnesota Multiphasic Personality Inventory (MMPI) was released in 1943 (Hathaway & McKinley, 1943) and resulted from work by the authors at the University of Minnesota Hospital. Hathaway and McKinley's intent was to create a true-false self report diagnostic instrument to assess patients' symptoms in a medical setting. By the mid 1960's, the MMPI was the most widely used self-report personality assessment in the field of psychology (Harrison, Kaufman, Hickman, & Kaufman, 1988; Lubin, Larson, & Matarazzo, 1984). In 1989, after several decades of research, the original scales were revised and the MMPI-2 was released. The second edition included additional validity scales, standardized scores with more uniform distributions, and updated norms (Butcher, Dahlstrom, Graham, Tellegen, & Kaemmer, 1989).

What separated the MMPI from other personality assessments was the use of empirical keying. While this method is commonly used today, it was an innovation that impacted the field of personality assessment. The original MMPI Clinical Scales were created using a normative group of patients and non-patient visitors of the hospital. Empirical keying allowed the authors to create a measure that differentiated between the

two groups (Tellegen et al., 2003). Individuals of both groups were asked questions regarding different facets of psychological difficulties. The authors then analyzed the responses and separated out all of the questions endorsed by the psychiatric group. The questions most frequently endorsed by the patients then became a part of a specific scale, depending on the psychometric group diagnosis (Graham, 2012).

Both the MMPI and MMPI-2 had several flaws, which provided the impetus for a further revision. One major problem with both the MMPI and MMPI-2 was inter-scale correlation. When creating the original MMPI, Hathaway and McKinley (1943) remarked that empirical discriminant keying was their focus on allocating an item to a scale. The rationale for placement of an item on the MMPI was how each item differed from other items. Despite the author's best efforts, inter-scale correlation was a problem. A study by Butcher et al. (1989) pointed out that there were correlations of .80 between the Psychasthenia scale, a measure of "neuroticism" and the Schizophrenia scale that measures "psychoticism." These findings were similar to those found by Tellegen et al. (2003) who also questioned the inter-scale correlations and validity of the MMPI-2. Despite the revision of the MMPI, inter scale correlation persisted as a problem with the MMPI-2. This was partially due to the fact that the MMPI-2 scales remained highly consistent with the MMPI. This was done in an attempt to maintain continuity between the MMPI and MMPI-2 (Tellegen et al., 2003).

The Restructured Clinical Scales

The process of creating the Restructured Clinical (RC) scales was a thorough step by step analysis of each Clinical Scale on the MMPI-2. The intent was to create a new set of scales that would be less intercorrelated and have greater discriminant validity. The

objective was to clarify the definition and interpretations made for each Clinical Scale. The RC scales' development depended heavily on the authors theoretical model, clinical impressions, and professional judgment (Tellegen et al., 2003). The creation of the RC scales was based on four sample groups who completed the MMPI-2. Two groups consisted of 832 men and 380 women at a residential substance use treatment facility (McKenna & Butcher, 1987). The other two groups were located at one of three psychiatric facilities in Ohio or Minnesota and included 232 men and 191 women (Graham & Butcher, 1988). Thus, the RC scales were created by professional clinicians using research regarding the core components of pathology, while incorporating additional data. The authors also used reanalyzed data from the normative sample of the MMPI-2 (Tellegen et al., 2003).

The leading threat to both the MMPI and MMPI-2 was the vague and emotional focused definitions for anxiety and depression. The Welsh Anxiety Scale (A Scale) assesses for subjective items of depression and anxiety and was known as the "MMPI-2 first factor" (Welsh, 2000, 1956). The authors of the RC scales identified this factor as demoralization, describing it as feeling down, bad, or blue (Tellegen et al., 2003). To begin to address high internal correlations between scales, demoralization items from each original scale were removed. Tellegen et al. emphasized the need for a measurement of demoralization that should be measured separately from other scales. Making each new scale independent allowing other scales to more accurately assess the core of what each scale was intended to assess. This led to the creation of the Demoralization scale and removal of each demoralization item from all Clinical scales to create a new set of scales.

This new set of scales was referred to as the Restructured Clinical Scales (Tellgen et al., 2003).

The Watson and Tellgen (1985) model of Positive Affect (PA) and Negative Affect (NA) were used to remove items of demoralization from each original scale. In Watson and Tellgen's model, items of positive and negative emotions are identified within a personality assessment. In the construction of the RC Scales this process was altered, Positive Emotionality (PEM) and Negative Emotionality (NEM) were used instead of Positive and Negative Affect. The model was used to examine different states of emotion, such as feeling "glad" or "eager" to a more broad measure of moods, like "happy" or "blue." A factor analytic approach was used to isolate the demoralization items on the MMPI-2. The primary factor that was used included items related to demoralization and depression. First, item content was inspected for scales 2 and 7 of the original clinical scales as they assessed depression and psychasthenia. Items from scales 2 and 7 with a Primary Factor loading (PF1) of .50 or greater were then considered to be added to the Demoralization scale. The analysis of scales 2 and 7 resulted in a total of 14 items with a PF1 loading of .50 or greater, 10 of which were then considered to be added to the Demoralization scale. After scales 2 and 7 were analyzed, the authors extracted demoralization items from the remaining clinical scales that had a PF1 loading of .50 or greater. Once each scale was analyzed, a total of 23 demoralization items from scales 2 and 7 of the original MMPI-2 had a PF1 loading of .50 or greater. Of the 23 items with an acceptable PF1 loading, 18 were chosen to make up the final Demoralization scale (Tellegen et al., 2003).

Throughout the process of removing demoralization items from each scale, items with high factor loadings on the "root" (what the scale was intended to assess for) of each scale were isolated. The items with high factor loadings made up what were known as "seed scales" (Tellegen et al., 2003). Researchers also ensured that the items selected for the seed scales did not have significant factor loadings for any other seed scales. This long process of removing items that overlapped was done to improve discriminate validity. Items were also removed from scales if external criterion measures did not correlate to what the scale was intended to assess (Tellegen et al., 2003).

Of the original eight Clinical scales eight were developed into RC scales. The RC scales and the original Clinical scales they were assigned to are displayed in the Table 1.

Table 1

The original Clinical Scales and the Restructured Clinical Scales

Clinical Scale	Restructured Clinical Scale
Scale 1 Hypochondriasis (Hs)	RC1 Somatic Complaints (Som)
Scale 2 Depression (D)	RC2 Low Positive Emotions (LPE)
Scale 3 Hysteria (Hy)	RC3 Cynicism (Cyn)
Scale 4 Psychopathic Deviate	RC4 Antisocial Behavior (AsB)
Scale 6 Paranoia	RC6 Ideas of Persecution (Per)
Scale 7 Psychasthenia	RC7 Dysfunctional Negative Emotions
Scale 8 Schizophrenia	RC8 Aberrant Experiences
Scale 9 Hypomania	RC9 Hypomanic Activation (HPM)

Scales 0 and 5 were not used to create an RC scale as they were not determined to assess true symptoms of psychopathology (Tellegen et al., 2003). Aside from RC3, each RC scale had high positive correlations with its corresponding original Clinical scale. For example, RC1 and Scale 1 correlated .89 for men and .92 for women. The correlational mean for each set of scales was .64 with the highest correlation at .92 and lowest at .41. This shows that while vast improvements were made, the scales still measured similar characteristics with the demoralizing factors removed (Graham, 2006).

The release of the RC scales produced much controversy. Those in favor, commented on the increase of discriminant validity, but several opposed the changes to the original Clinical scales. Leading the criticisms was David S. Nichols, who criticized the RC scales in a "special issue" volume of the *Journal of Personality Assessment* (Nichols, 2006). Nichols pointed out that the RC scales highly correlate with the Clinical scales reducing their necessity. Nichols added that removing the subjective depression factors (demoralization) from the Clinical scales may have moved the assessment too far away from the original purpose of Hathaway and McKinley (1940); this problem was referred to as construct drift by Nichols (2006).

In response, Tellegen et al. (2006) asserted that Nichols neglected to mention several aspects of Tellegen's empirically validated research. Tellegen remarked that his research backed the theory that the demoralization characteristic was important enough to be identified as a single scale. Ben-Porath and Tellegen (2008) point out that several studies have supported the RC scales. Several studies have demonstrated that the demoralization factor is significant enough to stand alone in numerous populations, including: mental health outpatient units (Simms, Casillas, Clark, Watson, & Doebbeling,

2005; Wallace & Liljequist, 2005), college counseling centers (Sellbom, Ben-Porath, & Graham, 2006), private practice outpatient (Sellbom, Graham, & Schenk, 2006), and substance abuse clinics (Forbey & Ben-Porath, 2007). All of the studies indicated acceptable validity and reliability in regards to the RC scales. However, Ben-Porath and Tellegen (2008a) reported that all of the RC scales could benefit from further investigative studies.

To address Nichols' criticisms regarding construct validity, Weed (2006) remarked that the RC scales are "focusing" or "sharpening," not "drifting" as suggested by Nichols. Weed (2006) went on to explain that shift in construct is unavoidable when you are modifying a multidimensional measure into a single dimension but the benefits greatly outweigh the costs. Narrowing the scope of assessment is the benefit of a single dimension measure, where elevations on a multidimensional measure may be a result of several variables. Single dimensional measures reduce confusion regarding why a scale may be elevated.

Many of the original concerns have been answered regarding the RC scales, but skeptics remain hesitant to use the phrase "gold-standard" in accordance with the RC scales. A 2010 study by Wise, Streiner, and Walfish compared the reliability of the MMPI-2-RF, PAI, and MCMI-III. While the content scales of the MMPI-2 were competitive with the PAI and MCMI-III, the RC scales were less impressive. The percentage of scales with a test-retest of .80 or higher for the MCMI-III and PAI were 100% and 61%, while the RC scales' percentage came in at 39% (Wise, Streiner, & Walfish, 2010).

The MMPI-2-RF

The MMPI-2-Restructured Form (RF) is the latest release in the long standing history of the MMPI. The MMPI-2-RF was released in 2008 and is a shorter and revised version of the MMPI-2. Ben-Porath and Tellegen (2008b) stated that the MMPI-2-RF is not a replacement of the MMPI-2 but is a valuable alternative. While the Restructured Clinical (RC) scales improved the discriminant validity of the MMPI-2, there were several characteristics that were not assessed in the RC scales. Ben-Porath and Tellegen (2008b) intended to increase validity of and create additional scales for a wider range of assessment with the MMPI-2-RF.

In creating the RF version, authors used the normative sample from the MMPI-2. The MMPI-2 sample was created from analysis of the 1980 census. Seven testing sites in the United States (Minnesota, Ohio, North Carolina, Washington, Pennsylvania, Virginia, and California) were used to adequately represent the American population. To improve the diversity, military groups and Native Americans were also included in the sample. Couples were also assessed and gave a brief history of their relationship. In total 2,900 participants completed the MMPI-2. However, 2,600 (1,462 women and 1,138 men) participants were included in the final normative sample, 300 were eliminated as their test was either incomplete or invalid (Ben-Porath & Tellegen, 2008b).

The MMPI-2-RF includes nine RC scales, eight revised validity scales, three Higher Order scales, 23 new Specific Problems scales, two Interest scales, and a revised version of the Personality Psychopathology Five (PSY-5) scales. Authors also added the Infrequent Somatic Response Scale (Fs) to assess for over-reporting of somatic complaints (Ben-Porath & Tellegen, 2008b).

The addition of the Higher Order scales was intended to further identify the area in which a patient's emotional distress was focused. The three scales include Emotional/Internalizing Dysfunction (EID), Thought Dysfunction (THD), and Behavioral Dysfunction (BXD). The Higher Order scales were created through a similar factor analysis used to create the RC scales. Each Higher Order scale is made up of items from the RC scales and the Specific Problem scales that correlate with its description. For example RCD (demoralization) is a component of EID. When a patient endorses items associated with RCD, the EID scale also elevates. The EID scale indicates what form of emotional distress the patient may be presenting (Ben-Porath & Tellegen, 2008b).

While the authors believed the RC scales to be an improvement of the original Clinical Scales, there were some areas the scales did not address. The inclusion of the Specific Problem scales alleviated this issue. Adding scales that assessed for juvenile delinquency, substance use problems, and suicidal ideation increased the scope of the MMPI-2-RF. The addition of two Interest scales was designed to suggest a patient's occupational strengths and weaknesses (Ben-Porath & Tellegen, 2008b).

Adding a revised version of the PSY-5 scales was intended to provide further insight into test takers' personality characteristics. These were not intended to assess symptoms of pathology and do not correlate with the RC scales, but give a representation of an individual's personality (Ben-Porath & Tellegen, 2008b). By increasing the validity and reliability of most scales and reducing the items on the questionnaire, most have considered the RF an improvement for the MMPI (Graham, 2012).

RC3 Cynicism

At the head of the controversy of the release of the RC scales was RC3 (Ingram, Kelso, & McCord, 2011). The drastic shift from the original Clinical Scale 3 Hysteria, to RC3 assessing cynicism was of serious concern. Clinical Scale 3, Hysteria, was created to assess conversion disorder in reaction to stress. The 60 items on Clinical Scale 3 included assessment of specific somatic symptoms, denial of emotional or psychological problems, denial of physical health problems, and denial of social discomfort (Tellegen et al., 2003). The process for creating each RC scale involved a two step analysis that drew out the demoralization factor and isolated the core of what the scale was assessing. This two step analysis worked for all of the original Clinical scales except Scale 3 (Hysteria). For Scale 3, a three factor solution was used and analyzed across four samples. Of the 60 items on Scale 3, 18 were isolated in the factor analysis as demoralizing characteristics. The second factor isolated was somatic concerns, but was removed since those items had already been assigned to RC1. The third factor yielded cynical content, leaving cynicism to be the core of Scale 3 (Tellegen et al., 2003).

Graham (2006) raised several concerns regarding RC3 and the lack of correlation it had to its original scale, Hysteria. He went on to question RC3's validity but noted that the reliability coefficients for RC3 were in acceptable ranges. The normative outpatient and inpatient samples for RC3 showed internal consistency reliability coefficients of .79 for women and .80 for men. The normative sample for RC3 had test-retest coefficients of .87 for women and .76 for men. Tellegen et al. (2006) reported clinical samples comparing RC3 and Hysteria that had correlation coefficients of .20 or lower. Correlation statistics between the two scales indicate RC3 assesses different characteristics than those assessed by the Hysteria scale. The Cynicism scale is one of the Content scales on the

MMPI-2 which assesses for aspects of distrust, skepticism, and opposition toward 2. Several skeptics noted RC3 would be redundant if it were added and the Cynicism scale remained a part of the MMPI-2; around 80% of the items on RC3 appear on the Cynicism scale (Butcher, Hamilton, Rouse & Cumella, 2006; Greene, Rouse, Butcher, Nichols, & Williams, 2009; Nichols, 2006; Rogers, Sewell, Harrison, & Jordan, 2006).

In response to critics, Tellegen et al. (2006) explained the purpose and rationale of RC3. Elevated scores on RC3 may indicate a lack of trust as well as a lack of caring, self-centeredness, and pessimistic perception of the world. However, lower scores on RC3 may indicate being gullible, naïve, and overly trusting. In a separate response to critics, Ingram et al. (2011) argued that RC3 was needed for multiple reasons and noted that the RC scales clear up several of the concerns expressed by those who used the MMPI-2. By creating RC1 to assess for somatic complaints and RCd to assess for demoralization, the authors found RC3 to be the most suitable place for cynicism to be assessed. The Content Scales were not included on the Restructured Form meaning the original Cynicism scale ceased to exist, leaving RC3 as the only measure of cynicism.

The RC3 scale has significant correlations with several other MMPI-2-RF scales (Ben-Porath &Tellegen, 2008b). In outpatient women the highest correlations to RC3 were Anxiety (.41) and the Stress/Worry (.37) scales. For outpatient men, the highest correlation to RC3 was the Anger Proneness scale (.44), followed by Anxiety (.40) and Stress/Worry (.38). For inpatient men RC3 scores correlated most with the Self-Doubt (.68), Helplessness/Hopelessness (.67), and the Shyness (.51) scales. For inpatient females, RC3 scores correlated most with Anger Proneness (.45), Stress/Worry (.39), and Anxiety (.35). In the normative sample, RC3 scores of males correlated most with Anger

Proneness (.38) and Stress/Worry (.37). For females in the normative sample, RC3 scores correlated most with Anger Proneness (.45), Stress/Worry (.39), and Anxiety (.35). Correlational studies focusing on RC3 indicate RC3 may not only assess for characteristics of cynicism but anxiety, stress, and anger as well.

Several studies have investigated the correlation between RC3 and other measures. The MMPI-2 manual reports correlations between RC3 and 30 other external variables including scales on: the Neuroticism-Extroversion-Openness-Personality Inventory-Revised (NEO-PI-R; Costa & McCrae, 1992), the Brief Psychiatric Rating Scale (Overall & Gorham, 1988), and the Multidimensional Personality Questionnaire (Tellegen, 2003) for samples in medical settings and mental health outpatient units (Ben-Porath & Tellegen, 2008a). The Machiavellianism-IV Scale, a measure that assesses for cynical characteristics and a respondents tendency to trust others (MACH-IV; Christie & Geis, 1970) had the highest correlation with RC3 at .60 (Ben-Porath & Tellegen, 2008a). Forbey and Ben-Porath (2008) found similar results when comparing RC3 and 15 other measures, the MACH-IV was the highest correlation ($r = .53$ for men and $r = .56$ for women). Correlational studies contribute to the validity of RC3 as a measure of cynicism.

Independently, other researchers have discovered correlations of the RC3 and similar assessment measures. Several studies have found correlations between RC3 and measures of anger and violent behaviors. Tellegen, Ben-Porath, and Sellbom (2009) found statistically significant correlations between RC3 and the Angry-Hostility scale ($r = .41$) of the NEO-PI-R. The NEO-PI-R's Trait Anger scale was also correlated to RC3 for men *r*(.36; Sellbom, Ben-Porath, Baum, Erez, & Gregory, 2008). Handel and Positive

correlations between RC3 and the Negative Emotionality *r*(.55) of the Multidimensional Personality Questionnaire were found (Sellbom, Fischler, & Ben-Porath, 2007).

Measures of externalizing behaviors have also been correlated to RC3. The Impulsiveness *r*(.31) and Magical Ideation for women *r*(.38) scales of the NEO-PI-R had positive correlations with RC3 (Sellbom, Ben-Porath, and Bagby (2008). RC3 correlated with the Blame Externalization *r*(.22) and Violence Disinhibition scales *r*(.19) of the Multidimensional Personality Questionnaire in a sample of partners who had been physically or emotionally abused (Sellbom, Ben-Porath, Baum, Erez, & Gregory, 2008). Another study found police officer candidates who elevated RC3 were more likely to experience problematic job behaviors such as increased citizen complaints, rude behaviors, and externalization of blame (Sellbom, Fischler, & Ben-Porath, 2007).

In addition, several measures of trust have been correlated to RC3. Negative correlations have been found between RC3 and the Agreeableness *r*(-.43) and the Trust facet scales *r*(-.64) of the NEO-PI-R (Sellbom, Ben-Porath, & Bagby, 2008). RC3 correlated to the Suspiciousness scale *r*(.12) of the Brief Psychiatric Rating Scale (Handel & Archer, 2008). The Alienation scale (.54) of the Multidimensional Personality Questionnaire was found to be positively correlated to RC3 (Sellbom & Ben-Porath, 2005).

Taken together, these studies suggest that RC3 measures characteristics of cynicism but may also assess for characteristics such as stress, anger, independence, and agreeableness. The complexity of RC3 and cynicism as a personality characteristic may explain why many have questioned the validity of RC3 as a measure of cynicism.

Cynicism may be viewed as a complex trait that has many facets, making it difficult to assess for.

With the release of the MMPI-2-RF in 2008 and the answers given by Tellegen and Ben-Porath to critics, much of the research on RC3 and the RC scales concluded in 2011. However, questions were still left unanswered regarding RC3's validity. The focus of this study is to investigate RC3 and what it is assessing. Graham (2006) noted that RC3's correlates for both inpatient and outpatient settings were less than impressive questioning whether it is a valid measure. This study will add to the validation of RC3 with an established assessment tool that has yet to be used in conjunction with RC3 in publication.

Cynicism

In order to address the validity of RC3, it is helpful to explore the construct of cynicism in a more general manner. The definition of cynicism in the field of psychology is not widely agreed upon. A general definition seems to entail a general distrust of others and their motives, including traits such as skepticism, burnout, hostility and distrust (Abraham, 2000). Graham defined cynicism as an attitude or belief of an individual who is untrusting, pessimistic, self-focused, authoritarian, and uncaring (Graham, 2012). Scales such as the Machiavellianism scale (Mudrack, 2000), the Paulhus Socially Desirable Responding Scales (Paulhus, 1984), the Interpersonal Trust Scale, and the Cook Medley Hostility Scale (Cook & Medley, 1954) all address aspects of cynicism. Bakker and Heuven (2006) found that individuals with cynical beliefs often possessed aspects of depersonalization, viewing and treating others more like objects, reducing job satisfaction and increasing problematic incidents at work. Bakker and Heuven (2006)

defined depersonalization as a state of numbness toward others thoughts and feelings. Camerona et al. (2006) defined depersonalization similarly to Bakker and Heuven (2006) and concluded depersonalization was associated with higher burnout rates of various occupations.

Bakker and Heuven (2006) compared the exhaustion level and burn out rate of nurses and police officers. Exhaustion was assessed with a scale developed by Van Veldhoven and Meijman (1994) while burnout was assessed by the Maslach Burnout Inventory–General Survey (MBI-GS; Schaufeli, Leiter, Maslach, & Jackson, 1996) both self report measures. Results indicated having excessive emotional demands from a job affected workers in a negative manner. Cynicism and disengagement were positively correlated to feeling detached from one's occupation according to the MBI-GS. Cynicism was correlated to higher burnout rates of employees for both occupations. Another study found that in those who lost a job, higher rates of cynicism were associated with increased difficulty in finding a new job (Brandes et al., 2008). A correlation between cynical views and mistrust has been established in both police officers and the general public. Police officers, who were identified as cynical, according to co-workers, had more public complaints against them and had been reprimanded more frequently. Descriptors such as distrusting, negative, and oppositional were listed by co-workers to describe officers labeled as cynical (Ben-Porath, 2012).

Nafei (2013) examined the effects of cynicism on job satisfaction and perceived opinion of coworkers and superiors. Results indicated that individuals with cynical beliefs were more likely to view their superiors and peers as a threat to them. The employees with less cynicism cynical had a greater job satisfaction and were viewed as

more agreeable by their coworkers. The authors concluded that diminished job satisfaction, a lack of agreeability with coworkers, and a negative perception of the company may be associated with cynical characteristics (Nafei, 2013). A three-year study of medical students in residency concluded that over half of the individuals who were determined to possess a cynical perspective, scored higher on burn-out assessments. Cynical students also reported to be more likely to engage in unprofessional behaviors at work and were more apathetic toward others than students who did not endorse cynical characteristics (Billings, Lazarus, Wenrich, Curtis, & Engleberg, 2011).

Cynicism and world outlook in undergraduate Japanese students were investigated by Izawa, Kodama, and Nomura (2006). Researchers used the term hostile cognitions, defined as pessimistic views of the world and others, which directly correlates to the general definition of cynicism (Abraham, 2000). Hostile cognitions were displayed different among the behavior of Japanese students with cynical characteristics. Researchers indicated the differences may be attributed to the Japanese culture, which looks down upon expressing angry emotions and advocates cooperative behavior.

Another concern regarding cynicism is whether individuals who have cynical characteristics seek mental health services. National Guard soldiers were assessed for characteristics of cynicism using the MMPI-2-RF, RC3 scale. Each soldier who participated in this study had previously met diagnostic criteria for a mental health disorder. Six months after returning from deployment, soldiers were reassessed and questioned about any mental health services they had received since returning. Those who scored higher on RC3 were less likely to have obtained services despite meeting criteria for a mental health diagnosis (Arbisi, Rusch, Polusny, Thuras, & Erbes, 2013).

To better understand cynicism as personality characteristic, other terms are often used to define traits one may possess. Hostility is a synonym used for both RC3 and the Vigilance scale of the 16PF, but it is also used as a descriptor for both scales. Wong, Na, Regen, and Whooley (2013) assessed hostility levels and correlations with a list of cardiovascular complications, including myocardial infarction, heart failure, stroke, transient ischemic attack, and death in a sample of 1,022 outpatients with controlled coronary heart disease a self-reported measure was used to assess hostility. The study found that individuals at the highest quartile of hostility had a 58% greater chance of a second cardiovascular event compared to those at the lowest quartile. Nabi et al. (2008) also examined the effects of hostility on health and found individuals possessing characteristics of hostility had a greater likelihood of experiencing poor medical health and higher mortality rates. Olsen et al. (2005) investigated the risk of adverse events and recovery rate in women with suspected coronary artery disease. High cynical cynicism was correlated with an increased rate of adverse events, a lower survival rate, and longer recovery rates.

Research regarding cynicism and personal life factors such as marriage and friendships is rather scarce. However, with research regarding other areas affected by cynicism, several inferences may be made. Lueng et al. (2002) established dimensions of social cynicism, which involved a negative view of others, biases toward certain people or groups, mistrust of social institutions, and a lack of guilt for unethical actions to achieve goals. Alternatively, cynicism has been viewed as a personality trait by Graham (1993). Individuals possessing the trait may be less likely to trust others, be skeptical of others, and attempt to exploit and deceive others (Graham, 1993). Differentiating

between the two characteristics, social cynicism focuses on the distrust of others and social situations, while the personality trait is defined by distrustful and cynical beliefs about one's self (Pope, Butcher, & Seelen, 1993).

Li, Zhou and Leung (2011) found that cynical individuals self-reported lower levels of life satisfaction. Bond, Leung, Au, Tong, and Chemonges-Nielson (2004) speculated that social cynicism may lead to unhealthy styles of conflict resolution, which Bond et al. stated directly correlated to the distrust of others. Given the literature regarding social cynicism individuals who are highly cynical may not anticipate others compromising in a disagreement or for others to be motivated by their own personal interests. Using self-report measures and clinical interviews questioning participant's views on coping strategies and conflict resolution, Bond et al. (2004) found that cynicism is associated with a calloused perspective toward compromising.

Fu et al. (2004) found that individuals who elevated measures of social cynicism typically used means of manipulation, coercion, and assertive tactics to settle disagreements. Fu et al. concluded that social cynicism was often a result of a highly competitive personality.

Individuals who are highly cynical may possess a general skepticism of others, including family members, romantic partners, and friends. Costa, Zonderman, McCrae, and Williams (1986) found that cynicism correlated to paranoia, a mental health symptom that is focused on the distrust of others and correlates with several maladaptive characteristics.

In summary, cynicism may be related to faster burnout and a less agreeable perception in the work environment. Cynicism also affects consumer's perception of

companies and their expectations of companies. Cynicism has been established as having negative implications on one's physical health. Life satisfaction has also been shown to decrease in those with cynical characteristics.

The current study focuses on the aspects of distrust of others as distrust is the core of what RC3 was created to assess. The RC3 scale of the MMPI-2-RF is not the only measure designed to assess characteristics of distrust and cynicism. Other scales have validity and reliability in identify individuals who possess characteristics of cynicism and distrust. Correlating RC3 with another scale that has been proven through research to a valid measure in assessing individuals with characteristics of cynicism would be beneficial for validation of the RC3 scale of the MMPI-2-RF. One such measure with extensive research is the 16PF (Con & Reike, 1994), with the Vigilance scale of the 16PF being of most relevance to examination of RC3.

The 16PF's Vigilance Scale

The word vigilance often refers to sustained attention. However, the 16PF uses the term to describe individuals who are suspicious, distrustful, and skeptical of others. The 16PF has been established as a valid measure for several decades in the field of personality assessment (Conn & Rieke, 1994). This self-report measure includes 16 different characteristics that address the overall scope of one's personality. The current study focuses on the Vigilance scale of the 16PF.

Since the release of the 16PF in 1949, it has seen four updates (1956, 1962, 1967-1969, and 1994). In its most recent addition the authors focused on updating item content, standardization of the current population sample, and improving the overall quality of the instrument. In creating the fifth edition of the 16PF, Conn and Rieke (1994) chose the

most valid items from previous editions and added new items to create one assessment. A four form study was conducted to analyze the new and old items to ensure that they should be included in the fifth edition. A total of 350 participants completed forms A, B, C, and D of the fourth edition, three studies from 1962 and 1968 had participants complete form A, a factor-analytic study of 480 participants was conducted , and a four factor form analytic study was conducted in Europe that included 3,250 participants. The items went through further analysis before finally being included in the fifth edition. In total, the sample for the fifth edition included 3,498 respondents (1,749 men and 1,749 women; Conn & Rieke, 1993).

Each scale of the 16PF is on a continuum, one end indicating a characteristic and the other an opposing characteristic. The Vigilance scale includes questions regarding trust of others, their general beliefs about others, and their view of others' motives. The Vigilance scale was created to determine whether the test taker is more likely to possess characteristics of distrust and suspicious or are more accepting and trusting. Individuals endorsing items that relate to characteristics of distrust, skepticism, and opposition may elevate the scale in one direction. Test takers endorsing items associated with the opposing end of the Vigilance scale, may be accepting, trusting, and unsuspecting of others. It is important to note not every test taker falls at one end of the scale or the other, as the 16PF is considered a dimensional measure. Furthermore, while the phrases higher and lower are used for ease of explanation these do not dictate whether either set of characteristics are maladaptive or beneficial to possess (Conn & Rieke, 1994).

Much of the research regarding the Vigilance scale of the 16PF involves its effects in the work environment and overall health. Vigilance has been correlated to

characteristics such as cynicism, hostility, and distrust. The Cook Medley Hostility scale (Ho) was positively correlated to the Vigilance scale and found that the two assessed similar characteristics (Barefoot et al., 1987). Barefoot et al. found that the Vigilance scale correlated with the Hostility scale, both of which assess aspects of distrust and cynicism. The study also reported that elevated score on both scales were correlated to a decline in general health and increased risk of mortality. Participants who elevated the Vigilance scale reported a higher number of health concerns that may lead to death as determined by medical physicians.

Another study examined the correlation of the Vigilance scale between psychological health and well being. Those who elevated the Vigilance scale were more likely to report mental health problems. The study concluded individuals who are distrusting, dependent, and self-opinionated, as described by the Vigilance scale, were more likely to experience psychological distress and non-psychiatric disorders (Satija & Kahn, 2013). Going back to the general definition of vigilance as sustained attention, one study linked patient reports of higher anxiety with a chronic state of vigilance. This study found heightened states of vigilance changed lipids in the body and lead to a higher rate of acute emotional stress reactions (Sagar & Pattanayak, 2013).

In the consumer market, vigilance has been associated with distrust. Moddy, Lowry, and Galletta (2013) found consumers who were more vigilant were more likely to be distrustful of others. In this case, the researchers discovered through self-report questionnaires that shoppers who observe more and research what they are buying may be less trusting of companies and their products. These are similar findings to Fan's

(2005) study that concluded cynical consumers held higher expectations for corporations whose products were more expensive.

Hypervigilance was also found to be correlated with cynicism and distrust in police officers. One study assessed correctional officers and examined their level of distrust, vigilance, and cynicism. Higher rates of hypervigilance, distrust, vigilance, and cynicism were found in officers who had been working as prison guards for more than five years compared to those working less than five years. The hypothesis was that the increased need for sustained attention and the negative surroundings of working with prison inmates had taken a toll on the officers. The psychological effect of these circumstances resulted in a more pessimistic and cynical view. Those officers that had been working in the field longer also felt they needed to increase their attention level as they reported a greater risk of inmates disobeying rules than less experienced officers. The authors hypothesized this increased need for vigilance was a result of inmate disobedience throughout their careers (Lerman & Page, 2012).

There is limited research regarding the interpersonal effects of individuals who elevate the 16PF's Vigilance scale. Studies have used the 16PF's Vigilance scale to assess for characteristics of distrust, pessimism, and cynicism. There is also a lack of research regarding the interpersonal effects of the lay definition of vigilance, defined as watchful, suspicious, and hyper focused. This lack of research makes it challenging to understand how vigilance may affect someone in their personal life. It is necessary to make inferences from studies conducted in other areas such as, an individual's physical health and occupation. The lack of trust and pessimistic perspective toward those around them may make it challenging at times for vigilant individuals to sustain relationships.

This may also result in negative effects on their occupation. Struggling to trust others may affect working with peers, especially on group projects.

A notable reason why the 16PF was chosen for this study was its use of the global factor scales. The global factors are made up of the 16 personality factor scales. Of the five global factor scales an elevated score on the Vigilance scale influences two global factors, Anxiety and Independence. An elevation on the Vigilance scale results in an elevation on both the Anxiety and Independence factors. In addition to the Vigilance scale, the Apprehensive, Emotionally Reactive, and Tense scales also contribute to elevations on the Anxiety global factor scale. Conn and Rieke (1994) stated that the Anxiety global factors scale was created to assess for emotional stability in challenging situations. Individuals who elevate the Anxiety global factor scale may struggle to cope with challenges in their life reacting in an anxious manner and report tension, insecurity, and emotional dissatisfaction. Those who score low on the Anxiety global factor scale may report little anxiety, feel little need to change, and minimize negative mood. The Vigilance scale is also a component of the Independence global factor, along with the Dominant, Bold, Vigilance, and Open to Change scales. The Independence global factor scale was created to assess for individuals who may challenge social norms, prefer to influence others rather than be influenced, and be forceful. The other end of the Independence continuum is labeled as Accommodating which is characterized by an individual who is easily influenced by others, may feel uncomfortable expressing their opinions or being assertive, and value accommodation rather than self determination (Conn & Rieke, 1994). Because, Vigilance is associated with both the Anxiety and Independence global factor scales, these global factors may help clarify uncertainty

regarding what RC3 is assessing and whether cynical characteristics are better related to anxiety or social isolation.

Cynicism and Vigilance

Research regarding the interpersonal effects of elevation on the MMPI-2-RF's RC3 scale and the 16PF's Vigilance scale is somewhat scarce. Research on cynicism and vigilance has predominantly focused on impact on other areas, such as occupation and heath. Cynicism has been correlated with distrust in others and may lead to a higher burn out rate at one's occupation (Bakker & Heuven, 2006). It has also been a correlated with a greater risk in health decline (Nabi et al., 2008). Research regarding social cynicism indicates that conflict resolution habits may be unhealthy and interpersonal conflicts occur at a higher rate (Bond et al., 2004). It is also unclear as to how cynicism may play a role in the mental health of an individual. While it may be presumed that there are many negative effects of cynicism, there is little evidence confirming cynicism's maladaptive effects on an individual's personal life.

The Vigilance scale assesses elements of distrust, skepticism, and has been likened to cynicism. Elevated scores on the Vigilance scale are also correlated with poor health and occupational complications (Satija & Kahn, 2013; Lerman & Page, 2012). Individuals elevating this scale may be distrustful of others. However, much like cynicism, the Vigilance scale has little research regarding how it may affect an individual interpersonally. It is also unclear how an elevated score of the Vigilance scale may play a role in the mental health of an individual.

Christiansen and Smith (1993) illustrate how cynicism and vigilance are related. The study investigated hostility and its relationship to coronary heart disease (CHD) and

other illnesses. Hostility is a key component of both vigilance and cynicism. After finding that hostility increases the chance of developing CHD or other illnesses, Christiansen and Smith attempted to explain this correlation. A state of vigilance was found to increase peripheral vasoconstriction by Williams, Barefoot, and Shekelle (1985). In addition, situations that cause distrust and skepticism in others are associated with increase in blood pressure. This connection helps explain the relationship between cynicism and vigilance to CHD and other illnesses.

The MMPI-2-RF and 16PF have been a part of the personality assessment field for many years. Characteristics such as distrust and hostility are common components of the Vigilance scale and RC3. It is clear that both characteristics play a role in the mental health of an individual but exactly how is unclear.

The current study focuses on the validity of the MMPI-2-RF's RC3 scale. The purpose is to validate RC3 by assessing a correlation with the 16PF's Vigilance scale. The 16PF was chosen for its long standing presence in the field of personality assessment. In addition, the Vigilance scale was used as the characteristics it assesses for correlate with those RC3 is designed to assess. The fact that the16PF may help differentiate the underlying construct of cynicism through examination of its global factors, Anxiety and Independence, also contributed to it being chosen. A positive correlation of the Independence global factor, rather than the Anxiety factor, would aid in understanding cynicism. The positive correlation between the Independence global factor and RC3 would indicate cynicism may be driven by an introspective distrust of others and desire for independence, rather than a lack of trust due to anxious distress and thoughts that others have malevolent intentions.

Present Study and Hypotheses

The validity of RC3 is still in question and how cynicism affects and individual's personal life is not well understood. While RC3 has been compared to other measures that relate to cynicism, the 16PF's Vigilance scale has yet to be used in publication in conjunction with RC3. The current study will attempt to contribute to the construct validation of RC3 as a measure of cynicism. In addition, the current study will attempt to clarify whether cynicism as a characteristic is more correlated with a desire for independence or anxiety. The present study has three hypotheses:

1. RC3 will be statistically and significantly and positively correlated with the Vigilance scale.
2. RC3 will be statistically and significantly and positively correlated with the Independence and Anxiety global factors.
3. RC3 will have a higher positive correlation with the Independence global factor than the Anxiety global factor.

CHAPTER III

METHODOLOGY

Participants

The present study was based on a previously established data set. Participants were enrolled in general psychology courses during the spring of 2010 at a Midwestern regional university. Participants were not excluded based on gender, race, socioeconomic status, or ethnic background. Participants were informed of the opportunity through announcements made in general psychology classes and notices posted in the Department of Psychology and Counseling.

Materials

The current study used the Minnesota Multiphasic Personality Inventory 2nd Edition Restructured Form (MMPI-2-RF; Ben-Porath & Tellegen, 2008b) and the 16 Personality Factors (16PF; Conn & Rieke, 1993). The MMPI-2-RF is a 338 true/false self assessment of psychopathological symptoms the test taker may be experiencing. When interpreting the MMPI-2-RF the first concern is the validity of the test takers responses. The number of items not responded to is displayed on the Cannot Say (CNS) scale. When a respondent does not answer 15 items or more the scores become invalid and are not interpretable (Ben-Porath & Tellegen, 2008b).

Some test takers may respond in an inconsistent manner or simply endorse items for no reason (either all true or all false). To ensure that the test taker has responded in a consistent manner the Variable Response Inconsistency-revised (VRIN-r) and True Response Inconsistency-revised (TRIN-r) scales are used (Ben-Porath & Tellegen, 2008b). The VRIN-r scale uses items worded differently but assessing similar situations. When one item is endorsed and the other is not the VRIN-r scale is elevated. For example, if a test taker reports he or she often wakes up feeling rested, but also endorses having sleep disturbance through the night the scale, this would contribute to an elevation on the VRIN-r scale.. TRIN-r, on the other hand, indicates whether a test taker answered true or false items in a fixed fashion. An elevated TRIN-r score may be the result of a respondent answering true to all the items or responding in a fixed pattern. Raw scores for both scales are then converted to T-scores. T-scores at or above 120 indicate that a test taker responded in an invalid manner, making the responses invalid for interpretation (Ben-Porath & Tellegen, 2008b). T-scores of 120 or greater, on either the VRIN-r or TRIN-r scales will result in the test takers results being omitted from the present study.

The Infrequent Responses-revised (F-r) scale may help detect random responding but was primarily designed to detect over reporting of psychological symptoms. According to Ben-Porath and Tellegen (2008b) T-scores over 79 should be interpreted with caution as over reporting of symptoms may be present. Scores at or above 120 indicate extreme over reporting in most cases and invalidate the scores. For the purposes of this study respondents with T-scores of 100 or greater will be excluded.

The MMPI-2-RF includes three additional validity scales: Infrequent Psychopathology Responses-revised (Fp-r), Infrequent Somatic Responses (Fs-r), and

Symptom Validity Scale-revised (FBS-r). The Fp-r scale was created to detect those with severe psychopathology. The concept was to help identify those who experience severe forms of pathology. T-scores of 100 or greater invalidate the results. Fs-r was designed to identify abnormal somatic complaints. T-scores of 100 or greater invalidate the results due to exaggeration of somatic symptoms. FBS-r identifies cognitive impairment beyond the normative sample. T-scores greater than 100 may be indicative of severe cognitive impairment (Ben-Porath & Tellegen, 2008b). A T-score of 100 will be set as the cut off for all F scales in the present study.

The uncommon Virtues (L-r) and Adjustment Validity (K-r) scales were designed to recognize underreporting. T-scores of 80 or greater indicate the results may be invalid as the test taker likely attempted to present his or herself in an overly favorable manner. The test taker may have not endorsed items that most people endorse out of fear that they will be perceived negatively. K-r scores of 80 or greater indicate the test taker may have underreported the severity of their distress (Ben-Porath & Tellgen, 2008b). In the current study scores greater than or equal to 80 for either L-r or K-r were omitted.

The 16PF is made up of 16 primary factor scales that fit into five global scales (16PF; Conn & Reike, 1994). The fifth edition of the 16PF consists of 185 items and typically takes 35 to 50 minutes to complete.

The first aspect to interpreting the 16PF includes ensuring the scores are valid. Tests missing 12 items or more are invalid for interpretation. The Impression Management (IM) scale assesses the test takers response style in regards to social desirability. Raw scores of 20 or greater may warrant the need to retest the respondent as they may have attempted to present themselves in an overly favorable manner. In the

present study respondents with scores of 20 or greater on the IM scale were omitted. The Infrequency (INF) scale was designed to identify random responding. However, elevations of the INF scale may also be indicative of a test taker's attempt to make his or herself look good, having reading comprehension difficulties, neither answer fitting the respondent, or an inability to decide. Raw scores of 8 or greater should be interpreted with caution. INF scales of 8 or greater were omitted from this study. The Acquiescence (ACQ) scale was created to detect random responding by using paired questions that assessed similar characteristics but are worded differently. This is similar to the VRIN-r scale of the MMPI-2-RF. Scores of 71 or greater may warrant interpreting the results with caution. Scores at this level may indicate the respondent misunderstood the question or answer, random responding, or a desire to be viewed in a positive manner (Conn & Rieke, 1994). For this study ACQ scores greater than 70 were not included in the results.

The 16 primary factor scales are on a continuum that assesses one characteristic at one end and the other an opposing characteristic. In addition, to the 16 primary scales the 16PF includes the global factors: Extraversion, Anxiety, Tough-Mindedness, Independence, and Self-Control. Elevations on the primary scales lead to elevations on the global factors the primary scale is aligned with. Internal consistency reliability coefficients for the primary scales, range from .66 to .86. While the test re-test coefficients mean was .75.

The Vigilance (L) scale assesses for an individual's willingness to trust other, their general beliefs about others, and their view of others motives. Individuals who elevate items endorsing at one end are often distrustful or suspicious while those who elevate at the other end are less assertive and expect others to have good intentions (Conn

& Rieke, 1994). Elevations on the Vigilance scale have been correlated with characteristics such as hostility, skepticism, hypervigilance, and pessimism. The scale has test re-test coefficients of .73 and has been correlated to scales assessing similar characteristics such as, the Cook Medley Hostility (Ho) scale (Conn & Rieke, 1994; Barefoot et al., 1987).

Procedure

All groups completed the questionnaires in proctored rooms on the university's campus. Participants were given a verbal and written summary of the procedures, benefits, risks, confidentiality, and rights as a research participant prior to administration. The participants were given a debriefing statement on completion of the questionnaires that included the investigator's name and contact information so participants could contact them with further questions or concerns. All the procedures were approved by Pittsburg State Universities Committee for Protection of Human Research Subjects.

Method of Analysis

Statistical analyses were performed using the Pearson Product Momentum-Correlation Coefficients. The analysis compared the correlation between scores of the MMPI-2 RF's RC3 scale and the 16PF's Vigilance scale. In addition, the Pearson Product Momentum-Correlation Coefficients was used to compare the Independence and Anxiety global factors to RC3. After both global factors were compared to RC3 a *t*-test was used to compare each global factor's correlation to RC3. Identifying whether cynicism is related to either of the global factor scales may give a better understanding of how cynicism affects an individual's mental health.

CHAPTER IV

RESULTS

A total of 97 individuals participated in this study. Of the 97 individuals, 23 were excluded due to invalid profiles on the MMPI-2-RF or 16PF leaving 74 participants for consideration in the study. Criteria for validity regarding the MMPI-2-RF were established by guidelines suggested by Ben-Porath and Tellegen (2008b). Exclusion for validity were the following: a VRIN-r or TRIN-r score of 120 or greater, any F scales T-score greater than or equal to 100; and L-r and K-r T-score greater than or equal to 80. Criteria for validity regarding the 16PF were established by Conn and Rieke (1994). Exclusion for validity was the following: an Impression Management (IM) raw score of 20 or greater, an Infrequency (INF) raw score of 6 or greater, and an Acquiescence (ACQ) raw score of 70 or greater.

Of the 74 participants included in the results 61 (82.4%) were White, four (5.4%) were Black/African-American, three (4.1%) were Asian, two (2.7%) were Hispanic/Latino, one (1.4%) was Native American, and three (4.1%) selected the other category. In regards to gender, 41 (55.4%) were men and 33 (44.6%) were women. The average age of the participants was 20.38 years, and age ranged from 17 to 30 years.

Regarding participant's education level, 51 (68.9%) reported to be of freshman year status, 14 (18.9%) reported to be of sophomore year status, seven (9.5%) reported to be of junior year status, and two (2.7%) reported to be of senior year status. Concerning majors 24 (32.4%) were in the college of Arts and Science, 13 (17.6%) were in the college of Business, 8 (10.8%) were in the college of Education, 15 (20.3%) were in the college of Technology, and 14 (18.9%) reported to be undeclared. A two-sample t-test was used to compare the gender differences between participants RC3 scores. As with the normative sample used for the MMPI-2-RF, the sample used in this study showed no statistical difference between either gender's RC3 scores.

Scores for RC3 were converted from raw scores of zero to 15 to T scores. T-scores of 65 or greater may indicate psychological difficulty (Ben-Porath & Tellegen, 2008b). In addition, scores for the 16PF's primary scales ranged from 1 to 10. Primary scales influence the global factors which are displayed using the same ten point scale (Conn & Rieke, 1994).

Pearson Correlation coefficients, (one-tailed tests), were used to compare RC3 T-scores to specific primary scales and global factors on the 16PF. A significant correlation was found between RC3 (M = 54.07) and the Vigilance scale (M = 6.46), $r(74) = .49$, $p < .001$. A significant correlation was also found RC3 (M = 54.07) and the Anxiety global factor (M = 6.46), $r(74) = .28$, $p < .01$, and RC3 and the Independence global factor (M = 5.28), $r(74) = .33$, $p < .01$. A Hotelling's T^2 was used to compare the strength in correlation between RC3 and both the Independence global factor and Anxiety global factor. There was a statistically significant difference between the correlation of the Independence (M = 5.28), $r(74) = .33$, $p < .01$, and the Anxiety (M = 6.46), $r(74) = .28$, p

< .01 global factors when correlated to RC3 (M = 54.07) at the .001 level, F (1,73) =17.255. Correlations between the 16PF's primary scales and global factors to RC3 are displayed in Table 2.

Table 2

16PF Primary Scales, Global Factors, and MMPI-2-RF's RC3: Correlations and Descriptive Statistics (N=74)

Variables	1	2	3	4	5	6	7	8	9	10
1. Anxiety GF	-									
2. Vigilance	.59**	-								
3. Emotionally Reactive	-.70**	-.25*	-							
4. Apprehensive	.80**	.39**	-.50**	-						
5. Tense	.67**	24*	-.25*	.35**	-					
6. Independence GF	-.04	.27**	.17	-.25*	.10	-				
7. Dominance	-.11	.01	.16	-.29**	.14	.88**	-			
8. Socially Bold	-.21*	.18	.28**	-.34**	-.02	.80**	.60**	-		
9. Open to Change	-.05	.12	.05	-.09	.14	.39**	.12	.22*	-	
10. RC3	.28**	.49**	-.21*	.04	.14	.33**	.29**	.20*	.04	-
M	6.46	6.46	4.54	5.77	5.86	5.28	5.56	5.00	5.05	54.07
SD	1.66	1.39	1.55	1.63	1.70	1.72	1.92	1.85	1.31	7.61

Note. *$p < .05$ and ** $p < .01$

CHAPTER V

DISCUSSION

The goal of this study was to add to the literature regarding the validity of the MMPI-2-RF's RC3 Cynicism scale. Furthermore, to clarify what RC3 measures and to better understand cynicism as it may affect an individual's mental health. Since its conception, many have questioned the validity of RC3 as a measure of cynicism. To further contribute to the validity of RC3, the scale was compared to an established measure of cynicism, the Vigilance scale of the 16PF. The literature regarding how cynicism may affect an individual interpersonally is sparse. To better understand the concept of cynicism, RC3 was correlated with the 16PF's Independence and Anxiety global factors.

Elevations on the MMPI-2-RF's RC3 scale may be indicative of distrust of others, a lack of caring, concern only about one's self, and being exploitive. While they are not interpreted, Ben-Porath and Tellegen (2008b) state low scores on RC3 likely indicate an individual may be gullible, overly trusting, and/or naïve.

The first hypothesis of the study was that RC3 would positively correlate to the 16PF's Vigilance scale, a measure that assesses characteristics of trust and perception of

others. The first hypothesis was supported. A significant positive correlation was found between RC3 and the Vigilance scale, indicating both RC3 and the Vigilance scale may assess similar characteristics of skepticism and distrust. The positive correlation between RC3 and the Vigilance scale adds to previous findings of RC3 as a valid measure of cynicism.

The second hypothesis stated there would be a positive correlation between RC3 and each of the Anxiety and Independence global factors of the 16PF. The Vigilance scale loads on both the Independence and Anxiety global factors. The second hypothesis was also supported as there was a significant positive correlation between both the Anxiety and Independence global factors and RC3. The positive correlation indicates that cynicism may be associated with characteristics of anxiety and independence.

The third hypothesis stated that RC3would have a significantly stronger correlation to the Independence global factor than the Anxiety global factor. The third hypothesis was supported as there was a statistically significant difference between the strength of the Independence and Anxiety global factors in correlation with RC3. Specifically, there was a statistically higher correlation between RC3 and the Independence global factor than RC3 and the Anxiety global factor, however it should be noted the level of significance was minimal. The intent of the third hypothesis was to identify which characteristic, anxiety or independence, may be more associated with cynicism. Results indicated that cynical individuals may be independent, persuasive, and willful. RC3's stronger correlation to the Independence global factor may help shape our perception of cynical individuals and their view of the world. Rather than seeing cynics as perturbable worriers, we may perceive them more as independent, assertive

individuals. Although RC3 was significantly correlated with Anxiety the findings indicate that cynicism is more related to characteristics of independence than anxious distress.

To more thoroughly assess and clarify the relationship between RC3 and the Anxiety and Independence global factors, a post hoc analysis was conducted between RC3 and the primary scales that influence the Anxiety and Independence global factors. This was done out of concern that certain primary scales may have had a greater influence on the correlation between RC3 and the Anxiety and Independence global factors. In examining the primary scales associated with the Anxiety and Independence global factors, not all scales showed a significant correlation with RC3. This may suggest that not all characteristics that represent independence or anxiety are represented in cynicism. The Vigilance and Dominance scales, were correlated at the .01 level of significance. At the .05 level of significance, Social Boldness and Emotionally Reactive were correlated to RC3. The Apprehensive, Tense, and Openness to Change scales contribute to the Anxiety and Independence global factors but were not significantly correlated to RC3.

The Vigilance scale is included on both the Anxiety and Independence global factors, while Social Boldness and Dominance scales influence the Independence global factor. The Emotionally Reactive scale influences the Anxiety global factor. It is noted that the Emotionally Reactive scale was negatively correlated to RC3, indicating that participants who endorsed items on the Emotionally Reactive scale were less likely to endorse items on RC3. The Vigilance, Social Boldness, and Dominance scales were

positively correlated to RC3; meaning participants that endorsed items on each of these scales were more likely to endorse items on RC3.

In this study, RC3 was associated with high scores on the Vigilance scale. The 16PF manual describes those who elevate the Vigilance scale as suspicious, oppositional, and distrustful. Individuals elevating the Dominance scale may be assertive, competitive, and stubborn. Those elevating the Social Boldness scale may be thick skinned, can take on stress, and are venturesome. RC3 was also associated with low scores on the Emotionally Stability scale. Individuals elevating the Emotional Reactive scale may be emotionally unstable, easily upset, and easily manipulated.

While results show that RC3 is more strongly correlated with the Independence global factor than with the Anxiety global factor, possibly the greatest understanding came from the post hoc analysis. It is also noted that RC3's correlation to the Vigilance, Dominance, Emotional Reactive, and Socially Bold scales were not a result of strong inter-correlation between these scales. Low internal correlation indicates that each of the primary scales likely explain a unique aspect of RC3. The findings indicate that the Vigilance, Dominance, Emotionally Reactive, and Socially Bold scales and may be the most accurate portrayal of what RC3 is assessing, in this investigation.

The results of the post hoc analysis indicate that individuals that elevate RC3 may be aggressive, venturesome, and skeptical. Individuals who elevate RC3 may feel more comfortable when in control and prefer to be in charge rather than allow others to take on leadership roles. The data indicate that cynical individuals may be opinionated and outspoken. Other correlations indicate individuals elevating RC3 may be easily upset and emotionally unstable. Individuals elevating RC3 may be skeptical of others and find it

difficult to trust many people. They may be suspicious of others, assertive in their beliefs, but become easily upset when confronted. Results of the current study are consistent with previous findings of RC3 and cynicism. Specifically, previous research on cynicism has found that United States military soldiers who reportedly were more cynical were less likely to partake in mental health counseling after returning from deployment (Arbisi, Rusch, Polusny, Thuras, & Erbes, 2013). Other studies have outlined struggles cynical individuals may experience in occupational or educational settings. Many of the problems that have been found to occur for cynical individuals have included, decreased job satisfaction and difficulty working with others, specifically those with authority (Billings, Lazarus, Wenrich, Curtis, & Engleberg, Nafei, 2013; 2011; Izawa, Kodama, & Nomura, 2006). The results of the present study may contribute to understanding cynicism and how it may affect an individual.

Limitations of the current study include the range of *T* scores which may have limited conclusions made from the data. The mean RC3 T score was 54 and 75% of the participants' scores fell between 47 and 61. These scores are slightly lower than the mean score listed by Ben-Porath and Tellgen (2008b) in the MMPI-2-RF manual. This indicates that there were few individuals in the present study who experience cynicism at a level that may cause impairment in their life. A low range may suggest that the sample is made up of well-adjusted participants who possess an optimistic perspective. In addition, using a population of college students may be limiting. Including only college students does not properly represent the general population.

Regarding areas of future exploration, researchers may consider a study to better identify how cynicism affects one's personal relationship with others. Researchers may

also consider a similar study with a more diverse population. The lack of ethnic diversity and narrow range in age limited the results of this study. Future research may find more meaningful data from a pool of participants that more adequately represents the general population. The restricted range of scores was also an area of concern. It may be appropriate to attempt to include participants from a wide array of lifestyles rather than only college students.

The present study has attempted to clarify and better explain what RC3 assesses for, how cynicism is conceptualized, and how it may affect an individual's mental health. RC3's correlation to the Vigilance, Dominance, Emotional Reactive, and Socially Bold scales of the 16PF may help to clarify what RC3 assesses for. Based on the results from the present study we may be able to understand that individuals who elevate the MMPI-2-RF's RC3 scale may be distrustful, oppositional, emotionally stable, and assertive. RC3's comparison to the various primary scales and global factors of the 16PF help to shape our conceptualization of individuals who elevate RC3. RC3's correlation to scales on the 16PF may also help to explain many of the correlations that have been made to cynical individuals. From a decrease in life satisfaction, decrease in life span, and a decrease in occupational satisfaction, the correlates of the 16PF to RC3 may help to explain why cynics are privy to such effects. It may also help to explain previous findings that cynicism may be a characteristic that affects an individual's entire life rather than certain areas such as their occupation or health. Clarifying what RC3 assesses may help clinicians better understand individuals who elevate RC3 and provide more accurate and effective treatment.

References

Abraham, R. (2000). Organizational cynicism: Bases and consequences. *Genetic, Social, and General Psychology Monographs, 126*, 269-292.

Arbisi, A. P., Rusch, L., Polusny, A. P. Thuras, P., & Erbes, R. C. (2013). Does cynicism play a role in failure to obtain needed care? Mental health service utilization among returning U.S. National Guard soldiers. *Psychological Assessment, 25*, 991-996.

Bakker, A. B., & Heuven, E. (2006). Emotional dissonance, burnout, and in-role performance among nurses and police officers. *International Journal of stress Management, 13*, 423-440.

Barefoot, C. J., Siegler, C. I., Nowlin, B. J., Peterson, L. B., Haney, L. T., & Williams, B. R. (1987). Suspiciousness, health, and mortality: A follow-up study of 500 older adults. *Psychosomatic Medicine, 49*, 450-457.

Ben-Porath, Y. (2012). *Interpreting the MMPI-2 Restructured Form.* Minneapolis, MN: University of Minnesota Press.

Ben-Porath, Y., & Tellegen, A. (2008a). Empirical correlates of the MMPI-2 Restructured Clinical (RC) scales in mental health, forensic, and nonclinical settings: An introduction. *Journal of Personality Assessment, 90*, 119-121.

Ben-Porath, Y., & Tellegen, A. (2008b). *MMPI-2-RF: Manual for administration, scoring and interpretation*. Minneapolis, MN: University of Minnesota Press.

Billings, E. M., Lazarus, E. M., Wenrich, M., Curtis, J. R., & Engleberg, A. R. (2011). The effect of hidden curriculum on resident burnout and cynicism. *Journal of Graduate Education, 12*, 503-510.

Bond, M. H., Leung, K., Au, A., Tong, K., & Chemonges-Nielson, Z. (2004). Combining social axioms with values in predicting social behaviors. *European Journal of Personality, 18*, 177–191.

Brandes, P., Castro, S. L., James, M. S. L., Martinez, A. D., Matherly, T. A., Ferris, G. R., & Hochwarter, W. A. (2008). The interactive effects of job insecurity and organizational cynicism on work effort following a layoff. *Journal of Leadership and Organizational Studies, 14*, 233-247.

Burke, R. J., & Matthiesen, S. (2004). Short communication: Workaholism among Norwegian journalists: Antecedents and consequences. *Stress and Health, 20,* 301-308.

Butcher, J. N., Dahlstrom, W. G., Graham, J. R., Tellegen, A., & Kaemmer, B. (1989). *Minnesota Multiphasic Personality Inventory (MMPI-2): Manual for administration and scoring*. Minneapolis, MN: University of Minnesota Press.

Butcher, J. N., Hamilton, C. K., Rouse, S. V., & Cumella, E. J. (2006). The deconstruction of the Hy scale of MMPI–2: Failure of RC3 in measuring somatic symptom expression. *Journal of Personality Assessment, 87,* 186-192.

Camerona, C., Buunk, A. P., Peiro, J. M., Rodriguez, I., & Bravo, M. J. (2006). Do social comparison and coping styles play a role in the development of burnout? Cross-sectional and longitudinal findings. *Journal of Occupational and Organizational Psychology, 79,* 85-99.

Christiansen, J. A., & Smith, W. T. (1993). Cynical hostility and cardiovascular reactivity during self-disclosure. *Psychosomatic Medicine, 55,* 193-202.

Christie, R., & Heis, F. L. (1970). *Studies in Machiavellianism*. New York: Academic Press.

Conn, S. R, & Rieke, M. L. (1994). *16PF Fifth Edition.* Champaign, IL: Institute for Personality and Ability Testing Incorporated.

Cook, W., & Medley, D. (1954). Proposed hostility and pharisaic-virtue scales for the MMPI. *Journal of Applied psychology, 38,* 414-418.

Costa, T. P., & McCrae, R. R. (1992). *NEO-PI-R professional manual*. Odessa, FL: Psychological Assessment Resources.

Costa, T. P., Zonderman, B. A., McCrae, R. R., & Williams, B. R. (1986). Cynicism and paranoid alienation in the Cook and Medley HO scale. *Psychosomatic Medicine, 48*, 283-285.

Fan, Y. (2005). Ethical branding and corporate reputation. *Corporate Communications, 10*, 341-350.

Forbey, J. D., & Ben-Porath, Y. S. (2007). A comparison of the MMPI–2 Restructured Clinical (RC) and Clinical Scales in a substance abuse treatment sample. *Psychological Services, 4*, 136–141.

Forbey, J. D., & Ben-Porath, Y. S. (2008). Empirical correlates of the MMPI-2 Restructures Clinical (RC) scales in a nonclinical setting. *Journal of Personality Assessment, 90,* 136-141.

Fu, P. P., Kennedy, J., Tata, J., Yukl, G., Bond, M. H., & Peng, T. K. (2004). The impact of societal cultural values and individual social beliefs on the perceived effectiveness of managerial influence strategies: A meso approach. *Journal of International Business Studies, 38*, 284–304.

Graham, J. R. & Butcher, J. N. (March, 1988). *Differentiating Schizophrenic and Major Affective Disorder inpatients with the revised form of the MMPI*. Paper presented at the 23rd annual Symposium on Recent Developments in the MMPI, St. Petersburg Beach, FL.

Graham, J. R. (1993). *MMPI-2: Assessing personality and psychopathology* (Second Edition). New York, NY: Oxford University Press.

Graham, J. R. (2006). *MMPI-2: Assessing personality and psychopathology* (Fourth Edition). New York, NY: Oxford University Press.

Graham, J. R. (2012). *MMPI-2: Assessing personality and psychopathology* (Fifth Edition). New York, NY: Oxford University Press.

Greene, L. R., Rouse, V. S., Butcher, N. J., Nichols, S. D., & Williams, L. C. (2009). The MMPI-2 Restructured Clinical (RC) Scales and redundancy: Response to Tellegen, Ben-Porath, and Sellbom. *Journal of Personality Assessment, 91*, 222-226.

Handel, R. W., & Archer, R. P. (2008). An investigation of the psychometric properties of the MMPI-2 Restructured Clinical (RC) scale with mental health inpatients. *Journal of Personality Assessment, 90*, 239-249.

Harrison, P. L., Kaufman, A. S., Hickman, J. A., & Kaufman, N. L. (1988). A survey of tests used for adult assessment. *Journal of Psychoeducational Assessment*, 6, 188-198.

Hathaway, S. R., & McKinely, J. C. (1943). *The Minnesota Multiphasic Personality Inventory Manual.* New York, NY: Psychological Corporation.

Ingram, P. B., Kelso, K. M., & McCord, D. M. (2011). Empirical correlates and expanded interpretation of the MMPI-2-RF Restructured Clinical Scale 3 (cynicism). *Assessment, 18*, 95-101.

Izawa, S., Kodama, M., & Nomura, S. (2006). Demensions of hostility in apanese undergraduate students. *International Journal of Behavioral Medicine, 13*, 147-152.

Kanter, D. L., & Mirvis, P. H. (1989). *The Cynical Americans; Living and Working in an Age of Discontent and Disillusion.* San Francisco: Jossey-Bass.

Lerman, E. A., & Page, J. (2012). The state of jobs: An embedded work role perspective on prison officer attitudes. *Punishment and Society, 4*, 503-529.

Leung, K., Bond, H. M., de Carrasquel, R. S., Munoz, C., Hernandez, M., Murakami, F., Yamaguchi, S., Bierbauer, G., & Singelis, M. T. (2002). Social axioms: The search for universal dimensions of general beliefs about how the world functions. *Journal of Cross-Cultural Psychology, 33*, 286–302.

Li, F., Zhou, F., & Leung, K. (2011). Expecting the worst: Moderating effects of social cynicism on the relationships between relationship conflict and negative affective reactions. *Journal of Business Psychology, 26*, 339-345.

Lubin, B., Larsen, R. M., & Matarazzo, J. D. (1984). Patterns of psychological test usage in the United States: 1935-1982. *American Psychologist, 40*, 857-861.

McKenna, T. & Butcher, J. N. (1987, April). *Continuity of the MMPI with Alcoholics*. Paper presented at the 22nd Annual Symposium on Recent Developments in the MMPI, Seattle, WA.

Moody, G., Lowry, B. P., & Galletta, F. D. (June, 2013). *Explaining the engenderment and role of consumer ambivalence in E-commerce.* Paper presented at the Pacific Asia Conference on Information Systems, Jeju Island Korea.

Mudrack, P. E. (2000). Machiavelliansim scale. In J. Maltby, C. A. Lewis, & Hill, A. (EDs.), *Commissioned Reviews of 250 psychological Tests*. Lewiston, NY: Edwin Mellen Press.

Nabi, H., Kivimaki, M., Zins, M., Elovainio, M., Consoli, S. M., Cordier, S., Ducimetiere, P., Goldber, M., & Singh-Manoux, A. (2008). Does personality predict mortality? Results from the GAZEL French prospective cohort. *International Journal of Epidemiology, 37,* 386-396.

Nafei, A. W. (2013). The effects of organizational cynicism on job attitudes an empirical study on teaching hospitals in Egypt. *International Business Research, 6,* 52-69.

Nichols, D. S. (2006). The trials of separating the bath water from the baby: A review and critique of the MMPI-2 Restructured Clinical Scales. *Journal of Personality Assessment, 87,* 121-138.

Olson, M. B., Krantz, D. S., Kelsey, S. F., Pepine, C. J., Sopko, F., Handberg, E., Rogers, W. J., Geierach, G, L., McClure, C. K., & Merz, C. N. (2005). Hostility scores are associated with increased risk of cardiovascular events in women undergoing coronary augiography: A report from the NHLBI-sponsored WISE study. *Psychosomatic-Medicine, 67,* 546-552.

Overall, J. E., & Gorham, D. R. (1988). Introduction: The Brief Psychiatric Rating Scale (BRPS): Recent developments in ascertaining and scaling. *Psychopharmacology Bulletin, 24,* 97-98.

Paulhus, D. L. (1984). Two-component models of socially desirable responding. *Journal of Personality and Social Psychology, 45, 598-609.*

Pope, K. S., Butcher, J. N., & Seelen, J. (1993). The MMPI, MMPI-2 & MMPI-A in court. Washington, DC: American Psychological Association.

Rogers, R., Sewell, K. W., Harrison, K. S., & Jordan, M. J. (2006). The MMPI-2 Restructured Clinical Scales: A paradigmatic shift in scale development. *Journal of Personality Assessment, 87,* 152-160.

Sagar, R., & Pattanayak, D. R. (2013). Link between personality and physical health: Scope for intervention. *Journal of Mental Health and Human Behavior, 18,* 1-68.

Satija, S. & Kahn, W. (2013). A study of working professionals' mental health in relation to personality at workplace. *Management Insight, 9,* 44-57.

Sellbom, M., & Ben-Porath, Y. S. (2005). Mapping the MMPI-2 Restructured Clinical Scale onto normal personality traits: Evidence of construct validity. *Journal of Personality Assessment, 85,* 179-187.

Sellbom, M., Ben-Porath, Y. S. & Bagby, R. M. (2008). Personality and psychopathology: Mapping the MMPI-2 Restructured Clinical (RC) Scale onto the five-factor model of personality. *Journal of Personality Disorders, 22,* 291-312.

Sellbom, M., Ben-Porath, Y. S., & Graham, J. R. (2006). Correlates of the MMPI–2 Restructured Clinical (RC) scales in a college counseling setting. *Journal of Personality Assessment, 86,* 89–99.

Sellbom, M., Ben-Porath, Y. S., Baum, L. J., Erez, E., & Gregory, C. (2008). Predictive validity of the MMPI-2 Restructured Clinical (RC) Scales in a batterers' intervention program. *Journal of Personality Assessment, 90*, 129-135.

Sellbom, M., Fischler, G. L., & Ben-Porath, Y. S. (2007). Identifying MMPI-2 predictors of police officer integrity and misconduct. *Criminal Justice and Behavior, 34*, 985-1004.

Sellbom, M., Graham, J. R., & Schenk, P. (2006). Incremental validity of the MMPI–2 Restructured Clinical (RC) scales in a private practice sample. *Journal of Personality Assessment, 86,* 196–205.

Simms, L. J., Casillas, A., Clark, L. A.,Watson, D., & Doebbeling, B. I. (2005). Psychometric evaluation of the Restructured Clinical scales of the MMPI–2. *Psychological Assessment, 17,* 345–358.

Tellegen, A., Ben-Porath, Y. S., & Sellbom, M. (2009). Construct validity of the MMPI-2 Restructured Clinical (RC) Scales: Reply to Rouse, Green, Butcher, Nichols, and Williams. *Journal of Personality Assessment, 91*, 211-221.

Tellegen, A., Ben-Porath, Y. S., McNulty, J. L., Arbisi, P. A., Graham, J. R., & Kaemmer, B. (2003). MMPI-2 *Restructured Clinical (RC) scales: Development, validation and interpretation*. Minneapolis: University of Minnesota Press.

Tellegen, A., Ben-Porath, Y. S., Sellbom, M., Arbisi, P. A., McNulty, J. L., & Graham, J. R. (2006). Further evidence on the validity of the MMPI-2 Restructured Clinical (RC) Scales: Addressing questions raised by Rogers, Sewell, Horrison, and Jordan and Nichols. *Journal of Personality Assessment, 87*, 148-171.

Van Veldhoven, M., & Meijman, T. F. (1994). *The measurement of psychosocial strain at work: The questionnaire experience and evaluation of work*. Amsterdam: NIA.

Wallace, A.,& Liljequist, L. (2005). A comparison of the correlational structures and elevation patterns of the MMPI–2 Restructured Clinical (RC) and Clinical Scales. *Assessment, 12,* 290–294.

Watson, D., & Tellegen, A. (1985). Toward a consensual structure of mood. *Psychological Bulletin, 98,* 219-235.

Weed, N. C. (2006). Syndromal complexity, paradigm shifts, and the future validation research: Comments on Nichols and Rogers, Sewell, Harrison, and Jordan. *Journal of Personality Assessment, 87,* 217-222.

Welsh, G. S. (2000). Factor dimensions A and R. In J N. Butcher (Ed.), *Basic sources on the MMPI-2* (pp. 73-92). Minneapolis: University of Minnesota Press. (Original work published 1956).

Williams, R. B., Barefoot, J. C., Shekelle, R. B. (1985). The health consequences of hostility. In Chesney MA, Roseman RH (Ed.S.). *Anger and hostility in cardiovascular and behavioral disorders* (pp. 173-185). New York, NH.

Wise, E. A., Streiner, D. L., Walfish, S. (2010). A review and comparison of the reliabilities of the MMPI-2, MCMI-III, and PAI presented in their respective test manuals. *Measurement and Evaluation in Counseling and Development, 42*, 246-254.

Wong, J. M., Na, B., Regan, M. C., & Whooley, M. A. (2013). Hostility, health behaviors, and risk of recurrent events in patients with stable coronary heart

disease: Finding from the heart and soul study. *Journal of American Heart Association, 2,* 1-10.