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RUMINATION AND QUALITY OF LIFE AMONG NORTHERN PLAINS INDIANS

by

Devon S. Isaacs

A thesis submitted in partial fulfillment
of the requirements for the degree

of

MASTER OF SCIENCE

in

Psychology

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2020

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ABSTRACT

Influence of Rumination on Quality of Life among Northern Plains Indians

by

Devon S. Isaacs, Master of Science

Utah State University, 2020

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Department: Psychology

Barriers to mental health resources prevent service utilization by high-disparity Native American (NA) populations living in low resource areas. Therapeutic mechanisms targeting multiple mental health disorders may be key to providing effective services with these groups. Rumination, a cognitive response style, is a well-recognized transdiagnostic factor across disorders in the general population (Arditte et al., 2016; Nolen-Hoeksema, 1991). To address the paucity of transdiagnostic research among NAs, this study explored incidence of rumination among a sample of 585 Northern Plains Indian (NPI) adult women and men using secondary data gathered from a Mood Disorder Assessment Validation study. Parallel multiple mediation path analyses indicated rumination did not have a direct influence on quality of life in Model 1, but there was a significant total indirect effect ($c = -13.96, p < .001$). Increases in rumination indicated higher anxiety ($R^2 = .38, p < .001$), depression ($R^2 = .60, p < .001$), and substance use symptoms ($R^2 = .14, p < .001$). In Model 2 and 3, depression fully mediated the link between rumination and quality of life, while anxiety and substance abuse partially mediated the links. As rumination increased, significant increases occurred in severity of symptoms reported for both women and men for all diagnoses- but lower perceived quality of life only occurred

in the presence of depressive symptoms (women = $B = -28.19$, $p < .001$; men = $B = -20.15$, $p < .001$). Significant gender differences also arose between NPI, with women reporting higher rumination, anxiety, and depression and men reporting higher substance use. Based on these results, rumination is useful as a transdiagnostic factor for NPI by uncovering the nature of maladaptive coping mechanisms. In addition, quality of life assessments are culturally-relevant ways to target maladaptive coping and replace unhealthy coping with more adaptive, positive coping via culturally congruent methods.

(Pages 85)

PUBLIC ABSTRACT

Influence of Rumination on Quality of Life among Northern Plains Indians

Devon S. Isaacs

Native Americans (NAs) share unique risk factors for poor mental health. In response, mental health providers must address barriers to treatment while making the most of low resource situations. One way to increase usefulness of treatment is to address the mechanisms underlying multiple mental health disorders. Rumination is a style of thinking marked by repeated thoughts about distress and is well-recognized as a diagnostic factor for underlying disorders in the general population. Secondary data from the Mood Disorder Assessment Validation with Northern Plains Indians (NPI) pilot study was used to examine the relationship between rumination and anxiety, depression, and substance abuse, as well as overall quality of life. Results indicated that as rumination increased, significant increases occurred in severity of symptoms reported for both women and men- but lower perceived quality of life only occurred in the presence of depressive symptoms. Significant differences arose between NPI women and men, with women reporting higher rumination, anxiety, and depression and men reporting higher substance abuse. Based on these results, rumination is useful as a transdiagnostic factor for NPI by uncovering the nature of maladaptive coping mechanisms. In addition, quality of life assessments are culturally-relevant ways to target maladaptive coping and replace unhealthy coping with more adaptive coping via culturally congruent methods.

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I want to dedicate this work to my parents. I lost my mother during my undergraduate years and my father during the process of writing this thesis. These losses forever changed my life. My resilience, creativity, and love of learning comes from them. Thank you to my brother, who taught me the beauty of curiosity. Thank you to my husband and step-children, who taught me the importance of family, setting goals, and staying strong in my faith. Thank you to all the friends who cheer me on from afar. Without all of you, life would not be as meaningful. You are my compass and my heart. I am forever grateful for your love and encouragement.

CONTENTS

ABSTRACT.....	iii
PUBLIC ABSTRACT	v
ACKNOWLEDGMENTS	vi
LIST OF TABLES	viii
LIST OF FIGURES	ix
CHAPTER	
I. INTRODUCTION	1
Native American Mental Health Disparity.....	1
Contextual Risk Factors among Northern Plains Indians (NPI)	4
II. LITERATURE REVIEW	12
Theories and Models of Rumination	14
Relationship Between Rumination and Mental Health Disorders.....	16
Differences in Rumination across Demographic Characteristics	19
Native American Mental Health Belief Models: Quality of Life as an Outcome	22
III. METHOD.....	28
Aims of the Current Study.....	28
Participants	29
Research Design	29
Institutional Approvals	30
Measures.....	30
Analytic Plan	35
IV. RESULTS	37
Descriptive Statistics	37
Correlations	44
Path Analysis.....	45
Aim 1. Direct effect of rumination on quality of life.....	48
Aim 2. Indirect effects of rumination on quality of life.....	48
Aim 3. Differences between NPI women and men.....	49
V. DISCUSSION	53
Limitations of the Current Study	57
Future Direction and Implications.....	58
REFERENCES	59

LIST OF TABLES

Table		Page
1	Means and Standard Deviations for Mental Health Symptom Variables by Measure.....	43
2	Pearson's Correlation Matrix: Rumination, Symptoms, and Quality of Life by Sex.....	44
3	Unstandardized Direct and Indirect Effects of Rumination on Quality of Life Through Mental Health Symptoms for NPI Women	51
4	Unstandardized Direct and Indirect Effects of Rumination on Quality of Life Through Mental Health Symptoms for NPI Men	52

LIST OF FIGURES

Figures	Page
1 Gray and Rose's (2012) Medicine Wheel Model.....	26
2 Domains Based on Frisch's (2004) Quality of Life Assessment	27
3 Parallel Multiple Mediation Path Analysis Model with Covariates	36
4 Marital Status for the NPI Sample by Percentage	38
5 Employment Level for the NPI Sample by Percentage.....	38
6 Education Level for the NPI Sample by Percentage	39
7 Income Level for the NPI Sample by Percentage	39
8 Severity of Depression Using BDI-II Clinical Thresholds.....	41
9 Severity of Anxiety Using BAI Clinical Thresholds.....	41
10 Likelihood of Substance Abuse Using SASSI-3 Clinical Cut Points	42
11 Satisfaction with Quality of Life Using QoLI Profile Guidelines.....	42
12 Parallel Multiple Mediation Path Analysis for Both NPI Women and Men.....	46
13 Meditational Influence of Symptoms on Relationship between Rumination and Global Perception of Quality of Life for NPI Women.....	47
14 Meditational Influence of Symptoms on Relationship between Rumination and Global Perception of Quality of Life for NPI Men	48

CHAPTER I

INTRODUCTION

Native American mental health has long been considered a subject of major disparity (Gone & Trimble, 2012; Manson, 2000). The U.S. Census Bureau defines American Indian/Alaskan Native as “a person having origins in any of the original peoples of North and South America (including Central America) and who maintains tribal affiliation or community attachment” (Norris et al., 2012, p. 2). It is important to note, although American Indian/Alaskan Native (AI/AN) is currently the accepted legal terminology for referring to this population, many individuals prefer the term Native American (NA) and these terms may be used interchangeably throughout the document.

Native American Mental Health Disparity

Mental health disparity is defined as “a significant [difference] in the overall rate of mental illness incidence or prevalence, morbidity, mortality or survival rates in a health disparity population as compared with the health status of the general population” (Safran et al., 2009, p. 1962). Broadly, it has been estimated that Native American peoples experience rates of psychological distress 1.5 times higher than the general population (American Psychiatric Association [APA], 2010). In 2014, approximately 21% of AI/ANs age 18 and older reported experiencing some form of mental illness as compared to 17.9% of the general population (APA, 2017). Common mental health concerns among Native American populations include depression, posttraumatic stress disorder (PTSD), anxiety disorders, and substance abuse disorders- all with high rates of comorbidity.

Unfortunately, gaining a clear picture of the reasons for (and impact of) mental health disorders among Native Americans is often complicated by differences in prevalence rates by tribe, geographic location, gender, and age. Studies comparing rates of disorders across ethnic minority or racial groups also tend to forego the categories of “American Indian/Alaskan Native” or “Native American” by combining these populations into a category of “other”. This leaves little room for understanding how rates of disorder among Native Americans differ from other groups, or how this may relate to choosing appropriate, culturally responsive interventions for use with specific tribal populations- much less, appropriate wide coverage treatments that address multiple needs for low resource populations with limited access to mental healthcare.

Based on available data for 2006, NA adults (specifically, those reporting one race) experienced the highest rates of both psychological distress (25.9%) and Major Depressive Episode (12.1%) in comparison to the general adult population (Urban Indian Health Institute, 2012). As an example of how prevalence rates can differ, The American Indian Service Utilization, Psychiatric Epidemiology, Risk and Protective Factors Project (Beals et al., 2005) found rates for “any depressive disorder” ranging from 8.1% to 11.2% among a sample of Northern Plains (NPI, $n = 1,638$) and Southwestern Tribal (SWT, $n = 1,446$) members. In the study, women of both tribes reported higher rates of depressive disorders (9.3% and 13%, respectively) than men (6.8% and 8.9%). Major Depressive Disorder was also found to occur at higher rates than Dysthymic disorder in both men and women for the sample. Note, Beals et al. (2005) assessed for major depressive episode, dysthymic disorder, generalized anxiety disorder, panic disorder, posttraumatic

stress disorder (PTSD), alcohol abuse, alcohol dependence, drug abuse, and drug dependence.

Overall, NAs reported lifetime prevalence of drug use disorders as 18.4%, compared to 10.3% for the total population (APA, 2010). Based on data from the 2014 National Survey on Drug Use and Health, Bagalman and Heisler (2016) found that past-year substance abuse rates for NAs were 16% as compared to non-Hispanic White (8%), non-Hispanic Black (8.6%), Hispanic (8.5%), Asian (4.5%), and Native Hawaiian or other Pacific Islanders (10%). While alcohol use “overall” is reported less in NAs than in the general population, heavy alcohol use and binge use were reported at higher rates among NAs than White, African American, or Hispanic/Latino groups (APA, 2010). Particularly, NA youth are more likely to abuse substances at higher rates and younger ages than all other ethnic groups combined (APA, 2010). Alcohol was reported as the most abused substance in the two-tribe sample with rates of 18.1% (NPI) and 14.1% (SWT; Beals et al., 2005).

As of 2010, PTSD was twice as likely among NA individuals as compared to the general population (APA, 2010). Bagalman and Heisler (2016) found that both PTSD and suicidal behavior occurred at higher rates among NAs than all other racial-ethnic groups assessed. Note, suicidal behavior was not assessed in the current study and will not be expanded upon in detail. For more information on suicide rates and implications for rumination, see Cheref et al. (2015), and Gray and McCullagh (2014). Based on *Diagnostic and Statistical Manual of Mental Disorders*, fourth edition (DSM-IV; APA, 1994) criteria, Beals et al. (2005) found PTSD rates of 14.2% (NPI) and 16.1% (SWT) among NA men and women- again, rates were higher for women. Rates for “any anxiety

disorder” ranged from 15.9% (NPI) to 19.1% (SWT) while “any anxiety and/or depression” ranged from 20.2 to 24.2% respectively (Beals et al., 2005). The AI-SUPERPFP Team utilized both DSM-III and DSM-IV diagnostic criteria and further indicated that PTSD was included in the “any anxiety disorder” criteria.

Widely cited studies currently in NA mental health literature often rely on the fourth edition of the *Diagnostic and Statistical Manual of Mental Health Disorders* for outlining diagnostic criteria. It should be directly noted that the DSM-IV (APA, 1994) integrated PTSD within the anxiety disorders category (Davidson & Foa, 1991; Kirmayer et al., 1995). This may complicate understanding of anxiety prevalence, given the high incidence of trauma among NA communities. There are also cultural variations in symptomatology across NA groups that may require careful consideration of the distinction between trauma and anxiety.

Contextual Risk Factors among Northern Plains Indians

As a caution, when reporting statistics with such strong implications for deviation from healthy mental functioning, researchers run the risk of pathologizing NA peoples. Indeed, NA peoples have long been the subjects of research that ignores the intersectional nature of psychosocial dimensions and ecological risk factors among NA communities in favor of deficit-based approaches with pathological foci. An understanding of the context and histories in which Native people are situated is crucial to understanding NA mental health. Many risk factors stem from historical events which have disrupted traditional healing practices and uprooted cultural protective factors (Walters et al., 2011). Risk factors also vary by geographic region and differ between rural and urban settings (Bagalman & Heisler, 2016). Clinical case conceptualization and treatment planning

should take into account differences among demographic characteristics (e.g., income level and educational attainment, including access), Social Determinants of Health, Adverse Childhood Experiences, Historical/Intergenerational Trauma, and barriers to treatment, which can greatly impact both prevalence and treatment response. While these are overarching factors for treatment among many NA groups, these factors play out very differently when thinking about specific contexts- for example, those experienced by Northern Plains Indians.

The term “Northern Plains Indian” refers to individuals with tribal origins living in the Northern Plains region of the U.S. which, according to the Indian Health Services (IHS) provision map, includes North and South Dakota, Nebraska, Montana, Wyoming, Minnesota, Iowa, Wisconsin, and Michigan (IHS, 2020a). For the purposes of the current study, the author will refer specifically to North and South Dakota as this is the geographic area of data collection. According to the U.S. Census Bureau (2002), North and South Dakota were among the 19 states in 2000 that had Native American population estimates higher than the U.S. proportion of 1.5% and those numbers seem to be growing. For example, in North Dakota, population percentages shifted from 11.1% in 2000 to 14.9% in 2010, and the Native population of South Dakota increased from 8.8% to 12.5%. These numbers include “American Indian and Alaska Native” alone, or “in-combination” with other races. North and South Dakota contain five of the 20 reservation areas with the statistically largest populations of Native Americans and are also home to a large number of Urban Indians, or individuals living away from tribal lands in larger cities. Many Native Americans, particularly those living in rural areas, rely heavily on IHS, a division of the Department of Health and Human Services, to meet their healthcare

needs (IHS, 2020b). Urban Indian centers also see a large number of NAs due to the population shift from rural to urban areas that resulted from Bureau of Indian Affairs' Relocation Programs in the 1950s and 60s (IHS, 2020b).

Historically, tribes living in the Northern Plains would have hunted, fished, and later farmed quite effectively to provide for themselves and their kinship networks. Considering the effects of colonization (e.g., war, genocide, land loss, assimilation), many now live in high-poverty, low-resource areas with little access to nutritious foods, basic preventative treatments, or safe ways to reverse an increasingly sedentary lifestyle. As a result, they must navigate disproportionate rates of physical disease believed to stem from economic barriers and less than adequate social conditions (IHS, 2019). Heart disease, cancer, unintentional injuries, and diabetes are among the top four causes of death for Native peoples, including NPIs (Espey et al., 2014). Overall, mortality rates indicate that life expectancy is 5.5 years lower for Native Americans when compared to the average for all other races. The average age of death in North Dakota is 54.7 for NAs, compared to 75.7 for the White population (Gray, 2014).

Experiencing, and witnessing, disease and early mortality among NA families and communities often have cognitive and emotional impacts on members of those kinship systems. For example, a qualitative ethnographic study of Northern Plains Indians conducted by Martin et al. (2016), found that tribal member's perceptions of diabetes and family health often contained a certain degree of fatalism that translated to patterns of thinking. For example, tribal members often felt there was nothing they could do to prevent diabetes (e.g., "my parent has it, so there's nothing I can do for myself"). Rather than engage in proactive behaviors, NPIs in the sample indicated trying to "think it away"

which usually led to maladaptive behaviors rooted in negative emotions- such as angry refusal to check blood sugar rather than acknowledge and give credence to the diagnosis (Martin et al., 2016, p. 6-7).

At this time, it is unclear how this type of fatalistic thinking translates to mental health concerns. Tribal members in the Martin et al. (2016) study endorsed Social Determinants of Health (SDOH) such as poverty, unemployment, limited resources, geographic isolation, along with difficulties in policy and political leadership, as contextual factors shaping both prevalence and perception of diabetes. Family, access to education, and resources for expressing spiritual/religious needs were viewed as assets that created a support network for NAs and their families when faced with health disparity. However, disenfranchisement from traditionally rooted methods of health and healing, stemming from colonization and the resulting diaspora, greatly impact ability to tend to health both physically and mentally.

Social Determinants of Health are well regarded as contributing to poor mental health for racial and ethnic minorities but are often overlooked among NAs (Brondolo et al., 2017). The Centers for Disease Control (2013) define SDOH as the conditions and settings in which people live “that affect a wide range of health, functioning, and quality-of-life outcomes and risks”. These include economic stability, education, social and community context, health and health care, and neighborhood and built environments. It has been estimated that over one-quarter of NAs live in poverty, with distinct inequities among Northern Plains Indian (NPI) tribal groups (Sarche & Spicer, 2008). For NPIs specifically, reported unemployment rates have been as high as 15% compared to 4.6% for Whites living in the same region (Austin, 2013). This may be due in large part to

ongoing discrimination and geographic isolation which greatly limits employment opportunity. Subsequently, poverty occurring at high rates may negatively impact educational attainment and achievement among NAs (Faircloth & Tippeconnic, 2010; Johnston-Goodstar & Roholt, 2017; National Center for Education Statistics, 2008; Sarche & Spicer, 2008). Lower levels of income and educational attainment negatively affect NAs by decreasing self-sufficiency in establishing safe and healthy environments. NA communities are often forced to rely on external agencies such as the Bureau of Indian Affairs and the federal government for funding to create improvements to community infrastructure, despite being considered independent nations with their own political systems.

Growing up in poverty can create strain within families and communities, and NAs also experience a significant amount of Adverse Childhood Experiences (ACES). ACES are experiences that contribute to toxic stress, thereby increasing likelihood of poorer mental physical and mental health later in life. Utilizing the National Survey of Children's Health, Kenney and Singh (2016) found that NA children 17 years or younger were far more likely to have had 8 out of 9 ACES experiences; including income deprivation, witnessing or experiencing violent victimization, racial/ethnic discrimination, household substance abuse, domestic violence, parental incarceration, divorce, and death of a parent. Native American children were also 2-3 times more likely to have experienced multiple ACES than White children. There is a notably strong relationship between ACES and behavioral health/substance abuse issues and higher numbers of ACES are indicative of poorer outcomes (Kenney & Singh, 2016).

The effects of ACES are cumulative for NA youth and young adults living on reservations (Brockie et al., 2015). For these children, each additional ACE created a 57% increase in the likelihood of experiencing depressive symptoms after controlling for mediating variables such as age or gender. Increases were also seen in PTSD (55%), poly-drug use (51%), and suicide attempts (37%) after controlling for these same variables (Brockie et al., 2015). Factors like racism and community violence perpetuate this toxic stress which, without supportive environments, can lead to long-term triggering of the body's stress response system. A study by Boyd-Ball and colleagues (2006) reported that approximately half of their sample of Northern Plains adolescents and youth had experienced one or more severe traumatic events consistent with ACES.

In addition, “discrimination and the memory of historical trauma work in tandem to add immeasurably to the inherent difficulties in the development of children who live on reservations” (Brockie et al., 2015, p. 418). Historical trauma is conceptualized as a complex trauma inflicted upon a group with shared identity, affiliation, or circumstance over time (Mohatt et al., 2014; Evans-Campbell, 2008; Brave Heart & DeBruyn, 1998). This trauma is believed to be transmitted across generations, wherein individuals removed from the actual perpetuating events experience trauma-related symptoms similar to Post-Traumatic Stress Disorder. The result is an intergenerational trauma that may greatly impact family and community systems by disrupting natural supports through loss of cultural mechanisms like traditional parenting practices and healthy displays of parental warmth.

Mohatt et al. (2014) note that the term “historical” should not create a failure to recognize that trauma in Native communities is irrevocably tied to “real injustices or

disasters” and that historical trauma effectively links past traumas to current experiences to create cumulative effects situated in everyday contexts (p. 5-6). Through disenfranchisement from traditional healing practices, many Native Americans have little or no outlet for understanding or effectively coping with these cumulative effects. This can be particularly difficult when surrounded by negative social contexts that do not allow for practice of positive coping skills. Today, community engagement and ceremony (e.g., powwows, stomp dances) are the most accessible means of traditional healing.

Furthermore, demographic factors such as unemployment, income level, access to education, and even marital status (given higher mortality rates among Native people) are inextricably tied to the conditions in which Native people live. Many of these demographic characteristics are much less malleable in the face of external barriers to leading a good “quality” of life with a positive sense of well-being. For instance, income and education have been found to be important factors for determining individual well-being, with education being one of the “most important predictors of...health status, employability, and probability of being married, all well-known predictors of life satisfaction” (Powdthavee et al., 2015, p. 2). In turn, these factors have implications for ability to seek care and maintain needed financial and social support.

Access to mental health care is absolutely integral in alleviating the effects of mental health disparity in NA communities due to these substantial contextual risk factors (Gone & Trimble, 2012; Manson, 2000). However, NAs are far less likely to have private insurance and may rely solely on Indian Health Services (IHS) and tribal clinics for behavioral health needs. Services are often under-funded and culturally competent service providers may be lacking. Due to historical distrust of Western medicine and

stigma surrounding mental health diagnoses, NAs may be less likely to use available services. In addition, facilities are sometimes not accessible in rural areas and Urban Indian Centers are often located miles away from reservation communities. Compound this with providers' lack of understanding of Native cultural worldviews on the origin and nature of disease, Native patients' unique worldviews on health and healing, and an institutionalized pathological focus on the individual, and it is a prime formula for generating a number of substantial barriers to treatment.

Due to these barriers, there is an understandable and considerable push to "make the most" of behavioral health services in Indian Country- or land within the limits of any Indian reservation under the jurisdiction of the United States Government- and in Urban Indian Health Centers (Cornell Law School, 2019). This is not without challenges of course. It makes sense to look at mechanisms that underlie multiple diagnoses that allow us to do the most good, with the least amount of resources, to address disparate rates of mental health disorder for NA peoples. As clinicians, it is important we consider both the use of evidence-based treatment and culturally-adapted practice. Simply put, it is not feasible to adapt every treatment modality across the heterogeneity of Native American cultures even if we can tailor our approaches to implementing them.

CHAPTER II

REVIEW OF THE LITERATURE

Transdiagnostic factors for mental health may be one way to address multiple diagnoses among low resource populations, thereby utilizing time and resources allocated to treatment services more effectively- particularly with highly comorbid populations (Krueger & Eaton, 2015). As indicators of mental health, transdiagnostic factors for mental health disorder “account for the development and continuity of disorders and comorbidity over time, function as the primary links between disorders and important outcomes such as suicide, mediate associations between environmental exposures and disorders, provide an empirically supported classification system, and serve as foci for efficient, broadband intervention approaches” (Eaton, et al., 2015, p. 171). Given the disproportionate rates of mental health disorder among Native American populations, and significant group differences, it is concerning that so little is known about transdiagnostic factors and their implications for addressing NA mental health needs. This is likely because researchers have generally focused on specific symptoms/disorders via the DSM classification system, rather than broadly reaching factors underlying multiple disorders.

Transdiagnostic factors are sometimes defined as internalizing versus externalizing traits and can include cognitive styles such as repetitive negative thinking (Arditte et al., 2016; Krueger & Eaton, 2015). For example, rumination has been described as a repetitive, passive focus on the “causes, consequences, and symptoms” of distress (Nolen-Hoeksema, 1991; Smith & Alloy, 2009). Rumination is a well-known as a factor contributing to depression, anxiety, PTSD, and substance abuse. However, only one study of rumination with a NA population exists. Tucker and colleagues (2015)

investigated the impact of frequency of historical loss thinking on suicidal ideation among American Indian young adults. Historical loss thinking is defined as a “negative repetitive thinking style” regarding intergenerational/ancestral trauma and loss, and is theorized as similar to the mechanism of rumination (Evans-Campbell, 2008; Sotero, 2006; Tucker et al., 2015). Tucker et al. (2015) conceptualized this type of thinking pattern as a potential mechanism by which historical loss thinking negatively impacts mental health. They found a correlation with a medium-sized, positive effect between one theoretical component of rumination, brooding/negative thinking, and suicidal ideation ($d = .31, p = .01$) and a small effect between historical loss thinking and both components of ruminative thinking (brooding vs. reflection/neutral thinking). Results of the study indicated that ruminative thinking (specifically brooding) had a greater impact on suicidal ideation than historical loss thinking alone. Although this is only one study, it suggests that rumination may exacerbate the effects of contextual factors specific to Native American populations.

Ruminative response styles may also impact mental health by influencing an individual’s view of both their psychological well-being and their social support systems. Using the WHOQOL-BREF, an abbreviated version of the WHOQOL-100 quality of life assessment, Kuehner & Buerger (2005) found that rumination (via the Response Styles Questionnaire; RSQ) predicted poorer psychological quality of life ($t = -2.60, p < .05$) among a sample of depressed inpatient participants after discharge. Rumination was also associated with the quality of life social support domain, and higher reported rumination predicted poorer quality of life outcomes ($t = -2.23, p < .05$). Interestingly, the authors point out that a “ruminative coping style was found to be associated with poor

psychological well-being” while “distractive coping had a clear positive association with psychological health” for the sample (Kuehner & Bueger, 2005, p. 211). This indicates that rumination may serve as a maladaptive coping mechanism that influences how we view our mental health and perceptions of quality of life. Thus, coping strategies such as distraction and reflection may be much more effective in dealing with distress.

Theories and Models of Rumination

Rumination is a passive, persistent, recurring cognitive response style in which individuals think repeatedly about symptoms of distress thereby leading to increases in negative affect (Meyer et al., 2015; Watkins & Nolen-Hoeksema, 2014). Perhaps the most widely accepted theory of rumination, Response Styles Theory (RST) suggests that ruminative thinking is a stable, habitual pattern focusing on emotional states and experiences of distress (Nolen-Hoeksema, 1991). This theory lends itself to the notion that rumination is trait-like and automatic although rumination is also considered a state-like condition. In Nolen-Hoeksema’s (1991) conceptualization of rumination, mental health difficulties are clearly linked to the pattern of cognition and not the particular content of ruminative thoughts. Additionally, RST suggests that thinking about symptoms of distress serves as an attempt to cope with problematic issues. Individuals may believe ruminating helps them problem-solve the reasons for distress. However, rather than leading to productive solutions, ruminative processes most often lead to maladaptive coping styles (Nolen-Hoeksema et al., 2008; Thompson et al., 2010). Rumination impairs functioning because this type of “problem-solving” does not rid one of distress or change distressing situations, nor does it generate a better understanding of reasons for the distress.

Rumination has also been viewed as a cognitive response pattern resulting from failed progress toward attaining specific goals, or Goal Progress Theory (GPT; Martin & Tesser, 2006; Martin, Tesser, & McIntosh, 1993). Whereas Nolen-Hoeksema's (1991) RST theory focuses on "causes, consequences, and symptoms of current negative affect", GPT suggests that it is an awareness of incongruence between a desired goal and the actual outcome that contributes to the negative affect characteristic of rumination (Jones et al., 2013). GPT also suggests this negative affect will persist until some resolution of the failure toward the goal occurs. Similarly, Wells and Matthews' (1994) Self-Regulation Theory (S-REF) describes rumination in terms of discrepancy between actual and desired states of being. The S-REF model proposes rumination as an interaction between automatic processing, voluntary attention, and "stored knowledge" in the form of self-beliefs (Wells & Matthews, 1994). However, it has been noted that much of this particular conceptualization of rumination overlaps with the construct of worry. While both are forms of perseverative thinking, rumination is distinct from worry in that it is an "elaboration of depressing content" while worry is a phenomenon enabling avoidance (Hoyer et al., 2009, p. 3).

Rumination is generally recognized as having two distinct factors: brooding and reflection. Therefore, how we ruminate may also play a role in how we respond to distress. Brooding (the negative component of rumination) is associated with increases in negative affect whereas reflective rumination is considered to be neutrally valenced (Whitmer & Gotlib, 2011). Therefore, brooding is considered to be the component of rumination that directly contributes to maladaptive coping styles (Treyner et al., 2003). Several versions of ruminative response surveys break down ruminative thinking based

on this two-factor model. For example, the 10-item Ruminative Responses Scale is structured with equal numbers of questions assessing for each of these factors (Parola, 2017). Issue-specific models of rumination also exist; for instance, Rumination on Sadness is concerned directly with depressive vulnerability (Conway et al., 2000). Other models relate rumination to stressful events, trauma, and social phobia, to name just a few (Ehring et al., 2008; Kim et al., 2017; Michael et al., 2007; Michl et al., 2013; Penney & Abbott, 2014; Szabo et al., 2017). In summary, there is currently no single, concrete definition of what rumination is or how it works. Rumination, across various conceptualizations, operates very differently depending on theoretical framework and some theorists argue that rumination may occur outside of goal failure which lends less credence to GPT theory (Smith & Alloy, 2009). To date, RST is currently the most empirically supported theory of rumination.

Relationship Between Rumination and Mental Health Disorders

Rumination is widely accepted as playing a key role in the maintenance, onset, and duration of depression and is considered predictive of depressive relapse (Papageorgiou & Wells, 2004). It is believed to prolong symptoms, intensify symptoms of distress, predict longer periods of depression, and predict greater severity of dysphoria or general unease and dissatisfaction with life (Nolen-Hoeksema & Morrow, 1991; Nolen-Hoeksema et al., 1994; Nolen-Hoeksema, 1991; Nolen-Hoeksema et al., 2008). In general, ruminative thinkers tend to view the world through a negative lens; viewing past events and interpreting current experiences more negatively, while also thinking in a more pessimistic way about the future. This may help explain how rumination increases vulnerability to new episodes of depression and decreases overall quality of life. This

negative lens may also decrease the social support needed for coping with low mood states- all while creating interpersonal stress and discord. As ruminative states decrease the quality of problem-solving, exacerbation of interpersonal stress can occur- further deteriorating formerly supportive relationships as the individual becomes increasingly isolated (Nolen-Hoeksema, 2000).

Primarily, research literature has focused on the link between depression and rumination. However, anxiety disorders may also be related to ruminative thinking. Longitudinal analyses conducted by Nolen-Hoeksema (2000) indicated that ruminative thinking was significantly correlated with both depression and anxiety as well as comorbid depression/anxiety. Nolen-Hoeksema (2000) also speculated that rumination may be suspect in explaining the high likelihood of comorbidity between anxiety and depression. To explain the role of rumination in comorbid anxious symptoms, it is again necessary to think of rumination as an attempt at problem solving. The more unsuccessful problem-solving attempts prove to be, the more problematic depressive states and negative affect become as attempts to understand distress prove increasingly futile. Thus, anxiety about problem solving serves to maintain the already cyclical nature of rumination.

In consideration of DSM-IV classification of anxiety disorders used in this study, it is important to note the relationship between rumination and PTSD as well since PTSD falls within the categorical range of anxiety disorders. A study by Roley et al. (2015) found that both repetitive and anticipatory ruminative subtypes moderated the relationship between PTSD and Major Depressive Disorder (MDD) meaning at higher levels of rumination, greater levels of PTSD put adults at greater risk for depressive symptoms. Ehring et al. (2008) provided support for rumination's predictive ability of

PTSD symptoms six months post trauma event, and their study showed rumination predicted severity of PTSD symptoms in their sample.

Similar findings have been demonstrated with the relationships between rumination and substance abuse, particularly in regard to alcohol use. Caselli et al. (2010) were among the first to demonstrate that rumination is predictive of problem drinking. In a later study, Caselli et al. (2010) found that baseline rumination scores were predictive of alcohol use and level of use at three, six, and twelve-month follow up points. Additionally, rumination had a causal relationship with cravings among alcohol dependent drinkers (Caselli et al., 2013). These findings indicate that rumination may be an important predictor for relapse in alcohol use post-intervention. Magidson et al. (2013) found that brooding (negative) rumination mediated the relationship between distress tolerance, an internalizing symptom, and depressive symptoms in a sample of 128 substance users in an urban residential treatment facility. They highlighted the function of brooding rumination as a maladaptive distress coping strategy similar to the avoidance seen with worry. For instance, people endorsing high levels of rumination may avoid self-directed rumination by engaging in substance use as an attempt to “escape the self” (Nolen-Hoeksema et al., 2007; Hull, 1981).

Rumination is linked to perceptions of quality of life, particularly when faced with stressful life events. This may indicate that rumination serves as a mechanism which heightens stress sensitivity- with increases in rumination post-event predicting poorer affect, increases in maladaptive behaviors, and heightened levels of Major Depressive and Generalized Anxiety symptoms even when adjusting for stressfulness of the event (Ruscio et al., 2015). With this in mind, the effects of rumination on well-being are

hypothesized to extend well beyond mental health disorders. Research has also shown support for rumination's impact on physical well-being. Rumination negatively impacts "cardiovascular, autonomic, and endocrine nervous system activity, suggesting a pathogenic pathway to long-term disease outcomes, and perhaps clarifying the still unexplained relationship between chronic stress and health vulnerability" (Ottaviani et al., 2016).

In regard to specificity of rumination across mood disorders, substance use, and comorbid disorders, rumination is most widely regarded as a factor for depression. However, the aforementioned studies provide robust evidence that rumination should be considered for both anxiety (including PTSD) and substance use (Nolen-Hoeksema, 2000; Olatunji et al., 2013; Watkins, 2009). This supports usefulness as a transdiagnostic factor across disorders (Arditte et al., 2016; Drost et al., 2014; Hsu et al., 2015; Johnson et al., 2016; McEvoy et al., 2013; McLaughlin & Nolen-Hoeksema, 2011). As many of the disorders examined in the current study occur comorbidly to a great degree, assessing for rumination may be helpful in addressing multiple disorders in a single treatment setting. Particularly since individuals with comorbid disorders may have a worse prognosis or be at greater risk for relapse (Sartorius, 2013).

Differences in Rumination Across Demographic Characteristics

The effects of rumination are known to be mediated by multiple idiographic characteristics such as gender and age, suggesting that rumination contributes to poorer health (both mental and physical) in varying ways across demographic characteristics. Potentially the most robust finding of differences across demographic characteristics has been with gender. Multiple studies, including well-sampled meta-analyses, have found

that women ruminate more than men (Johnson & Whisman, 2013; Jose & Brown, 2008; Lopez et al., 2009; Nolen-Hoeksema & Aldao, 2011; Nolen-Hoeksema & Harrell, 2002; Nolen-Hoeksema & Jackson, 2001). Differences in rumination across men and women may contribute, in part, to the differences that exist across gender for mood disorder prevalence (Nolen-Hoeksema et al., 1994; Nolen-Hoeksema, 1991, 1998). To explain these differences, Nolen-Hoeksema and Jackson (2001) theorized that women and men have differing views about emotion and coping; including controllability of emotions, acceptability of rumination, responsibility for setting the “emotional tone” in relationships, and mastery over negative events. In Nolen-Hoeksema and Jackson’s (2001) study, differences in beliefs about emotion and coping fully mediated the gender difference for rumination. In the literature, the terms male/female and women/men indicate cisgender biological constructs and not gender identity. Please note, the author of the current study will operate around those definitions out of necessity and not preference.

Across the lifespan, older adults tend to ruminate less than young adults- a finding potentially tied to differences in autobiographical memory retrieval (Ricarte et al., 2016). Sütterlin and colleagues (2012) found life satisfaction was impacted negatively by brooding rumination and this decrease in brooding rumination among older adults may be a function of changes in distress responding styles among depressed persons. Older adults often report having better psychological, social, and environmental quality of life (Kuehner & Bueger, 2005). However, rumination prolongs distress and delays recovery for older adults recovering from a psychosocial stressor (Robinette & Charles, 2016).

Gender differences also intersect with age. For example, Jose and Brown (2008) found that adolescent girls most often report increases in stress at around age 12 to 13, around the same time they also report increases in ruminative thinking. While rumination mediated the relationship between stress and depression for adolescent girls, it did not mediate the relationship in young men, only adult men. A study by Thompson et al. (2010), found that depressed adolescent women with higher levels of rumination and lower coping skills experienced higher levels of depressive symptoms. Thus, the presence of rumination pre-adulthood may have serious implications for the onset and prevalence of mental health disorders with high ruminators having worse outcomes in adulthood (particularly for women).

Even in relatively safe environments, rumination seems to have potential for negatively impacting meaningful activities and relationships. Rumination has been reported as a mechanism mediating depressive symptoms and subjective social status, defined as self-reported social standing, among economically disadvantaged populations (Zvolensky et al., 2018). Interaction relationships between rumination and subjective social status were stronger among individuals reporting lower social status as opposed to higher social status. Income inequality, particularly perceptions of economic social status and low subjective social status in comparison to peers, has a marked effect on mental/physical health and quality of life- perhaps by promoting ruminative coping (Ribeiro et al., 2017; Roth et al., 2017; Jackson et al., 2011). As rumination is also hypothesized to impact executive functioning, it may also affect educational attainment and employment by impairing core functions such as working memory or the ability to switch between task sets or task response rules (Watkins & Brown, 2002; Yang et al.,

2017). As a final note of interest, rumination regarding insecure attachment to a partner is speculated to mediate the path between adult attachment and marital satisfaction in married men and women (Chung, 2015). Rumination leading to avoidant attachment styles negatively influenced both forgiveness and empathetic ability. As a whole, these findings suggest that ruminative thinking varies across demographics far beyond gender, and a deeper investigation of demographic differences warrants further study.

Native American Mental Health Belief Models: Quality of Life as an Outcome

According to Response Styles Theory, rumination is a cognitive style that focuses on emotional states and experiences of distress resulting from distressing content rather than a focus on the content itself. If Native Americans have such high risk of exposure to distress, thereby perpetuating the cycle of ruminative thought, it is important to consider how we may change the focus on the distress rather than alleviating it. This is because some stressors are deeply rooted in historical frames of reference (e.g., discrimination) and social contexts (e.g., poverty, inequitable access to resources) that are not easily shifted. Rumination does not generally result in effective problem solving, and solving problems such as high unemployment levels and high levels of ACES are not typically within the NA therapy client's control. Trying to shift an NA individual's context may, in fact, bring added attention to the inability to create effective change in how the NA client lives and operates.

The same is true of symptom reduction. If the NA client is unable to shift the context in which they live, it seems unwise to insist that they forego natural reactions (e.g., sadness, anger) to events that are out of their realm of control or when activating events have a high likelihood of occurring. Rather than focusing purely on symptom

reduction, which may not be feasible in light of these types of stressors, it may be more effective to promote change in the ways in which NAs react to stressors and cope with their distress, while building resilience and positive coping skills for facing future distress. The ultimate goal would be providing clients with tools needed to live a more balanced life- with an emphasis on using strengths to move from maladaptive coping to more adaptive coping to increase quality of life.

The World Health Organization (WHO) defines quality of life as “an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns” (WHO, 2019). Quality of life may be a useful indicator of change for treating mood disorders and substance abuse in the presence of rumination. As an assessment tool, quality of life is an indicator of clinically significant change in relation to treatment goals (Frisch et al., 2005). Increases in perceived quality of life can show that an intervention and/or the therapeutic relationship is effective across multiple domains of functioning (e.g., health, self-esteem, learning, and community). However, quality of life is rarely the first-line target of assessing the effectiveness of therapeutic interventions despite being used extensively for health related concerns (Connell et al., 2012; Connell et al., 2014; Katschnig, 2006; Shiovitz-Ezra et al., 2009).

Assessing for quality of life is consistent with a shift among mental health models from focusing primarily on symptom reduction to a broader, holistic view of wellness. This more comprehensive view of health and well-being is more theoretically consistent with Native American models of healing that address the whole person in a culturally competent manner through acknowledging that the “path to illness as well as healing are

integrated; the mind, body, spirit, or environment are seen as one; [and] all is connected” (SAMHSA, 2018, p.132). Native Americans’ beliefs about mental health, wellness, and healing (including the origin of disease), should be taken into account when considering target goals and outcomes of treatment. Native American health belief models generally follow a medicine wheel framework that examines balance among emotional, physical, mental, and spiritual domains. The primary belief is that imbalance across domains then becomes the origin for disorder and disease. Health is restored when the individual is brought back into balance. With the medicine wheel model, clinicians can treat the whole client within the context of their family, social, and built environments. The goal is to understand which areas of a client’s life present as deficits and which areas emerge as strengths. The therapist would then guide the client in using strengths to supplement areas of imbalance.

Early models conceptualize each of the four medicine wheel domains as corresponding to the four cardinal directions and different aspects of well-being. For example, in one version of the model, the Eastern quadrant of the wheel corresponds to community and belonging with the client at the center of the wheel and a focus on social connection and social interest (Roberts et al., 1998). Newer models such as the one presented by Gray and Rose (2012), combine traditional healing and evidence based practice for use in cultural adaptation of treatment (see Figure 1). Success in using the medicine wheel model in both physical and mental health treatment settings speaks volumes about the usefulness of domains and categories for visually organizing areas of the client’s life that need additional support. Through the use of domains, key concepts of the wheel are highly adaptable yet securely rooted in an Indigenous worldview that

translates across a wide number of tribal affiliations and cultural contexts. This maps on well to quality of life measures. Goals, expectations, standards, and concerns may be globally understood through use of a quality of life instrument by assessing satisfaction with areas ranging anywhere from self-esteem, to work and home, and interpersonal relationships (see Figure 2 for quality of life domains). Thus, quality of life as a tool for mental health outcomes opens space for dialogue useful for understanding client characteristics rooted in culture and values, while creating a baseline for assessing growth and increased balance in multiple areas of the client's life.

Figure 1

Gray's (2010) Medicine Wheel Model. Used with Permission from Gray and Rose (2012).

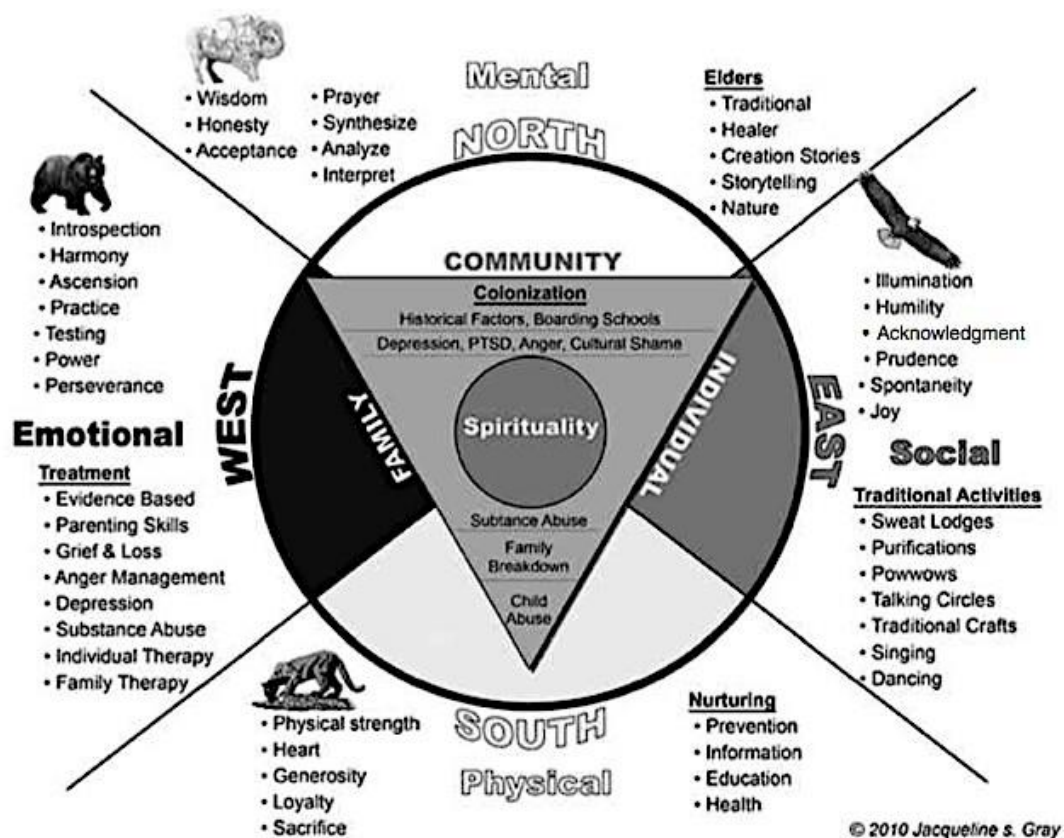


Figure 2

Domains Based on Frisch's (2004) Quality of Life Assessment

Global Life Satisfaction (Well-Being)	Health
	Self-Esteem
	Goals and Values
	Money
	Work
	Play
	Learning
	Creativity
	Helping
	Love
	Friends
	Children
	Relatives
	Home
	Neighborhood
	Community

CHAPTER III

METHOD

The current study comprises a secondary analysis of data collected from a Native American Research Centers for Health (NARCH) Pilot Study, “Mood Disorder Assessment Validation with Northern Plains Indians” (#U26IHS300127/01; PI, Jacqueline Gray). The original project constituted a validity and reliability study for several well-known mood disorder assessments regularly used when working with Native American populations. The breadth and scope of the original study was optimal for an examination of the influence of rumination on quality of life and the mediational effects of mental health symptoms. Use of multiple assessments in the original study allowed for selection of appropriate measures with greatest validity per published findings of the original researchers. Demographic characteristics available from the original study also provided ample opportunity for controlling for contextual factors that may impact the way rumination operates for NPI peoples. In addition, the sample size was adequate for comparison of the effects on women and men separately.

Aims of the Current Study

The primary aims of the current study were to determine if, (a) there was a relationship between rumination and quality of life, and (b) whether the relationship was mediated by mental health symptoms in the sample of Northern Plains Indians (NPI). It was hypothesized that a direct effect would occur between rumination and quality of life with higher rumination scores predicting lower quality of life. Rumination was also hypothesized to be related to mental health symptoms (e.g., depression, anxiety/PTSD, substance use) and quality of life via indirect effects in the sample. It was hypothesized

that rumination would be a significant factor for the presence of all symptom variables, and that the effects of rumination would further influence quality of life in the presence of these symptoms. The final and third aim of the study was, (c) determining if the relationship between rumination and quality of life occurred differently for women and men as the literature suggests that men and women report ruminating quite differently. Distinct differences in prevalence rates between women and men also occur across certain disorders (e.g., depression) in both the general population and for various tribal groups, further indicating the use of separate models.

Participants

Data for the original study were collected in 2006. In the study, adult participants ages 18-80 were recruited via convenience sampling from tribal behavioral health and Indian Health Services (IHS) clinics on seven reservations across North and South Dakota. The research protocol was reviewed by the University of North Dakota Institutional Review Board prior to any research activities. All participants in the sample provided informed consent to research and releases prior to any clinician reporting (e.g., diagnosis codes). All assessments were completed via paper and pencil. Participants received \$10 gift/gas coupons as reimbursement for their time. Note that specific tribal groups or affiliations will not be listed to protect participant and tribal identities. For the current study, after cleaning the de-identified data, the sample consisted of 585 participants (women, $N = 355$; men, $N = 230$) with a mean age of 36.15 ($SD = 12.64$).

Research Design

De-identified data were shared with consent via a signed data sharing agreement with PI Gray. Secondary data analysis constitutes an acceptable and viable research

method among the psychological sciences. It is considered a cost-effective way to utilize data that might otherwise not receive the full breadth and scope of consideration due to resource or time constraints. It is also an ethical way to maximize participants' original contributions (Trzesniewski et al., 2011). As the data are not longitudinal, the author will refer to variables as having an “influence” or “relationship”, rather than attempting to infer causality. Thus, the study is exploratory in nature with long-term goals of defining and testing an intervention for ruminative response styles for use with Native American populations.

Institutional Approvals

Approvals for the original study were received from Institutional Review Boards at University of North Dakota, Aberdeen Area Indian Health Services (IHS), Great Plains Tribal Chairs Health Board, seven tribal councils, and eight IHS services unit chief officers. Copies of these approvals were made available during the data sharing process. The current study was deemed exempt from full review and received expedited approval from the Utah State University Institutional Review Board (#10430).

Measures

Demographics. Participants completed a demographic survey that included questions related to sex, age, marital status, education level, employment status, and income level. At the time of the original study, the demographic survey question wording was based on sex as defined by biological male or female, and a category of other which was not further defined. This “other” category was excluded from analysis due to lack of defined parameters and too few cases to be able to run statistical analyses as a separate group.

Depression. The Beck Depression Inventory, Second Edition (BDI-II; Beck et al, 1996) is one of the most widely used measures of depression. It is an update to the original BDI published in 1961 and designed to be administered to individuals 13 and older. It consists of 21 self-report, multiple choice items which gauge the presence and severity of depressive symptoms. Eight of the items capture information regarding affect. Thirteen items capture somatic difficulties. Items are assessed using a 4-point scale ranging from 0 (*anchor*) to 3 (*anchor*). The BDI-II is scored by summing responses to the 21 items with higher scores indicating higher levels of depressive symptoms (max score = 63). Scores are interpreted as follows: no depression (0-13), mild (14-19), moderate (20-28), and severe depression (29-63). The BDI-II has high internal reliability among normative samples: outpatients ($\alpha = .92$) and college students ($\alpha = .93$). Further analyses with the current NPI sample revealed excellent reliability with a Cronbach's alpha of .94 ($n = 529$) and a split-half correlation of .904/.883 (Gray et al., 2018).

Anxiety. The Beck Anxiety Inventory (BAI; Beck et al., 1988) is a 21-item self-report, multiple choice questionnaire that assesses for presence and severity of anxiety symptoms. It is designed for administration among individuals 17-80 years of age. Questions ask how the individual has “been feeling in the last week” regarding a variety of anxious symptoms. Items correspond to a cognitive subscale and a somatic subscale and are designed to minimize overlap with depression scales. Answers range from 0 (*not at all*) to 3 (*I could barely stand it*). Scores are computed by summing all responses, with higher scores indicating more anxious symptomatology. Scores are interpreted as follows: minimal anxiety (0-7), mild (8-15), moderate (16-25), severe (26-63). The BAI represents good internal consistency in the general population ($\alpha = .92$) with a one-week

test-retest reliability of .75 (Beck et al., 1988). In the current NPI sample there was high internal consistency ($\alpha = .95$), however analyses of criterion validity ended with mixed results with participants endorsing higher anxiety scores having little differentiation from participants diagnosed with mood disorders (Gray et al., 2016).

Substance Use. The Substance Use Subtle Screening Inventory, Third Edition-Adult Form (SASSI-3; Miller et al., 1999) is a brief questionnaire used to discern the likelihood of having a diagnosable substance use disorder among people 18 and older. The SASSI-3 requires a 3.2 grade reading level and is comprised of 93 items. Of these items, 67 are dichotomous, true/false questions and contain both direct and indirect content for accurate subtle screening. The remaining 26 items ask questions about substance use and its consequences and are answered using a Likert scale. Additional face valid and subtle items were provided to reduce rates of false positives and account for any unwillingness to endorse presence of substance use or associated symptoms. In addition, the SASSI-3 has 10 clinical subscales including a Defensive Scale where higher scores may indicate greater defensive responding.

Clinical cut-off scores vary by subscale and are compared to norms via online scoring and reports. The SASSI-3 Symptoms Subscale was chosen specifically based on its ability to more concretely measure the causes, consequences, and correlates of misuse in comparison to the subtle subscales, which are more reliant on reporting styles. A Symptoms Subscale score of 7 or higher indicates high likelihood for misuse. The SASSI-3 has a high test-retest reliability between .92 and 1.00 (depending on subscale) over a two-week period, and a total coefficient alpha of .93 (Miller et al., 1999). Gray, Petros, and Ayala (2020) indicated test-retest reliability coefficients for the SASSI-3

scales “ranged from .92 to 1.00 [and] internal consistency ranged from .79 to .95” for Face Valid Alcohol (FVA), Face Valid Other Drugs (FVOD), and Symptoms (SYM) “but dropped off for the other subscales, ranging from .27 to .71”. Only the Symptoms Subscale was used in the current study.

Rumination. The Rumination Response Survey, (RRS short form, adapted; Treynor, Gonzalez, & Nolen-Hoeksema, 2003). The original Ruminative Response Scale created by Treynor, Gonzalez, and Nolen-Hoeksema (2003) was shortened from an earlier 22-item Response Styles Questionnaire (RSQ) due to content overlap with the Beck Depression Inventory (Nolen-Hoeksema & Morrow, 1991). An additional factor analysis of the RSQ showed a 10-item scale comprised of two components- brooding and reflection- making the RRS far more clinically useful and easier to administer (Treynor et al., 2003). The Rumination Response Survey used in the original mood disorder validation study for this study was adapted from the RRS. This adapted version contains items from both factor components and contained clarified language for use with NPIs.

Reflection factor items are neutrally-valenced while brooding items have negative connotations believed to contribute to maladaptive coping. For example, “I go away by myself and think about why I feel this way” would be a reflective item. Whereas, “I think about all my shortcomings, failings, faults, mistakes” would constitute a brooding item. Items are answered based on a Likert-type scale ranging from 1 (*almost never*) to 4 (*almost always*). Respondents are asked to rate the series of questions using this scale and responses are summed to obtain a rumination total score. The adapted RRS scale, also used in the current study, codes responses on a scale of 0 (*almost never*) to 3 (*almost always*) using a different question subset than the original Treynor et al. (2003) scale.

However, correlational analysis of the adapted scale suggests a strong total item reliability with a Cronbach's alpha of .941 in the current sample

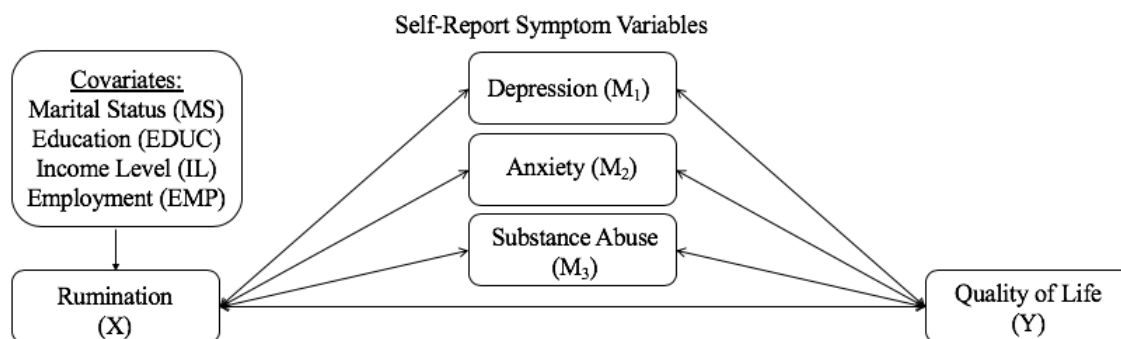
Quality of Life. The Quality of Life Inventory (QoLI; Frisch et al., 2005) was constructed based on theories of subjective well-being and life satisfaction. It measures life satisfaction based on 16 different domains. Domains include: Health, Self-Esteem, Goals and Values, Money, Work, Play, Learning, Creativity, Helping, Love, Friends, Children, Relatives, Home, Neighborhood, Community. There is also a measure of global life satisfaction (Well-Being) which equals the sum of all other domain scores. Domains are often grouped further as Basic Needs and/or Achievement, Activities and Self-Expression, Relationships, and Surroundings. Scoring is obtained using Pearson QoLI software and result in scores ranging from -6 (*extremely dissatisfied*) to 6 (*extremely satisfied*). These domains are further weighted based on the importance the client places on them. This generates a raw score ranging from -96 to 96. Final total global scores are calculated by transforming raw scores to standardized T scores. T-scores are then compared to a satisfaction scale. Scores are interpreted as follows: 0-36 = very low satisfaction, 37-42 = low satisfaction, 43-57 = average satisfaction, and 58-77 = high satisfaction with quality of life. The QoLI has exhibited good internal consistency and one-month retest reliability with Cronbach's alphas greater than .75 (McAlinden & Oei, 2006). It is also purported to identify real-life contextual issues and gauge change relevant to successful treatment outcomes. As the QoLI was not the subject of validity testing in the original study, less is known about its validity with NPIs.

Analytic Plan

A parallel multiple mediation path analysis model was proposed to determine if there was a direct effect between rumination and quality of life, and to explore whether symptom variables mediated the relationship between rumination and perceived quality of life (see Figure 3). Parallel multiple mediational path analysis was deemed to be the best analytical method because it allows for multiple mediators to be tested simultaneously while accounting for any confounding variables that can be controlled for as covariates (Hayes, 2013). There is an additional advantage of not needing exceptionally large datasets or a normally distributed sample because bootstrapping generates a more accurate approximation of a normal distribution (Hayes, 2013). Separate models were proposed based on biological sex (i.e. women, men) due to differences between men and women in the literature. Age, Income Level (IL), Education (EDUC), Employment (EMP), and Marital Status (MS) were initially considered as covariates to eliminate factors contributing to statistical noise in the model and to more clearly define the relationship between the primary variables of interest. However, age was not included in the final model as analysis of variance testing indicated it was not significantly related to any mental health variables.

Figure 3

Final Parallel Multiple Mediation Path Analysis Model with Covariates



CHAPTER IV

RESULTS

Prior to analyses, data were cleaned to ensure all pertinent cases were included. Of the data originally collected ($N = 771$), 186 cases were removed due to one or more of the following: (a) not data available for the RRS, (b) missing BAI, BDI, or SASSI-3 Symptoms Subscale scores, (c) a QOLI total score was not present, or (d) insufficient data points to reliably contribute to analysis of relationships between variables of interest. During computation of mean scores for each of the survey instruments, additional cases were excluded if data points on any scale were insufficient to generate an accurate mean score. One case was removed because it did not meet age criteria for adult participants ranging from 18-80 years of age.

Descriptive Statistics

Descriptive statistics were run based on the final 585 participants (women, $N = 355$; men, $N = 230$). The mean age of all participants was 36.15 ($SD = 12.64$). For Marital Status (MS), men were more likely to be single compared to women, and women were more likely to report being married or divorced. For Employment Level (EMP), women were more likely to be employed full-time, whereas men reported higher rates of unemployment. For Education Level (EDUC), men were more likely attain a high school diploma as their highest level of education completed, with more men reporting they did not complete high school. Women were more likely to have attended college and obtained an associate's or bachelor's degree. The majority of both men (49.1%) and women (47.3%) reported household Income Levels (IL) of less than \$8,000 per year. Note, federal poverty guidelines consider an annual household income of \$25,000 for a

family of four as meeting the poverty level. (See Figures 4-7 for a breakdown of descriptives).

Figure 4

Marital Status for the NPI Sample by Percentage

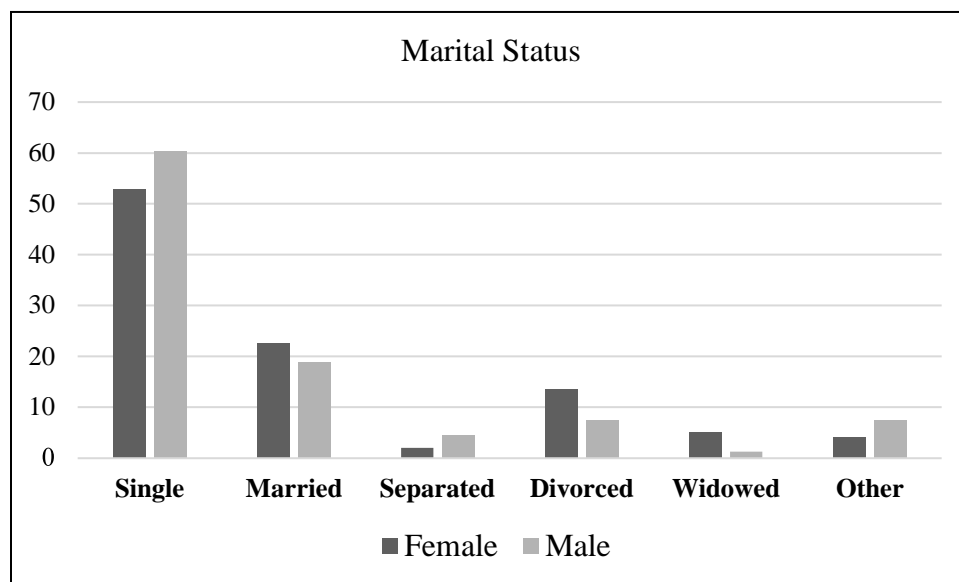


Figure 5

Employment Level for the NPI Sample by Percentage

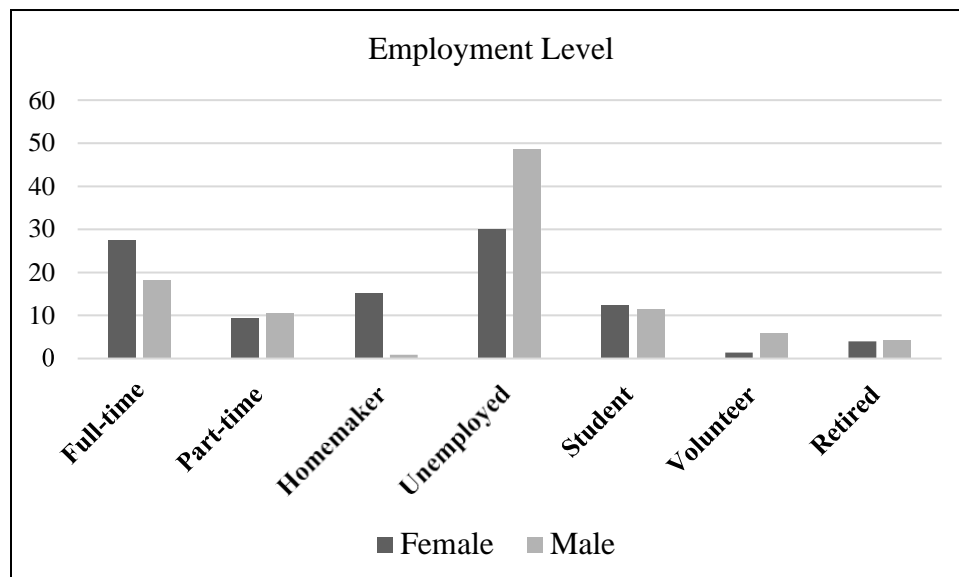
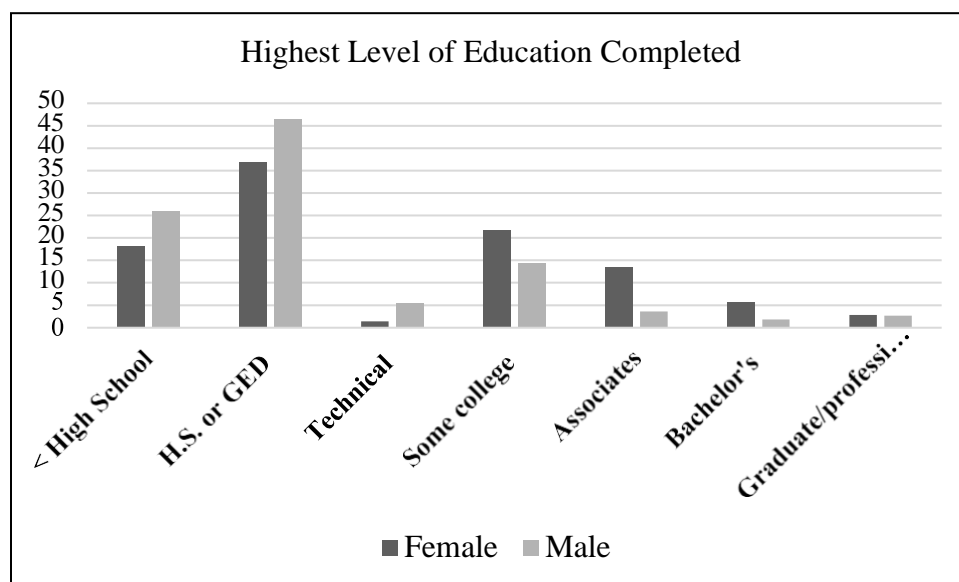
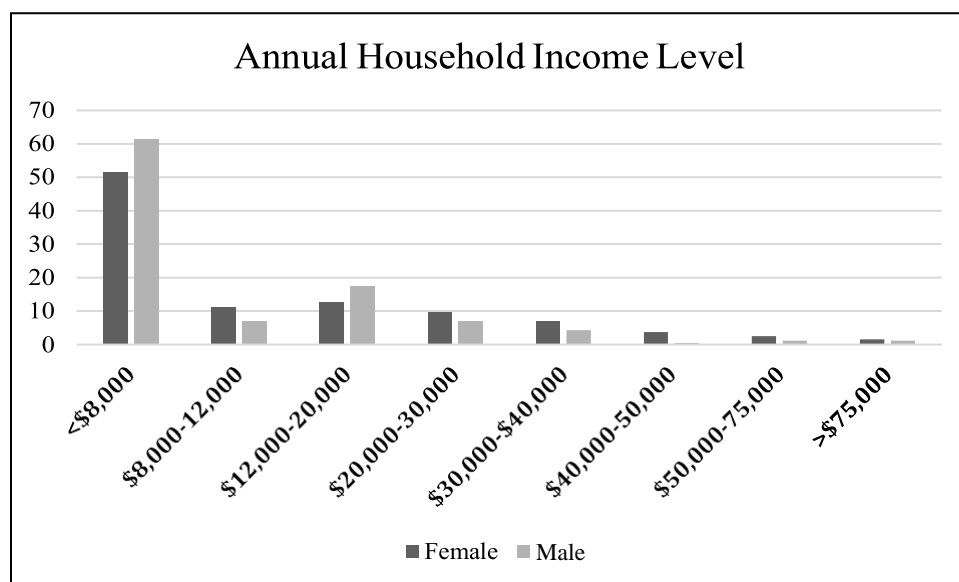


Figure 6*Education Level for the NPI Sample by Percentage***Figure 7***Income Level for the NPI Sample by Percentage*

Percentages were also calculated for mental health variables to determine prevalence for the sample using total scores for each measure (see Figures 8-11). Use of

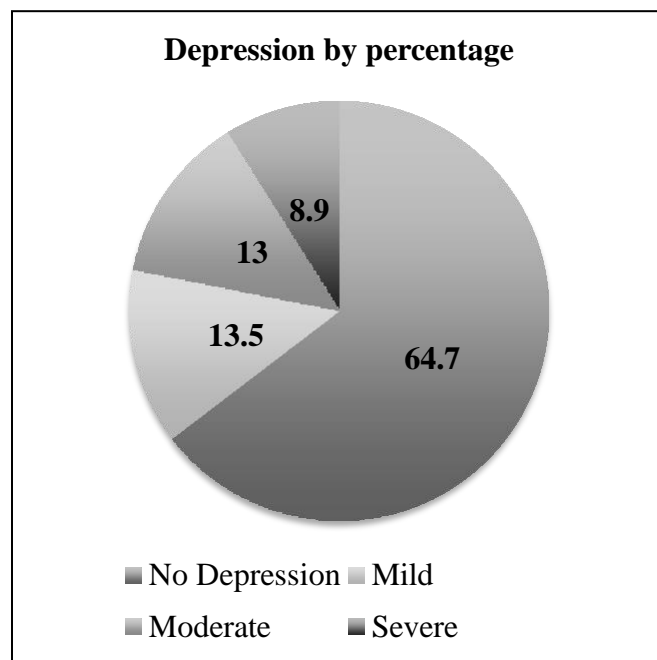
total scores in the calculation allowed for more accurate accounting of missing data for descriptive purposes. Categories were set based on clinical thresholds for assessing level of severity. For depression, 64.7% of participants indicated no depression, 13.5% mild depression, 13% moderate depression, and 8.9% indicated severe depression. For anxiety, 56.6% indicated minimal anxiety, 20.2% indicated mild, 12.6% indicated moderate, and 10.5% indicated severe anxiety. Likelihood for substance abuse was calculated using SASSI-3 clinical cut points for the Symptoms Subscale. For the sample, 65% of participants were considered to have a low likelihood for substance abuse, and 35% met criteria for high likelihood (e.g., a score of 7 or greater).

For quality of life, QoLI total scores were converted to T-scores for ease of interpretation with QoLI profile guidelines. T-scores were structured using the QoLI classification of very low, low, average, and high perceived global life satisfaction. For QoLI, 9.3% reported a very low satisfaction with quality of life, 10.4% reported low satisfaction, 54.7% were in the average range, and 25.6% reported high satisfaction with quality of life. Currently, there are no guidelines for clinical use regarding the RRS-SF scale. Higher scores simply indicate higher levels of rumination.

Overall, participants reported a mean rumination score of 0.81 ($SD = .72$), a mean BDI-II score of 0.55 ($SD = .54$), a mean BAI score of 0.47 ($SD = .54$), and a mean SASSI-3 Symptoms score of 4.99 ($SD = 3.28$). The mean for Quality of Life using raw total scores was 35.78 ($SD = 29.74$). Scores for men and women looked quite different across mental health variables. Mean scores for the RRS (SF), BDI-II, BAI, SASSI-3 Symptoms Subscale, and QoLI Total Score by Sex are indicated in Table 1.

Figure 8

Severity of Depression Using BDI-II Clinical Thresholds

**Figure 9**

Severity of Anxiety using BAI Clinical Thresholds

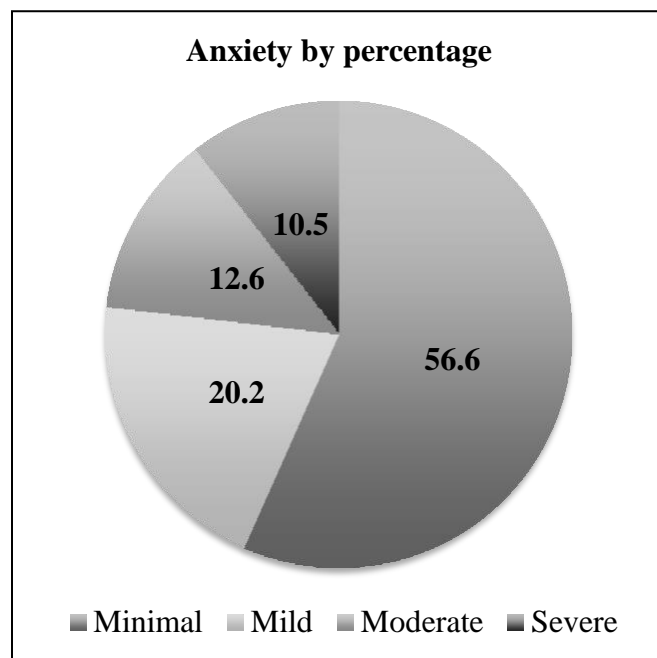
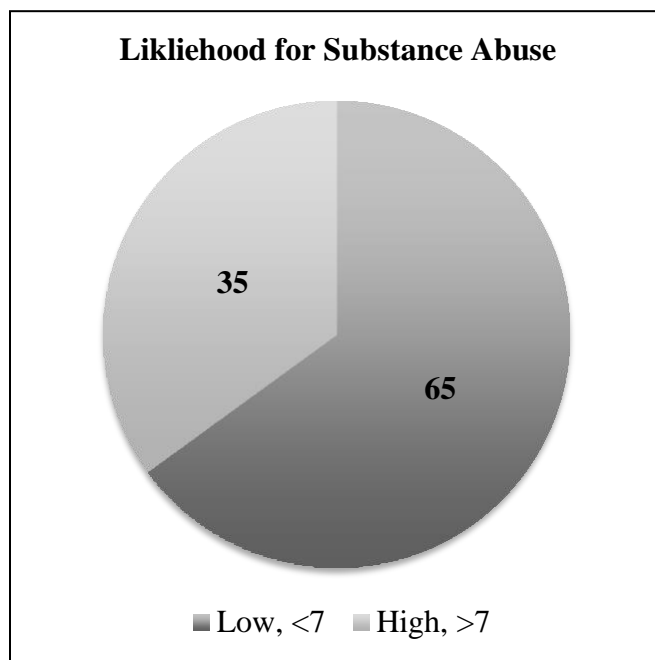


Figure 10

Likelihood of Substance Abuse using SASSI-3 Clinical Cut Points

**Figure 11**

Satisfaction with Quality of Life using QoLI Profile Guidelines

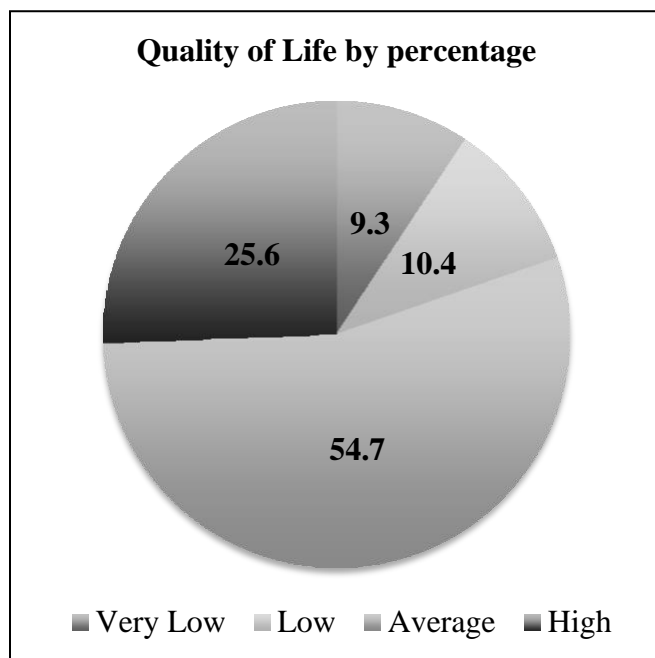


Table 1

Means and Standard Deviations for Mental Health Variables by Measure- and Between-Groups Differences by Sex Using a One-Way ANOVA.

	Women		Men		ANOVA	
Measure	<i>M(SD)</i>	Sample Range	<i>M(SD)</i>	Sample Range	<i>F(df)</i>	<i>p</i>
RRS (SF)	0.90(0.75)	[0-3]	0.67(0.65)	[0-3]	15.6 (1, 583)	.000
BDI-II	0.62(0.57)	[0-2.67]	0.45 (0.48)	[0-2.48]	14.05 (1, 559)	.000
BAI	0.53(0.57)	[0-2.76]	0.37(0.47)	[0-3]	11.91 (1, 581)	.001
SASSI-3 Sym.	4.66(3.40?)	[0-11]	5.49(3.07)	[0-11]	8.595 (1, 549)	.004
QoLI Total	35.23(31.35)	[-76-96]	36.66(27.3)	[-26-96]	0.31 (1, 565)	.578

Note: Both the SASSI-3 and QoLI use a weighting system to achieve overall scores. Mean weighted total scores are represented for both of these instruments.

Correlations

Consistent with the literature, women reported significantly higher mean rumination scores than men. Women also reported significantly more depression and anxiety symptoms than men, while men reported significantly higher substance abuse symptoms. Quality of life was similar for both men and women. However, the range of reported dissatisfaction was greater for women than men. A Pearson's correlation indicated rumination was significantly, positively associated with all mental health variables of interest including depression, anxiety, and substance abuse symptoms at the bivariate level. Rumination was significantly, negatively associated with perceived quality of life for the total sample ($r = -.35, p < .01$). Depression, anxiety, and substance abuse symptoms were also significantly, negatively associated with quality of life. (See Table 2 for correlations split by gender).

Table 2

Pearson's Correlation Matrix: Rumination, Symptoms, and Quality of Life by Sex

Variable	1	2	3	4	5
1. RRS (SF)	---	.78**	.60**	.40**	-.40**
2. BDI-II	.77**	---	.59**	.38**	-.51**
3. BAI	.63**	.72**	---	.31**	-.24**
4. SASSI-3 Sym.	.40**	.35**	.36**	---	-.22**
5. QoLI Total	-.24**	-.31**	-.21**	-.25**	---

Scores for women are above the diagonal and men are below the diagonal. Note: ** indicates significance at the .01 level.

Bivariate correlations were also used to determine any associations between categorical demographic variables and mental health variables. Education Level (EDUC) had a small positive correlation with depression ($r = .09, p = .036$) meaning as education increased so did depression. Income Level (IL) had a small negative correlation with substance abuse ($r = -.15, p = .001$) with higher income indicating lower substance use, and a small positive correlation with quality of life ($r = .14, p = .002$), meaning as income increased so did quality of life.

One-way Analysis of Variance was used to determine differences for Marital Status (MS) and Employment Level (EMP). For Marital Status, there were significant differences between-groups for depression, $F(1, 5) = 2.37, p = .038$, substance abuse, $F(1, 5) = 6.11, p < .001$, and quality of life, $F(1, 5) = 2.98, p = .012$. A Tukey's post-hoc analysis indicated that divorced participants indicated more depression than married participants ($p = .032$), and married participants indicated significantly less substance abuse than all other groups. The married group also endorsed a higher quality of life than the divorced group ($p = .032$). For Employment Level, there were significant differences between-groups for rumination, $F(1,6) = 2.24, p = .038$, anxiety, $F(1,6) = 3.41, p = .003$, and depression, $F(1,6) = 2.31, p = .033$. Home-makers tended to report more anxiety than either the full-time ($p = .004$) or unemployed ($p = .033$) groups. Retired participants reported more depression than those employed full-time ($p = .029$).

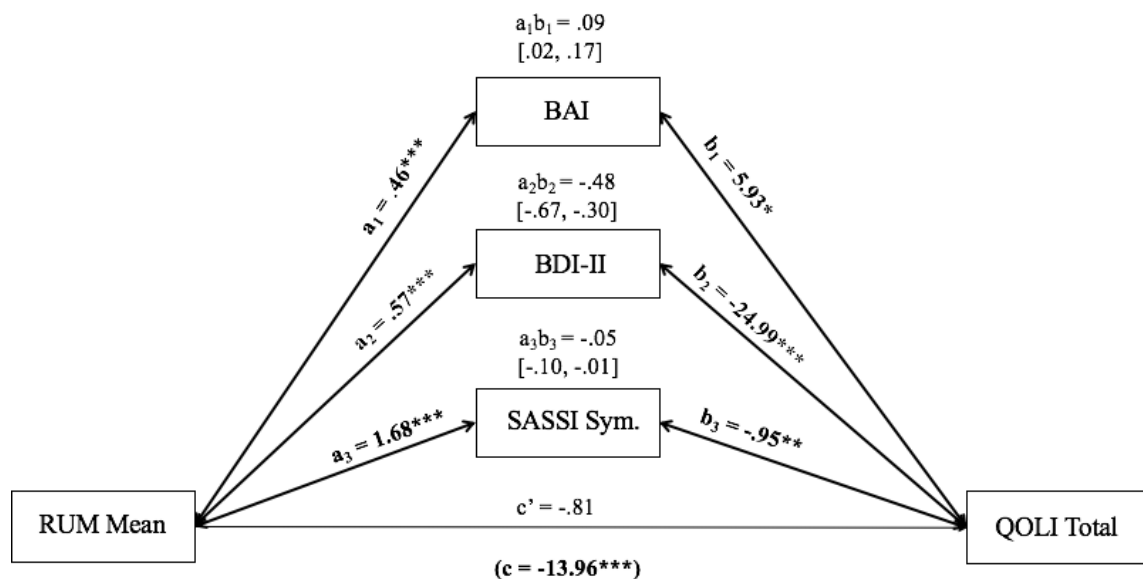
Path Analysis

Hayes' (2013) PROCESS macro for SPSS was used to conduct all mediational path analyses using Model 4. This provided bootstrapping confidence intervals, model estimations, and conditional and direct effect computations. Bootstrapping was set at

10,000 samples with 95% bias-corrected confidence intervals. First, a parallel multiple mediation model (see Model 1) was run with both sexes included and without any covariates. Rumination mean scores (RUM) was set as the independent variable with Quality of Life Inventory total scores (QoLI) as the dependent variable. Depression (BDI-II), anxiety (BAI), and substance abuse symptoms (SASSI-3 Sym) were established as potential mediators. Results indicate there was no significant direct effect between rumination and quality of life. However, all specific indirect effects were significant as was the total effect. See Figure 12 for direct, indirect, and total effects; total indirect effects on ab paths were partially standardized for ease of interpretation.

Figure 12

Model 1. Parallel Multiple Mediation Path Analysis for Both NPI Women and Men (Not Controlling for Confounding Variables), with Significant Paths in Bold.

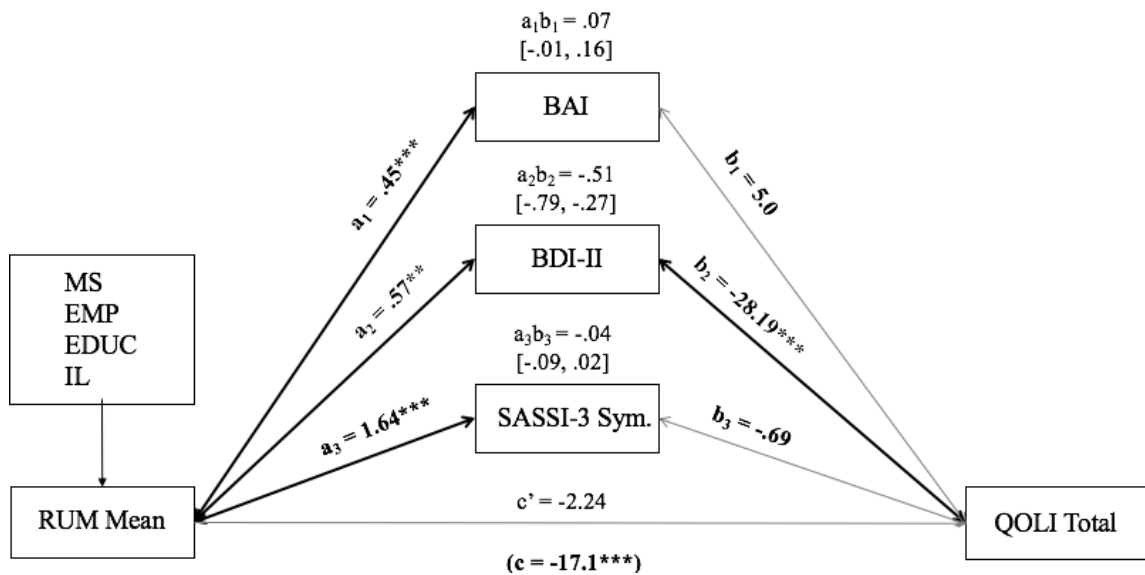


Note: * = $p \leq .05$, ** = $p \leq .01$, and *** = $p \leq .001$.

Next, two parallel multiple mediation models were run including covariates (i.e. Marital Status, MS; Employment Level, EMP; Education Level, EDUC; Income Level, IL) to determine if holding demographic (i.e., contextual) factors constant would account for any of the specific indirect effects in the model. Rather than use Sex as a covariate, due to known differences across sex for mental health disparity and rumination, separate models were run for men and women. Model 2 indicates results for women and Model 3 indicates results for men. For women, rumination accounted for 19% of the variance for the total effects of the model, $F(5, 275) = 12.69, p < .001$. For men, rumination accounted for 12% of the variance for the total effects of the model, $F(5, 155) = 4.22, p < .001$. See Figures 13 and 14 for direct, indirect, and total effects for Models 2 and 3.

Figure 13

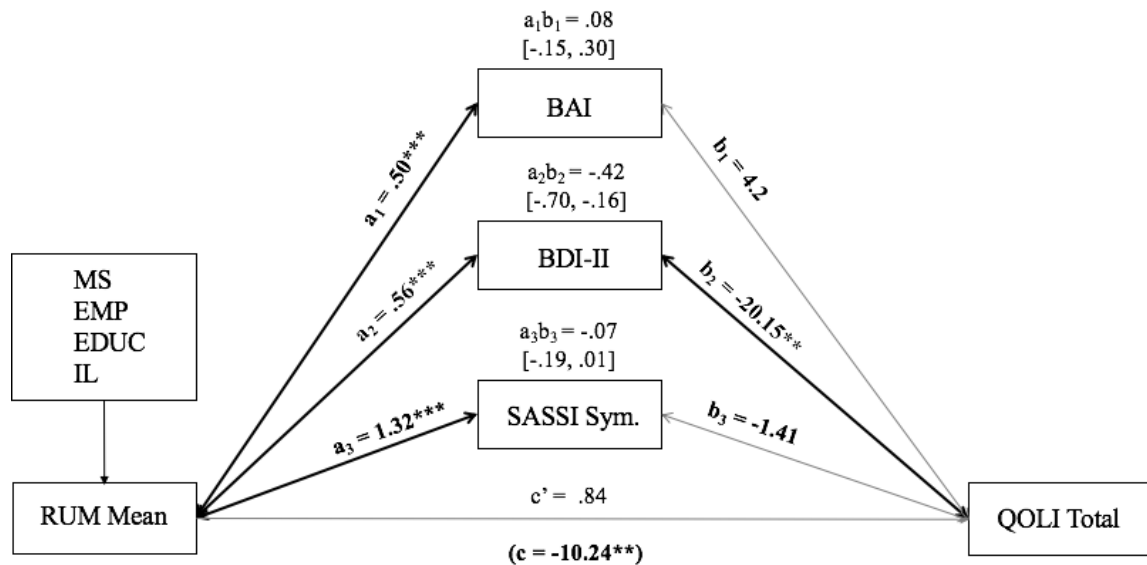
Model 2. Mediation Influence of Symptoms on Relationship Between Rumination and Global Perception of Quality of Life for NPI Women- with Significant Paths in Bold.



Note: * = $p \leq .05$, ** = $p \leq .01$, and *** = $p \leq .001$

Figure 14

Model 3. Mediation Influence of Symptoms on Relationship Between Rumination and Global Perception of Quality of Life for NPI Men- with Significant Paths in Bold.



Note: * = $p \leq .05$, ** = $p \leq .01$, and *** = $p \leq .001$.

Aims of the Current Study

Aim One. Findings did not generate support for the first hypothesis, indicating that rumination did not have a direct influence on perceived quality of life. In Model 1, the direct path between RUM and QoLI was not significant ($c' = .8090$, $p = .76$). The direct path remained not significant when accounting for demographic variables in Model 2 and 3. This was true for both NPI women ($c' = -2.24$, $p = .51$) and NPI men ($c' = .84$, $p = .86$).

Aim Two. For Model 1, all indirect effects on both the a and b paths were significant, creating a significant total effect for the full sample ($c = -13.96$, $p < .001$).

Model 1 supports the second hypothesis that rumination would be a significant factor for

the presence of all symptom variables, and that the effects of rumination would further influence quality of life in the presence of these symptoms. For Model 1, increases in rumination indicated higher anxiety ($R^2 = .38, p < .001$), depression ($R^2 = .60, p < .001$), and substance use symptoms ($R^2 = .14, p < .001$). Increases in mental health symptoms also influenced perceptions of quality of life ($R^2 = .20, p < .001$). Increases in depression ($B = -25, p < .001$) and substance abuse ($B = -.95, p = .01$) had a negative influence on quality of life. However, for every one-unit increase in anxiety there was a 5.93 ($p = .04$) increase in quality of life for the full sample.

When covariates (e.g., MS, EMP, EDUC, IL) were added to Models 2 and 3, the second hypothesis was only partially supported. For both women and men, the effects of rumination on mental health symptoms remained significant. However, the indirect effects of anxiety and substance abuse on QoLI shifted for both groups. For women, anxiety ($B = 5.00, p = .14$) and substance abuse ($B = -.69, p = .18$) were no longer related to quality of life. The same was true for men; anxiety ($B = 4.2, p = .49$) and substance abuse ($B = -1.41, p = .05$). It is important to note for men, MS accounted for significant variance on the path from RUM to substance abuse symptoms ($B = .41, p = .01$) with IL significantly accounting for variance on the path from SASSI-3 symptoms to QoLI ($B = 2.45, p = .04$). For women, IL accounted for a significant amount of variance on the path from RUM to substance abuse symptoms ($B = -.24, p = .01$). Holding MS and IL constant may have played a large role in changes to significance for these indirect effects.

Aim Three. Findings also partially supported the third hypothesis which stated the relationship between rumination and quality of life occurred differently for women and men. Not only did women report significantly more rumination than men, increases

in rumination changed the amount of mental health symptoms reported when comparing the two groups. See Tables 3 and 4 for coefficients and standard errors.

For women, every one-unit increase in rumination generated a .45 ($R^2 = .35, p < .001$) increase in anxiety symptoms in comparison to men who experienced a slightly larger .5 ($R^2 = .45, p < .001$) increase. Increases in anxiety did not significantly impact perceived quality of life. The influence of rumination on depression symptoms did not differ substantially for women and men ($R^2 = .59, p = .00$, and $R^2 = .56, p = .00$ respectively). However, depression was perhaps the variable with the largest impact on quality of life. For women, each unit increase in depression contributed to significantly lower quality of life ($B = -28.19, p < .001$). Men experienced a slightly lessened impact ($B = -20.15, p < .001$), but the effect was still highly significant.

For substance abuse, women ($R^2 = .16, p = .00$) reported about the same increases in symptoms as men ($R^2 = .16, p = .00$) for every one-unit increase in rumination.

Although the indirect effects of SASSI-3 symptoms on QoLI were not significant, both men and women associated increases in substance abuse symptoms with decreases in quality of life. Women reported that increases in substance abuse symptoms ($B = -.69, p = .18$) impacted quality of life less than increases in symptoms for men ($B = -1.41, p = .054$). Note, the indirect effect for men is just short of the cut point for determining significance at the .05 level.

Table 3

Unstandardized direct and indirect effects of rumination on quality of life through mental health symptoms for NPI women

Dependent Variable	<i>B</i>	SE	<i>t</i>	<i>p</i>	LLCI	ULCI
Direct Effect						
(<i>c'</i>) RRS > QoLI	-2.24	3.43	-0.65	.515	-8.98	4.51
Specific Indirect Effects						
(<i>a</i> ₁) RRS > BAI	0.45	0.04	11.84	.000	0.38	0.53
(<i>a</i> ₂) RRS > BDI-II	0.57	0.03	19.65	.000	0.51	0.62
(<i>a</i> ₃) RRS > SASSI-3	1.64	0.24	6.70	.000	1.16	2.12
(<i>b</i> ₁) BAI > QoLI	5.00	3.35	1.49	.136	-1.59	11.59
(<i>b</i> ₂) BDI-II > QoLI	-28.19	4.45	-6.33	.000	-36.95	-19.43
(<i>b</i> ₃) SASSI-3 > QoLI	-0.69	0.52	-1.33	.184	-1.71	0.33
Total Effect						
(<i>c</i>) Direct + Indirect	-17.10	2.23	-7.66	.000	-21.49	-12.70

Note: LLCI = lower limits of confidence intervals, ULCI = upper limits of confidence intervals

Table 4

Unstandardized Direct and Indirect Effects of Rumination on Quality of Life Through Mental Health Symptoms for NPI Men

Dependent Variable	<i>B</i>	SE	<i>t</i>	<i>p</i>	LLCI	ULCI
Direct Effect						
(<i>c'</i>) RRS > QoLI	0.84	4.96	0.17	.865	-8.95	10.63
Specific Indirect Effects						
(<i>a</i> ₁) RRS > BAI	0.50	0.05	11.02	.000	0.41	0.59
(<i>a</i> ₂) RRS > BDI-II	0.56	0.04	13.96	.000	0.48	0.64
(<i>a</i> ₃) RRS > SASSI-3	1.32	0.35	3.79	.000	0.63	2.01
(<i>b</i> ₁) BAI > QoLI	4.20	6.14	0.68	.495	-7.93	16.33
(<i>b</i> ₂) BDI-II > QoLI	-20.15	6.86	-2.94	.004	-33.71	-6.60
(<i>b</i> ₃) SASSI-3 > QoLI	-1.41	0.73	-1.94	.054	-2.86	0.03
Total Effect						
(<i>c</i>) Direct + Indirect	-10.24	3.24	-3.16	.002	-16.64	-3.85

Note: LLCI = lower limits of confidence intervals, ULCI = upper limits of confidence intervals

CHAPTER V

DISCUSSION

Consistent with the literature, women reported significantly higher mean rumination scores than men. Women also reported significantly more depression and anxiety symptoms than men, while men reported significantly higher substance abuse symptoms. Quality of life was similar for both men and women. However, women tended to report a wider range of global satisfaction scores. Findings suggest that rumination does not directly influence perceived quality of life in a sample of Northern Plains Indian (NPI) men and women. However, mental health symptoms mediated the relationship between rumination and perceived quality of life in the combined model when not controlling for demographic characteristics. Based on indirect effects, as rumination increased, there were significant increases in the level of symptoms reported for both women and men for all mental health diagnoses, but lower perceived quality of life only in the presence of depressive symptoms. Depression was the only mental health variable to act as a consistent mediator for rumination's influence on quality of life.

Once marital status, employment, education level, and income level were added as covariates to the female and male models, the links between anxiety, substance abuse, and quality of life were no longer significant. Marital status and income level emerged as significant covariates for substance abuse in the both the male and female models, despite the majority of demographic variables not impacting the mediational models in any meaningfully consistent way. For substance abuse, this may be because factors like marital status and income level are also highly correlated with quality of life domains such as work and family for NPI individuals. Marital status can also drastically change

the impact of income for individuals, particularly those in high-poverty areas, and income is also highly associated with educational attainment and higher quality of life. As NPI men were less likely to be college educated, marital status may greatly enhance income level. NPI women, who were more likely to have professional degrees, may be less reliant on marital status for increasing income but may feel added strain to provide for partners and family. Note that depression increased with education- perhaps speaking to the pull to create a better quality of life for NPI families and individuals.

In regard to differences in rumination among NPI women and men, Nolen-Hoeksema and Jackson (2001) originally stated women and men may have differing views about emotion and coping. In their study, beliefs about emotion and coping fully mediated the gender difference for rumination. Therefore, there may be specific contextual or cultural factors for NPI women that contribute to differences in coping styles. NPI women often serve as the caregivers for extended, not just nuclear, families. This points back to demographic characteristics such as higher educational attainment and income. Because demographic characteristics, such as income level, impacted the mediational effect of mental health it may also be useful to reexamine the theory surrounding rumination. For example, Goal Progress Theory (GPT) may require a second look for Native American groups (Martin & Tesser, 2006; Martin, Tesser, & McIntosh, 1993). GPT suggests that negative affect will persist until some resolution of the failure toward the goal occurs. However, goal attainment may not occur easily for populations that face so many seemingly immovable, external barriers to good mental health.

In regard to changes for anxiety and substance abuse in Model 2 and 3, an interesting theory emerges. Ruminative thinking is considered a passive cognitive style

resulting in maladaptive coping. For NPIs, anxiety and substance abuse may be considered more “active” coping styles that potentially replace or minimize the effect of rumination. For anxious individuals, this may increase quality of life through problem-solving- thus potentially becoming a temporary adaptive coping mechanism. As a coping strategy, worry (associated with anxiety) at non-clinical levels can also generate some amount of effective coping by proactively addressing future instances of distress. At higher levels, however, anxiety may enable avoidance of distress.

Although substance use is considered a highly undesirable coping strategy, minimal and responsible use can still lead to a temporary alleviation of distress. For those engaging in substance abuse, however, the greater impact of misuse may override potential as an adaptive mechanism for increasing quality of life in favor of a harmful avoidant one. In summary, these maladaptive coping mechanisms might simply be enabling distraction and avoidance, while creating opportunities to “escape the self” (Kuehner & Buerger, 2005; Hoyer et al., 2009; Hull, 1981; Nolen-Hoeksema et al., 2007). Unfortunately, substance abuse and anxious coping may seem like more accessible strategies for alleviating distress among members of Native American groups as NAs are generally unable to make greater shifts to the context in which they live and operate due to systematic oppression and social inequity.

Ultimately, rumination has important clinical implications for preventing increases from functional levels of mental health symptoms to clinical thresholds- particularly for depression. Clients reporting depression are not actively engaging in adaptive coping strategies and may engage in increased isolation. Hence, the negative affect associated with rumination (particularly brooding), may exponentially compound

symptoms known to substantially decrease overall satisfaction with life. By shifting clients from more passive, maladaptive coping toward more active, adaptive coping (e.g. behavioral activation, mindfulness, reflection) we may be able to guide them in increasing satisfaction with quality of life. Assessment of ruminative thinking may also be helpful for relapse prevention among individuals with endorsement of substance abuse or sub-clinical levels of anxiety. As ruminative thinking is predictive of certain aspects of anxiety and substance abuse, it may be useful as a targeted intervention (e.g., cravings) or for replacing negative coping strategies (e.g., avoidance) with more useful and healthy strategies for increasing good mental health.

As an assessment tool, quality of life surveys such as the QoLI may be useful in determining which areas of the client's life could use additional support. Because the QoLI indicates areas of satisfaction with life, as opposed to dissatisfaction alone, it promotes use of a strengths-based approach encompassing multiple domains. This may be more resonant with Native American worldviews and health belief models which promote bringing the client back to a place of balance rather than attempting to alleviate symptoms. It should be highlighted, that many of these active and adaptive coping strategies can already be found in the traditional healing practices associated with NA ceremony and traditional rites of passage.

Constantine et al. (2004) write, "[I]ndigenous techniques and strategies, such as the use of herbs, pipe ceremonies, sun dances, and sweat lodges, are reported to be helpful in alleviating mental health problems" and may serve as alternative or adjunctive methods for addressing mental health issues (p. 112). Traditional healing practices and culturally adapted treatments may also help alleviate stigma associated with Western

healthcare. In response, many Indian Health Services facilities and Urban Indian Health Centers are actively shifting toward incorporating more traditional methods of care (Greymorning, 2015; Buchwald et al., 2000; Kuschell-Haworth, 1999). If traditional methods are available, use of rumination and quality of life assessment should be considered only to inform and make these services more effective, and should not be used as replacement treatments.

Limitations of the Current Study

As this study constitutes a secondary data analysis, several limitations exist. First, all data are based on self-report measures. Although diagnostic labels appeared in the original data set, specific diagnostic codes were not available. Thus, symptom reporting was the best way to establish the immediate presence of distress using validated measures. Additionally, as there was no way to account for when diagnoses were given or by whom, whether medication was used, or if participants had engaged in therapy/treatment prior to assessment, current symptomology provided an optimal picture of mental health issues for the sample. Thus, continuous data from multiple measures was the most effective way to address “current” symptoms at the time of data collection. There was also an unclear deviation from the items used in the original RRS scale. However, total and inter-item correlations suggest the adaptation resulted in a measure constituting high reliability suitable for use in this study. Finally, as NA cultures represent a great deal of heterogeneity, results of this study would need to be replicated for other tribal groups. Findings indicate this may be a line of research well worth pursuing.

Future Direction and Implications

Research examining rumination as a transdiagnostic factor is gaining momentum as mental health providers work to make the most of service provision- particularly among high-disparity, low resource populations such as Native Americans. This study constituted one small move forward toward the establishment of that research base. Findings may directly benefit clinicians working with Northern Plains Indian populations by providing a singular target for addressing multiple mental health disorders and comorbid disorders, and for understanding differences in prevalence across NA men and women. By leveraging transdiagnostic factors such as rumination, therapeutic resources may be better utilized to provide the most effective mental health coverage for high-risk groups. Finally, use of quality of life outcomes in conjunction with transdiagnostic factors are incredibly useful for taking a culturally-relevant, strengths-based approach that honors Indigenous worldviews on health and healing. By restoring a sense of balance for NA peoples, we may effectively combat the use of harmful coping mechanisms in favor of more positive, culturally-congruent coping styles.

Author's Note: Consistent with ethically sound research among tribal populations, findings from this study will be shared with the original PI so that it may benefit the groups from which the original data were collected, while contributing to any gaps in rumination literature.

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