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Impact Of Cultural Identity On MMPI-2 Profiles In Northern Plains American Indians

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IMPACT OF CULTURAL IDENTITY ON MMPI-2 PROFILES IN NORTHERN PLAINS AMERICAN INDIANS

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Colleen Anne Kagan
5/29/2014

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To my family,
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ABSTRACT

American Indian populations experience high rates of psychological distress with 44.5% percent of Northern Plains American Indians reporting experiencing some depressive, anxiety, or substance use disorder over their lifetime. The MMPI-2 is a commonly used psychodiagnostic tool that has become widely used in the mental health treatment of different racial and ethnic groups. Research on the MMPI-2 with minority populations, and American Indian populations in particular, fails to account for the impact of level of acculturation. This study examined the impact of cultural identity on MMPI-2 profiles in Northern Plains American Indians and comparison Caucasian samples. Participants were administered a reading test, the MMPI-2, the Northern Plains Biculturalism Inventory to assess level of acculturation, and a brief demographic form. Results show that American Indians who identify as traditional and, to a lesser extent, bicultural tend to score significantly higher than Caucasian participants on a number of Validity (VRIN, TRIN, F, Fb, Fp, L), Clinical (Pa, Sc, Ma), Harris-Lingoes (Pa1, Sc1, Sc3, Sc5, Sc6, Ma4), and Content (FRS, DEP, HEA, BIZ, ANG, ASP, TPA, SOD, FAM, TRT) Scales. These results would indicate that level of acculturation impacts performance on the MMPI-2. This may suggest that Northern Plains American Indians 1) who are less acculturated experience more psychological distress and exhibit more traits of psychological disorders and 2) score higher because they interpret the items differently based upon the impact of their culture on their worldview.

CHAPTER I

INTRODUCTION

History of the Minnesota Multiphasic Personality Inventory

The Minnesota Multiphasic Personality Inventory (MMPI) is a popular psychodiagnostic tool that has become widely used in the treatment of different racial and ethnic groups. As research has shown, it is no longer appropriate to apply certain norms without examining the proper fit for the population of interest (Robin, 2003). It is important to examine all aspects of cultural diversity among minority populations both as they relate to White American culture and as they stand alone. There is a growing necessity for research that examines the validity of the use of the MMPI (and subsequent versions) in minority populations and the boundary conditions for its use.

The Minnesota Multiphasic Personality Inventory (MMPI) was developed by Starke Hathaway, PhD and J. Charnley McKinley, MD during the 1930's at the University of Minnesota. The researchers' intent was to use the MMPI as a tool for providing objective and appropriate clinical diagnostic labels during patient assessment. Whereas previous diagnoses relied heavily on the subjective judgment of the treating professional, items on the MMPI were empirically based and questions were pulled from research on various case-studies, reports, and other personality scales available at the time (of the test development). The statements were chosen to be independent of one another and reflect multiple areas of personality assessment. Once the questionnaires had been administered, scales were developed based upon empirical keying (Hathaway &

McKinley, 2001; Graham, 2006). Empirical keying works to create the clinical scales by selecting items that had been endorsed by participants diagnosed with specific disorders.

Empirical keying provided an improved alternative from previous diagnostic tools and allowed the researchers to pull specific presentation patterns out of the results and pair them with specific disorders. Items that were endorsed by patients with known clinical disorders were used to compose the various scales. The original normative sample was composed of University of Minnesota hospital patients, non-patient relatives, and students from the University. Item analysis of patient profiles revealed specific clusters of questions that differentiated between disorders. These clusters composed the first MMPI Clinical scales. The scores of non-patients were used to develop linear T scores. Linear T scores can be compared to the normative sample for one specific scale but cannot be compared to the T scores on the other scales. The Clinical scales were cross-validated by administering them to a second sample of patients diagnosed with the disorder of interest (Hathaway & McKinley, 2001; Graham, 2006).

To measure the validity of each profile four scales were originally developed. The Cannot Say (?) scale takes into account the number of omissions. More than thirty unanswered questions renders the profile invalid and un-interpretable; however, profiles that contain any more than 10 omissions must be carefully examined. The L scale is a measure of underreporting and is sensitive to a defensive presentation. A high L score is traditionally used to detect when an individual is trying to make themselves appear more favorably. It is important to note that this scale is sensitive to level of education and socioeconomic status, as individuals from a lower social class tend to score higher than individuals from a higher social class. Like the L scale, the Correction (K) Scale can

detect a defensive presentation style but it is a more subtle measure of when an individual may be trying to exaggerate or deny symptoms. A high T-score on the K scale may indicate a "fake-good" or defensive profile, average scores may indicate a realistic view of self, and low scores may indicate a "fake-bad" profile. Due to its subtlety, the K scale is also impacted by level of education where higher educated individuals tend to score higher on the scale. The F scale is derived from 60 items that are endorsed by less than 10% of the normative sample. It identifies an atypical way of responding. A high score indicates that an individual is answering in an unusual way that is not consistent with the majority of the normative sample. This could be caused by indiscriminate responding, may indicate severe psychopathology, or mere response bias, thus consulting other validity scales is imperative. The F scale is closely tied to ethnicity in which certain minority populations (African American, Native American, and Hispanic) tend to achieve higher T-scores (Graham, 2006). Five additional validity scales were included in the MMPI-2.

The Variable Response Inconsistency (VRIN) Scale measures the probability that an individual is responding in a contradictory manner. The scale is composed of 67 question pairs in which the item content either agrees or disagrees. The way in which the client responds to each question in the pair contributes to their inconsistency score. The True Response Inconsistency (TRIN) Scale also is a measure of inconsistency but more specifically indicates when a person may be answering items arbitrarily with a true response bias or false response bias. Scales developed for detecting over reporting of symptoms include the Back F (F_B) and Infrequency Psychopathology (F_P) Scales. An elevated F_B score may indicate that an individual has responded in an inconsistent

manner in the latter portion of the inventory. There is the possibility that the whole profile (not just the back portion) was completed in an inconsistent pattern in which case there would also be elevated F and VRIN scores. An elevated F_B score accompanied by a high TRIN can indicate someone who is "faking bad". However, when the F_B scale is elevated in the absence of a high F score the person may have changed the way they answer questions from the beginning portion of the inventory. This validity scale has been discussed as a possible indicator of fatigue or a lack of motivation. This scale may be critical when studying minority populations in which motivation has been questioned. The Infrequency Psychopathology (F_P) Scale includes item content, which is not frequently endorsed by either psychiatric inpatients or the normative sample. A high F_P Scale score may help in differentiating individuals who could be malingering. The Superlative Self-Presentation (S) Scale is the final validity scale, which detects underreporting of symptoms. Within the general population certain symptoms or items are endorsed even when no distress or disorder is present. Some individuals may try to present themselves in a way that is unrealistically moral or good by not endorsing any symptoms. This results in high scores on the S scale (Graham, 2006). Together these scales help to determine how a MMPI profile should be interpreted.

In addition to the validity scales several other scales have been developed in order to provide an illustration of an individual's personality. The Clinical scales include ten numbered scales, each composed of items highlighting symptoms associated with various psychological traits. The scales and their associated labels are as follows: Scale 1 (Hypochondriasis), Scale 2 (Depression), Scale 3 (Hysteria), Scale 4 (Psychopathic Deviate), Scale 5 (Masculinity-Femininity), Scale 6 (Paranoia), Scale 7 (Psychasthenia),

Scale 8 (Schizophrenia), Scale 9 (Hypomania), Scale 0 (Social Introversion). The Clinical scales have good short term test-retest reliability but poor internal consistency as a result of the heterogeneous nature of the items included in each scale. The validity of the Clinical scales is considered very good due in part to the high convergent validity as well as the tremendous amount of research done prior to and posttest construction (Graham, 2006). Other scales and subscales that are used as additional resources include the Harris-Lingoes, Content, Restructured Clinical (RC), Personality Psychopathology Five (PSY-5), and Supplementary Scales.

The Minnesota Multiphasic Personality Inventory, Second Edition (MMPI-2) was published in 1989 (revised in 2001) and provided necessary revisions including a representative normative sample, reduced number of allowed omissions, elimination of sexist language, and most importantly conversion of T scores from linear to uniform. Unlike the linear T scores, uniform T scores allow comparison of percentiles between scales. An individual's profile could now compare scores on one scale to scores on another.

The MMPI was first published in 1943 with 550 items and quickly became the most widely used diagnostic inventory. According to the publisher, PsychCorp, the MMPI-2 remains "the most widely used and widely researched test of adult psychopathology." Over the following sixty years from its inception, the inventory was subjected to multiple revisions and additional norm references. Today the Minnesota Multiphasic Personality Inventory, Second Edition, Restructured Form (MMPI-2 RF) is the most recent version of the diagnostic assessment. The MMPI-2 and subsequent versions used a normative sample representative of the United States population. The

most recent normative sample includes a wider range of ethnic groups than the original MMPI participant group, which was heavily biased by a preponderance of rural, white, middle-class residents of Minnesota. The demographic information from the 2000 US census provided the necessary comparison group with which the norm sample was matched. This allowed greater representation and diversity within the MMPI results. However, it should be noted that the ratio of ethnic minorities to the Caucasian majority is still quite disproportionate and prevents a full comparison of most MMPI-2 research findings.

Impact of Culture and Ethnicity on Mental Health

Ethnic minorities in the United States are at a disadvantage due to a history of persecution, prejudice, and discrimination. Franklin (2009) addresses the impact of cultural oppression in the field of psychology. The history of transgressions made against specific cultural groups continues to affect the lives of those group members today. Socioeconomic status and education level are significant factors affecting mental health. Many ethnic minorities, but particularly American Indians, live in poverty. According to the 2006-2008 American Community Survey (ACS) 25.3% of American Indians and Alaska Natives (AI/AN) live in poverty versus 13.3% of the overall United States population (ACS, 2010). Research in mental health disparities has found that individuals are 2 to 3 times more likely to have a mental disorder when they belong to the lowest level of socioeconomic status compared to individuals in the highest level (Safran, 2009).

Studies on prevalence rates of DSM disorders within the AI/AN community indicate the high need for psychological services and interventions. Completed between 1997 and 2000, the American Indian Service Utilization, Psychiatric Epidemiology, Risk

and Protective Factors Project (AI-SUPERPFP) examined the lifetime prevalence of psychological disorders and help-seeking behavior of two American Indian tribal communities (Beals, Manson, Whitesell, Spicer, Novins, & Mitchell, 2005a). Using the University of Michigan version of the Composite International Diagnostic Interview (UM -CIDI) researchers interviewed 3084 participants from a Southwestern and a Northern Plains tribal community. Results showed that in a community sample of Northern Plains American Indians the lifetime prevalence rates for any depressive, anxiety or substance use disorder were 47.1% for men, 41.9% for women, and 44.5 % combined. Co-morbid anxiety and depressive disorders were also quite prevalent with lifetime rates at 14.7% for men, 25.6% for women, and 20.2% combined. Northern Plains women had the highest lifetime prevalence rates for Posttraumatic Stress Disorder (PTSD) at 19.2%. Northern Plains men had the highest lifetime prevalence rates for Alcohol abuse and dependence at 20.5% for both (Beals et al., 2005a).

The same study by Beals et al. measured help seeking behavior in the surveyed sample. Analysis revealed that Northern Plains American Indians (combined men and women) sought out help from mental health professionals, medical professionals, and traditional healers. Of American Indians meeting criteria (DMS-III-R) for any depressive disorder 40.1% sought help from mental health professionals, 37.3% sought help from medical professionals, and 33.7% sought help from traditional healers. Of American Indians meeting criteria for any anxiety disorder 28.6% sought help from mental health professionals, 19.4% sought help from medical professionals, and 16.9% sought help from traditional healers. Of American Indians meeting criteria for any substance use disorder 49.3% sought help from mental health professionals, 34.6% sought help from

medical professionals, and 37.4% sought help from traditional healers (Beals et al., 2005a).

Results from this study highlight both the need for services and interventions within the American Indian community as well as the importance of traditional services. Rates of alcohol dependence as well as prevalence of PTSD are higher in the AI/AN population than in the overall US population (Hasin, Stinson, Ogburn & Grant, 2007; Kessler, Berglund, Delmer, Jin, Merikangas, & Walters, 2005). Help seeking behavior was quite high in the AI/AN population included within this study. The National Epidemiologic Survey on Alcohol and Related Conditions found that in a population representative of the United States only 24.1% of individuals with alcohol dependence ever received treatment (Hasin, Stinson, Ogburn, & Grant, 2007). In comparison, 40.1% of the surveyed AI/AN population in Beals et al. 2005 study reported seeking some form of help. (It should be noted that these numbers cannot be held in direct comparison due to the difference in questions: receiving alcohol dependence treatment vs. seeking help for alcohol dependence.) The willingness to seek treatment is a promising finding; however, the source of treatment is also significant. American Indian participants seek out help for psychological and substance use disorders from traditional healers at similar rates to medical professionals (Beals et al., 2005a). A separate study by Beals (2003) revealed that 40% of AI/AN who sought mental health treatment consulted a traditional healer. This finding indicates that for many AI/AN individuals their traditional culture plays a large part in their concept of health and healing.

Although the Beals et al. study illuminates the prevalence of certain affective and substance use disorders in AI/AN it failed to include personality variables or disorders.

This author could not find any research examining prevalence of personality disorders within the AI/AN population. The National Comorbidity Survey Replication found that personality disorders were significantly comorbid with Axis I disorders (Lenzenwenger, Lane, Loranger, Kessler, 2007) in nationally representative sample. Given the high rates of Axis I affective and comorbid disorders in the AI/AN population collected in the AI-SUPERPFP study this author does not consider it an inappropriate leap to hypothesize that personality traits may contribute to the expression and/or experience of Axis I disorders in Northern Plains American Indians. The exact relationship between personality disorders and Axis I disorders in AI/AN populations remains to be determined.

The past prejudice and resulting economic standing has shaped the worldview and mental resiliency of American Indians and other ethnic minorities. Assessment results and test profiles can reflect these historical and cultural variables. These and other factors must be taken into consideration during psychological research into this population of interest. In order to do so, one must begin by understanding culture itself. One definition, adopted by modern anthropology, states that culture is "the system of shared beliefs, values, customs, behaviors, and artifacts that the members of society use to cope with their world and with one another, and that are transmitted from generation to generation through learning." (Boaz, 1911). This definition conceptualizes culture as an inheritance of societal norms, heuristics, and identity that is not related to genetic inheritance. Based on this definition, the American Indian population is composed of a large number of distinct cultures, each with specific "beliefs, values, customs, behaviors, and artifacts".

The diversity that exists between cultural groups is extensive and reflects geographic, linguistic, and gender differences (Velasquez, 2000). These differences between tribes necessitate a certain vigilance and conscientiousness when working with a Native population. American Indian tribes are cultural subgroups that may be compared and contrasted, however, uncritical generalizations of findings across different tribes should be avoided (Robin, 2003). American Indian and Alaska Natives make up 50% of the country's diversity although a comparatively small population. Tribes should not be conglomerated under one label. When the term American Indian is used to describe all tribal communities the various nuances are lost. Safran et al. (2009) refers to this problem as "ethnic gloss" while stressing how few facts exist that can be universally applied to all American Indian cultures. Further research is needed to alleviate the dearth of knowledge that currently exists about the Native community.

Research Incorporating the MMPI-2 and Culture/Ethnicity

The majority of MMPI-2 research with ethnic minorities involves comparing the minority sample with Caucasian counterparts (Velasquez, 2000). This type of comparison provides a foundation for the identification of cultural diversity and highlights the necessity of considering cultural differences when interpreting MMPI-2 profiles. It was originally thought that few differences exist between minority groups and White samples when the factors of socioeconomic status and education were held constant (Velasquez, 2000); however, further evaluation has found that some differences between American Indians and Caucasians on the MMPI-2 remain even after matching for SES and education level. For example, Robin et al. (2003) held the factor of education constant and maintained significant (albeit slightly diminished) differences

between American Indian and normative samples on six scales (L, F, 1, 4, 8, 9). The American Indians scored higher than the normative sample on all significant scales. The L scale in particular has been found to be consistently higher in minority populations (Velasquez, 2000; Robin, 2003). This difference has been attributed to the cultural views of these ethnic groups that emphasize privacy. It may also reflect what Velasquez (2000) refers to as "cultural defensiveness" in which individuals may try and present themselves favorably, due to their minority status. This is one of a number of issues with applying the MMPI-2 to cultural minorities using only the normative scores.

Recently, the scope of MMPI-2 research in the American Indian population has expanded. Velasquez references the popularity of the MMPI-2 in the assessment of culturally diverse populations. Unlike other personality tools, the MMPI-2 tends to be the preferred method of assessment due to the large body of research available and the improved normative sample. Since the publication of the MMPI-2 in 1989 a sizeable amount of research has been done in the African American and Latino communities. Within the last 10-15 years research has branched out to include Asian Americans, American Indians, and Iranian Americans. American Indians were included in the most recent normative sample. American Indians are actually over represented in the normative group at 3% versus the 1-2% makeup of the US population (Hathaway & McKinley, 2001). This fact must be tempered by the relatively small number (n = 77) of American Indians actually included in the sample. Regardless, a number of differences in MMPI-2 profiles have been reported between the normative group and American Indians.

Graham (2006) reports that four scales are related to ethnicity and produce significantly higher T-scores with American Indians. The F Validity scale (3-5 T-points) and Pd (5-10 T-points), Sc (5 T-points), and Ma (5-10 T-points) Clinical scales tend to produce significantly higher profile scale scores with American Indians. Although Graham suggests interpretive caution he does not address why these differences exist or what they may mean.

Robin et al. (2003) examined responses on the MMPI-2 in two American Indian tribes in relation to the normative sample, and found a number of significant differences. A Southwestern tribal community composed of three reservations and a Plains tribe composed of a variety of rurally located members made up the American Indian sample. The tribes were chosen to be independent and unrelated to one another both in origin and geographic location (Robin, 2003). The results of the study indicated a significant difference between both tribal groups and the normative sample on a total of 14 scales. A difference of 5 T score points (half of a standard deviation) was determined to be clinically significant (statistical significance was not included). The following five validity and clinical scales were significantly higher in American Indian participants: L, F, 1 (Hs), 4 (Pd), 8 (Sc), and 9 (Ma). The following eight content and supplementary scales were significantly higher in American Indian participants: Depression (DEP), Health Concerns (HEA), BIZ, CYN, ASP, Negative Treatment Indicators (TRT), MacAndrew Alcoholism (MAC-R) and Addiction Admission (AAS). Both tribes scored significantly lower than the normative group on the Addiction Potential Scale. This study did not find any clinically significant (>5 T points) differences between the two tribes on any scales.

In order to control for confounding variables Robin et al. went a step further and matched each American Indian participant on age, gender, and education with a member of the normative group. Although this minimized the T score differences between the groups a number of differences remained significant. Socioeconomic status was not directly controlled for in this study. Based upon the findings of Robin et al. (2003), one can ask whether these differences exist due to test bias or qualitative differences in cultural variation innate to American Indian communities? To address this question Greene, Robin, Albaugh, Caldwell, and Goldman (2003) conducted a follow up study.

Green et al. (2003) used the same Southwestern and Plains tribe data from the previous work by Robin et al. (2003). Greene et al., compared MMPI-2 profiles with the results of a clinical interview and the corresponding psychiatric diagnosis based upon DSM-III-R criteria. The diagnostic interviews were originally conducted in the previous work by Robin et al. (2003). The results of the study found significant correlations between MMPI-2 elevations and descriptions taken from the interview on numerous scales. The highly correlated data included antisocial symptoms, generalized distress, negative affect, and AAS. The areas of MMPI-2 elevation that did not have significant correlations with the interview included scales 2 (D), 1 (Hs), 3 (Hy), and HEA. One explanation for these results is the absence of empirical measures, in the study, that assess physical symptoms. With nothing in the interview or additional surveys to compare with, no correlations could be made. The high correlations on other scales suggest that MMPI-2 test bias is most likely not causing the significant differences between the tribes and normative sample. These results provide support for the idea of existing cultural differences that impact the experience of psychological distress.

Although the previous studies controlled for socioeconomic status (indirectly) through such demographic variables as income and level of education they all but ignored the level of cultural affiliation. The one article that addressed acculturation was limited to participants that considered themselves as largely culturally traditional (Pace, 2006). Few studies have examined the role of acculturation in MMPI-2 profiles with American Indians and no studies have examined the role of biculturalism. Cultural affiliation may impact MMPI-2 results due to the effect acculturation has on world view and interpretation of life events.

Acculturation

A culture is composed of many facets of knowledge, experience, behavior and identity. Knowing if an individual affiliates themselves primarily with a traditional cultural group (American Indian), primarily with the majority White American culture (Assimilation), or operates comfortably in both worlds (Bicultural) may help to explain how that person views themselves and their situation. This information may help to answer questions about the experience of stress and mental health in American Indians. For instance, would being acculturated into the White American majority act as a buffer to stress in American Indians or create psychological confusion, which may deplete mental resources?

In order to address this question, Pace et al. (206) conducted a study with participants from two tribes from the areas of Eastern Woodland Oklahoma (EWO) and Southwest Plains Oklahoma (SWPO). Neither tribe was located on a reservation. The *Life Perspectives Scale* (LPS) was used as a measure acculturation by means of traditionality (Berryhill, 1998). The LPS consisted of 70 items that the individual

endorsed their degree of agreement with each statement. The statements encompassed four components of acculturation: cognitive, spiritual, behavioral, and social. It was determined that the LPS measured two factors that included identification with Indian culture and non-identification with Indian culture. Therefore a higher score on factor one and a lower score on factor two represented a traditional non-acculturated Indian identity. A lower score on factor one and higher score on factor two represented an acculturated, majority cultural identity.

Pace et al. (2006) argued that the LPS serves as a continuous measure of Indian acculturative states with higher scores indicating traditional Indian identity and lower scores indicating an acculturated majority culture identity. They found that individuals from the EWO tribe that identified as traditional, or less acculturated, had significantly higher F and scale 8 scores. The authors point to the possibility that less assimilated Native participants might be more susceptible to acculturative stress. This finding closely mirrors the concerns of Velasquez (2000) on the impact of acculturative stress in minority groups. The need to measure acculturative stress is great and one MMPI-2 scale has been developed to meet this need. The Acculturative Stress Index (ASI) was a subscale of the MMPI-2 developed to examine acculturation through stress and coping mechanisms. This scale and others like the Hispanic Stress Inventory (HIS) may provide the impetus for future specialized scales (Velasquez, 2000). The findings by Pace et al begin to build a case for the importance of examining cultural affiliation, but more research is needed that explores all cultural options. The Pace study only looked at levels of traditionalism without taking into consideration full acculturation or biculturalism.

A recent study by Hill, Pace, and Robbins (2010) used the same EWO tribe as the Pace 2006 article and further examined cultural affiliation. Through item analysis thirty items from the MMPI-2 were found to be endorsed to a much higher degree or lesser degree by the EWO tribe than the normative sample. Participants were then asked to explain how they interpreted each item, what language or cultural barriers might have influenced their answer, and how the question could be reworded to incorporate their perspective (Hill et al., 2010). Analysis of these responses revealed nine different concepts that expressed the cultural beliefs and practices of the tribe. Most notable is the theme of Living in Two Worlds. Participants describe the necessity of knowing how to live in the "White world" in addition to their own society. This is often very stressful and confusing for the Native peoples in which they feel torn between two dissimilar cultures (Hill et al., 2010).

McDonald, Morton, and Stewart (1993) discuss how location on the continuum of acculturation impacts conception of self, mental health, and coping with stress. It is suggested that American Indians residing on the extreme ends of traditionality or assimilation, may experience increased stress and psychological issues. This is due to the differences between the majority culture and traditional culture. Those who identify as traditional or assimilated are essentially rejecting one culture. The authors point out that biculturalism may not be able to avoid these problems, but the implication exists that it offers an alternative world view. One that integrates the two cultures and may be able to withstand some of the psychological hardships that are so prevalent on the extremes. Due to the influence of acculturation, McDonald, Morton, and Stewart (1993) suggest measuring the level of acculturation and using it as a moderator when administering

standardized tests. In order to accurately determine acculturation along the continuum the Northern Plains Biculturalism Inventory, Revised (NPBI-R) was developed.

The Northern Plains Biculturalism Inventory was originally developed by Allen and French (1994) and later revised by Baker (2005). The inventory was based off of the Alternation Model of Cultural Acquisition and the Orthogonal Theory of Biculturalism (Baker, 2009). The Alternation Model of Cultural Acquisition focuses on biculturalism as a function of behavior or the ability to fit your behavior with either culture. There are six factors that make up the model including: knowledge of cultural beliefs and values, positive attitudes toward both groups, bicultural efficacy, communication competency, role repertoire, and groundedness (Baker, 2009; LaFromboise, 1993). The Orthogonal Theory of Biculturalism involves four areas or quadrants. The first quadrant (traditional) involves low identification with the majority culture and high identification with culture of origin. The second quadrant (bicultural) involves high identification with both cultures. The third quadrant (assimilated) involves high identification with one culture and moderate identification with another culture. The fourth quadrant (marginal) involves low identification with both cultures. The theory is grounded in the idea that bicultural competence increases well-being and psychological functioning (Oetting & Beauvais, 1991).

Resulting from these two theories was the 20-item Northern Plains Biculturalism Inventory, Revised. Factor analysis of the inventory resulted in two factors being isolated; American Indian Cultural Identification (AICI) and European American Cultural Identification (EACI) subscales create four levels of acculturation. A high score on the AICI scale and low score on the EACI scale indicate American Indian Cultural

Identification while low score on AICI scale and a high score on the EACI scale indicate European American Cultural Identification. Scores that fall above the median on both AICI and EACI indicate biculturalism while scores that fall below the median on both scales indicate marginality (Baker, 2005). Having a measure of biculturalism opens the door for research to delve into the relationship between level of acculturation and psychological testing.

Understanding the relationship between cultural identity and psychological testing will be important for the future of culturally targeted interventions. Gone (2011) and Beals (2012) address the need for culturally relevant psychological interventions when treating the AI/AN population. Gone calls for the use of traditional Indian culture to act as a therapeutic intervention; however, the success of these interventions may depend on the cultural identity of the client. An individual who identifies as traditional may respond well to traditional cultural interventions and practices but an individual who identifies as marginalized or acculturated may not.

Studying the impact of cultural identity on the outcome of the MMPI-2 in Northern Plains American Indians can help shed light on which psychological interventions may be most in need of culturally relevant revisions or adaptations. For example, if cultural identity significantly impacts responding on scale D (depression), in that, individuals who identify as traditional score significantly higher than acculturated individuals, psychodiagnostic instruments that measure depressive symptomology should be normed specifically for American Indians separating groups by cultural identity. Interventions to treat depression may then need to incorporate traditional cultural practices or methods of communication and healing. Thus measuring level of

acculturation may be important in conceptualizing your client and developing your treatment plan. Just as gender, age, and personality are taken into consideration when creating a treatment plan, cultural identity should be considered when treating AI/AN clients.

Preliminary Research on American Indian Cultural Identity and the MMPI-2

In an effort to study acculturation, Kagan (2011) conducted research that measured the impact of cultural identity on MMPI-2 profiles. Thirty Northern Plains American Indians recruited from the University of North Dakota (UND) participated along with 78 Caucasian students from UND who were used as a comparison group. Participants were administered the NPBI-R to measure biculturalism, the MMPI-2, the Wide Range Achievement Test (WRAT) to assess reading level, and a demographic form. Variables of level of education and socioeconomic status were controlled for during analysis. The American Indian sample was divided into four groups according to the analysis of the NPBI-R. These groups consisted of a Bicultural group (n=12), an Assimilated group (n=11), a Traditional group (n=5), and a Marginalized group (n=2). The four American Indian groups and the Caucasian group were compared in a series of one-way analysis of variance using the MMPI-2 T-scores.

The analysis revealed two distinctive findings. First, the Northern Plains American Indian and Caucasian groups were largely similar in their responses to the MMPI-2. The samples produced few significant differences on the Validity, Clinical, or Content scales of the MMPI-2. Only the Pa Clinical scale and FRS, HEA, and SOD content scales were significantly different. American Indians scored significantly higher than Caucasians on all four scales. Kagan hypothesized that these results may be due to

the high functioning, non-clinical sample of American Indians. The fact that the sample was draw from a large state university may also impact the range of acculturation status. The university setting (a government funded state institution) would suggest that a majority of participants had some degree of familiarity with European American culture.

Second, although differences between cultural identification groups are fewer than differences between racial groups, they still exist. This would suggest that level of acculturation has some degree of influence over MMPI-2 scale T-scores. The FRS content scale, HEA3 content component scale, and Rc7 and Rc9 restructured clinical scales appear to be influenced by level of acculturation. Elevations on these scales represent endorsement of a significant number of items relating to fearfulness, anxiety, physical complaints, irritability, suspiciousness, hypomania, and antisocial behaviors. American Indian participants who identify as traditional, acculturated, and bicultural tend to score significantly higher than Caucasian participants on all significant scales. In some cases, the differences between T-scores of traditional, acculturated, and bicultural groups were significant. American Indian participants who identify as marginalized appear to resemble the Caucasian group and do not score significantly different. The study concluded that further research was necessary to clarify the role of cultural identity in the outcome of MMPI-2 profiles.

Purpose of the Present Study

In order to more broadly sample the various levels of cultural identity within the Northern Plains American Indians, this study aimed to gather a large number of participants from a range of environments that would foster specific levels of acculturation. Building upon Kagan's (2011) previous study, this research administered a

measure of biculturalism and the MMPI-2 to study the relationship between acculturation and expression of personality traits and psychological distress.

Three distinct populations of American Indian participants were sampled; each with a comparison Caucasian group. Data collected in the 2011 thesis study by Kagan provided the first group of American Indian and comparison Caucasian participants. These AI and White participants were sampled from the undergraduate and graduate programs of the same state university. The state university sample is a non-clinical, highly educated, high functioning population. Most of the American Indian participants have large exposure to mainstream American culture and may be more removed from traditional cultural lifestyle than other samples. Consequently, the scores on the NPBI may be different from individuals living on reservations. To address this potential confound, American Indians were sampled from a tribal university located on a Northern Plains reservation and included within the college sample. The participants are students pursuing a post-secondary education similar to the participants at the state university, but the tribal college's location on the reservation allows the local culture to remain more salient.

The first population described thus far (college) is both highly educated and non-clinical samples. The second and third groups attempt to increase the participant variability and generalizability. The second population is American Indian participants recruited form a non-clinical community-dwelling sample. These participants provide a better range in age and education level than the university samples. Participants were recruited at a North Dakota Pow Wow and include American Indians living on and off reservations. A comparison of community-dwelling Caucasian participants were

recruited from the greater Grand Forks, Eastern North Dakota area. The final population of American Indian participants came from a clinical, reservation dwelling sample. Participants were recruited from a local mental health agency on a Northern Plains reservation. This group varies in age and education level and mental health. A clinical sample of Caucasian participants was also taken from a local Grand Forks mental health services clinic and used for comparison.

The Caucasian sample was specifically sampled form the North Dakota/Minnesota area to match the American Indian sample. The hope was that this would reduce differences between the American Indian and Caucasian groups that could be accounted for by geographic variables. However, this produces a specific type of Caucasian group that may not be representative of the total US Caucasian population.

In total, six different groups (American Indian and Caucasian) that range in age, education level, socioeconomic status, mental health, and proximity to traditional culture were recruited and studied with the goal of measuring a broad range of levels of acculturation. Although the stated goal of this research project was to study the impact of cultural identity on MMPI-2 T-scores, the study may offer additional benefits beyond those discussed here. Collecting MMPI-2 scores from such a large and varied group of Northern Plains American Indians (NPAI) will also contribute to more accurate norms of the NPAI community. The results of the relationship between the biculturalism inventory and MMPI-2 may also contribute to the field of culturally relevant therapeutic interventions. In the end, it is the hope of this author that the study will allow greater cultural sensitivity when treating and testing the Northern Plains American Indian community.

CHAPTER II

METHODS

Participants

Participants included in the study consisted of 115 American Indian participants. The participants were sampled from the undergraduate and graduate population of the University of North Dakota (UND), Sinte Gleska University on the Rosebud Reservation in South Dakota, a non-clinical community and reservation dwelling sample from North Dakota and Minnesota, and a clinical reservation dwelling sample from Eagle Butte South Dakota. Compensation was given in the form of psychology course extra credit or twenty dollars. Participants from UND were recruited through campus wide flyers, listserv email advertisements, course advertisements, and the online website SONA system. The non-clinical community and reservation dwelling sample was recruited through flyers and announcements at local Pow Wows throughout the state of North Dakota. The clinical reservation dwelling sample was recruited through a local mental health clinic in Eagle Butte. The participants from Sinte Gleska University were recruited through class announcements and flyers.

The study included 152 White Caucasian participants. The participants were sampled from the undergraduate population of UND, a non-clinical community population from the greater Grand Forks area, and a clinical population from a local area clinic. Compensation was given in the form of psychology course extra credit or twenty dollars. Participants from UND were recruited through campus wide flyers, listerv email

advertisements, course advertisements, and the online website SONA system. The non-clinical community sample was recruited through print flyers and online announcements across the greater Grand Forks area. The clinical sample was taken from archival data at a local Grand Forks private practice.

Materials

Participants were administered the MMPI-2 which was previously discussed in the above portion of this paper, the Northern Plains Biculturalism Inventory, Third Edition (NPBI-III), the Life Perspectives Scale, and a brief demographic form.

Informed Consent

Participants were anonymous and all data had identifying information removed then numerically coded. Individuals were given a debriefing following the completion (or voluntary termination) of the study.

Minnesota Multiphasic Personality Inventory, 2nd Edition

The MMPI-2 is detailed previously in the above paper.

Northern Plains Biculturalism Inventory, 3rd Edition

The NPBI-III is a 25-item self-report questionnaire in which participants are asked to answer items based upon a 4 point scale. An answer of "1" on the scale usually indicates a negative affiliation with the statement and an answer of "4" indicates a positive affiliation with the statement. The questionnaire was derived from factor analysis and has been shown to measure the two factors of American Indian Cultural Identification (AICI) and European American Cultural Identification (EACI), resulting in four levels of acculturation.

Life Perspectives Scale

The *Life Perspectives Scale* (LPS) is used as a measure acculturation by means of traditionality (Berryhill, 1998). The LPS consists of 70 items that the individual endorses their degree of agreement with each statement. The statements encompass four components of acculturation: cognitive, spiritual, behavioral, and social. The LPS measures two factors that included identification with Indian culture and non-identification with Indian culture. Therefore a higher score on factor one and a lower score on factor two represented a traditional non-acculturated Indian identity. A lower score on factor one and higher score on factor two represented an acculturated, majority culture identity.

Woodcock-Johnson, 3rd Edition Passage Comprehension Subtest

The Passage Comprehension subtest of the WJ-III is a measure of reading comprehension. Participants must orally supply a missing word removed from a sentence or brief paragraph. The MMPI-2 requires a 6th grade reading level. Participants who do not meet a 6th grade reading level will be administered the auditory recording of the MMPI-2.

Demographic Form

Participants answered basic questions regarding demographic background including age, gender, education, ethnicity, tribal affiliation, and income level.

Procedure

Participants who volunteered for the study were administered the materials in a group setting of 2-8 participants, or individually. Participants that would have required assistance or had below a sixth grade reading level would have been administered the

materials verbally with the audio version of the MMPI-2, however, all participants read at a 6th grade reading level or higher. Participants were made aware that they had the opportunity to terminate their involvement at any time during the testing procedure. Individuals were given the informed consent prior to the administration of any of the measures. The materials were administered in the following order: Passage comprehension subtest, MMPI-2, NPBI-III, LPS, and demographic information. The Bicultural forms and demographic questionnaire were administered after the MMPI-2 in order to control for potential priming effects.

The MMPI-2 surveys were scored and analyzed using the Validity, Clinical, Content, and Harris-Lingoes scales. This data was used in conjunction with the information gathered from the biculturalism scales and the demographic form. Once the data was collected and analyzed it was stored in a locked room. The data will be stored in a secure room for two years before being destroyed. Any identifying information will be being kept in a locked room until it is destroyed.

Design

The demographic variables were subjected to a series of one-way Analyses of Variance. These analyses were performed to determine if any demographic variables had significant differences between the six sample groups of White College, AI College, White Community, AI Community, White Clinical, and AI Clinical. Next, a series of Analyses of Covariance were conducted to compare the effect of sample setting on MMPI-2 T-scores while holding constant any significant demographic variables.

A one-way ANOVA was conducted to examine the impact of cultural identification on the demographic variables. The analyses were performed to determine

if any demographic variables had significant differences between the four levels of acculturation described later in this paper. Finally, a series of Analyses of Covariance were conducted to compare the effect of cultural identity on the MMPI-2 T-scores while holding constant any significant demographic variables.

CHAPTER III

RESULTS

Analysis by Sample Group

The demographic variables of participant age and level of education were subjected to a series of one way ANOVAs based on sample group. The means and F values for these variables are presented in Table 1. There were significant differences

Table 1. One-Way ANOVA Means and F of Demographic Items by Sample

	College		Community		Clinical		
Items	White	American Indian	White	American Indian	White	American Indian	F
Age	19.56	26.26	41.44	34.38	32.28	37.75	26.622*
Education	3.50	3.19	2.15	3.50	3.33	4.30	17.246*

Note: *p < .01

found between the various sample groups on age and education. The analysis revealed a significant difference in participant age $F(5, 260) = 26.622$, $p < .001$ between the six groups. Games-Howell pairwise comparison revealed a significant difference was observed between AI College and White College (mean difference = 6.697, p < .001) in participant age. Results indicate that American Indian college students were significantly older than White college students. A significant difference was observed between White Community and White College (mean difference = 21.877, p < .001) and AI College (mean difference = 15.180, p < .001) in participant age. These results indicate that White

participants from the community were significantly older than White and American Indian college students. A significant difference was observed between AI Community and White College (mean difference = 14.811, p < .001) and AI College (mean difference = 8.114, p = .014) in participant age. Results indicate that American Indian participants recruited from the community are significantly older than White and American Indian college students. A significant difference was observed between White Clinical and White College (mean difference = 12.711, p < .001) in participant age. Results indicate that White participants from a clinical setting are significantly older than White college students. A significant difference was observed between AI Clinical and White College (mean difference = 18.186, p < .001) and AI College (mean difference = 11.489, p = .005) in participant age. These results indicate that American Indian participants recruited from a clinical setting are significantly older than White and American Indian college students.

The analysis revealed a significant difference in participant level of education $F(5, 254) = 17.246$, $p = .000$ between the six groups. The variable of education was coded as 1 = graduate degree, 2 = four year college graduate, 3 = some college education, 4 = high school graduate, 5 = some high school education, 6 = some grade school education, and 7 = less than seven years of education; lower values represent higher levels of education. Games-Howell pairwise comparison revealed a significant difference was observed between White Community and White College (mean difference = -1.353, p < .001), AI College (mean difference = -1.044, p < .001), AI Community (mean difference = -1.353, p < .001), White Clinical (mean difference = -1.186, p = .001), and AI Clinical (mean difference = -2.153, p < .001) in participant level of

education. These results would indicate that White participants from the community have significantly higher levels of education than all other groups. Additionally, a significant difference was observed between AI Clinical and White College (mean difference = .800, p = .041) and AI College (mean difference = 1.109, p = .004). These results indicate that American Indian participants that are recruited from a clinical setting have significantly lower levels of education than White and American Indian College students in addition to the White community members previously addressed.

In light of significant group differences, a series of Analyses of Covariance was conducted to compare the effect of sample on MMPI-2 T-scores using participant education and age as covariates. Table 2 reports the adjusted means and F values for the

Table 2. ANCOVA Adjusted Means and F for Validity Scales by Sample

Validity Scales	College		Community		Clinical		F
	White	American Indian	White	American Indian	White	American Indian	
VRIN	51.707	54.718	55.593	66.958	50.549	53.176	11.515*
TRIN	57.473	58.192	57.883	62.747	57.490	59.558	3.583*
F	51.682	56.874	58.996	73.766	62.082	51.613	12.196*
Fb	48.961	54.444	56.589	77.465	60.653	53.684	15.396*
Fp	54.233	52.323	54.284	74.771	53.409	57.094	12.542*
L	51.995	53.834	49.926	59.567	55.031	59.313	3.810*
K	51.724	48.361	49.585	49.452	49.007	50.108	.721
S	51.445	49.422	48.598	50.558	49.163	50.370	.429

Notes: Means are adjusted based on the following covariates: participant age = 29.43, participant level of education = 3.31.
*p < .05

validity scales. The ANCOVAs revealed significant results on a number of scales. The VRIN scale is a measure of valid responding using paired items that are similar in content. A significant difference on the VRIN scale $F(5, 251) = 11.515$, $p < .05$, was observed between the six sample groups. Least Significant Difference (LSD) pairwise comparison revealed a significant difference was observed between AI Community and White College (mean difference = 15.251, $p < .001$), AI College (mean difference = 12.240, $p < .001$), White Community (mean difference = 11.365, $p < .001$), White Clinical (mean difference = 16.409, $p < .001$), and AI Clinical (mean difference = 13.782, $p < .001$) on the VRIN scale. These results would suggest that American Indian participants from the community tend to respond more inconsistently than American Indian participants from college and a clinical setting and White participants from college, the community, and a clinical setting (Graham, 2006).

The TRIN scale is a measure of valid responding using paired items that are opposite in content. A significant difference on the TRIN scale $F(5, 251) = 3.583$, $p < .05$, was observed between the six sample groups. LSD pairwise comparison revealed a significant difference between AI Community and White College (mean difference = 5.274, $p < .001$), AI College (mean difference = 4.555, $p = .003$), White Community (mean difference = 4.864, $p = .006$), and White Clinical (mean difference = 5.258, $p < .001$) on the TRIN scale. These results would suggest that American Indian participants from the community tend to respond more indiscriminately than American Indian participants from college and White participants from college, the community, and a clinical setting (Graham, 2006).

The F scale is a measure of over-reporting. A significant difference on the F scale $F(5, 251) = 12.196$, $p < .05$, was observed between the six sample groups. LSD pairwise comparison revealed a significant difference was observed between AI Community and White College (mean difference = 22.084, p < .001), AI College (mean difference = 16.892, p < .001), White Community (mean difference = 14.770, p < .001), White Clinical (mean difference = 11.684, p = .001), and AI Clinical (mean difference = 22.153, p < .001) on the F scale. A significant difference also was also observed between White Clinical and White College (mean difference = 10.401, p = .003) and AI Clinical (mean difference = 10.469, p = .022) on the F scale. These results would suggest that American Indian participants from the community tend to endorse more problems and symptoms than all other sample groups and White participants from a clinical setting endorse more symptoms than White college students or American Indians from a clinical setting (Graham, 2006).

The Fb scale is a measure of consistent responding between the front and back half of the test (Graham, 2006). A significant difference on the Fb scale, $F(5, 251) = 15.396$, $p < .05$, was observed between the six sample groups. LSD pairwise comparison revealed a significant difference between AI Community and White College (mean difference = 28.504, p < .001), AI College (mean difference = 23.022, p < .001), White Community (mean difference = 20.877, p < .001), White Clinical (mean difference = 16.813, p = .000), and AI Clinical (mean difference = 23.781, p < .001) on the Fb scale. A significant difference also was also observed on the Fb scale between White Clinical and White College (mean difference = 11.691, p = .002). These results would suggest that American Indian participants from the community tend to respond less consistently

on the back half of the test than all other sample groups and White participants from a clinical setting respond less consistently to the back half of the test than White college students.

The Fp scale is a measure of infrequent responding that is not normally seen in either the normative sample or a psychiatric sample (Graham, 2006). A significant difference on the Fp scale ($F(5, 251) = 12.542$, $p < .05$) was observed between the six sample groups. LSD pairwise comparison revealed a significant difference between AI Community and White College (mean difference = 20.538, $p < .001$), AI College (mean difference = 22.448, $p < .001$), White Community (mean difference = 20.487, $p < .001$), White Clinical (mean difference = 21.361, $p < .001$), and AI Clinical (mean difference = 17.677, $p < .001$) on the Fp scale. These results would suggest that American Indian participants from the community are more likely to endorse items that make them appear to be faking bad or malingering compared to all other sample groups.

The L scale is a measure of underreporting in an attempt to appear more favorable (Graham, 2006). A significant difference on the L scale ($F(5, 251) = 15.396$, $p < .05$) was observed between the six sample groups. LSD pairwise comparison revealed a significant difference between AI Community and White College (mean difference = 7.572, $p = .001$), AI College (mean difference = 5.733, $p = .018$), and White Community (mean difference = 9.641, $p = .001$) on the L scale. A significant difference was also observed on the L scale between AI Clinical and White College (mean difference = 7.317, $p = .022$) and White Community (mean difference = 9.387, $p = .010$). These results would suggest that American Indian participants from the community do not report as many personal flaws or weaknesses than White and American Indian

participants from college and White participants from the community. Additionally, American Indian participants from a clinical setting are less likely to endorse personal flaws and weakness than White participants from college or the community.

An ANCOVA on the MMPI-2 clinical scales revealed a significant difference between sample groups on a number of scales. Table 3 lists the adjusted means and F values for the Clinical scales. The Hs Clinical scale is a measure of somatic complaints

Table 3. ANCOVA Adjusted Means and F for Clinical Scales by Sample

Clinical Scales	College		Community		Clinical		F
	White	American Indian	White	American Indian	White	American Indian	
HS	51.080	51.004	52.108	58.835	56.000	59.741	3.425*
D	50.826	53.019	51.746	56.930	60.395	60.933	4.179*
HY	51.458	49.626	48.298	52.314	56.361	54.968	1.978
PD	50.749	52.791	55.053	58.389	59.405	61.419	4.353*
MF	53.308	54.057	51.718	53.771	51.577	49.644	.528
PA	49.283	56.197	51.979	64.428	60.038	57.989	7.355*
PT	52.959	54.028	54.481	58.997	61.763	59.926	3.109*
SC	52.911	56.166	55.509	64.545	61.579	61.288	5.504*
MA	54.047	54.502	50.131	57.619	51.100	53.889	2.091
SI	48.509	50.093	50.066	53.638	56.365	54.653	2.894*

Notes: Means are adjusted based on the following covariates: participant age = 29.43, participant level of education = 3.31.
*p < .05

and physical competence (Graham, 2006). A significant difference on the Hs scale ($F(5, 251) = 3.425$, $p < .05$) was observed between the six sample groups. LSD pairwise comparison revealed a significant difference between AI Community and White College

(mean difference = 7.755, p = .002), AI College (mean difference = 7.831, p = .002), and White Community (mean difference = 6.727, p = .023) on the Hs scale. A significant difference was also observed on the Hs scale between AI Clinical and White College (mean difference = 8.661, p = .010), AI College (mean difference = 8.737, p = .012), and White Community (mean difference = 7.633, p = .010). These results would suggest that American Indian participants from the community report more physical problems and somatic concerns than White and American Indian participants from college and White participants from the community. Additionally, American Indian participants from a clinical setting report more physical problems and somatic complaints than White participants from college or the community and American Indian participants from college.

The D Clinical scale is a measure of depressive symptoms including: denial of happiness and personal worth, lack of interest, worry, withdrawal, and somatic complaints. (Graham, 2006). A significant difference on the D scale ($F(5, 251) = 4.179$, $p < .05$) was observed between the six sample groups. LSD pairwise comparison revealed a significant difference between AI Community and White College (mean difference = 6.105, p = .013) on the D clinical scale. A significant difference was also observed on the D scale between White Clinical and White College (mean difference = 9.569, p < .001), AI College (mean difference = 7.375, p = .008), and White Community (mean difference = 8.648, p = .006). Additionally, a significant difference was observed between AI Clinical and White College (mean difference = 10.108, p = .003), AI College (mean difference = 7.914, p = .023), and White Community (mean difference = 9.187, p = .017) on the D clinical scale. These results would suggest that American Indian

participants from the community and White and American Indian participants from a clinical setting report more depressive symptoms than White and American Indian participants from college and White participants from the community.

Due to the significant findings of the D Clinical scale a follow-up ANCOVA was run on the Harris –Lingoes subscales D1, D2, D3, D4, and D5. Table 4 lists the adjusted means and F values for the Harris-Lingoes scales. The analysis revealed significant

Table 4. ANCOVA Adjusted Means and F for Harris-Lingoes D Scales by Sample

Harris-Lingoes	College		Community		Clinical		F
	White	American Indian	White	American Indian	White	American Indian	
D1	50.702	52.507	51.307	56.039	59.649	59.162	3.456*
D2	50.573	52.658	50.628	54.127	53.406	55.660	1.206
D3	51.552	53.190	53.518	56.229	57.288	58.455	1.561
D4	51.509	53.288	52.560	56.366	61.920	58.102	3.331*
D5	49.119	50.525	50.639	54.113	54.697	54.023	1.637

Notes: Means are adjusted based on the following covariates: participant age = 29.43, participant level of education = 3.31.
*p < .05

differences between the groups on the D1 and D4 subscales. The D1 Harris-Lingoes subscale is a measure of subjective depression including symptoms of sadness, trouble concentrating, worry, social discomfort, and lack of self-confidence (Graham, 2006). A significant difference on the D1 Harris-Lingoes subscale ($F(5, 251) = 3.456$, $p < .05$) was observed between the six sample groups. LSD pairwise comparison revealed a significant difference between AI Community and White College (mean difference = 5.337, p = .029) on the D1 subscale. A significant difference was also observed between

White Clinical and White College (mean difference = 8.947, p = .001), AI College (mean difference = 7.141, p = .011), and White Community (mean difference = 8.342, p = .008) on the D1 subscale. Another significant difference was observed between AI Clinical and White College (mean difference = 8.461, p = .012) and White Community (mean difference = 7.856. p = .041) on the D1 subscale. These results would suggest that American Indian participants from the community tend to endorse more items relating to subjective depression than White participants from college. White participants from a clinical setting endorse more subject depression than White and American Indian college students and White community members. American Indian participants from a clinical setting endorse more subjective depression than White college students and White community members.

The D4 Harris-Lingoes subscale is a measure of mental sluggishness including symptoms of lack of energy, tension, difficulty concentrating, poor memory, poor self-confidence, feelings of inferiority, lack of enjoyment, and feelings that life is not worthwhile (Graham, 2006). A significant difference on the D4 Harris-Lingoes subscale ($F(5, 251) = 3.331$, $p < .05$) was observed between the six sample groups. LSD pairwise comparison revealed a significant difference between White Clinical and White College (mean difference = 10.411, p < .001), AI College (mean difference = 8.632, p = .004), and White Community (mean difference = 9.360, p = .006) on the D4 subscale. These results would suggest that White participants from a clinical setting tend to endorse more items relating to mental sluggishness than White and American Indian participants from college and White participants from the community. No other significant differences on the Harris-Lingoes D subscales were found.

The PD Clinical scale is a measure of social rebelliousness including: conflict with authority figures, strained family relationships, and difficulty with work or school (Graham, 2006). A significant difference on the PD Clinical scale ($F(5, 251) = 4.353$, $p < .05$) was observed between the six sample groups. LSD pairwise comparison revealed a significant difference between AI Community and White College (mean difference = 7.640, p = .001) and AI College (mean difference = 5.598, p = .020) on the PD clinical scale. A significant difference was also observed on the PD scale between White Clinical and White College (mean difference = 8.656, p = .001) and AI College (mean difference = 6.614, p = .011). Additionally, a significant difference was observed between AI Clinical and White College (mean difference = 10.670, p = .001) and AI College (mean difference = 8.629, p = .008) on the D clinical scale. These results would suggest that American Indian participants from the community and White and American Indian participants from a clinical setting report more societal rebellion than White and American Indian participants from college.

Due to the significant findings of the PD Clinical scale a follow-up ANCOVA was run on the Harris –Lingoes subscales PD1, PD2, PD3, PD4, and PD5. Table 5 lists the adjusted means and F values for the Harris-Lingoes scales. The analysis revealed

Table 5. ANCOVA Adjusted Means and F for Harris-Lingoes PD Scales by Sample

	College		Community		Clinical		
Harris-Lingoes	White	American Indian	White	American Indian	White	American Indian	F
PD1	50.964	53.875	55.295	57.008	53.671	57.548	1.946
PD2	48.633	52.515	52.220	57.293	56.424	57.468	4.155*
PD3	52.775	50.422	48.328	49.480	48.219	47.537	1.432

Table 5. cont.

Harris-Lingoes	College		Community		Clinical		F
	White	American Indian	White	American Indian	White	American Indian	
PD4	49.225	52.210	53.288	54.863	57.436	51.609	2.418*
PD5	49.716	53.410	53.349	54.193	56.790	58.655	2.156

Notes: Means are adjusted based on the following covariates: participant age = 29.43, participant level of education = 3.31.
*p < .05

significant differences between the groups on the PD2 and PD4 subscales. The PD2 Harris-Lingoes subscale is a measure of authority problems including items related to resentment of societal standards, trouble with school or law, rigid opinions on right and wrong, sense of righteousness, inability to be influenced by the values of others (Graham, 2006). A significant difference on the PD2 Harris-Lingoes subscale, $F(5, 251) = 4.155$, $p < .05$, was observed between the six sample groups. LSD pairwise comparison revealed a significant difference between AI Community and White College (mean difference = 8.660, p < .001) and AI College (mean difference = 4.778, p = .041) on the PD2 subscale. A significant difference was also observed between White Clinical and White College (mean difference = 7.791, p = .001) on the PD2 subscale. Another significant difference was observed between AI Clinical and White College (mean difference = 8.835, p = .004) on the PD2 subscale. These results would suggest that American Indian participants from the community tend to endorse more items relating to authority problems than White and American Indian participants from college. White participants from a clinical setting endorse more authority problems than White college students. American Indian

participants from a clinical setting endorse more problems with authority than White college students.

The PD4 Harris-Lingoes subscale is a measure of social alienation including feelings of isolation, loneliness, being misunderstood, and believing they get a raw deal from life. The subscale also includes items related to believing others are responsible for personal problems and shortcomings, being concerned about how others perceive the self, and feelings of guilt or remorse for actions (Graham, 2006). A significant difference on the PD4 Harris-Lingoes subscale ($F(5, 251) = 2.418$, $p < .05$) was observed between the six sample groups. LSD pairwise comparison revealed a significant difference between American Indian Community and White College (mean difference = 5.637, p = .017) on the D4 subscale. A significant difference was also observed between White Clinical and White College (mean difference = 8.210, p = .002) on the PD4 subscale. These results would suggest that American Indian participants from the community and White participants from a clinical setting tend to endorse more items relating to social alienation than White participants from college. No other significant differences on the Harris-Lingoes PD subscales were found.

The PA Clinical scale is a measure of paranoid ideation and includes items relating to oversensitivity to others, suspiciousness, resentment, blaming others, and feeling they are getting a raw deal in life (Graham, 2006). A significant difference on the PA scale ($F(5, 251) = 7.355$, $p < .05$) was observed between the six sample groups. LSD pairwise comparison revealed a significant difference between AI College and White College (mean difference = 6.913, p = .009) on the PA Clinical scale. A significant difference was also observed on the PA scale between AI Community and White College

(mean difference = 15.145, p < .001), AI College (mean difference = 8.231, p = .005), and White Community (mean difference = 12.448, p < .001). A significant difference was also observed between White Clinical and White College (mean difference = 10.755, p < .001) and White Community (mean difference = 8.058, p = .026) on the PA Clinical scale. Additionally, significant difference was observed between AI Clinical and White College (mean difference = 8.706, p= .025) on the PA Clinical scale. These results would suggest that American Indian college students, American Indian community members, and White and American Indian participants recruited from a clinical setting all endorse more symptoms of paranoia than White college students. Additionally, American Indians pulled from the community endorse more paranoid ideation than American Indian college students and White community members. White participants from a clinical setting endorse more paranoid ideation than White community members.

Due to the significant findings of the PA Clinical scale a follow-up ANCOVA was run on the Harris –Lingoes subscales PA1, PA2, and PA3. Table 6 lists the adjusted means and F values for the Harris-Lingoes scales. The analysis revealed significant

Table 6. ANCOVA Adjusted Means and F for Harris-Lingoes PA Scales by Sample

Harris-Lingoes	College		Community		Clinical		F
	White	American Indian	White	American Indian	White	American Indian	
PA1	52.562	57.286	54.283	65.361	60.936	58.859	4.612*
PA2	49.535	51.447	52.402	54.438	53.836	53.420	1.106
PA3	46.198	48.754	48.163	49.387	49.313	46.423	.884

Notes: Means are adjusted based on the following covariates: participant age = 29.43, participant level of education = 3.31.
*p < .05

differences between the groups on the PA1. The PA1 Harris-Lingoes subscale is a measure of persecutory ideas including items that ask about feeling misunderstood, feeling unfairly punished, feeling like getting a raw deal in life, viewing the world as a threatening place, suspiciousness, blaming others for their problems, feeling that others are trying to influence or control them, or believing that others are trying to poison them (Graham, 2006). A significant difference on the PA1 Harris-Lingoes subscale $F(5, 251) = 4.612$, $p < .05$, was observed between the six sample groups. LSD pairwise comparison revealed a significant difference between AI Community and White College (mean difference = 12.800, p < .001), AI College (mean difference = 8.075, p = .010), and White Community (mean difference = 11.078, p = .002) on the PA1 subscale. A significant difference was also observed between White Clinical and White College (mean difference = 8.374, p = .010) on the PA1 subscale. These results would suggest that American Indian participants from the community tend to endorse more items relating to feelings of persecution than White and American Indian participants from college and White community members. White participants from a clinical setting endorse more feelings of persecution than White college students. No other significant differences on the Harris-Lingoes PA subscales were found.

The PT Clinical scale is a measure of psychological turmoil and includes items relating to uncontrollable or obsessive thoughts, anxiety and fear, doubt of one's own ability, unhappiness, and physical complaints (Graham, 2006). A significant difference on the PT Clinical scale, $F(5, 251) = 3.109$, $p < .05$, was observed between the six sample groups. LSD pairwise comparison revealed a significant difference between AI Community and White College (mean difference = 6.038, p = .016) on the PT Clinical

scale. A significant difference was also observed on the PT scale between White Clinical and White College (mean difference = 8.804, p = .001), AI College (mean difference = 7.735, p = .007), and White Community (mean difference = 7.282, p = .024). Additionally, a significant difference was observed between AI Clinical and White College (mean difference = 6.967, p = .043) on the PT Clinical scale. These results would suggest that American Indian community members and White and American Indian participants recruited from a clinical setting all endorse more symptoms of psychological turmoil than White college students. Additionally, White participants from a clinical setting endorse more psychological turmoil than American Indian college students and White community members.

The SC Clinical scale is a measure of disturbances of thinking, mood, and behavior and includes items relating to delusions, hallucinations, bizarre sensory experiences and constricted emotion (Graham, 2006). A significant difference on the SC Clinical scale, $F(5, 251) = 5.504$, $p < .05$, was observed between the six sample groups. LSD pairwise comparison revealed a significant difference on the SC scale between AI Community and White College (mean difference = 11.633, p < .001), AI College (mean difference = 8.379, p = .002), and White Community (mean difference = 9.035, p = .003). A significant difference was also observed between White Clinical and White College (mean difference = 8.667, p = .002) on the SC clinical scale. Additionally, a significant difference was observed between AI Clinical and White College (mean difference = 8.377, p= .016) on the SC clinical scale. These results would suggest that American Indian community members and White and American Indian participants recruited from a clinical setting all endorse more symptoms associated with disturbed thinking, mood, and

behavior than White college students. Additionally, American Indians pulled from the community endorse more symptoms of disturbed thinking, mood, and behavior than American Indian college students and White community members.

Due to the significant findings of the SC Clinical scale, a follow-up ANCOVA was run on the Harris –Lingoes SC subscales. Table 7 lists the adjusted means and F values for the Harris-Lingoes scales. The analysis revealed significant differences

Table 7. ANCOVA Adjusted Means and F for Harris-Lingoes SC Scales by Sample

Harris-Lingoes	College		Community		Clinical		F
	White	American Indian	White	American Indian	White	American Indian	
SC1	50.683	55.105	53.507	61.272	55.705	59.417	4.054*
SC2	50.452	48.505	51.649	58.917	56.702	55.813	3.884*
SC3	54.968	56.701	56.543	59.806	65.044	58.881	2.384*
SC4	54.414	52.532	53.677	57.551	62.873	57.251	2.938*
SC5	53.286	56.262	52.415	60.695	56.851	52.108	3.660*
SC6	54.400	57.978	53.697	64.132	57.859	59.424	3.354*

Notes: Means are adjusted based on the following covariates: participant age = 29.43, participant level of education = 3.31.
*p < .05

between the groups on all six SC subscales. The SC1 Harris-Lingoes subscale is a measure of social alienation including items that ask about feeling like they are getting a raw deal out of life, feeling misunderstood, believing others have it in for them or are trying to harm them, lack of family support and love, feeling like they are treated like children from family, feelings of hostility towards family, feeling lonely, lack of loving relationships, and avoidance of social situations and interpersonal relationships (Graham, 2006). A significant difference on the SC1 Harris-Lingoes subscale, $F(5, 251) = 4.054$, p

< .05, was observed between the six sample groups. LSD pairwise comparison revealed a significant difference between AI Community and White College (mean difference = 10.589, p < .001), AI College (mean difference = 6.167, p = .020), White Community (mean difference = 7.765, p = .011), and White Clinical (mean difference = 5.567, p = .048) on the SC1 subscale. A significant difference was also observed between AI Clinical and White College (mean difference = 8.734, p = .012) on the SC1 subscale. These results would suggest that American Indian participants from the community tend to endorse more items relating to feelings of social alienation than White and American Indian participants from college, White community members, and White participants from a clinical setting. American Indian participants from a clinical setting endorse more feelings of social alienation than White college students.

The SC2 Harris-Lingoes subscale is a measure of emotional alienation and includes items that ask about feeling of depression and despair, feelings of apathy or fear, and sadistic and/or masochistic needs (Graham, 2006). A significant difference on the SC2 Harris-Lingoes subscale ($F(5, 251) = 3.884$, $p < .05$) was observed between the six sample groups. LSD pairwise comparison revealed a significant difference between AI Community and White College (mean difference = 8.465, p = .001), AI College (mean difference = 10.412, p < .001), and White Community (mean difference = 7.268, p = .022) on the SC2 subscale. A significant difference was also observed between White Clinical and White College (mean difference = 6.250, p = .029) and AI College (mean difference = 8.197, p = .006) on the SC2 subscale. A significant difference was observed between AI Clinical and AI College (mean difference = 7.308, p = .050) on the SC2 subscale. These results would suggest that American Indian participants from the

community tend to endorse more items relating to emotional alienation than White and American Indian participants from college and White community members. White participants from a clinical setting endorse more feelings of emotional alienation than White and American Indian college students. American Indian participants from a clinical setting endorse more feelings of emotional alienation than American Indian college students.

The SC3 Harris-Lingoes subscale is a measure of thought problems and includes items that ask about strange thought processes or feelings of unreality, problems with concentration, and feelings of losing one's mind (Graham, 2006). A significant difference on the SC3 Harris-Lingoes subscale, $F(5, 251) = 2.384$, $p < .05$, was observed between the six sample groups. LSD pairwise comparison revealed a significant difference between White Clinical and White College (mean difference = 10.076, p = .001), AI College (mean difference = 8.344, p = .012), and White Community (mean difference = 8.501, p = .022) on the SC3 subscale. These results would suggest that White participants in a clinical setting tend to endorse more items relating to thought problems than White and American Indian participants from college and White community members.

The SC4 Harris-Lingoes subscale is a measure of depression and includes items that ask about despair, difficulty coping, excessive worry, anhedonia, loss of hope, withdrawal into a fantasy world, wishing they were dead (Graham, 2006). A significant difference on the SC4 Harris-Lingoes subscale, $F(5, 251) = 2.938$, $p < .05$, was observed between the six sample groups. LSD pairwise comparison revealed a significant difference between White Clinical and White College (mean difference = 8.459, p =

.003), AI College (mean difference = 10.341, p = .001), and White Community (mean difference = 9.196, p = .007) on the SC4 subscale. These results would suggest that White participants in a clinical setting tend to endorse more items relating to depression and problems coping than White and American Indian participants from college and White community members.

The SC5 Harris-Lingoes subscale is a measure of problematic inhibition of emotions and impulses and includes items that ask about feeling a loss of control, restlessness, hyperactivity, irritability, labile emotionality, and periods of time where one cannot remember what they had done (Graham, 2006). A significant difference on the SC5 Harris-Lingoes subscale, $F(5, 251) = 3.660$, $p < .05$, was observed between the six sample groups. LSD pairwise comparison revealed a significant difference between AI Community and White College (mean difference = 7.409, p = .001), White Community (mean difference = 8.280, p = .003), and AI Clinical (mean difference = 8.587, p = .005) on the SC5 subscale. These results would suggest that American Indian participants from the community tend to endorse more items relating to problematic inhabitation of emotions and impulses than White participants from college, White community members, and American Indian participants from a clinical setting.

The SC6 Harris-Lingoes subscale is a measure of bizarre sensory experiences and includes items that ask about feeling the body is changing in strange ways, skin sensitivity, muscle twitching, problems with balance, weakness, voice changes, hallucinations, and ideas of reference (Graham, 2006). A significant difference on the SC6 Harris-Lingoes subscale, $F(5, 251) = 3.354$, $p < .05$, was observed between the six sample groups. LSD pairwise comparison revealed a significant difference between AI

Community and White College (mean difference = 9.732, p < .001), AI College (mean difference = 6.154, p = .034), White Community (mean difference = 10.435, p = .002), and White Clinical (mean difference = 6.273, p = .042) on the SC6 subscale. These results would suggest that American Indian participants from the community tend to endorse more items relating to bizarre sensory experiences than White or American Indian participants from college, White community members, and White participants from a clinical setting.

The SI Clinical scale is a measure of social introversion and includes items relating to feeling shy, insecure, low self-confidence, being over-controlled, and complaint (Graham, 2006). A significant difference on the SI Clinical scale, $F(5, 251) = 2.894$, $p < .05$, was observed between the six sample groups. LSD pairwise comparison revealed a significant difference on the SI scale between AI Community and White College (mean difference = 5.129, p = .021). Additionally, a significant difference was observed between White Clinical and White College (mean difference = 7.856, p = .001), AI College (mean difference = 6.272, p = .013), and White Community (mean difference = 6.299, p = .027) on the SI clinical scale. A significant difference was also observed between AI Clinical and White College (mean difference = 6.143, p= .044) on the SI clinical scale. These results would suggest that American Indian community members and White and American Indian participants from a clinical setting endorse more symptoms of social introversion than White college students. Additionally, White participants in a clinical setting endorse more social introversion than American Indian college students and White community members. It should be noted, that low scores (<40 T-score) on this scale would indicate that the individual is extroverted, talkative,

friendly, and self-confident. The estimated average means for all groups fell above a T-score of 40.

Due to the significant findings of the SI Clinical scale, a follow-up ANCOVA was run on the Harris –Lingoes SI subscales. Table 8 lists the adjusted means and F values for the Harris-Lingoes scales. The analysis revealed significant differences between the

Table 8. ANCOVA Adjusted Means and F for the Harris-Lingoes SI Scales by Sample

	College		Community		Clinical		
Harris-Lingoes	White	American Indian	White	American Indian	White	American Indian	F
SI1	46.997	49.796	51.070	52.954	52.640	53.469	2.363*
SI2	45.976	49.556	46.101	49.673	50.453	51.681	1.882
SI3	51.344	51.137	52.689	54.676	56.958	53.569	1.701

Notes: Means are adjusted based on the following covariates: participant age = 29.43, participant level of education = 3.31.
*p < .05

groups on the SI1 subscale. The SI1 Harris-Lingoes subscale is a measure of shyness and self-consciousness and includes items that ask about feeling shy, anxious, embarrassed, discomfort with new situations, lack of self-confidence, sadness, lack of energy, and not being talkative or friendly (Graham, 2006). The analysis revealed a significant difference on the SI1 Harris-Lingoes subscale, $F(5, 251) = 2.363$, $p < .05$, between the six sample groups. LSD pairwise comparison revealed a significant difference between AI Community and White College (mean difference = 5.957, p = .003) on the SI1 subscale. A significant difference was also observed between White Clinical and White College (mean difference = 5.643, p = .011) on the SI1 subscale. Additionally, a significant difference was observed between AI Clinical and White

College (mean difference = 6.473, p = .021) on the SI1 subscale. These results would suggest that American Indian participants from the community and White and American Indian participants from a clinical setting tend to endorse more items relating to feeling shy and self-conscious than White participants from college. No other SI Harris-Lingoes subscales were found to be significant.

An ANCOVA conducted on the MMPI-2 content scales revealed a number of significant differences between the six sample groups. Table 9 lists the adjusted means

Table 9. ANCOVA Adjusted Means and F for the Content Scales by Sample

Content Scales	College		Community		Clinical		F
	White	American Indian	White	American Indian	White	American Indian	
ANX	52.198	55.105	52.437	55.105	59.805	56.712	2.299*
FRS	48.293	54.082	47.642	57.727	50.976	51.571	6.020*
OBS	48.440	50.414	50.882	50.880	54.589	52.252	1.322
DEP	49.485	50.843	53.225	59.009	55.494	56.352	3.961*
HEA	51.542	54.810	51.428	62.118	57.049	60.980	5.792*
BIZ	50.249	55.793	51.582	62.373	54.420	50.528	6.781*
ANG	47.814	49.527	48.099	52.220	51.771	53.296	1.578
CYN	52.456	53.551	50.243	52.748	51.930	55.760	.864
ASP	52.990	54.485	54.457	57.957	52.308	58.893	2.031
TPA	48.901	49.956	46.963	49.630	50.173	49.253	.426
LSE	49.367	50.885	52.756	55.941	56.399	54.878	2.533*
SOD	46.253	50.942	48.180	53.203	52.514	54.556	3.132*
FAM	47.335	51.382	52.025	58.588	51.282	54.595	5.359*
WRK	50.952	51.705	52.060	55.284	57.787	53.186	1.846
TRT	48.578	50.518	52.795	59.001	55.447	54.015	3.913*

Notes: Means are adjusted based on the following covariates: participant age = 29.43, participant level of education = 3.31.
*p < .05

and F values for the content scales. The ANX content scale is a measure of anxiety and includes items relating to worry, concentration, sleep problems, somatic complains, sadness, stress, and feeling overwhelmed (Graham, 2006). An ANCOVA on the ANX content scale was significant, $F(5, 251) = 2.299$, $p < .05$, for the six sample groups. A significant difference in adjusted group means was observed between White Clinical and White College (mean difference = 7.607, p = .003) and White Community (mean difference = 7.368, p = .014) participants on the ANX content scale. The results would indicate that White clinical participants endorse more items relating to anxiety than White college or community members.

The FRS content scale is a measure of fearfulness and anxiety (Graham, 2006). A significant difference in adjusted group means was observed on the FRS content subscale, $F(5, 251) = 6.020$, $p < .05$, between the six sample groups. Subsequent tests revealed a significant difference between AI College and White College (mean difference = 5.788, p = .004) and White Community (mean difference = 6.440, p = .015) participants. Additionally, a significant difference was observed between AI Community and White College (mean difference = 9.434, p < .001) and White Community (mean difference = 10.086, p < .001), White Clinical (mean difference = 6.156, p = .005), and AI Clinical (mean difference = 6.156, p = .032) on the FRS content scale. These results would suggest that that American Indian participants from college and American Indian participants from the community endorse more items relating to fearfulness, unease, and specific phobias than White college students or White community members. Additionally, American Indian participants from the community endorse more items

relating to fearfulness, unease, and specific phobias than White and American Indian participants from a clinical setting.

The DEP content scale is a measure of sadness and depression and includes items relating to feeling empty, unhappy, inadequate, guilty, and suicidal (Graham, 2006). A significant difference in adjusted group means was observed on the DEP content scale, $F(5, 251) = 3.961$, $p < .05$. Subsequent tests revealed significant differences between AI Community and White College (mean difference = 9.524, p < .001), AI College (mean difference = 8.166, p = .001), and White Community (mean difference = 5.784, p = .041) participants. A significant difference was observed between White Clinical and White College (mean difference = 6.008, p = .019) on the DEP content scale. Another significant difference was observed between AI Clinical and White College (mean difference = 6.867, p = .034) on the DEP content scale. These results would suggest that that American Indian participants from the community endorse more items relating to sadness and depression than White and American Indian college students and White community members. Additionally, American Indian and White participants from a clinical setting endorse more items relating to sadness and depression than White college students.

The HEA content scale is a measure of health concerns and includes items relating to gastrointestinal, neurological, and other general physical symptoms and complaints (Graham, 2006). A significant difference in adjusted group means was observed on the HEA content subscale, $F(5, 251) = 5.792$, $p < .05$. Subsequent tests revealed a significant difference between AI Community and White College (mean difference = 10.576, p < .001), AI College (mean difference = 7.308, p = .003), and

White Community (mean difference = 10.690, p < .001) participants. Another significant difference was observed between White Clinical and White College (mean difference = 5.507, p = .030) on the HEA content scale. Finally, a significant difference was observed between AI Clinical and White College (mean difference = 9.438, p = .004) and White Community (mean difference = 9.552, p = .009) on the HEA content scale. These results would suggest that American Indian participants from the community endorse more items relating to health concerns than White and American Indian college students and White community members. White participants from a clinical setting endorse more items relating to health concerns than White college students. Additionally, American Indian participants recruited from a clinical setting endorse more items relating to health concerns than White college students and White community members.

The BIZ content scale is a measure of bizarre thoughts and includes items relating to psychotic symptoms and feeling that one's thoughts and behaviors are controlled by others (Graham, 2006). A significant difference in adjusted group means on the BIZ content subscale, $F(5, 251) = 6.781$, $p < .05$, was observed between the six sample groups. A significant difference was observed between AI College and White College (mean difference = 5.544, p = .015) on the BIZ content scale. A significant difference was observed on the BIZ content scale between AI Community and White College (mean difference = 12.124, p < .001), AI College (mean difference = 6.580, p = .010), White Community (mean difference = 10.791, p < .001), White Clinical (mean difference = 7.953, p = .004), and AI Clinical (mean difference = 11.845, p < .001) participants. These results would suggest that American Indian college students endorse more items relating to bizarre thoughts than White college students. Additionally, American Indian

participants from the community endorse more items relating to bizarre thoughts than White or American Indian college students, White community members, and White and American Indian clinical participants.

The LSE content scale is a measure of low self-esteem and includes items relating to self-doubt, negative self-attitudes, and submissiveness (Graham, 2006). A significant difference on the LSE content scale, $F(5, 251) = 2.533$, $p < .05$, was observed between the six sample groups. A significant difference in adjusted group means was observed between AI Community and White College (mean difference = 6.574, p = .004) and AI College (mean difference = 5.056, p = .037) on the LSE content scale. Another significant difference was observed between White Clinical and White College (mean difference = 7.032, p = .005) and AI College (mean difference = 5.514, p = .036) on the LSE content scale. These results would suggest that American Indian community members endorse more items relating to low self-esteem than White and American Indian college students. Additionally, White clinical participants endorse more items relating to low self-esteem than White or American Indian college students.

The SOD content scale is a measure of social discomfort and includes items relating to social discomfort, feeling nervous, interpersonal sensitivity, feelings of depression, and preoccupation with illness (Graham, 2006). A significant difference on the SOD content scale, $F(5, 251) = 3.132$, $p < .05$, was observed between the six sample groups. Subsequent tests revealed a significant difference in adjusted group means between AI College and White College (mean difference = 4.689, p = .027) on the SOD content scale. A significant difference was observed between AI Community and White College (mean difference = 6.950, p = .002) on the SOD content scale. A significant

difference was also observed between White Clinical and White College (mean difference = 6.262, p = .011) on the SOD content scale. An additional significant difference was observed between AI Clinical and White College (mean difference = 8.303, p = .008) on the SOD content scale. These results would suggest that American Indian college students, American Indian community members, and American Indian and White clinical participants endorse more items relating to social discomfort than White college students.

The FAM content scale is a measure of familial discord and includes items relating to feelings of anger and resentment towards family members, as well as, feeling that the family is not understand or supportive (Graham, 2006). A significant difference on the FAM content scale, $F(5, 251) = 5.359$, $p < .05$, was observed between the six sample groups. A significant difference in adjusted group means was observed between AI Community and White College (mean difference = 11.253, p < .001), AI College (mean difference = 7.206, p = .002), White Community (mean difference = 6.563, p = .015), and White Clinical (mean difference = 7.306, p = .003) on the FAM content scale. An additional significant difference was observed between AI Clinical and White College (mean difference = 7.260, p = .018) on the FAM content scale. These results would suggest that American Indian community members endorse more items relating to familial discord than White and American Indian college students, White community members, and White clinical participants. Additionally, American Indian clinical participants endorse more items relating to familial discord than White college students.

The TRT content scale measures if someone would have difficulty in treatment and includes items relating to motivation, ability to disclose, and feelings of pessimism

(Graham, 2006). A significant difference on the TRT content scale, $F(5, 251) = 3.913$, $p < .05$, was observed between the six sample groups. Subsequent tests revealed a significant difference in adjusted group means between AI Community and White College (mean difference = 10.423, p < .001), AI College (mean difference = 8.483, p = .002), and White Community (mean difference = 6.206, p = .042) on the TRT content scale. An additional significant difference was observed between White Clinical and White College (mean difference = 6.869, p = .013) on the TRT content scale. These results would suggest that American Indian community members endorse more items relating to negative treatment indicators than White and American Indian college students and White community members. Additionally, White clinical participants endorse more items relating to negative treatment indicators than White college students.

Analysis by Level of Acculturation

In an attempt to more specifically examine the impact of cultural identification on group differences in MMPI-2 scores, the participants were divided into five separate groups based upon cultural identity. The NPBI-R and NPBI-III provided two scales of cultural identity: American Indian Cultural Identity and European American Cultural Identity. High scores on both scales are associated with bicultural cultural identity, a high score on the American Indian Cultural Identity scale and a low score on the European American Identity scale is associated with traditional cultural identity, a low score on the American Indian Cultural Identity scale and a high score on the European American Cultural Identity scale is associated with assimilated cultural identity, and low scores on both scales are associated with marginalized cultural identity.

On the NPBI-R a value of 38 was used as the median split for the American Indian Cultural Identity scale and a value of 21 was used as the median split for the European American Cultural Identity scale. These values were based off a large sample study using the NPBI-R in seven Northern Plains American Indian reservations (Gray, 2011). On the NPBI-III, a value of 40 (mean) was used as the cut-point for the American Indian Cultural Identity scale and a value of 24 (mean) was used as the cut-point for the European American Cultural Identity scale. These values were based off a large norming sample for the NPBI-III (McDonald, 2013). These cut-point values were applied to both American Indian and Caucasian participants. All Caucasian participants fell into the assimilated group. These participants were re-designated into a fifth group, White Assimilated, to separate them from the American Indian participants in the Assimilated group (controlling for race and ethnicity). The groups were coded as follows: 1 = Traditional, 2 = Bicultural, 3 = Assimilated, 4 = Marginal, 5 = White Assimilated.

A one-way ANOVA was conducted to compare the effect of cultural identity on the demographic variables of Age and Level of Education. Table 10 lists the mean and F value for the demographic variables scales. The analysis revealed a significant difference

Table 10. One-Way ANOVA Means and F of Demographic Items by Level of Acculturation

Item	Traditional	Bicultural	Assimilated	Marginal	White Assimilated	F
Age	35.11	30.90	27.50	29.88	27.80	2.615*
Education	3.55	3.52	3.39	3.56	3.14	2.134*

Note: *$p < .05$

in participant age $F(4, 261) = 2.615$, $p = .036$ between the five groups. Games-Howell pairwise comparison revealed a significant difference between Traditional and White Assimilated (mean difference = 7.303, p = .036) in participant age. Results indicate that American Indian participants who identified as traditional were significantly older than White participants. The ANOVA revealed a significant difference in participant level of education at $p < .1$ but not at $p < .05$, $F(4, 255) = 2.134$, $p = .077$ between the five groups. Due to the non-significance, no pairwise comparisons were run.

In light of these findings, a series of Analyses of Covariance was conducted to compare the effect of level of acculturation on MMPI-2 T-scores using participant education and age as covariates. Table 11 reports the adjusted means and F values for the Validity scales. The ANCOVAs revealed significant results on a number of scales. The

Table 11. ANCOVA Adjusted Means and F for Validity Scales by Level of Acculturation

Validity Scale	Traditional	Bicultural	Assimilated	Marginal	White Assimilated	F
VRIN	62.193	59.848	53.623	59.788	52.322	6.569*
TRIN	60.928	60.728	58.328	59.118	57.610	2.525*
F	70.418	61.656	52.244	61.116	55.772	6.599*
Fb	71.233	62.871	51.755	61.803	53.549	7.651*
Fp	71.101	61.883	53.552	45.435	54.156	9.265*
L	56.023	58.694	52.848	60.409	60.409	3.552*
K	46.505	49.695	51.347	52.340	50.642	1.458
S	48.188	50.048	51.976	54.430	50.279	.894

Notes: Means are adjusted based on the following covariates: participant age = 29.43 and participant education = 3.31.
*p<.05

VRIN scale is a measure of valid responding using paired items that are similar in content (Graham, 2006). A significant difference on the VRIN scale $F(4, 252) = 6.569$, $p < .05$, exists between the five acculturation groups. Least Significant Difference (LSD) pairwise comparison revealed a significant difference between Traditional and Assimilated (mean difference = 8.569, p = .016) and White Assimilated (mean difference = 9.870, p < .001) on the VRIN scale. A significant difference was also observed between Bicultural and White Assimilated (mean difference = 7.526, p < .001). These results would suggest that American Indian participants that identify as Traditional respond more inconsistently than American Indian and White participants that identify as Assimilated. American Indian participants that identify as Bicultural respond more inconsistently than White Assimilated participants.

The TRIN scale is a measure of valid responding using paired items that are opposite in content (Graham, 2006). A significant difference on the TRIN scale $F(4, 252) = 3.318$, $p < .05$, was observed between the five acculturation groups. LSD pairwise comparison revealed a significant difference between Traditional and White Assimilated (mean difference = 3.318, p = .015) on the TRIN scale. A significant difference was also observed between Bicultural and White Assimilated (mean difference = 3.118, p = .010) on the TRIN scale. These results would suggest that American Indian participants that identify as Traditional and Bicultural tend to respond more indiscriminately than White assimilated participants.

The F scale is a measure of over-reporting. A significant difference on the F scale $F(4, 252) = 6.599$, $p < .05$, was observed between the six sample groups. LSD pairwise comparison revealed a significant difference between Traditional and Bicultural (mean

difference = 8.762, p = .014), Assimilated (mean difference = 18.175, p < .001), and White Assimilated (mean difference = 14.646, p < .001) on the F scale. A significant difference was also observed between Bicultural and Assimilated (mean difference = 9.413, p = .038) and White Assimilated (mean difference = 5.884, p = .033) on the F scale. These results would suggest that American Indian participants that identify as traditional tend to endorse more problems and symptoms than American Indian participants that identify is bicultural or assimilated and White participants (Graham, 2006). American Indian participants that identify as bicultural endorse more problems and symptoms than American Indian that identify as assimilated and White participants.

The Fb scale is a measure of consistent responding between the front and back half of the test (Graham, 2006). A significant difference on the Fb scale, $F(4, 252) = 7.651$, $p < .05$, was observed between the five acculturation groups. LSD pairwise comparison revealed a significant difference between Traditional and Bicultural (mean difference = 8.362, p = .039), Assimilated (mean difference = 19.478, p < .001), White Assimilated (mean difference = 17.684, p < .001) on the Fb scale. A significant difference was also observed on the Fb scale between Bicultural and Assimilated (mean difference = 11.116, p = .031) and White Assimilated (mean difference = 9.322, p = .003). These results would suggest that American Indian participants that identify as traditional and bicultural tend to respond less consistently on the back half of the test than American Indian and White assimilated participants. Additionally, American Indian participants that identify as traditional tend to respond less consistently on the back half of the test than American Indians that identify as bicultural.

The Fp scale is a measure of infrequent responding that is not normally seen in either the normative sample or a psychiatric sample (Graham, 2006). A significant difference on the Fp scale, $F(4, 252) = 9.265$, $p < .05$, was observed between the five acculturation groups. LSD pairwise comparison revealed a significant difference between Traditional and Bicultural (mean difference = 9.218, p = .011), Assimilated (mean difference = 17.549, p < .001), Marginalized (mean difference = 25.666, p < .001), and White Assimilated (mean difference = 16.945, p < .001) on the Fp scale. A significant difference was also observed between Bicultural and Marginalized (mean difference = 16.448, p = .010) and White Assimilated (mean difference = 7.726, p = .006). These results would suggest that American Indian participants that identify as traditional and bicultural are more likely to endorse items that make them appear to be faking bad or malingering compared to American Indian participants that identify as marginalized and White assimilated participants. Additionally, American Indians that identify as traditional score significantly higher than American Indian participants that identify as bicultural and assimilated.

The L scale is a measure of underreporting in an attempt to appear more favorable (Graham, 2006). A significant difference on the L scale, $F(4, 252) = 3.552$, $p < .05$, was observed between the six sample groups. LSD pairwise comparison revealed a significant difference between Bicultural and White Assimilated (mean difference = 6.329, p = .001) on the L scale. These results would suggest that American Indian participants that identify as bicultural do not report as many personal flaws or weaknesses than White assimilated participants. Analysis of additional validity scales revealed no significant differences.

ANCOVAs on the MMPI-2 Clinical scales revealed significant differences between sample groups on a number of scales. Table 12 lists the adjusted means and F values for the Clinical scales. The PA Clinical scale is a measure of paranoid ideation

Table 12. ANCOVA Adjusted Means and F for Clinical Scales by Level of Acculturation

Clinical Scales	Traditional	Bicultural	Assimilated	Marginal	White Assimilated	F
HS	56.941	55.730	51.308	57.135	52.677	1.456
D	56.662	56.319	52.662	54.188	53.493	.838
HY	51.594	51.979	49.247	52.805	52.004	.236
PD	57.451	56.794	53.304	54.592	54.007	1.013
MF	51.987	53.663	53.370	56.877	52.446	.379
PA	63.975	60.255	51.587	55.492	52.508	6.377*
PT	57.794	57.846	53.536	53.737	55.552	.716
SC	64.122	60.387	53.487	57.674	55.682	4.206*
MA	56.513	57.855	48.973	54.973	52.390	3.530*
SI	53.783	51.875	48.645	54.215	50.836	.912

Notes: Means are adjusted based on the following covariates: participant age = 29.43 and participant education = 3.31.
*p<.05

and includes items relating to oversensitivity to others, suspiciousness, resentment, blaming others, and feeling they are getting a raw deal in life (Graham, 2006). A significant difference on the PA Clinical scale, $F(4, 252) = 6.377$, $p < .05$, was observed between the five acculturation groups. LSD pairwise comparison revealed a significant difference between Traditional and Assimilated (mean difference = 12.388, p = .002) and White Assimilated (mean difference = 11.467, p < .001) on the PA Clinical scale. A

significant difference was also observed on the PA scale between Bicultural and Assimilated (mean difference = 8.668, p = .026) and White Assimilated (mean difference = 7.747, p = .001). These results would suggest that American Indian participants that identify as traditional and bicultural endorse more paranoid ideation than American Indian and White assimilated participants.

Due to the significant findings of the PA Clinical scale a follow-up ANCOVA was run on the Harris –Lingoes subscales PA1, PA2, and PA3. Table 13 lists the adjusted means and F values for the Harris-Lingoes scales. The analysis revealed

Table 13. ANCOVA Adjusted Means and F for Harris-Lingoes PA Scales by Level of Acculturation

Harris-Lingoes	Traditional	Bicultural	Assimilated	Marginal	White (Assimilated)	F
PA1	65.874	60.124	53.363	58.087	54.975	4.533*
PA2	54.557	53.660	49.333	49.062	51.264	1.237
PA3	48.166	49.059	48.486	48.143	47.371	.290

Notes: Means are adjusted based on the following covariates: participant age = 29.43 and participant education = 3.31.
*p<.05

significant differences between the groups on the PA1 subscale. The PA1 Harris-Lingoes subscale is a measure of persecutory ideas including items that ask about feeling misunderstood, feeling unfairly punished, feeling like getting a raw deal in life, viewing the world as a threatening place, suspiciousness, blaming others for their problems, feeling that others are trying to influence or control them, or believing that others are trying to poison them (Graham, 2006). A significant difference on the PA1 Harris-Lingoes subscale ($F(4, 252) = 4.533$, $p < .05$) was observed between the five acculturation groups. LSD pairwise comparison revealed a significant difference

between Traditional and Assimilated (mean difference = 12.511, p = .004) and White Assimilated (mean difference = 10.899, p < .001) on the PA1 subscale. A significant difference was also observed between Bicultural and White Assimilated (mean difference = 5.149, p = .037) on the PA1 subscale. These results would suggest that American Indian participants that identify as traditional and bicultural tend to endorse more items relating to feelings of persecution than White assimilated participants. Additionally, American Indians that identify as traditional endorse more items relating to feelings of persecution than American Indians that identify as assimilated. No other significant differences on the Harris-Lingoes PA subscales were found.

The SC clinical scale is a measure of disturbances of thinking, mood, and behavior and includes items relating to delusions, hallucinations, bizarre sensory experiences and constricted emotion (Graham, 2006). A significant difference on the SC Clinical scale, $F(4, 252) = 4.206$, $p < .05$, was observed between the five acculturation groups. LSD pairwise comparison revealed a significant difference on the SC scale between Traditional and Assimilated (mean difference = 10.635, p = .004) and White Assimilated (mean difference = 8.440, p < .001). Additionally, a significant difference was observed between Bicultural and Assimilated (mean difference = 6.900, p = .046) and White Assimilated (mean difference = 4.705, p = .025) on the SC Clinical scale. These results would suggest that American Indian participants that identify as traditional and bicultural endorse more symptoms associated with disturbed thinking, mood, and behavior than White college students.

Due to the significant findings of the SC Clinical scale, a follow-up ANCOVA was run on the Harris –Lingoes SC subscales. Table 14 lists the adjusted means and F

Table 14. ANCOVA Adjusted Means and F for Harris-Lingoes SC Scales by Level of Acculturation

Harris-Lingoes	Traditional	Bicultural	Assimilated	Marginal	White (Assimilated)	F
SC1	62.668	57.566	51.566	57.438	52.593	5.535*
SC2	56.551	54.307	47.426	53.182	52.377	1.629
SC3	63.189	58.427	51.134	49.571	57.748	2.994*
SC4	59.174	54.749	50.363	50.762	56.340	1.836
SC5	60.424	57.229	53.610	53.446	53.847	2.870*
SC6	65.023	60.583	52.584	60.382	55.051	5.134*

Notes: Means are adjusted based on the following covariates: participant age = 29.43 and participant education = 3.31.
*p<.05

values for the Harris-Lingoes scales. The analysis revealed significant differences between the groups on a number of SC subscales. The SC1 Harris-Lingoes subscale is a measure of social alienation including items that ask about feeling like they are getting a raw deal out of life, feeling misunderstood, believing others have it in for them or are trying to harm them, lack of family support and love, feeling like they are treated like children from family, feelings of hostility towards family, feeling lonely, lack of loving relationships, and avoidance of social situations and interpersonal relationships (Graham, 2006). A significant difference on the SC1 Harris-Lingoes subscale, $F(4, 252) = 5.535$, $p < .05$, was observed between the five acculturation groups. LSD pairwise comparison revealed a significant difference between Traditional and Assimilated (mean difference = 11.012, p = .002) and White Assimilated (mean difference = 10.074, p < .001) on the SC1 subscale. A significant difference was also observed between Bicultural and White Assimilated (mean difference = 4.972, p = .016) on the SC1 subscale. These results

would suggest that American Indian participants that identify as traditional and bicultural tend to endorse more items relating to feelings of social alienation than White assimilated participants. Additionally, American Indian participants that identify as traditional endorse more feelings of social alienation than American Indian participants that identify as assimilated.

The SC3 Harris-Lingoes subscale is a measure of thought problems and includes items that ask about strange thought processes or feelings of unreality, problems with concentration, and feelings of losing one's mind (Graham, 2006). A significant difference on the SC3 Harris-Lingoes subscale, $F(4, 252) = 2.994$, $p < .05$, was observed between the five acculturation groups. LSD pairwise comparison revealed a significant difference between Traditional and Assimilated (mean difference = 12.056, p = .004), Marginalized (mean difference = 13.618, p = .014), and White Assimilated (mean difference = 5.441, p = .043) on the SC3 subscale. These results would suggest that American Indian participants that identify as traditional tend to endorse more items relating to thought problems than American Indian participants that identify as assimilated and marginalized and White assimilated participants.

The SC5 Harris-Lingoes subscale is a measure of problematic inhibition of emotions and impulses and includes items that ask about feeling a loss of control, restlessness, hyperactivity, irritability, labile emotionality, and periods of time where one cannot remember what they had done (Graham, 2006). A significant difference on the SC5 Harris-Lingoes subscale, $F(4, 252) = 2.870$, $p < .05$, was observed between the five acculturation groups. LSD pairwise comparison revealed a significant difference between Traditional and Assimilated (mean difference = 6.814, p = .037) and White

Assimilated (mean difference = 6.577, p = .002) on the SC5 subscale. These results would suggest that American Indian participants that identify as traditional tend to endorse more items relating to problematic inhabitation of emotions and impulses than American Indian and White participants that identify as assimilated.

The SC6 Harris-Lingoes subscale is a measure of bizarre sensory experiences and includes items that ask about feeling the body is changing in strange ways, skin sensitivity, muscle twitching, problems with balance, weakness, voice changes, hallucinations, and ideas of reference (Graham, 2006). A significant difference on the SC6 Harris-Lingoes subscale, $F(4, 252) = 5.134$, $p < .05$, was observed between the five acculturation groups. LSD pairwise comparison revealed a significant difference between Traditional and Assimilated (mean difference = 12.439, p = .001) and White Assimilated (mean difference = 9.971, p < .001) on the SC6 subscale. A significant difference was also observed between Bicultural and Assimilated (mean difference = 7.999, p = .031) and White Assimilated (mean difference = 5.532, p = .014). These results would suggest that American Indian participants that identify as traditional and bicultural tend to endorse more items relating to bizarre sensory experiences than American Indian and White assimilated participants.

The MA Clinical scale is a measure of psychological and physical energy and includes items relating to level of activity and energy, hallucinations and delusions, impulsivity, self-appraisal, frustration tolerance, and emotional lability (Graham, 2006). A significant difference on the MA Clinical scale, $F(4, 252) = 3.530$, $p < .05$, was observed between the five acculturation groups. LSD pairwise comparison revealed a significant difference on the MA scale between Traditional and Assimilated (mean

difference = 7.541, p = .019) and White Assimilated (mean difference = 4.123, p = .049. Additionally, a significant difference was observed between Bicultural and Assimilated (mean difference = 8.882, p = .004) and White Assimilated (mean difference = 5.465, p = .003) on the MA Clinical scale. These results would suggest that American Indian participants that identify as traditional and bicultural endorse more symptoms of high psychological and physical energy than American Indians and Whites that identify as assimilated.

Due to the significant findings of the MA Clinical scale, a follow-up ANCOVA was run on the Harris –Lingoes MA subscales. Table 15 lists the adjusted means and F values for the Harris-Lingoes scales. The analysis revealed a significant difference on the

Table 15. ANCOVA Adjusted Means and F for Harris-Lingoes MA Scales by Level of Acculturation

Harris-Lingoes	Traditional	Bicultural	Assimilated	Marginal	White (Assimilated)	F
MA1	53.101	55.601	49.766	49.810	53.640	1.270
MA2	51.734	53.080	47.942	51.874	51.229	.935
MA3	52.619	53.086	52.228	50.593	50.871	.520
MA4	55.604	54.709	47.022	51.612	51.747	3.067*

Notes: Means are adjusted based on the following covariates: participant age = 29.43 and participant education = 3.31.
*p<.05

Ma4 Harris-Lingoes subscale. The Ma4 Harris-Lingoes subscale is a measure of inflated ego and includes items that relate to viewing self as important, feeling resentment when others make demands, and feeling that you have been treated unfairly (Graham, 2006). A significant difference, $F(4, 252) = 3.067$, $p < .05$, was observed between the five

acculturation groups. LSD pairwise comparison revealed a significant difference between Traditional and Assimilated (mean difference = 8.582, p = .003) and White Assimilated (mean difference = 3.857, p = .039) on the Ma4 subscale. A significant difference was also observed between Bicultural and Assimilated (mean difference = 7.687, p = .005) on the Ma4 subscale. These results would suggest that American Indian participants that identify as traditional and bicultural tend to endorse more items relating an inflated ego than American Indian participants that identify as assimilated. Additionally, American Indian participants that identify as traditional endorse more items related to an inflated ego than White assimilated participants. No other significant differences on the Harris-Lingoes MA subscales were found. Analysis of additional Clinical scales revealed no significant differences.

An ANCOVA conducted on the MMPI-2 content scales and revealed a number of significant differences between the five acculturation groups. Table 16 lists the adjusted means and F values for the Content scales. The FRS content scale is a measure of

Table 16. ANCOVA Adjusted Means and F for Content Scales by Level of Acculturation

Content Scales	Traditional	Bicultural	Assimilated	Marginal	White (assimilated)	F
ANX	56.720	56.171	51.083	52.033	54.085	1.112
FRS	57.407	54.162	54.312	53.069	48.740	6.135*
OBS	53.017	50.702	48.063	47.396	50.496	.838
DEP	58.958	54.709	48.730	52.781	51.888	3.452*
HEA	60.553	59.601	52.697	58.280	52.953	5.048*
BIZ	62.736	58.182	49.163	50.723	51.422	8.629*
ANG	55.918	50.165	45.667	48.203	48.850	4.304*

Table 16. cont.

CYN	55.622	52.829	51.349	53.871	51.819	1.323
ASP	59.370	56.710	51.766	54.577	53.221	3.314*
TPA	53.392	48.907	47.193	43.353	48.700	2.653*
LSE	56.031	52.832	50.205	53.354	51.915	1.120
SOD	52.622	52.607	48.512	58.199	48.264	3.048*
FAM	59.347	54.557	47.908	51.450	49.407	7.146*
WRK	56.919	53.122	48.278	49.460	52.850	1.893
TRT	60.476	52.621	48.212	52.824	51.244	4.523*

Notes: Means are adjusted based on the following covariates: participant age = 29.43 and participant education = 3.31.
*p<.05

fearfulness and anxiety (Graham, 2006). The ANCOVA on the FRS content scale was significant, $F(4, 252) = 6.135$, $p < .05$. Subsequent tests revealed a significant difference in adjusted group means between Traditional and White Assimilated (mean difference = 8.668, $p < .001$) on the FRS content scale. A significant difference was also observed between Bicultural and White Assimilated (mean difference = 5.422, $p = .002$) on the FRS content scale. Another significant difference was observed between Assimilated and White Assimilated (mean difference = 5.572, $p = .035$) on the FRS content scale. These results would suggest that that American Indian participants who identify as traditional, bicultural, and assimilated endorse more items relating to fearfulness, unease, and specific phobias than White participants.

The DEP content scale is a measure of sadness and depression and includes items relating to feeling empty, unhappy, inadequate, guilty, and suicidal (Graham, 2006). The ANCOVA on the DEP content scale and level of acculturation was significant, $F(4, 252)$

= 3.452, $p < .05$. Subsequent tests revealed a significant difference between Traditional and Assimilated (mean difference = 10.228, p = .003) and White Assimilated (mean difference = 7.070, p = .041) participants. These results would suggest that that American Indian participants that identify as traditional endorse more items relating to sadness and depression than American Indian participants that identify as assimilated and White participants.

The HEA content scale is a measure of health concerns and includes items relating to gastrointestinal, neurological, and other general physical symptoms and complaints (Graham, 2006). The ANCOVA on the HEA content scale and level of acculturation was significant, $F(5, 251) = 5.048$, $p < .05$. Subsequent tests revealed a significant difference between Traditional and Assimilated (mean difference = 7.857, p = .020) and White Assimilated (mean difference = 7.601, p = .001) on the HEA content scale. Another significant difference was observed between Bicultural and Assimilated (mean difference = 6.905, p = .032) and White Assimilated (mean difference = 6.649, p = .001) on the HEA content scale. These results would suggest that American Indian participants that identify as traditional and bicultural endorse more items relating to health concerns than American Indian participants that identify as assimilated and White participants.

The BIZ content scale is a measure of bizarre thoughts and includes items relating to psychotic symptoms and feeling that one's thoughts and behaviors are controlled by others (Graham, 2006). A significant difference in adjusted group means on the BIZ content subscale, $F(5, 251) = 8.629$, $p < .05$, was observed between the five acculturation groups. Subsequent tests revealed a significant difference between AI College and White

College (mean difference = 5.544, p = .015) on the BIZ content scale. A significant difference was also observed on the BIZ content scale between Traditional and Assimilated (mean difference = 13.573, p < .001), Marginalized (mean difference = 12.013, p = .010), and White Assimilated (mean difference = 11.314, p < .001) participants. Another significant difference was observed between Bicultural and Assimilated (mean difference = 9.019, p = .006) and White Assimilated (mean difference = 6.759, p = .001) on the BIZ content scale. These results would suggest that American Indian participants that identify as traditional and bicultural endorse more items relating to bizarre thoughts than American Indians that identify as assimilated and White participants. Additionally, American Indian participants that identify as traditional endorse more items relating to bizarre thoughts than American Indian participants that identify as marginalized.

The ANG content scale is a measure of anger and includes items relating to irritability, resentment, physical aggression, losing control, impulsivity, and being sensitive to criticism (Graham, 2006). A significant difference on the ANG content scale, $F(4, 252) = 4.304$, $p < .05$, was observed between the five acculturation groups. Subsequent tests revealed a significant difference in adjusted group means between Traditional and Bicultural (mean difference = 5.753, p = .010), Assimilated (mean difference = 10.250, p = .001), and White Assimilated (mean difference = 7.068, p < .001) on the ANG content scale. These results would suggest that American Indian participants that identify as traditional endorse more items relating to anger than American Indian participants that identify as bicultural and assimilated and White participants.

The ASP content scale is a measure of nonconforming and includes items relating to laize-faire attitudes towards rules, norms, and laws, as well as, a history of problems with school and the law (Graham, 2006). A significant difference on the ASP content scale, $F(4, 252) = 3.314$, $p < .05$, was observed between the five acculturation groups. Subsequent tests revealed significant difference in adjusted group means between Traditional and Assimilated (mean difference = 7.605, p = .011) and White Assimilated (mean difference = 6.150, p = .002) on the ASP content scale. A significant difference was also observed between Bicultural and White Assimilated (mean difference = 3.489, p = .042) on the ASP content scale. These results would suggest that American Indian participants that identify as traditional endorse more items relating to nonconforming than American Indian participants that identify as assimilated and White participants. American Indian participants that identify as bicultural endorse more items relating to nonconforming than White participants.

The TPA content scale is a measure of behavior that is consistent with a strong drive (Type-A personality) and includes items relating to being work-oriented, impatient, jealous, competitive, and being easily annoyed (Graham, 2006). A significant difference on the TPA content scale, $F(4, 252) = 2.653$, $p < .05$, was observed between the five acculturation groups. Subsequent tests revealed a significant difference in adjusted group means between Traditional and Bicultural (mean difference = 4.485, p = .036), Assimilated (mean difference = 6.198, p = .030), Marginalized (mean difference = 10.038, p = .009), and White Assimilated (mean difference = 4.692, p = .012) on the TPA content scale. These results would suggest that American Indian participants that identify as traditional endorse more items relating to "Type-A" behavior than American

Indian participants that identify as bicultural, assimilated, and marginalized and White participants.

The SOD content scale is a measure of social discomfort and includes items relating to social discomfort, feeling nervous, interpersonal sensitivity, feelings of depression, and preoccupation with illness (Graham, 2006). A significant difference on the SOD content scale, $F(4, 252) = 3.048$, $p < .05$, was observed between the five acculturation groups. Subsequent tests revealed a significant difference in adjusted group means between Traditional and White Assimilated (mean difference = 4.358, p = .039) on the SOD content scale. A significant difference was also observed between Bicultural and White Assimilated (mean difference = 4.343, p = .020) on the SOD content scale. Another significant difference was observed between Marginalized and Assimilated (mean difference = 9.687, p = .042) and White Assimilated (mean difference = 9.936, p = .015) on the SOD content scale. These results would suggest that American Indian participants that identify as traditional, bicultural, and marginalized endorse more items relating to social discomfort than White participants. Additionally, American Indian participants that identify as marginalized endorse more items relating to social discomfort than American Indian assimilated participants.

The FAM content scale is a measure of familial discord and includes items relating to feelings of anger and resentment towards family members, as well as, feeling that the family is not understand or supportive (Graham, 2006). A significant difference on the FAM content scale, $F(4, 252) = 7.146$, $p < .05$, was observed between the five acculturation groups. Subsequent tests revealed a significant difference in adjusted group means between Traditional and Bicultural (mean difference = 4.790, p = .042),

Assimilated (mean difference = 11.440, p = .000), and White Assimilated (mean difference = 9.940, p < .001) on the FAM content scale. A significant difference was also observed between Bicultural and Assimilated (mean difference = 6.650, p = .027) and White Assimilated (mean difference = 5.150, p = .005) on the FAM content scale. These results would suggest that American Indian participants that identify as traditional and bicultural endorse more items relating to familial discord than American Indian participants that identify as assimilated and White participants. Additionally, American Indian participants that identify as traditional endorse more items relating to familial discord than American Indian participants that identify as bicultural.

The TRT content scale measures if someone would have difficulty in treatment and includes items relating to motivation, ability to disclose, and feelings of pessimism (Graham, 2006). A significant difference on the TRT content scale, $F(4, 252) = 4.523$, $p < .05$, was observed between the five acculturation groups. Subsequent tests revealed a significant difference in adjusted group means between Traditional and Bicultural (mean difference = 7.855, p = .004), Assimilated (mean difference = 12.264, p = .001), and White Assimilated (mean difference = 9.232, p < .001) on the TRT content scale. These results would suggest that American Indian participants that identify as traditional endorse more items relating to negative treatment indicators than American Indian participants that identify as bicultural and assimilated, as well as, White participants.

To further understand the impact of acculturation it is important to determine the frequency of each level of acculturation with each sample group. Percentages of each level of acculturation within each sample group was determined from the frequencies. Table 17 shows the frequencies and Figure 1 show the percentages. A visual analysis of

Table 17. Frequency of Level of Acculturation by American Indian Sample

	College	Community	Clinical
Traditional	7	22	10
Bicultural	24	19	6
Assimilated	13	3	2
Marginalized	3	4	2
Total	47	48	20

this chart reveals that a large percentage of participants that identified as traditional falls into the Community and Clinical American Indian samples. In fact, 56% of the total number of participants that identified as traditional falls in the Community sample while 26% falls in the Clinical sample. The American Indian College sample holds 72% of the total participants that identified as Assimilated. The American Indian College sample and American Indian Community sample also held a large percentage of participants that identified as bicultural at 49% and 39% respectively. The number of American Indian participants that identified as marginalized was roughly equal between the College sample (n=3) and the Community sample (n=4).

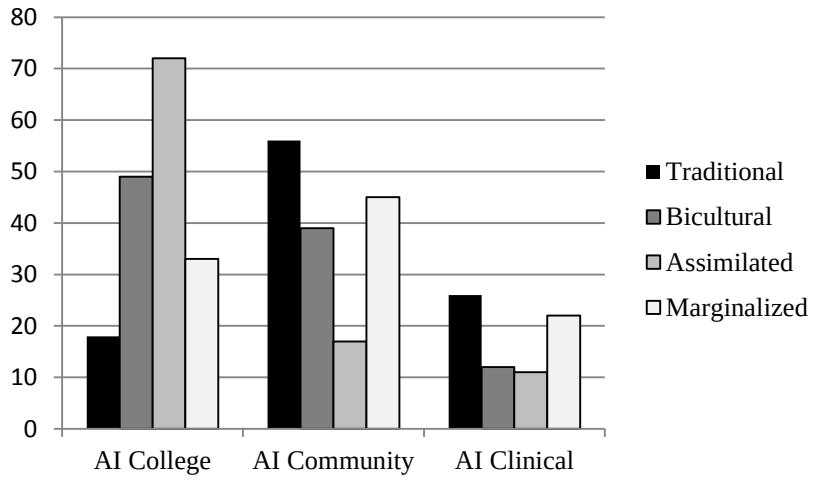

Figure 1. Percent of Each Level of Acculturation Within Sample Group. Figure illustrates the percent of total participants in each level of acculturation included within each sample group.

As mentioned in the Procedure section, the Life Perspectives Scale (LPS) was included in the present study to provide consistency with the Kagan 2011 study. However, the LPS could not be analyzed due to missing data. A majority of the American Indian community sample and all of the White clinical sample had missing LPS scores. This will be discussed later in the discussion.

CHAPTER IV

DISCUSSION

Findings

Use of psycho-diagnostic instruments in minority populations must be monitored and evaluated to assess for both test bias and treatment implications. It is an important objective of the research community to determine if a measure is biased against members of a minority population or whether actual differences exist between the norm population and minority population. That is, minority populations may respond in a manner different from the majority culture but entirely consistent with their cultural norms. Additionally, socioeconomic status is often lower in minority cultures than in the majority cultures. These factors need to be taken into account when evaluating whether a psychological test is culturally biased. It has been suggested that level of acculturation may impact the expression of psychological distress (Pace et al., 2006; McDonald, Morton & Stewart, 1993). The present research examined the influence of culture on MMPI-2 validity, clinical, content, and select additional scales within the Northern Plains American Indian community.

Analysis of the demographic variables of age and education revealed significant differences among the six different sample groups. Participants from the community and participants from a clinical setting tended to be significantly older than college students. Additionally, American Indian college students were significantly older than White college students. In regards to education, White participants from the community had

significantly higher levels of education than all other sample groups while American Indian participants from a clinical setting had significantly lower levels of education than college students (in addition to the White community sample). Due to the significance of these variables, age and education were used as covariates in the subsequent data analyses. This is slightly different than the Kagan (2011) study, which used the demographic variable of socioeconomic status as a covariate in the analyses. Socioeconomic status is determined by calculating a value from the variables of education and job status. Due to missing information from a number of participants regarding their type of job, SES could not be used in the present analyses. Using the same method as Robin et al (2003), level of education alone was used to account for SES. Education was significantly correlated with SES in our sample $r(219) = .42$, $p<.001$.

A series of ANCOVAs on the MMPI-2 scales were performed, controlling for participant age and level of education, across the six sample groups. The six sample groups differed on a number of validity scales including: VRIN, TRIN, F, Fb, Fp, L. This suggests that even when confounding variables (i.e. age and education) are controlled for, the six groups exhibit a number of differences. Where differences are observed, there is a specific pattern of responses depending on the ethnicity and setting of the sample. American Indian participants tend to score higher than White participants, specifically American Indians from the community sample. White participants from a clinical setting tend to score higher than other White participants. College students, both White and American Indian, tend to score lower than all other samples on the validity scales.

The six sample groups also differed on a number of Clinical scales (Hs, D, Pd, Pa, Pt, Sc, Si), Harris-Lingoes scales (D1, D4, PD2, PD4, PA1, SC1, SC2, SC3, SC4, SC5, SC6, SI1), and Content Scales (ANX, FRS, DEP, HEA, BIZ, LSE, SOD, FAM, TRT). The differences observed among the sample groups depend on ethnicity and setting. American Indian participants tended to score significantly higher than White participants. Participants from a clinical setting tended to score significantly higher than other samples (with the exception of the American Indian community sample) while participants from college tended to score significantly lower than other samples. American Indian participants from the community tended to score significantly higher than the college sample and White community sample but appear to generally score similarly to the clinical sample. High scores are associated with more psychological distress and personality disorders. These results indicate that even when holding constant the effects of age and education, there continue to be significant differences between the sample groups.

The demographic variables were also analyzed by level of acculturation. The American Indian participants were divided into four acculturation groups (Traditional, Bicultural, Assimilated, and Marginalized) based upon their response to the NPBI-R/NPBI-III. All White participants fell in the Assimilated category on the NPBI-R/NPBI-III and were put into a fifth group designated as White Assimilated. The analyses of demographic variables revealed significant differences between the levels of acculturation in participant age. American Indian participants that identified as traditional were significantly older than White participants. Although level of education was not significant at $p<.05$, it was included as a covariate in order to be conservative. A

second series of ANCOVAs, using age and education as covariates, analyzed the MMPI-2 scales in relation to level of acculturation. Comparison revealed significant differences between levels of acculturation on a number of Validity scales including: VRIN, TRIN, F, Fb, Fp, and L. These same scales were significantly different in the analyses of the sample groups. Among the Validity scales, American Indian participants that identify as traditional and bicultural tend to score higher than assimilated American Indian participants and White participants. Occasionally, traditional participants would score significantly higher than bicultural participants. It is important to note that American Indian participants that identify as assimilated do not score significantly different than White participants. Marginalized American Indian participants did not tend to score significantly different than any other group.

The five acculturation groups also differed on a number of Clinical scales (Pa, Sc, Ma), Harris-Lingoes scales (PA1, SC1, SC3, SC5, SC6, MA4), and Content Scales (FRS, DEP, HEA, BIZ, ANG, ASP, TPA, SOD, FAM, TRT). The same patterns in responding that occurred on the Validity scales were found in these other scales. American Indian participants that identify as traditional and bicultural appear to endorse more items associated with psychological distress and personality disorders than American Indian participants that identify as assimilated and White participants. The results indicate that even when age and education are controlled for, significant differences exist between levels of acculturation.

Implications

These analyses would also suggest that some of the differences found between the samples can be accounted for by level of acculturation. For example, the Pa Clinical

scale is found to have significant differences across both sample and level of acculturation. When examined, the Pa Clinical scale revealed significant differences between American Indian participants and White participants from college and the community. However, it would be inaccurate to conclude that all American Indian participants score higher on the Pa Clinical scale compared to White college students and White community members. The analysis of the Pa Clinical scale, by level of acculturation, shows that American Indian participants that identify as traditional and bicultural score significantly higher than White participants but American Indian participants that are assimilated and marginalized are not significantly different than White participants. Therefore, American Indians that identify as assimilated and marginalized resemble White participants more closely than American Indians that identify as traditional or bicultural. Analysis of the other Clinical, Harris-Lingoes, and Content scales that are significant by both sample and level of acculturation reveals similar findings. One can conclude that it is not merely ethnicity or sample setting that account for all of the differences between the participants of the study. Culture plays a significant role in the outcomes of MMPI-2 profiles in American Indians.

The analyses presented above represent a difference from the Kagan (2011) findings. Kagan found that American Indians and Caucasians appeared more similar than different on most MMPI-2 scales. The samples produced few significant differences on the Validity, Clinical, or Content scales of the MMPI-2. However, both samples were drawn from a college setting and were taken from a high functioning, non-clinical population. Kagan hypothesized that the university setting (a government funded state institution) had produced a limited range of acculturation. The present study corrected

for this limitation by sampling from a number of settings that differed in their proximity to and comfort with European American culture.

Consequently, the present study found a large number of significant differences on the Validity, Clinical, Harris-Lingoes, and Content scales which is consistent with some of the findings by Robin et al. (2003).

Previous work by Robin et al. (2003) demonstrated that American Indian participants scored significantly higher than norm group participants on specific scales of the MMPI-2. The 2003 study found that five validity and clinical scales (L, F, 1[Hs], 4[Pd], 8[Sc]) and six content scales (DEP, HEA, BIZ, CYN, ASP, TRT) were significantly higher (≥ 5 T-scores) in the American Indian group than the White group. When the participants were matched on age, gender, and education the size of the differences diminished but remained clinically significant. The present research revealed similar findings along with a number of additional significant scales. Significant differences on the L, F, 8 (Sc), DEP, HEA, BIZ, and TRT scales were found when analyzing based on sample and on level of acculturation. Significant differences were also found on 1 (Hs) and 4 (Pd) when analyzing for differences among the six samples. Significant differences were also found on ASP when analyzing for differences among the levels of acculturation. Only one Content scale that was found to be significant in the Robin et al. study was not found to be significant in the present study. Participants were never found to be significantly different on CYN based on sample or level of acculturation.

From these comparisons, the present study produced results much more similar to the Robin et al. (2003) study than the Kagan (2011) study. These similar findings may,

in part, be due to the populations sampled within each study. As mentioned previously, the Kagan (2011) study sampled from a high functioning, non-clinical population at a state university. Robin et al. (2003) sampled from tribal groups on reservations and in the community. Green et al. (2003) had a number of participants with a family history of clinical diagnosis. The present study sampled from reservations and recruited tribal members within the community, in keeping with Robin et al. (2003), and included a clinical sample like Green et al. (2003). Additionally, the present study attempted to control for socioeconomic differences.

Robin et al (2003) and Green et al (2003) assessed years of education to control for some socioeconomic differences between groups. These studies matched participants on age, gender, and education to account for significant demographic and socioeconomic differences. Controlling for these variables diminished the size of the differences but did not eliminate the differences between groups. With this in mind, the present study controlled for age and education. Gender was not used as a covariate due to the gendered norms of the MMPI-2. Even while controlling for age and education, a number of significant differences were found.

Robin et al. (2003) expressed the belief that the differences found in their study may reflect "historical, social, and economic conditions" within the American Indian community. In an effort to account for these variables the present study included a measure of acculturation. The Northern Plains Biculturalism Inventory, Revised (NPBI-R) and the third edition (NPBI-III) were administered to all participants to measure cultural identity; accounting for some social conditions that may differentiate American Indian participants from their non-native counterparts. This study found that culture can

account for some differences found between American Indian and Caucasian participants. Participant education was used to account for some of the social and economic influence. Additionally, participants were categorized by setting in order to create a clearer picture of where social differences may originate. Historical variables were not measured in this study.

Green et al. (2003) studied how MMPI-2 scale elevations compared to other psychological measures in American Indian samples. They found that the significant differences on MMPI-2 scales of American Indians correlated with clinical diagnoses from the Schedule for Affective Disorders and Schizophrenia-Lifetime (SADS-L). The authors concluded that differences on MMPI-2 scales between American Indian participants and the normative group were due to actual functional differences and not due to test bias. Additionally, the Beals et al. (2005a) study reports a high lifetime prevalence of depressive, anxiety, and substance use disorders within Northern Plains American Indians that would suggest that the MMPI-2 results represent true psychological distress. It is difficult to definitively say whether the MMPI-2 is biased against American Indian individuals, however, by examining some of the results we can draw some tentative conclusions.

First, if the MMPI-2 was biased towards non-native individual's it would be expected that the traditional group would score significantly higher than the bicultural, acculturated, and majority culture (Caucasian) groups. The results somewhat support this theory. The traditional group scored significantly higher than American Indian assimilated participants and White participants on all three Clinical scales with significant differences (6 [Pa], 8 [Sc], 9 [Ma]). However, the traditional group is not

significantly different from the bicultural group on a number of scales. One interpretation would suggest that the 6 (Pa), 8 (Sc), and 9 (Ma) Clinical scales may be biased against American Indians that identify with their Native culture (traditional and bicultural) but is not biased against American Indians that identify with European American culture only (assimilated) or American Indians that do not identify with either culture (marginalized). However, this could also indicate that American Indians that identify as traditional and bicultural experience more psychological distress than American Indians that identify as assimilated and marginalized.

Second, if the MMPI-2 is not biased against American Indians then we would expect to see similar scores between the White clinical and American Indian samples. The reason being, if Green et al. (2003) is correct and American Indians truly experience increased psychological distress (rather than merely appearing to have psychological distress), then it would be assumed that they would compare to White participants that are also experiencing similar distress. The clinical sample provides a population of White participants that are experiencing increased psychological distress. Interestingly, the ANCOVA results show that American Indian clinical and community participants do not score significantly different than White clinical participants on the Clinical scales. This would appear to support the hypothesis that American Indian clinical and community participants higher T-scores reflect substantive differences rather than test bias. It is important to note the impact of level of acculturation on this finding. When examining the frequencies of level of acculturation within each sample, it is revealed that the American Indian community and clinical samples were composed of a high percentage of traditional and bicultural identity.

McDonald, Morton, and Stewart (1993) lay ground for the argument that biculturalism may act as a protective factor for American Indian individuals. The ability to function comfortably in two cultures is believed to ameliorate the negative effects imposed by membership in a minority culture. The results of this study do not support McDonald, Morton, and Stewart's proposal. American Indian participants who identified as bicultural tended to score higher on MMPI-2 scales compared to the assimilated and White groups. However, McDonald, Morton, and Stewart state that American Indian individuals who fall into the extremes of cultural spectrum (i.e. traditional or assimilated) may experience more psychological stress. The present study partially supports this theory. American Indian participants who identified as traditional scored significantly higher than American Indian participants who identified as assimilated and White participants on all three of the significant Clinical scales. Table 12 lists the mean scores. This would suggest that American Indian participants that identify as traditional endorse more symptoms of psychological distress than most other participants. However, assimilated American Indian participants did not score significantly different from White participants and these results would suggest that they do not endorse more symptoms of psychological distress compared to Whites. These results support the theory of acculturative stress discussed by Pace et al. (2006) and Velasquez (2000). It appears that individuals that are less acculturated (i.e. traditional or bicultural) experiences greater distress.

These findings will be important for clinicians making treatment decisions when working with American Indians. The Beals et al. (2005a) study showed that Northern Plains American Indians that met criteria for depressive, anxiety, and substance use

disorders sought out treatment at a higher rate than the national average. The Northern Plains American Indians also frequently sought out treatment from traditional healers. Koithan and Farrell (2010) stress the importance that traditional ceremonies can have on the overall wellbeing of American Indians. The present study shows that Northern Plains American Indians that identify as traditional and bicultural, tend to score significantly higher on a number of scales of the MMPI-2. Many of the questions on the NPBI-III that relate to traditional and bicultural identity ask about participation in traditional cultural practices. This indicates that American Indians with traditional and bicultural identity are comfortable with traditional cultural practices. Clinicians should consider incorporating various culturally significant practices, concepts, and ceremonies (e.g. sweat lodges, pipe ceremonies, talking circles, medicine wheel, etc.) into the therapeutic process when appropriate. This may help improve treatment outcomes for traditional and bicultural American Indians by potentially increasing buy-in and affinity to mental health interventions.

Limitations and Weaknesses

There are a number of caveats to this study, which limit the ability to interpret the results. The American Indian clinical sample size is small, n = 20. Small samples sizes produce a higher chance of Type I error (Myers & Well, 2003). In effect, the small number of American Indian participants may overestimate the magnitude of the difference and create a false positive. The White clinical sample, n = 40, is larger. Additionally, the sizes of the six sample groups are not equal. Table 18 lists the frequencies. Unequal samples sizes can violate the assumption of homogeneity of variances. To test for this, Levene's test was run on the analyses. The Levene's test

Table 18. Frequency of Participants by Sample Group

	College		Community		Clinical	
	White	American Indian	White	American Indian	White	American Indian
N	78	47	34	48	40	20

revealed no significance on most of the Clinical scales for both sample and level of acculturation. The Hs Clinical scale, when analyzed by sample, had a positive Levene's test indicating heterogeneity of variance. This indicates that the significance difference found on this scale by sample may not be accurate. The Levene's test revealed a number of significant differences on Validity scales. The VRIN, TRIN, F, Fb, Fp, and L Validity scales tested positive for heterogeneity of variance for both sample and level of acculturation. This may impact the significant differences found on the Validity scales. Future studies should collect equal samples sizes.

Another limitation of the study is the generalizability of the results. As addressed previously, the cultural differences among American Indian tribes varies greatly and reflects geographic, historical, and linguistic differences. The present study specifically chose to study American Indians located in the Northern Plains region. This included a number of different reservations and tribes. Although the sample is mostly composed of Lakota and Chippewa people, in includes other Northern Plains tribes (i.e. Three Affiliated Tribes). Focusing on one region strengthens the applicability of the results to the Northern Plains people and prevents an "ethnic gloss" from occurring; however, this also means that the results do not tell us about American Indians from other regions or tribes. Additionally, this study utilized a non-random sample. Due to possible sampling error, the results may not be representative of all Northern Plains American Indians. As

mentioned previously, the Caucasian sample is only representative of Northern Mid-West Caucasians and not of the overall US Caucasian population.

The present sample has a high level of education with 56% of the sample having at least some college experience and 91% of the sample had a high school degree or equivalent degree. Nine percent of the sample had less than a high school degree or degree equivalent and only 1% had less than a 9th grade education. Previous studies (Robin et al, 2003; Green et al, 2003) averaged a high school education or less, with 13% of participants having less than a 9th grade education. Again, level of education was used as a covariate to help control for differences resulting from education. Still, these differences may limit the comparisons to previous research.

Finally, comparisons between the Northern Plains Biculturalism Inventory and another measure of acculturation (Life Perspectives Scale) were not able to be drawn due to missing LPS data from two of the sample groups (AI Community and White Clinical). Any direct comparisons would have been limited anyway due to the differences in norming samples. The LPS was given to American Indians from Oklahoma while the NPBI-R and NPBI-III were normed on Northern Plains American Indians. Kagan 2011 found no significant differences on the LPS scales and Berryhill (1998) suggests that the LPS may not be a strong measure of acculturation. Future research should consider additional measures of acculturation that are appropriate for the cultural differences in American Indian tribes.

Future Research

The differences on MMPI-2 scales among the samples and acculturation groups suggest that if socioeconomic factors and culture are properly controlled for differences

still exist between and within ethnic groups on the MMPI-2. Further research is necessary to determine the full relationship between race, culture, and SES on the MMPI-2. The MMPI-2 scales should be examined at an item response level. It may be important to determine which items are being endorsed more by American Indian participants that identify as traditional and bicultural and how these items contribute to cultural identity. The more that is understood about cultural identity the more may be understood about why differences are found on MMPI-2 scales. The present study highlights the need for research into why American Indian participants (specifically those that identify as traditional and bicultural) consistently score higher on Validity, Clinical, and Content scales. Green et al. (2003) demonstrated that American Indian participants score higher on MMPI-2 scales due to substantive differences; however, the article did not offer explanations of why these differences may exist. Future research should include additional measures of psychological distress (e.g. BDI-II, SCID, STAXI) to see if a correlation exists between the scores on the MMPI-2 and reported symptoms of distress in relation to level of acculturation.

Research within the American Indian community is limited and has been tainted by a history of abuse (Dana, 1988). It is imperative to present research findings that accurately portray the American Indian community. The current study concludes that American Indian participants that identify as traditional and, to a lesser extent, bicultural score significantly higher on a number of MMPI-2 scales. If these differences represent true symptoms (i.e. increased psychological distress) then it will be important information for clinicians working with American Indian clients to consider in their treatment plans. If these differences reflect cultural factors and do not represent

increased psychological distress then these findings should be disseminated to mental health providers; instructing appropriate use and interpretation of psychodiagnostic instruments within American Indian Clients.

APPENDICES

Appendix A
Northern Plains Biculturalism Inventory, 3rd Edition

NPBI-III (Northern Plains Biculturalism Inventory III)

(2011, McDonald, J.D, Baker, L., Gonzalez, J., Rose, W.)

These questions ask you to describe your attitudes, feelings, and participation in Indian and White cultures. Items may apply completely, some, or not at all, so please read each question carefully and answer as accurately as you can. Then circle the number above the answer that best fits how you feel or what you do, as in the example below.

Example: What is your degree of comfort with paper and pencil questionnaires?

1. ___	2. ___	3.____	4. _X_
No comfort			Great comfort

In this example, the person felt moderate but not complete comfort with paper and pencil questionnaires, so filled in 4.

In the case of attitudes and feelings, your first impression is usually correct. We are interested in how much your daily thoughts, feelings and actions are influenced by Indian and White cultures., keeping in mind that no two people have the same background.

1. In general, how comfortable are you around White people?

1. ___	2. ___	3. ___	4. ___
No comfort			Complete comfort

2. How comfortable are you in encouraging your children to learn and practice American Indian ways?

1. ___	2. ___	3. ___	4. ___
No comfort			Complete comfort

3. How strongly do you identify with American Indian culture?

1. ____	2. ____	3. ____	4. ____
No identification			Greatly identify

4. How strongly do you identify with White culture?

1. ____	2. ____	3. ____	4. ____
No identification			Greatly identify

5. How often do you think in an American Indian language?

1. ____	2. ____	3. ____	4. ____
I rarely or never think in an Indian language			Very often or always think in an Indian language

6. How confident are you in White/Western (doctors in hospitals) medicine?

1. ____	2. ____	3. ____	4. ____
I do not use White medical doctors			Have complete faith in White medical doctors

7. How confident are you in traditional Native/American Indian medicine and ceremonies?

1. ____	2. ____	3. ____	4. ____
No confidence in Native medicine			Have very strong faith in Native medicine

8. How much is your way of thinking of "Family" American Indian (cousins same as brothers and sisters, aunts/uncles as parents, everyone is related)?

1. ____	2. ____	3. ____	4. ____
My idea of "Family" is mostly "White", relatives/friends are what they are			My idea of "Family" is very strongly Indian we are all relatives

9. How often do you attend traditional American Indian ceremonies (i.e Sweat lodge, Pipe Ceremonies, Sundance, Shaky Tent, Vision Quest)?

1. ____	2. ____	3. ____	4. ____

I never attend Indian ceremonies

I attend Indian ceremonies frequently

10. How often do you attend more White, Christian religious ceremonies (Christenings, Baptisms, Church services)?

1. ____ 2. ____ 3. ____ 4. ____

I never attend Christian ceremonies frequently

I attend Christian ceremonies

11. How often do you participate in Indian dancing (Grass, Fancy, Jingle-Dress,Round, etc.)?

1. ____ 2. ____ 3. ____ 4. ____

I never participate in Indian dances

I participate in Indian dances frequently

12. To how many social organizations do you belong where most of the members are Indian?

1. ____ 2. ____ 3. ____ 4. ____

I belong to no Indian organizations

Most of the organizations I belong to are Indian organizations

13. How often do you attend White celebrations (i.e. White ethnic festivals, parades, etc)?

1. ____ 2. ____ 3. ____ 4. ____

I never attend White celebrations

I attend White celebrations frequently

14. How often do you attend Indian celebrations (i.e. Pow-Wows, Wacipis, Hand-games)?

1. ____ 2. ____ 3. ____ 4. ____

I never attend Indian celebrations

I attend Indian celebrations frequently

15. How many of your family speak an American Indian language?

1. ____	2. ____	3. ____	4. ____
None of my family speak Indian			Most of my family speak Indian

16. How much do you speak an American Indian language?

1. ____	2. ____	3. ____	4. ____
I rarely or never speak Indian			I often or always speak Indian

17. To what extent do members of your family have Indian first or last names (like "Wambli" or "Kills-in-Water")?

1. ____	2. ____	3. ____	4. ____
None have Indian last names			All have Indian last names

18. How often do you talk about White news and culture in your daily conversation?

1. ____	2. ____	3. ____	4. ____
I never engage in topics of conversation about Whites and their culture			I engage in topics of conversation about Whites and their culture frequently

19. How often do you talk about Indian topics, news and culture in your daily conversations?

1. ____	2. ____	3. ____	4. ____
I never discuss Indian news or cultural issues			I discuss Indian news or cultural issues daily

20. How much do you believe in any Indian Creation Stories (how Earth/People/Animals were made?)

1. ____	2. ____	3. ____	4. ____

I don't believe in any of those stories

I very strongly believe in those stories

21. How much do you believe in any non-Indian Creation Stories (Adam/Eve, Garden of Eden, etc?)

1. ____ 2. ____ 3. ____ 4. ____

I don't believe In any of those stories

I very strongly believe in those stories

22. In general, much do you believe *"Success"* best means when an **individual** wins or achieves something?

1. ____ 2. ____ 3. ____ 4. ____

I totally believe success is best achieved by individuals

I totally believe success is best achieved by groups (i.e. families teams, tribes, etc.)

23. In general, how much do you believe *"Success"* best means when a **Group** (i.e families teams, tribes, etc.) wins or achieves something?

1. ____ 2. ____ 3. ____ 4. ____

I totally believe success is best achieved by individuals

I totally believe success is best achieved by Groups

24. How often are you on, or been to, any American Indian reservations?

1. ____ 2. ____ 3. ____ 4. ____

I call a reservation "home"

Never been to an Indian reservation

25. How important is your European or White American heritage and history to you?

1. ____ 2. ____ 3. ____ 4. ____

Not at all Important

Very important

Appendix B
Life Perspective Scale, Revised

LPS-R

Read each statement then rate how often it sounds like something you do, think, feel, or believe by circling one of the numbers to the left.

Never	Hardly Not	Sometimes	Often	Most of the Time	
1	2	3	4	5	I speak my Native language when I'm around others who speak it.
1	2	3	4	5	Others see me as having knowledge of tribal history.
1	2	3	4	5	I prefer to work from a picture or detailed drawing when putting things together.
1	2	3	4	5	Indian people seem to think differently than I do.
1	2	3	4	5	I believe in something more than what is here today.
1	2	3	4	5	I like to work on Indian arts and handicrafts.
1	2	3	4	5	I prefer to have only Indian friends.
1	2	3	4	5	As an Indian person, I believe people see that I try to learn from Grandparents and other Indian elders.
1	2	3	4	5	I have trouble speaking any of my Native language.
1	2	3	4	5	Non-Indian people talk too fast.
1	2	3	4	5	I believe I show that I have knowledge about clan-band relationships.
1	2	3	4	5	I value my extended family.
1	2	3	4	5	It is important to me to help other Indian people see that they can keep traditional ways and still do okay in the world.
1	2	3	4	5	I prefer to have only non-Indian friends.
1	2	3	4	5	I like to attend Indian arts and crafts shows.
1	2	3	4	5	I laugh at things or tell jokes that only other Indian people laugh at.
1	2	3	4	5	I like to try to learn the "old ways" of doing certain crafts.

Never	Hardly Not	Sometimes	Often	Most of the Time	
1	2	3	4	5	I prefer to attend only Indian social events.
1	2	3	4	5	I feel better when I attend Indian church.
1	2	3	4	5	When people talk they should get straight to the point.
1	2	3	4	5	Indian people should speak slowly.
1	2	3	4	5	I feel more comfortable around non-Indian people.
1	2	3	4	5	It is important that I raise my children to be “Indian.”
1	2	3	4	5	I prefer to work in groups to solve problems.
1	2	3	4	5	When people speak to each other about important things, they should speak as equals.
1	2	3	4	5	I think Indian people should learn their Native language.
1	2	3	4	5	Non-Indian people speak more from their heads and not their hearts.
1	2	3	4	5	It is important that our Indian traditions are kept alive.
1	2	3	4	5	I choose only Indian people to be my close friends.
1	2	3	4	5	It is important that Indian people change the old traditions so they can do better in the world.
1	2	3	4	5	When I feel bad, I go to see the medicine man/woman or Indian doctor first.
1	2	3	4	5	I am happiest when I am with Indian people.
1	2	3	4	5	People should not show their feelings to everybody.
1	2	3	4	5	Everyone should respect nature and all living things.
1	2	3	4	5	I like to be seen as a leader and an important person.
1	2	3	4	5	Indian people should be involved in their tribe’s politics.
1	2	3	4	5	I feel most comfortable when I am alone.
1	2	3	4	5	I consider myself to be an individual first and a tribal member second.
1	2	3	4	5	I have lived in Indian communities.

Never	Hardly Not	Sometimes	Often	Most of the Time	
1	2	3	4	5	I'm not really comfortable around non-Indian people.
1	2	3	4	5	I take part in Indian religious ceremonies.
1	2	3	4	5	When I get together with my friends, the group is mostly non-Indian.
1	2	3	4	5	I was taught both White and Indian values.
1	2	3	4	5	I don't feel like I belong in the Indian world
1	2	3	4	5	I feel proud of my Indian heritage
1	2	3	4	5	I am happiest when I am around non-Indian people.
1	2	3	4	5	Non-Indian people seem to think differently than I do.
1	2	3	4	5	I would prefer to live in non-Indian communities.
1	2	3	4	5	To win arguments, I speak loudly and strongly.
1	2	3	4	5	When I talk to the Creator I talk in my Native language.

Appendix C
Demographic Information

CONFIDENTIAL INFORMATION

Please answer as honestly as possible the following questions about yourself. The answers you provide will be completely confidential.

Personal Information:

How old are you? _____

Are you *male*? ☐ *female*? ☐ *other*? _____

Do you primarily identify as *White?* ☐ *American Indian?* ☐ *Other?*_____

What language did you first learn to speak? _____

What is the highest grade *you* completed in school? _____

What is the highest grade *your father* completed in school? _____

What is the highest grade *your mother* completed in school? _____

Are you *married*? ☐ *divorced/separated*? ☐ *single*? ☐ *widowed?* ☐

Do you have children? *Yes* ☐ *No* ☐ If yes, how many? _____

Occupational Information:

What is *your* occupation or job? _____

What is/was *your father's* occupation or job? _____

What is/was *your mother's* occupation or job? _____

What is *your* total income?		What is your *parent's* household income?	
0 - $10,000	☐	0 - $10,000	☐
$10,000 - $20,000	☐	$10,000 - $20,000	☐
$20,000 - $30,000	☐	$20,000 - $30,000	☐
$30,000 - $40,000	☐	$30,000 - $40,000	☐
$40,000 - $50,000	☐	$40,000 - $50,000	☐
$50,000 - $60,000	☐	$50,000 - $60,000	☐
Over $60,000	☐	Over $60,000	☐

Tribal Affiliation:

What tribe(s) do you belong to/associate with? _____

Are you an *enrolled member* ☐ or *descendent* ☐ of your Tribe?

Do you live on a reservation? _____ If yes, please name _____

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