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Biculturalism And Native American College Students' Performance On The WAIS-III

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BICULTURALISM AND NATIVE AMERICAN COLLEGE STUDENTS' PERFORMANCE ON THE WAIS-III

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This thesis, submitted by Teton Ducheneaux in partial fulfillment of the requirements for the degree of Master of Arts from the University of North Dakota, has been read by the Faculty Advisory Committee under whom the work has been done and is hereby approved.

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This thesis meets the standards for appearance, conforms to the style and format requirements of the Graduate School of the University of North Dakota, and is hereby approved.

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ABSTRACT

Consideration of cultural appropriateness in using Western-European standardized intelligence measures with Native Americans for clinical and educational purposes has been neglected by professionals in the field of clinical assessment. Some studies suggest the possibility of a "Native American Pattern" on such tests, indicating a consistent, yet little-understood discrepancy. The present study investigated the impact of cultural identification of Native American college students on the Wechsler Adult Intelligence Scale-Third Edition (WAIS-III). The study assessed the relationship between cultural identification and cognitive-testing scores between two groups of Native American college students. The first group consisted of off-reservation Native American students attending the University of North Dakota (UND). The second group consisted of Native American students attending an on-reservation tribal college, Oglala Lakota College (OLC). The Northern Plains Biculturalism Inventory (NPBI) (Allen & French, 1993) was employed to measure cultural orientation and the WAIS-III provided scores indicative of intellectual functioning.

Many important factors, including heredity, socioeconomic background, and historical background play important roles in determining an individual's intelligence level. Due to skepticism and suspicion, historical factors, and a lifestyle and world-view that varies a great deal from that of European-Americans, intelligence test performance

can also differ between Native Americans and European-Americans. The degree to which these factors actually impact Native American intelligence is not well understood by psychologists. This study provided some important clues to understanding the relationship between cultural orientation and measured intelligence.

It was predicted that the Traditional sample (i.e., as assessed by the NPBI) compared to the Assimilated sample, would display different patterns on the WAIS-III. Results showed that the Traditional group scored higher on Verbal IQ and the Assimilated group scored higher on Performance IQ. This was possibly due to the fact that the UND group scored higher on Verbal IQ and also identified themselves as more Traditional then the Oglala College group, which scored lower on Verbal IQ. The overall sample scored higher on Performance IQ than Verbal IQ as predicted, which possibly supports a unique patterning difference. Also, when comparing the UND and OLC groups, the UND group scored significantly higher on Verbal IQ and Full Scale IQ.

An important limitation to this study was that subjects were in college; therefore, the results may not generalize to real world settings. It will be important for future research to examine the effects of Biculturalism on IQ performance in an environment that may be more generalizable. More research needs to be conducted to learn how Biculturalism can impact IQ performance on assessment measures.

INTRODUCTION

There has recently been an increased emphasis on the degree to which cultural identification impacts performance on assessment measures developed and standardized primarily on majority-culture members. The wide use and perhaps misuse of these scales with Native American populations in clinical and educational settings is leading to an increased need to understand the role culture and ethnic identification play in the assessment process.

Definition of Study Key Terms

1. Native American or American Indian: Any group or individual demonstrating blood quantum or ancestral lineage to any federal, state, or locally recognized tribe. Also, any person who becomes a member of such a tribe through ceremonial adoption and strives to live in traditional American Indian fashion (McDonald, Mc..on, & Stewart, 1993).
2. Biculturalism: Described as identification with both the European-American culture and Native American culture (LaFromboise, Trimble, & Mohatt, 1990).
3. Intelligence: The ability to adjust or adapt to the environment, the ability to learn, or the ability to perform abstract thinking (i.e., to use symbols and concepts). Wechsler (1985) states that intelligence is composed of many qualitatively different abilities, such as verbal comprehension and working memory.

Cultural Orientation

LaFromboise, Trimble, and Mohatt (1990) describe four solutions to a group identity dilemma or crisis that result from willingness or unwillingness to be assimilated by the dominant society and/or retain a traditional cultural identity. These include retention of the Traditional culture, identification with the dominant European-American culture (i.e., Assimilation), identification with both cultures (i.e, Biculturality) and Marginality which describes an individual that rejects segments of both the original and the dominant society cultures. Dana (1993) describes a possible fifth orientation which could be characteristic of Native Americans called Transitional, which can be said to describe Native Americans who are bilingual but who question their traditional religion and values.

Currently used assessment measures of intelligence are standardized by European-American norms which could be defined as culture-specific toward the majority culture lifestyle. Dana (1986) argues that environmental factors play an important role in determining one's intelligence. Differential attitudes about other cultures and lifestyles can also create problems for Native American people being assessed by such standardized tests. These differences in attitudes need to be given special consideration by psychologists and researchers working with Native American people.

The Orthogonal Theory of Biculturalism (Oetting & Beauvais, 1991) suggests that the more culturally competent one is in both the native and majority cultures, the more successful and well adjusted that individual will be. High level of knowledge and

practice pertaining to the values, beliefs and customs of one's culture distinguishes culturally competent individuals. Highly bicultural individuals also display a strong sense of identification, participation in cultural activities, good communication skills, knowledge about cultural norms and customs in both cultures (LaFromboise, Coleman, & Gerton, 1993).

Effects of Culture

Dana (1986) suggests acculturation be considered as a moderator variable that affects assessment instruments when gave to people who are of different levels of acculturation, and different from the population for which the instrument was originally designed. If a Native American individual is generally Traditional, perhaps attending sweat lodge ceremonies on a regular basis, devaluing materialism, being very modest and not competitive and following a traditional way of life, he/she will probably demonstrate a scoring profile that is different from a Native American person who is more acculturated or assimilated into majority culture values and behavior standards.

Neely and Shaughnessy (1984) point out that factors influencing Native American test scores are usually noted as sources of bias and are well-documented in the literature. Racism, prejudice, unfamiliar surrounding, and differences in customs and values are only a few factors that may cause Native American students to feel higher levels of test anxiety than their non-Native American counterparts (McDonald, Jackson, & McDonald, 1991). The culture and belief systems of Native American people need to be understood and accounted for when conducting any form of assessment with Native American people (Dana, 1993). Cultural differences between tribes also need to be taken into account.

Dana (1986) argues that uniform testing results across tribes is simply nonexistent. He also argues that tribal groups and Native American people have been subject to varying experiences of acculturation and historical influences by the majority culture lifestyle. These differences in influences must be taken into account and understood by assessors who are influenced by models that do not account for these differences, and are likely to believe that their training and knowledge are valid for all their professional research and practice (Dana, 1986).

Levitan, Johnston and Taggart (1975) point out that "the plight of Native Americans on reservations is more severe than that suffered by any other minority group in the United States. High unemployment, poor educational resources, and alcoholism represent only a few problems of Native Americans. The economic opportunities available to Native Americans on reservations are so limited that many are forced to relocate into urban settings" (p. 726). Among all the American minorities, Native Americans hold a unique status in that they were acquired in 1871 as official wards of the federal government. This has led to many negative attitudes about Native American people and their way of life, which include attitudes of pity, prejudice, and sympathy (Dana, 1993).

Historical injustices experienced by Native Americans have affected the attitudes and behaviors of many Native American individuals. These attitudes and behaviors are not accounted for in the development, use, and interpretation of today's intelligence tests. Within all tribal groups many traditional people may be skeptical or suspicious of assessment instruments and non-Indian assessors. This skepticism is a result of the

historical changes forced upon the Indian way of life by the federal government and majority culture way of life.

Many of the personal accounts given by both Indians and non-Indians explain that two imposed systems, boarding schools and reservations, were similar to concentration-prison or assimilation camps. Both efforts stressed assimilation to majority culture values and behavior. The accounts of these harsh, even brutal, experiences are well documented (Arbogast, 1995). In Arbogast (1995), Alta Swift Bird recounts being sent to Stephan Indian Mission Boarding School:

> We were told by the nuns and priests never to speak the Indian language. It was forbidden. Every time I said a word in Lakota, the nuns would take a ruler and hit me over the hand with the sharp edge of that ruler. I remember having big lumps on my hand. When one hand would get too sore and swollen, they would hit me on the other hand. When both hands became sore, they would take me into a room and use a strip of rubber and beat me on the back or on the butt. Sometimes we got beat on the legs too. Learning to speak English was a frightening experience. It was difficult to learn when I was scared all the time. Stephan was like a military camp. Another kind of punishment was having to go without food. I remember being hungry a lot. Just to get an extra slice of bread, we would have to take a spoonful of cod-liver oil. (pp. 175-176)

Awareness that several generations of Native Americans experienced such treatment may help clinicians of all backgrounds understand the negative psychological impact this has had on the survivors and their families. All clinicians and researchers interested in understanding and helping Native Americans need to be educated and knowledgeable of the negative attitudes these historical atrocities may have created in Native Americans about interacting with the majority culture.

McShane (1987) points out that:

> Differences in culture result in a lack of cultural understanding by non-Indian providers, lack of trust and rapport between Indians and non-Indians, lack of contact and relationship with the Indian community by professionals, difficulties because of changes in Indian leadership, and other problems. Differences in socioeconomic status result in the inability of Indian consumers to cover the cost of mental health services, insufficient funds for adequate mental health programs, not enough finances to deal with problems like child care, and in general, reduce the accessibility of mental health service for Indian persons. Geographical differences result in problems of transportation and distance, unfamiliarity with available resources by Indian people, fewer and less available trained staff on the reservation, scheduling difficulties, child care difficulties, and other problems which again tend to decrease accessibility and effectiveness. Differences in language impede communication, as does the lack of understanding of mental health terminology, jargon, and the

> language of therapy. Differences in educational level result in a lack of knowledge about the concept of mental health by Indian consumers, lack of information (awareness) about specific functions of existing resources and processes, lack of trained Indian personnel, and a distracting effect coming out of the educational levels of providers. (pp. 107-108)

Lack of understanding of these distinct cultural differences, including attitudes and beliefs, result in misunderstanding of assessment results by many clinicians. Lack of knowledge by clinicians regarding the culture of Native American patients may increase the potential of inappropriate diagnosis (McDonald, Morton & Stewart, 1993). Non-Indian clinicians need as much cross-cultural knowledge and as many skills as possible when addressing special issues affecting American Indians. Clinicians of all backgrounds increase the likelihood of successful treatment and assessment when appropriately educated of the unique challenges facing Native Americans (Dana, 1993; Maser & Dinges, 1993; McDonald et al., 1993).

Many Native Americans are economically disadvantaged. The average yearly income of Native Americans is considerably lower ($13,724 vs. $27,735) than their majority culture counterparts (Hersen, Kazdin, & Bellack, 1991). This trend for Native Americans with low income status has been consistent and with the current high levels of unemployment within the reservations, the future looks grim. Jenkins and Ramsey (1991) point out there are very low numbers of college-educated Native Americans; very few doctorate degrees have been awarded to Native Americans. They further discuss that as a result of these low numbers, relatively little research is being devoted to Native

American populations.

Jenkins and Ramsey (1991) suggest there is a lack of social mobility within Native American communities. This is seen as a result of prejudice, discrimination, and racism that have faced Native Americans. Lack of social mobility can also be seen as a result of high unemployment, poor education resources, and alcoholism. Many of the basic necessities of life that are taken for granted in the majority culture like health care and living are in some cases nonexistent in Native American communities. The rural and community environment within reservation settings often make it impossible for some Native American people to receive important living necessities.

Suicide and alcoholism rates on the reservations have reached epidemic levels. Suicide rates for American Indians are three to ten times the rates for the general population (Peters, 1981). Some communities are plagued with suicides and alcoholism, in epidemic proportions, with no effective support services available. Researchers and professionals are effective at giving numbers and statistics related to these areas, but are not effective with prevention and support services.

The National American Indian Court Judges Association (1985) found that suicide among American Indian adolescents has increased 200-300 percent on many reservations in the last 20 years. They also point out that the suicide rate on some reservations has not increased. Lack of an increase was related to tribes possessing certain unique factors. The tribes with low rates tended to be more traditional in their daily living, and their adolescents were able to remain at home because of employment and educational opportunities existing within the community. The two main factors considered to lead to

suicide on reservations are chronic depression and acute stress.

The National American Indian Court Judges Association (1985) further points out that many environmental factors seem to contribute to chronic depression and suicide among Native American adolescents. These factors include breakdowns of tribal traditions, the lack of effective and competent adult role models, alcoholic parents, broken families, early marriage, failure to gain education, unemployment, and groups of adolescents following friends or relatives who have recently committed suicide (i.e., "copycat" suicides). These suicides are a common trend or theme within some reservation communities and are also viewed as a normal thing.

Depression is a frequently diagnosed mental disorder among Native Americans. Among some tribal groups, depression accounts for 30-40% of all mental health problems (Jilek-Aall, Jilek, & Flynn, 1978; Kahn & Delk, 1973). Anxiety-related difficulties also exist. McDonald, Jackson and McDonald (1991) utilized the State-Trait Anxiety Inventory (Spielberger, Gursuch, & Lushene, 1977) to assess differences between non-reservation and reservation Native American individuals and non-Native American college students. Results indicated that Native Americans indeed do experience greater anxiety levels than their majority culture peers. These findings support the contention that Indian college students encounter difficulties derived from cultural differences that lead to higher levels of anxiety. Price and McNeill (1992) point out that traditional Native American college students (i.e., those who are highly committed to their culture) are less likely to seek counseling than non-traditional Native Americans.

Statistics and data from the Indian Health Service (Aberdeen Area Office, Indian

Health Service, 1992) show that in a four-year period on the Cheyenne River Sioux reservation in South Dakota, 75 people died in violent and tragic manners (e.g., a drunk driver killing an innocent person, hangings resulting in suicide). Such tragedies are commonplace; they occur almost monthly, occasionally two or three at a time. These deaths are accepted as normal and inevitable, and almost always they are alcohol-related. The median age for all deaths within the Cheyenne River Sioux Tribe is 42 years. For the alcohol-related deaths the median age is approximately 35 years.

Native American children and adolescents make up the single largest subgroup in most reservation and urban communities (U.S. Bureau of the Census, 1984a, 1984b). Unger (1977) reported that 25-35% of all Indian children are removed from their families and placed in foster care homes. This large subgroup on the reservations, with the lack of effective parental guidance and no health support programs, is increasingly becoming involved in gang-related activities. This also leads to more Native American adolescents committing suicide, and abusing alcohol and drugs.

Another major problem within the reservations is the high rates of inhalant abuse by Native American children and adolescents, and in many cases adults. The use of inhalants is quite popular among American Indian youth; inhalant abuse by Indian youth is almost twice the U.S. average for all adolescents between the ages of 12 to 17 (Beauvais & Oetting, 1988; May, 1982; Young, 1987). Inhalant abuse involves huffing or sniffing gasoline, glue, markers, and other toxic chemicals, with the intention of getting high.

Oetting (1988) found that there are several conditions that increase susceptibility to inhalant use such as deviance, educational problems, emotional problems, and peers' influence. Oetting further states that inhalants are often the first chemical tried by Native American youth. Morton (1987) notes that the prevalence rates of inhalant use reported by reporting agencies vary. He further notes that school surveys may not accurately reflect the true prevalence of inhalant abuse in school-aged children since many users are truants and drop out of school. The tendency to overrate this high use and to label all Indian youth as inhalant abusers must be avoided, even though levels of inhalant use are comparatively high for Indian youth.

Cultural Effects and IQ testing

All these socio-environmental factors may play an important role in affecting performance on intellectual assessments by Native Americans. Researchers and clinicians need to be aware of these factors and take them into account. These problems occurring on reservations compound the cultural differences. Mental health professionals and institutions have had difficulty addressing these prevalent and serious mental health problems; the difficulty relates in part to culture-related factors (McShane, 1987). Many researchers, clinicians, and mental health professionals, especially non-Native Americans, are not aware of cultural differences that exist between Native Americans that are more traditional or assimilated in cultural orientation.

Very few studies have examined Native Americans and intelligence testing, and fewer still have examined the effects of acculturation. Thus, there is an urgent need for research and increased understanding in this area. With problems plaguing the

reservations, culturally-sensitive psychological testing and assessment has a great deal to offer this population.

Jenkins and Ramsey (1991) argue that psychology has not always been sensitive to cultural differences and minority issues when constructing and developing intelligence assessment techniques. Minority populations were not the targets for intelligence test design. Dana (1986) points out that if Native American and other minority populations were the targets for test design and development, Wechsler and others would have included them in their samples. This continues to be apparent although the argument concerning bias in intelligence testing with minorities continues to rage. Dana (1986) and Hoffman, Dana, and Bolton (1985) argue that this kind of bias has also occurred for personality tests such as the Minnesota Multiphasic Personality Inventory (MMPI).

McShane and Plas (1983) examined the Wechsler performance patterns of Native American children using the WISC, WISC-R, and WPPSI subtest scores recategorized to the Bannatyne scheme. The Bannatyne categories are a combination of three subtests to measure Verbal Conceptualization (i.e., Vocabulary, Comprehension, Similarities), three subtests to measure Spatial abilities (i.e., Object Assembly, Block Design, Picture Arrangement), three subtests to measure Sequencing abilities (i.e., Digit Symbol, Digit Span, Arithmetic), and three subtests to measure Acquired Knowledge (i.e., Information, Vocabulary, Arithmetic) (Wechsler, 1997).

A study by Smith, Coleman, and Dokecki (1977) reported that learning disabled (LD) children on the WISC-R showed a pattern of Spatial > Conceptual > Sequential > Acquired Knowledge regardless of their Full Scale IQ, as long as it exceeded 75.

McShane and Plas (1983) assumed that a performance-oriented traditional Native American child would demonstrate a Bannatyne pattern of Spatial > Sequential > Verbal Conceptualization and Acquired Knowledge. A secondary hypothesis was that highly assimilated Native American children would display a pattern of performance more closely related to the norming group than to that of the Native American group.

McShane and Plas's (1983) samples consisted of 142 Ojibwa Native American children ranging in age from 4 ½ to 16 years and evenly distributed on the variable of sex. The children were referred for testing because of educational difficulties (N=150), problems with suspected otitis media influencing learning (N=20), and high potential and giftedness (N=17).

The groups were administered the WISC or the WISC-R, and were further divided into traditional or acculturated groups based on their Verbal-Performance IQ ratio. Those subjects who exhibited a 9 point or greater discrepancy between Verbal and Performance IQs were assigned to the traditional group, while those whose discrepancy was 8 points or less were assigned to the acculturated group.

The results indicated that a pattern of Bannatyne scores of Spatial > Sequential > Verbal Conceptualization and Acquired Knowledge was indeed displayed within the traditional group. However, no significant differences between Bannatyne scores were observed for the assimilated group. The authors suggested that future work should explore the relationship between these Verbal/Performance discrepancies and Bannatyne scores. The article expressed a great need for more research with Native American populations. They also contended that more attention needs to be given to the differences

in the discrepancies of the Verbal and Performance scores across assimilated and traditional Native American individuals.

Work done by Mishra (1982) on cultural bias examined 77 items from the Information, Similarities, and Vocabulary subtests, comparing Anglo and Navajo children. Subjects in both samples represented families of low socioeconomic status. All subjects were individually administered the ten regular subtests of the WISC-R by a certified school psychologist who had extensive experience in administering and scoring individual, as well as group tests, for subjects of varying ages and cultures. All regular subtests of the WISC-R were administered to all subjects, but only scores on Information, Similarities, and Vocabulary subtests were analyzed in the study, as items on these subtests were hypothesized to be more sensitive to cultural bias than items on the other subtests. The two groups were matched on Full Scale IQ to control for the effects of overall ability differences between the populations studied. The groups were then compared on the percentages of subjects in each group that passed each item on the subtests. The assumption was that group differences on the rate of passing each item must be due to cultural bias since the two groups were matched on ability.

It was found that 15 items or 19 percent of items were biased against the Navajo children. For each item, a significantly lower percentage of Navajo subjects passed the item as compared to Anglo subjects. However, the author advised caution when interpreting these findings due to the fact that nonhomogeneous groups were used, and subjects came from low socioeconomic families residing in isolated areas. One should also use caution in generalizing this bias to other Native American subjects.

The authors encouraged other tribes and researchers to examine possible biased items with Wechsler scales and other intelligence measures. Many tribes have a great deal of cultural variance within the tribe and these differences need to be examined as well. Tribes also vary in the level of skepticism they possess, lifestyle consistency with the European American culture, vocabulary, and beliefs about assertiveness.

Summary of Native American Assessment Issues

Research using the Native American College Student Attitude Scale (NACSAS; McDonald, 1992), which determines the degree to which Indian students perceive racism from their institutional environments, suggests that perceived racism and difficulties associated with forced acculturation may indeed make college more troublesome for Native American than non-Native American students. McDonald (1992) points out that this may contribute to the relatively high attrition rates among Native American college students.

Dana (1986) suggested that personality assessment services for Native Americans are culturally inappropriate, and have consequently been historically underutilized. Native Americans are consistently subject to examiner bias, test content bias, prejudice and racial bias, and cultural barriers that affect assessment measure outcomes. Not only do Native Americans face bias from standardization and validity problems, but language barriers can also be a negative factor when using assessment techniques that have been developed for use with the majority culture.

Dana (1986) further argues that most clinical assessors are trained in Boulder Model programs that are "elitist" in attitude in regards to their techniques, which can also

affect the assessment process with Native American populations. The current practices and techniques taught at the undergraduate and graduate levels seem to focus on the idea that the Boulder Model relates to all cultures and races of people. Practices developed from this model may be ineffective when working with Native Americans. The Boulder Model appears to imply that indigenous peoples need to adapt to its style of training and practice, as it does not push for more culturally sensitive assessment and understanding of how cultural orientation may influence performance on assessment measures. This could be viewed as unethical in the sense that instead of revising techniques or developing culturally-appropriate assessment techniques, again, Native American people are forced to accommodate to a more European American mind-set.

Intelligence assessment measures could be very useful to the Native American population, but the items that are biased within certain subtests may subsequently result in biased and inaccurate interpretation of test results. Researchers working within tribes need to examine test content items and develop useful, non-biased items to reflect more accurately their culture. As previously suggested, tribes vary in culture and it may be most appropriate to view items in specific tribal contexts.

Brescia (1989) argues that testing Native American students with tests developed for the majority culture leads to invalid results. He further suggests that current intelligence and aptitude test theories and scales are not geared toward Native American cultures. He talks about the biases facing Native American students with the use of achievement tests, aptitude tests, ability tests, and intelligence tests. These tests are frequently used in educational settings within reservation school systems for placement

and grading, which is ethically questionable.

McCullough, Walker, and Diessner (1985) used the Wechsler scales in the assessment of Native Americans of the Columbia River Basin. All the students enrolled in a private, tribally-operated junior and senior high school on a reservation in the Pacific Northwest were included in the study. The Columbian River Basin is defined geographically as the region from northern Washington state to southern Oregon, from the Cascade range in the west to the Rocky Mountains in the east. The majority of the students were members of the Confederated Tribes and Bands of the Yakima Indian Nation. Students (N=75) ranged in age from 12 to 19 years of age. Of the total, three students were considered learning disabled.

Thirty-three students ranging in age from 16 to 19 years took the WAIS. Fifty percent of the students taking the WISC-R were female and 27% of the students taking the WAIS were female. All students spoke American English and attended public school during their elementary school years. The study showed results that were consistent with studies of other Native American groups in that the Verbal scale scores of the WAIS and WISC-R were significantly below the normative mean, while the Performance scale results were at or above the normative mean. Furthermore, Verbal and Full scale scores were significantly correlated with a measure of reading achievement. However, for achievement in math, the Verbal scale was a fair correlate (r = .38), the Full Scale did not correlate at all (r = .04), and the Performance Scale was inversely correlated (r = -.41).

These findings demonstrate a need for greater understanding of cultural orientation and differences, their interaction with intelligence, and how cultural

orientation and differences are reflected in standardized test scores. A question of ethics also arises in considering if Native Americans have been treated, diagnosed, and assessed with biased assessment techniques. Ethical Standard 2.04 of the Ethics in Psychology (1998) relates to the Use of Assessment in General and With Special Populations and states, "Psychologists who perform interventions or administer, score, interpret, or use assessment techniques are familiar with the reliability, standardization or outcome studies of, and proper applications and uses of, the techniques they use" (p. 451). Psychologists must be aware of cultural differences and how this can influence test results, and more importantly, interpretation of the results.

Studies conducted on the impact of acculturation levels and the performance of Native Americans on intelligence tests are very limited. With the lack of Native American psychologists and relative lack of interest by non-Indian psychologists in this population, this area continues to be neglected. More needs to be done to develop assessment techniques and instruments to be used with this culturally distinct and complex population.

Purpose and Present Study Hypotheses

The purpose of this study was to examine whether different levels of Biculturalism between two different groups of Native American college students influence the configuration of subtest scores on the WAIS-III, reflecting a possible "Indian pattern" on the WAIS-III. It was considered that comparing the two groups would help determine how college students residing on the reservation (i.e., possibly more traditional Native Americans), differ from those residing in primarily white

communities (possibly more acculturated Native Americans). Moreover, the results would potentially help clinicians to have some appropriate data regarding Native Americans and determine an "Indian pattern" with the WAIS-III.

The hypotheses in this study were:

1. Native American adult college students who were relatively more traditional in cultural orientation would show a pattern of Performance > Verbal on the WAIS-III subscales and a pattern of Perceptual Organization, Working Memory, and Processing Speed > Verbal Comprehension on the Index subscales.

2. Native American adults who were relatively more assimilated would show a pattern more closely related to Verbal > Performance subscales on the WAIS-III and a pattern on the Index subscales more closely related to the more typical majority culture norm of Verbal Comprehension > Perceptual Organization, Working Memory, and Processing Speed.

3. The overall scores of the two groups would show a Performance > Verbal subscale pattern regardless of cultural identification.

METHOD

Subjects

Forty Eight Northern Plains Native American undergraduate students were used in this study. Twenty four were selected from Oglala Lakota College (OLC) in a reservation community setting, and twenty four from the University of North Dakota (UND). The participants' educational level ranged from freshman to senior. There was an attempt to incorporate into each sample an equal number of males and females, and there were nine males and 15 females in the UND group, and 10 males and 14 females in the OLC group. The mean age for the UND group was 24.58 and the mean age for the OLC group was 31.29. All participants were enrolled members of a federally recognized tribe and there was some variation in tribal affiliation.

Materials

All subjects were administered the following assessment measures (see Appendix A): a) Informed Consent Form, b) Demographic Questionnaire, c) Wechsler Adult Intelligence Scale-III (WAIS-III) (Wechsler, 1997), and d) The Northern Plains Biculturalism Inventory (NPBI) Scale (Allen & French, 1993). These measures are discussed in greater detail below.

Informed Consent. Participation in this study was anonymous. The subject's name only appeared on the Informed Consent Form. Forms were maintained in the Indians into

Psychology Doctoral Education (INPSYDE) Program office by the researcher to ensure security and to prevent any association of individuals with the experiment. Subjects were advised on this form that participation was completely voluntary. The amount of time involved and potential risks and benefits were also listed on the form. Extra credit slips for current psychology classes were given for those who chose to complete the questionnaires. Fifteen dollars was given to those who were not currently enrolled in psychology classes.

Demographic Sheet. Items on the demographic sheet assessed the participant's background. The demographic survey established age, gender, year in school, major, and specific tribal identity. These variables were examined to provide information regarding general characteristics of the sample.

Wechsler Adult Intelligence Scale-III (WAIS-III). The Wechsler Adult Intelligence Scale-III was administered to all participants. The WAIS-III is an individually administered clinical instrument for assessing the intellectual ability of adults aged 16 through 89. It yields the traditional three composite IQ scores: Verbal, Performance, and Full Scale, as well as four index scores: Verbal Comprehension, Perceptual Organization, Working Memory, and Processing Speed. The WAIS-III consists of 14 subtests, seven Verbal subtests and seven Performance subtests. The seven Verbal subtests include Vocabulary, Similarities, Arithmetic, Digit Span, Information, Comprehension, and Letter-Number Sequencing. Performance subtests include Picture Completion, Digit Symbol-Coding, Block Design, Matrix Reasoning, Picture Arrangement, Symbol Search, and Object Assembly. Eleven of the subtests were retained from the WAIS-R; Symbol

Search, was adapted from the Wechsler Intelligence Scale for Children (WISC-III). Two new subtests, Matrix Reasoning and Letter-Number Sequencing, were added from the WAIS-R.

Northern Plains Biculturalism Inventory (NPBI). The Northern Plains Biculturalism Inventory (NPBI, Allen & French, 1993) is a 30-question inventory of Upper Midwest Native American and Midwestern White (European-American) cultural identification. The inventory focuses mainly on social behavior, which is thought to be driven by fundamental attitudes that many authors have described as viewpoints, perceptions, Zeitgeist, and cultural identification. There are currently two different versions of the NPBI for use depending on the sample one is testing. The College version is meant for use with Native American college students. The Community version is for use in Native American communities and was not utilized in this study. The NPBI was developed in accordance with the Orthogonal Theory of Biculturalism (Oetting & Beauvais, 1990).

Instead of an unidimensional model of cultural identification, the NPBI proposes a circular adaptation (See Figure 1). Many researchers of Native Americans propose that effective coping in more than one culture leads to better mental adaptation and more self-fulfillment among Native Americans. There are three subscales that make up the NPBI, an American Indian Cultural Identification (AICI) subscale, a European American Cultural Identification (EACI) subscale, and a Language subscale. Each item on the NPBI loads on one of the subscales as follows: AICI, item numbers 2, 3, 8, 10, 11, 14, 15, 18, 23, 24, 26, 28, 29; EACI, item numbers 1,4, 7, 9, 12, 13, 16, 17, 25, 27, 30; and for the Language subscale, item numbers 5, 6, 19, 20, 21, 22. A subject with strong

traditional ties would have high scores on the AICI (American Indian Cultural Identification) subscale. A subject identifying with the majority culture would obtain high scores on the EACI (European-American Cultural Identification) subscale. If a subject scored highly on both the AICI and EACI scales, then he or she would be described as possessing a Bicultural Identification, whereas if a subject scored low on both scales, he or she would be described as Marginal (no clear identification with either culture). There is also a Language subscale, but this subscale was not utilized in this study. Response choices for each question range from one (Not at All) to four (Very Much).

Raw scores were obtained by summing the responses for each of the questions belonging to the two scales that were utilized (one item used in the two scales in this study is reverse keyed). A six-month test-retest reliability was shown to be $r = .82$ for the AICI scale, $r = .70$ for the EACI scale, and $r = .74$ for the Language scale (Allen and French, 1994).

Procedure

After securing approval from the Institutional Review Board (IRB), fliers were distributed throughout the campus at the University of North Dakota and Oglala Lakota College. Periodic trips to Oglala Lakota College were made to complete that portion of the study. The NPBI was also administered at the end of each WAIS-III. Lastly, the demographics' sheet was given to all subjects. Upon completion of the three assessment tools used, extra credit slips or $15.00 was given to subjects, documenting their participation in the study. Subjects exchanged credit slips for academic research credit in

their current psychology course at the UND or were paid $15.00, and all subjects at OLC were given $15.00.

Data Analysis

All scored test protocols were coded and computer analyzed utilizing the SPSS statistics program. Descriptive statistics were conducted on all the variables. Such statistics recorded the frequency and percentages of subject responses on the demographic questionnaire and the NPBI.

After examining the descriptive statistics, three other types of analyses were conducted. These included Pearson Product Moment correlations, t-tests, and Analysis of Variance (ANOVA). Pearson Product Moment correlations were conducted to examine the relationship between the Verbal IQ, Performance IQ, and Full Scale IQ scores, and the two scores on subscales from the NPBI (AICI and EACI). The primary analysis was a series of t-tests comparing the means of the two groups on Verbal IQ, Performance IQ, Full Scale IQ, and the four Index scores of the WAIS-III. The analysis of variance (ANOVA) was conducted to examine the effects of cultural identification (i.e., Bicultural, Traditional, Marginal, and Assimilated) on Verbal IQ, Performance IQ, Full Scale IQ, Verbal Comprehension Index Score, Perceptual Organization Index Score, Working Memory Index Score, and Processing Speed Index Score. The independent variables were the quadrant scores, and the dependent variable were the three IQ scores obtained from the WAIS-III. Significant effects revealed from the ANOVA were examined with Tukey tests to determine exactly what the specific significant effects were.

RESULTS

Sample Characteristics

There were 29 females subjects and 19 males which comprised the two groups of Native American college students from Oglala Lakota College (OLC) and the University of North Dakota (UND). There were 15 females and nine males in the Oglala Lakota College group, and 14 females and 10 males in the University of North Dakota group. The mean age for all subjects was 27.93. The average year in college for all subjects was 2.52 (1 pertaining to freshman status, 2 pertaining to sophomore status, 3 pertaining to junior status, and 4 pertaining to senior status). The average year in college for the Oglala Lakota College subjects was 2.12, and the average age was 31.29. The average year in college for the University of North Dakota subjects was 2.91 and the average age was 24.58. There were five subjects of Ojibwa/Chippewa ancestry, 31 subjects of Sioux ancestry, four subjects of the Three Affiliated Tribes (composed of Arikara, Mandan, and Hidatsa ancestry), one Arapaho, three Blackfeet, three Navajo, and one Sac-Fox. Thirty-two of the participants chose $15.00 compensation and 16 participants chose extra credit. Table 1 displays the means and percentages of age, gender, major, year in college, and tribal affiliation within each group.

Table 1

Information Regarding Sample

Characteristic	M	SD	%
Age	27.93	9.22	
Gender			
Female			60.4
Male			39.6
College Year			
Freshman			20.8
Sophomore			35.4
Junior			14.6
Senior			29.2
Major			
Psychology			16.7
Nursing			14.6
Undecided			8.3
Human Services			6.3
Environmental Engineering			4.2
Early Childhood Education			4.2
Education			4.2
Other			41.5
Tribal Affiliation			
Sioux			64.7
Ojibwa/Chippewa			10.4
Three Affiliated Tribes			8.3
Blackfoot			6.3
Navajo			6.3
Arapaho			2.1
Sac-Fox			2.1

Note. Female n = 29; Male n = 19.

Figure 1 represents the orthogonal NPBI subscales and the four quadrant types of cultural orientation. The Figure 2 scatterplot represents how subjects' NPBI EACI and

AICI scores placed them in the four quadrant categories as theorized by Oetting and Beauvais (1990). The combined median score for all subjects for EACI (32.00) and AICI (46.50) subscales determined the four Quadrants, and each subjects combined EACI and AICI scores determined their Quadrant score (see Figure 2 scatterplot). Quadrant one shows those identified as Bicultural (n = 9). Quadrant two shows those identified as Traditional Native American in orientation (n = 15). Quadrant three shows those identified as Marginal or whose identification was low in both cultures (n = 9). Quadrant four shows those identified as having a majority culture orientation (i.e., Assimilated) (n = 15).

In the Bicultural group, there were three males and six females, with eight from UND and one from OLC. Majors included Criminal Justice (1), Dietetics (1), Elementary Education (1), Undecided (1), Indian Studies (1), Nursing (1), Psychology (2), and Therapy (1). Tribal affiliation for the Bicultural group was distributed as follows: Chippewa ancestry (1), Sioux (6), Navajo (1), and Blackfeet (1). The mean age was 25.77, the mean class (as defined earlier) was 3.11, the mean Verbal IQ score was 99.77, the mean Performance IQ score was 109.00, the mean Full Scale IQ score was 103.77 (see Table 2), the mean Index Score for Verbal Comprehension was 99.77, the mean Index Score for Perceptual Organization was 107.22, the mean Index Score for Working Memory was 95.44, and the mean Index Score for Processing Speed was 109.33.

In the Marginal group, there were four males and five females, with two from UND and seven from OLC. Majors included Undecided (2), Human Services (1), Aviation (1), Carpentry (1), Civil Engineering (1), SEM (1), and Nursing (2). Tribal

affiliation for the Marginal group was distributed as follows: Sioux (7), Navajo (1), and Blackfeet (1). The mean age was 29.55, the mean class (as defined earlier) was 1.56, the mean Verbal IQ score was 93.11, the mean Performance IQ score was 103.66, the mean Full Scale IQ score was 97.44 (see Table 2), the mean Index Score for Verbal Comprehension was 92.11, the mean Index Score for Perceptual Organization was 101.88, the mean Index Score for Working Memory was 98.22, and the mean Index Score for Processing Speed was 102.66.

In the Assimilated group, there were seven males and eight females, with six from UND and nine from OLC. Majors included Art (1), Business (1), Computer Science (1), Early Childhood (1), Education (1), Engineering (2), Undecided (1), Nursing (1), Psychology (5), and Human Services (1). Tribal affiliation for the Assimilated group was distributed as follows: Chippewa (3), Sioux (8), Navajo (1), Blackfeet (1), and Three Affiliated Tribes (2). The mean age was 27.80, the mean class (as defined earlier) was 1.53, the mean Verbal IQ score was 98.00, the mean Performance IQ score was 101.26, the mean Full Scale IQ score was 99.33 (see Table 2), the mean Index Score for Verbal Comprehension was 97.40, the mean Index Score for Perceptual Organization was 100.46, the mean Index Score for Working Memory was 99.60, and the mean Index Score for Processing Speed was 101.40.

In the Traditional group, there were five males and 10 females, with eight from UND and seven from OLC. Majors included Business Administration (1), Communications (1), Early Childhood Education (1), Entrepreneur (1), Environmental Science (1), Human Services (1), International Law (1), Law (1), Nursing (4), Physical

Therapy (1), Psychology (1), and Social Services (1). Tribal affiliation for the Traditional group was distributed as follows: Chippewa (1), Sioux (10), Three Affiliated Tribes (2), Arapaho (1), and Sac-Fox (1). The mean age was 28.40, the mean class (as defined earlier) was 1.67, the mean Verbal IQ score was 105.46, the mean Performance IQ score was 106.86, the mean Full Scale IQ score was 106.53 (see Table 2), the mean Index Score for Verbal Comprehension was 103.26, the mean Index Score for Perceptual Organization was 106.13, the mean Index Score for Working Memory was 106.93, and the mean Index Score for Processing Speed was 107.06.

Table 2

Descriptive Data by Quadrant

Quadrant	N	M, F	Mean Age	Mean Verbal IQ	Mean Performance IQ	Mean Full Scale IQ
1. Bicultural	9	3, 6	25.7	99.70	109.00	103.77
2. Traditional	15	5, 10	28.4	105.46	106.86	106.53
3. Marginal	9	4, 5	29.5	93.11	103.66	97.44
4. Assimilated	15	7, 8	27.8	98.00	101.26	99.33

Note. N refers to total number of subjects in each quadrant; M refers to number of Male subjects in each quadrant; F refers to number of Females in each quadrant.

Pearson Product-Moment Correlations

Pearson Product-Moment correlational analyses of the WAIS-III IQ scores, and NPBI subscales and demographic variables revealed several interesting and statistically significant positive correlations between Verbal IQ scores, and the Performance IQ

scores, Full Scale IQ scores and scores on the AICI subscale of the NPBI. A statistically significant positive correlation was also observed between Performance IQ scores and Full Scale IQ scores. A statistically significant negative correlation was observed between the NPBI's two subscales (the AICI and the EACI). Also, a statistically significant positive correlation was found between Full Scale IQ scores and the AICI subscale. No other statistically significant correlations were obtained. These correlations can be found in Table 3.

Table 3

Pearson Product-Moment Correlation Results Matrix

Item	VIQ	PIQ	FSIQ	AICI	EACI
VIQ	--	.548**	.899**	.416**	-.133
PIQ	.548**	--	.855**	.221	-.107
FSIQ	.899**	.855**	--	.374**	-.148
AICI	.416**	.221	.374**	--	-.359
EACI	-.133	-.107	-.148	-.359*	--

Note. VIQ refers to Verbal IQ score; PIQ refers to Performance IQ score; FSIQ refers to Full Scale IQ score; AICI refers to American Indian Cultural Identification; EACI refers to European American Cultural Identification. * Correlation is significant at the 0.05 level; ** Correlation is significant at the 0.01 level.

One-Way ANOVAs

A series of one-way analyses of variance (ANOVA) was used for comparison of the different Quadrants (Bicultural, Traditional, Marginal, and Assimilated) between the

Wechsler Adult Intelligence Scale-III scores (Verbal IQ, Performance IQ, Full Scale IQ, Verbal Comprehension, Perceptual Organization, Working Memory, and Processing Speed) and the Northern Plains Biculturalism Inventory subscales (AICI and EACI). A significant difference was revealed between the four groups in terms of Verbal IQ scores, $F(3, 44) = 2.97$, $p = .042$. A subsequent Tukey test revealed that there was a significant difference between the Traditional and Marginal group on Verbal IQ score (see Table 4). A significant difference was also revealed between the four groups in terms of working Memory Index Score, $F(3, 44) = 2.89$, $p = .046$. A subsequent Tukey test revealed that there was a significant difference between the Bicultural and Traditional group on Working Memory Index Score (see Table 4). No other significant differences were observed between the other Quadrants in terms of Verbal IQ, Performance IQ, Full Scale IQ, or the Index Scores.

Independent t Test

Independent t Tests were conducted to determine if any significant differences existed between the Traditional and Assimilated groups (Quadrant 2 versus 4) on the WAIS-III, as hypothesized. There were no significant differences revealed for the groups on the Verbal IQ, Performance IQ, Full Scale IQ, and the Index Scores (Verbal Comprehension, Perceptual Organization, Working Memory, Processing Speed) (see Table 5). There were also no significant differences found between the Marginal and Bicultural groups (Quadrant 1 versus 3) on the Verbal IQ, Performance IQ, Full Scale IQ, and the Index Scores (Verbal Comprehension, Perceptual Organization, Working Memory, Processing Speed) (see Table 5). When considering the group as a whole, the

overall Performance IQ was indeed higher than the Verbal IQ score for the University of North Dakota and Oglala Lakota College subjects. The mean Performance IQ for the overall group was 104.92 (SD = 12.67) and the mean Verbal IQ for the overall group was 99.75 (SD = 10.86), which was significant with an alpha level of .05, $t(47) = 3.17$, $p = 003$.

Table 4

Post-Hoc Tukey Test Comparing Quadrants on Verbal IQ and Working Memory Index Score

Quadrant	Compared with Group	Mean Difference	Significance
	Verbal IQ		
Bicultural	Traditional	-5.69	.556
	Marginal	6.67	.517
	Assimilated	1.78	.976
Traditional	Marginal	12.36	.031*
	Assimilated	7.47	.204
Marginal	Assimilated	- 4.89	.671
	Working Memory Index Score		
Bicultural	Traditional	-11.49	.050*
	Marginal	-2.78	.938
	Assimilated	-4.16	.770
Traditional	Marginal	8.71	.195
	Assimilated	7.33	.216
Marginal	Assimilated	-1.38	.989

Note. * Denotes significance at the $p < .05$ level.

Table 5

Means and Standard Deviations (within parentheses) of Quadrants (Bicultural, Marginal, Assimilated, Traditional) for WAIS-III Verbal IQ, Performance IQ, Full Scale IQ, and Index Scores (Verbal Comprehension, Perceptual Organization, Working Memory, Processing Speed)

WAIS-III	Bicultural $n = 9$	Marginal $n = 9$	Assimilated $n = 15$	Traditional $n = 15$
Verbal IQ	99.77 (8.94)	93.11 (10.69)	98.00 (10.63)	105 46 (10.24)
Performance IQ	109.00 (10.86)	103.66 (9.65)	101.26 (15.48)	106.86 (12.18)
Full Scale IQ	103.77 (9.54)	97.44 (9.51)	99.33 (11.83)	106.53 (10.79)
Verbal Comprehension IS	99.78 (10.64)	92.11 (11.61)	97.40 (10.75)	103.27 (12.46)
Perceptual Organization IS	107.22 (10.03)	101.89 (11.71)	100.47 (17.63)	106.13 (11.38)
Working Memory IS	95.44 (4.61)	98.22 (5.59)	99.60 (12.49)	106.93 (11.91)
Processing Speed IS	109.33 (17.45)	102.67 (14.38)	101.40 (14.88)	107.07 (16.16)

Note. M refers to the mean of each IQ score of the WAIS-III; IS refers to the Index Score of the WAIS-III.

Comparison Between the University of North Dakota and Oglala Lakota College Groups

We decided to conduct an exploratory comparison between the University of North Dakota and Oglala Lakota College groups. There was a total of 48 subjects in this sample. There were nine males and 15 females in the UND group, and 10 males and 14 females in the OLC group. The mean age for the UND group was 24.58. The average year in college for UND subjects was 2.91 (as mentioned earlier), with one pertaining to freshman status, two pertaining to sophomore status, three pertaining to junior status, and four pertaining to senior status. Tribal affiliation for the UND group was as follows: Chippewa (5), Sioux (10), Three Affiliated Tribes (4), Navajo (1), Blackfeet (3), and Arapaho (1) (see Table 6). The mean age for the OLC group was 31.29. The average year in college for the OLC group was 2.12 (as mentioned earlier), with one pertaining to freshman status, two pertaining to sophomore status, three pertaining to junior status, and four pertaining to senior status. Tribal affiliation for the OLC group was as follows: Navajo (2), Sioux (21), and Sac-Fox (1) (see Table 7).

Independent t Tests for the University of North Dakota and Oglala Lakota College Groups

Independent t tests revealed significant differences between the University of North Dakota group and the Oglala Lakota College group on Verbal IQ, Full Scale IQ, and the Verbal Comprehension Index Score. The mean Verbal IQ score for the University of North Dakota group was 103.67 and the mean Verbal IQ score for the Oglala Lakota College group was 95.83. This difference was significant at the alpha

level of .05, $t(46) = 2.66$, $p = .01$. The mean Full Scale IQ score for the University of North Dakota group was 105.17 and the score was 98.96 for the Oglala Lakota College group. This difference was significant with an alpha level of .05, $t(46) = 2.02$, $p = .049$. No significant differences were found between the groups on Performance IQ score. With an alpha level of .05, the Verbal Comprehension Index Score was found to be significant $t(46) = 2.09$, $p = .042$. No other significant differences were observed between the groups for the other three WAIS-III Index Scores (see Table 8).

Table 6

Descriptive Statistics for University of North Dakota Sample

Characteristic	M	SD	%
Age	24.58	1.12	
Gender			
Female			62.5
Male			37.5
College Year			
Freshman			8.3
Sophomore			33.3
Junior			16.7
Senior			41.7
Major			
Psychology			33.3
Nursing			16.7
Aviation			4.2
Criminal Justice			4.2
Education			4.2
Indian Studies			4.2
Undecided			4.2
Other			29.4
Tribal Affiliation			
Sioux			41.6
Ojibwa/Chippewa			20.8
Three Affiliated Tribes			16.7
Blackfoot			12.5
Navajo			4.2
Arapaho			4.2

Note. Female n = 15; Male n = 9.

Table 7

Descriptive Statistics for Oglala Lakota College Sample

Characteristic	M	SD	%
Age	31.29	10.97	
Gender			
Female			58.3
Male			41.7
College Year			
Freshman			33.3
Sophomore			37.5
Junior			12.5
Senior			16.7
Major			
Nursing			12.5
Human Services			12.5
Undecided			12.5
Environmental Engineering			8.3
Early Childhood Education			8.3
Business Administration			4.2
Social Services			4.2
Law			4.2
Other			33.6
Tribal Affiliation			
Sioux			87.6
Navajo			8.3
Sac-Fox			4.2

Note. Female n = 14; Male n = 10.

Table 8

Means and Standard Deviations (in parentheses) for University of North Dakota and Oglala Lakota College groups for WAIS-III Verbal IQ, Performance IQ, Full Scale IQ, and Index Scores (Verbal Comprehension, Perceptual Organization, Working Memory, Processing Speed)

WAIS-III	University of North Dakota	Oglala Lakota College
Verbal IQ	103.67 (9.26)	95.83 (11.10)
Performance IQ	106.42 (11.30)	103.42 (13.98)
Full Scale IQ	105.17 (9.62)	98.96 (11.57)
Verbal Comprehension IS	102.13 (10.10)	95.25 (12.52)
Perceptual Organization IS	105.58 (11.37)	101.96 (15.22)
Working Memory IS	101.67 (11.66)	100.04 (10.08)
Processing Speed IS	104.17 (15.88)	105.63 (15.47)

Note. IS refers to the Index Score of the WAIS-III.

DISCUSSION

Simply stated, some of the hypothesized results were demonstrated, and some were not. Several findings from the data could have been anticipated, yet several were interestingly different from past studies. All in all, the findings did not conclusively demonstrate support for the Orthogonal Theory as it applies to cultural orientation and IQ scores, yet there were some intriguing results that warrant further research attention.

The more Traditional subjects were comprised mostly of University of North Dakota students, and these students scored significantly higher on the Verbal IQ scores than the Oglala Lakota College students. This finding was counterintuitive, in that previous studies with the NPBI (McDonald et al, 1998) have suggested Native American students attending state universities are typically either more Bicultural or Assimilated in orientation than their tribal college peers, who are typically more Traditional. Indeed, it was with this scheme in mind that the researchers sought subjects from both settings to increase the variance in terms of cultural orientation. It was not anticipated that the UND group would endorse themselves as more Traditional. This presented a potential theoretical and practical confound, since for the purposes of this study the more Traditional subjects were predicted to be primarily comprising Oglala Lakota College students and were predicted to score lower on Verbal IQ compared to the anticipated Assimilated (UND) subjects.

This anomalous scenario may be accounted for several ways. First, it may be that many Native American college students attending off-reservation state universities "over-identify" or "inflate" their identification with the Traditional Native American orientation in an effort not to appear as "selling out" or being too "white" to their peers, friends and family. This is easy to comprehend since there is often pressure to conform to reservation or tribal norms, values, and beliefs in order to be identified as a "true" Traditional Native American. Following this line of thinking, Native American college students from an on-reservation college may be more inclined to identify themselves as assimilated to meet the expectations of European-American culture and to succeed in a college environment. In other words, they may not want to appear to "rez" or "back-woodsy" merely because they come from a reservation setting. If this explanation is accurate, then it suggests Native American college students may not always be providing accurate information as to their cultural orientation which not only adversely impacts internal validity, but external validity as well. It may also be that the observed relationship occurred because the sample size was so small. Perhaps more subjects would have "washed out" this anomaly if indeed it is one.

The specific confounding effect that may have occurred in this data set, therefore, would come from having the more "Traditional" (UND) subjects actually scoring higher on Verbal IQ and lower on Performance IQ and "Assimilated" subjects (OLC) scoring lower on Verbal IQ and higher on Performance. This scenario runs counter to what the Orthogonal Theory would predict, since more truly Traditional subjects typically score lower on Verbal and higher on Performance IQ subtests as a function of their cultural and

educational background, and vice-versa with more true Bicultural and Assimilated subjects scoring in reverse-fashion.

One hypothesis that was supported by the results was that the overall group of subjects would score significantly higher on Performance IQ than Verbal IQ, which is typical of American Indian performance on IQ tests. This interesting finding may suggest a pattern of Performance > Verbal for Native American people, especially those that reside on the reservation and have less exposure to verbal items on the WAIS-III. The items that determine the Performance IQ scores seem to be more universal and can be more generalized to various populations such as Native Americans.

Although the hypothesis that the Traditional group compared to the Assimilated group would score significantly higher on Performance IQ was not supported, the finding that the University of North Dakota group scored significantly higher on Verbal IQ and Full Scale IQ compared to the Oglala Lakota College group was interesting and it supports the suggestion that the self-reported cultural orientations for both sets of subjects were perhaps less than accurate.

It was also interesting to find that the University of North Dakota group scored significantly higher on Full Scale IQ than the tribal college students. This could be attributed to the University of North Dakota students having greater exposure to the content typical in verbal items from the WAIS-III, and possibly residing in an environment that is more influenced by European-American lifestyle (Grand Forks, North Dakota). Furthermore, environments such as those the Oglala Lakota College students are exposed to (Pine Ridge Reservation, South Dakota), may be less exposed to verbal

item content, particularly for bilingual speakers. In practical terms, being able to name four past U.S. presidents is much less environmentally (i.e., culturally) relevant for reservation-dwellers than more urban and state-university oriented "town" residents.

These findings suggest that more needs to be done to understand the patterning differences that exist between cultures, such as the American Indian and European American. In many cases, more Traditional Native Americans face a great disadvantage on IQ assessment measures that include Verbal items which are less universal and generalizable than Performance items from the WAIS-III. Assessment measures such as the WAIS-III are used to determine intelligence and deficiency levels. This leads to questions related to appropriate and fair assessment of Native American people. This can be especially concerning for Traditional Native Americans that are very skeptical of European American assessment measures and lifestyle. Also, many Native American adolescents are facing high rates of suicide, substance abuse, and other mental health related problems, and are assessed with such measures as the Wechsler scales. The results of this study suggest cultural orientation does have some degree of impact on IQ test score patterns, yet determining exactly how and to what degree remains to be conclusively established.

One possible limitation to the study is the lack of more background data on the subjects. No background data were collected on grade point average and years of living on or off the reservation. Therefore, we were not able to determine whether students from the Oglala Lakota College experienced living on the reservation for a long period of time. It may have been the case that some of the Oglala Lakota College students recently

moved to the reservation after having a long period of exposure to more European-American lifestyles. Furthermore, it may be the case that students attending the University of North Dakota recently moved from a reservation environment and had relatively little exposure to European-American lifestyles. This information would have shed some light on their surprising cultural orientation patterns.

Another possible limitation of the study is the age difference between the University of North Dakota and Oglala Lakota College students. The mean age for the University of North Dakota students was 24.58, and the mean age for the Oglala Lakota College students was 31.29. This could have influenced the differences that were found to exist between the two groups merely because of the difference in life experiences between them. Differences in grade level between the groups of subjects must also be considered as a possible limitation. The University of North Dakota subjects were considerably lower in percentage of freshman status compared to the Oglala Lakota College subjects (8.3% compared to 33.3%). Senior status was considerably lower for the Oglala Lakota College subjects compared to the University of North Dakota subjects (16.7% compared to 41.7%). This should be taken into consideration when interpreting the data between the groups.

One possible solution to the observed reverse in cultural orientation for the students from both settings may simply be to administer the NPBI or other biculturalism scales in interview format, or at least obtain expert-witness validation of an individual's endorsements. Although this would make anonymity impossible, it would provide the validity of that person's (and ultimately the group's) cultural orientation that is so vital

both theoretically and practically.

This study provided some interesting preliminary clues to understanding how culture affects Native American's scores on intelligence measures such as the WAIS-III. The investigator hopes for more interest in this area and more research to understand better how Native Americans can be more appropriately assessed by taking into account level of biculturalism. Native Americans face a great disadvantage when assessed with intelligence measures that are standardized primarily on European-Americans without taking cultural orientation into account. Assessment measures that are standardized or revised to be more appropriate for use with Native Americans can have a tremendous influence on accurate and ethical assessment. Standardized assessment measures such as the Wechsler scales, could contribute greatly to the Native American populations that are facing high rates of mental health problems, but only when their use is clearly understood and fit within a context of cross-cultural competence. Biculturalism is an important factor that also needs to be better understood by researchers and clinicians that are working with Native American populations. If further research could more clearly establish and clarify the link between these two constructs, the future of American Indian health would be greatly and positively enhanced.

APPENDIX A

RESEARCH PACKET

Consent Form

You are invited to participate in a study being investigated by Teton Ducheneaux in partial fulfillment of the Masters of Arts Degree under the supervision of Dr. Doug McDonald, that is attempting to examine the effect of biculturalism on IQ test performance using the Wechsler Adult Intelligence Scale-III (WAIS-III). You must be 18 years of age or older. During the session you will complete two short questionnaires: 1. the Northern Plains Biculturalism Inventory (NPBI) and 2. a Demographics Questionnaire. The NPBI consists of 30 questions that ask individuals to describe their feelings, attitudes, and participation in association with Native American and Caucasian culture. The questions ask individuals to describe how often, or how they feel about attending Native American ceremonies or Christian religious ceremonies, and how often they wear Native American or Caucasian jewelry. These questions assess your degree of cultural orientation. You will be asked to describe how interested you are in being identified with White or Indian culture. All questions have 1-5 choices that are either no comfort to great comfort, or ranged in similar fashion. The Demographics questionnaire asks about age, gender, year in school, major, and specific tribal identity. Then you will take the WAIS-III, which measures intellectual ability. The purpose of this study is to increase the understanding of the relationship between biculturalism and IQ Performance. Research in this area is scarce, especially research including Native Americans. The benefits will make non-Native counselors/psychologists more aware of the uses and limitations of assessment instruments with the differing bicultural states that the Native American client may present.

The study was approved by the University of North Dakota Institutional Review Board (IRB). All information is strictly confidential and anonymous and there will be no releasing of subject names. You will be assigned a subject number and at no time will your name be used in the data collection process. Your name will only appear on the consent form whereas, your subject number or identification number will appear on all the test forms and questionnaires. The research data will be secured in the Indians in Psychology Doctoral Education (INPSYDE) program office in the Corwin-Larimore Building for a period of 3 years (at which point they will be shredded).

In return for your participation, you will be given class credit according to the system that your instructor employs or $15.00, but not both. If you decide to participate, you are free to quit at any time without a penalty.

If you have any further questions regarding this study or related matters, or if in the future you have questions or want to know a summary of the group results, please contact the investigators. Dr. Doug McDonald is the supervisor of this study and can be reached at (701) 777-4495. Teton Ducheneaux is the primary investigator and can be reached at (701) 777-4497.

I have read the above information and I am willing to agree to participate in this study.

Signature of Subject	Date	Phone Number
Signature of Investigator	Date	Phone Number

Demographic Questionnaire

Please complete the following information as accurately as possible. All information is strictly confidential and anonymous. This form will not include your name, only a subject number and at no time will your name be used in the data collection process. This will ensure that you will not be linked to the information given. Please complete all questions. Thank you.

1. Your age: _____

2. Your gender (check one): Male _____ Female _____

3. Your tribal affiliation: _____

4. Your Degree of Indian Blood: _____

5. What is your current class ranking? (Check only one):

   ___ a. Freshman
   ___ b. Sophomore
   ___ c. Junior
   ___ d. Senior
   ___

6. What is your current major: _____

NPBI (Northern Plains Biculturalism Inventory) College

These questions ask you to describe your attitudes, feelings, and participation in Indian and White culture. Some of the questions may not apply to you. In these cases, one of the possible answers allows you to note this.

Read each question. Then fill in the number above the answer that seems most accurate for you, as in the example below.

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

1. ___	2. ___	3. ___	4. _X_	5. ___
No comfort		Some 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 you are influenced by Indian and White culture regardless of your own ethnic background, keeping in mind that no two people have the same background.

1. What is your degree of comfort around White people?

1. ___	2. ___	3. ___	4. ___	5. ___
No comfort		Some comfort		Great comfort

2. What is your degree of comfort around Indian people?

1. ___	2. ___	3. ___	4. ___	5. ___
No comfort		Some comfort		Great comfort

3. How interested are you in being identified with Indian culture?

1. ___	2. ___	3. ___	4. ___	5. ___
No desire		Some desire		Great desire

4. How interested are you in being identified with White culture?

1. ___	2. ___	3. ___	4. ___	5. ___
No desire		Some desire		Great desire

5. How often do you think in English?

1. ___	2. ___	3. ___	4. ___	5. ___
Rarely or never think in English		Half the time think in English		Often or always think in English

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

1. ___	2. ___	3. ___	4. ___	5. ___
I rarely or never think in Indian language		Half the time think in Indian language		Often or always think in Indian language

7. How much confidence do you have in a medical doctor?

1. ___	2. ___	3. ___	4. ___	5. ___
I do not use medical doctors		Have some faith in medical doctors		Have strong faith in medical doctors

8. How much confidence do you have in the medicine man/woman?

1. ___	2. ___	3. ___	4. ___	5. ___
I do not use the medicine man/woman		Have some faith in the medicine man/woman		Have strong faith in the medicine man/woman

9. How much is your way of tracing ancestry White (focus on biological relative, descent through father)?

1. ___	2. ___	3. ___	4. ___	5. ___
I trace none of my ancestry according to White custom		I trace some of my ancestry according to White custom		I can trace all of my ancestry according to White custom

10. How much is your way of tracing ancestry Indian (cousins same as brothers and sisters, descent more through mother)?

1. ___	2. ___	3. ___	4. ___	5. ___
I trace none of my ancestry according to Indian custom		I trace some of my ancestry according to Indian custom		I can trace all of my ancestry according to Indian custom

11. How often do you attend Indian religious ceremonies (sweatlodge, Indian Peyote churches, Sundance, vision quest)?

1. ___	2. ___	3. ___	4. ___	5. ___
I have never attended Indian religious ceremonies		I sometimes attend Indian religious ceremonies		I attend Indian religious ceremonies frequently

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

1. ___	2. ___	3. ___	4. ___	5. ___
I never attend Christian religious ceremonies		I sometimes attend Christian religious ceremonies		I attend Christian religious ceremonies frequently

13. How often do you participate in popular music concerts and dancing?

1. ___	2. ___	3. ___	4. ___	5. ___
I never participate in popular concerts/dances		I sometimes participate in popular concerts/dances		I participate in popular concerts/ dances frequently

14. How often do you participate in Indian dancing (Indian, Owl, Stomp, Rabbit, etc.)?

1. ___	2. ___	3. ___	4. ___	5. ___
I never participate in Indian dances		I sometimes participate in Indian dances		I participate in Indian dances frequently

15. To how many social organizations do you belong where a majority of the members are Indian?

1. ___	2. ___	3. ___	4. ___	5. ___
I belong to no Indian organizations		I belong to some Indian organizations		Several of the organizations I belong to are Indian organizations

16. To how many social organizations do you belong where a majority of the members are non-Indian?

1. ___	2. ___	3. ___	4. ___	5. ___
I belong to no non-Indian organizations		I belong to some non-Indian organizations		Several of the organizations I belong to are non-Indian

17. How often do you attend White celebrations (White ethnic festivals, parades, barbecues)?

1. ___	2. ___	3. ___	4. ___	5. ___
I never attend White celebrations		I attend some White celebrations		I attend White celebrations frequently

18. How often do you attend Indian celebrations (Pow-Wows, Wacipi, Indian rodeos, Indian softball games, Indian running events)?

1. ___	2. ___	3. ___	4. ___	5. ___
I never attend Indian celebrations		I attend some Indian celebrations		I attend Indian celebrations frequently

19. Does anyone in your family speak an American Indian language?

1. ___	2. ___	3. ___	4. ___	5. ___
They rarely or never speak Indian		They speak Indian part of the time		They often or always speak Indian

20. How often does your family use English?

1. ___	2. ___	3. ___	4. ___	5. ___
They rarely or never speak English		They speak English part of the time		They often or always speak English

21. What is your use of English?

1. ___	2. ___	3. ___	4. ___	5. ___
I rarely or never speak English		I speak English part of the time		I often or always speak English

22. Do you speak an American Indian language?

1. ___	2. ___	3. ___	4. ___	5. ___
I rarely or never speak Indian		I speak Indian part of the time		I often or always speak Indian

23. To what extent do members of your family have traditional Indian last names (like "Kills-in-Water")?

1. ___	2. ___	3. ___	4. ___	5. ___
None have Indian names		Some have Indian names		All have Indian names

24. To what extent do members of your family have last names that are not traditional Indian last names (like "Smith")?

1. ___	2. ___	3. ___	4. ___	5. ___
None have White names		Some have White names		All have White names

25. How often do you talk about White topics and White culture in your daily conversation?

1. ___	2. ___	3. ___	4. ___	5. ___
I never engage in topics of conversation about Whites and their culture		Sometimes engage in topics of conversation about Whites and their culture		I engage in topics of conversation about Whites and their culture frequently

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

1. ___	2. ___	3. ___	4. ___	5. ___
I never engage in topics of conversation about Indians and their culture		Sometimes engage in topics of conversation about Indians and their culture		I engage in topics of conversation about Indians and their culture frequently

27. Do you wear White fashion jewelry?

1. ___	2. ___	3. ___	4. ___	5. ___
I never wear fashion jewelry		I sometimes wear fashion jewelry		I often wear fashion jewelry

28. Do you wear Indian jewelry?

1. ___	2. ___	3. ___	4. ___	5. ___
I never wear Indian jewelry		I sometimes wear Indian jewelry		I often wear Indian jewelry

29. How Indian is your preference in clothing (dressing in bright colors, clothes with Native artwork)?

1. ___	2. ___	3. ___	4. ___	5. ___
I never dress according to Indian style		I sometimes dress according to Indian style		I often dress according to Indian style

30. How White is your preference in clothing (dress according to White style and fashion)?

1. ___	2. ___	3. ___	4. ___	5. ___
I never dress according to White style		I sometimes dress according to White style		I often dress according to White style

APPENDIX B

FIGURES

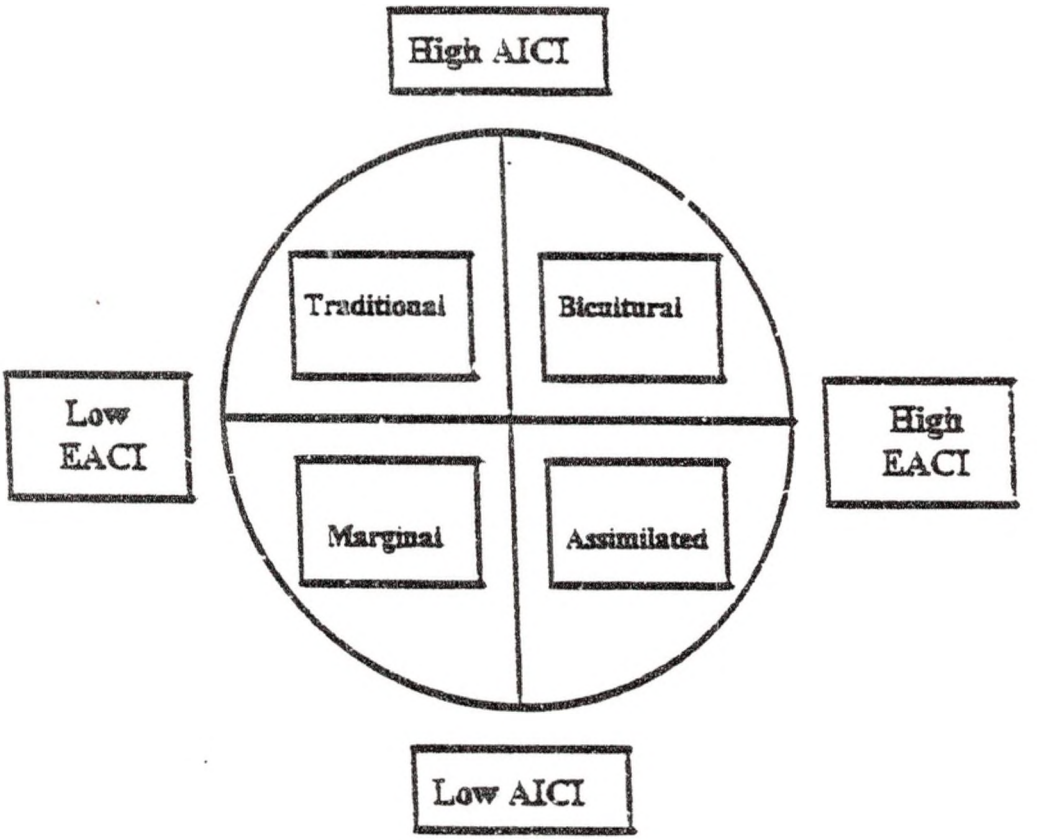

Figure 1. Orthogonal Theory of Biculturalism (Oetting & Beauvais, 1990)

EACI refers to European American Cultural Identification

AICI refers to American Indian Cultural Identification

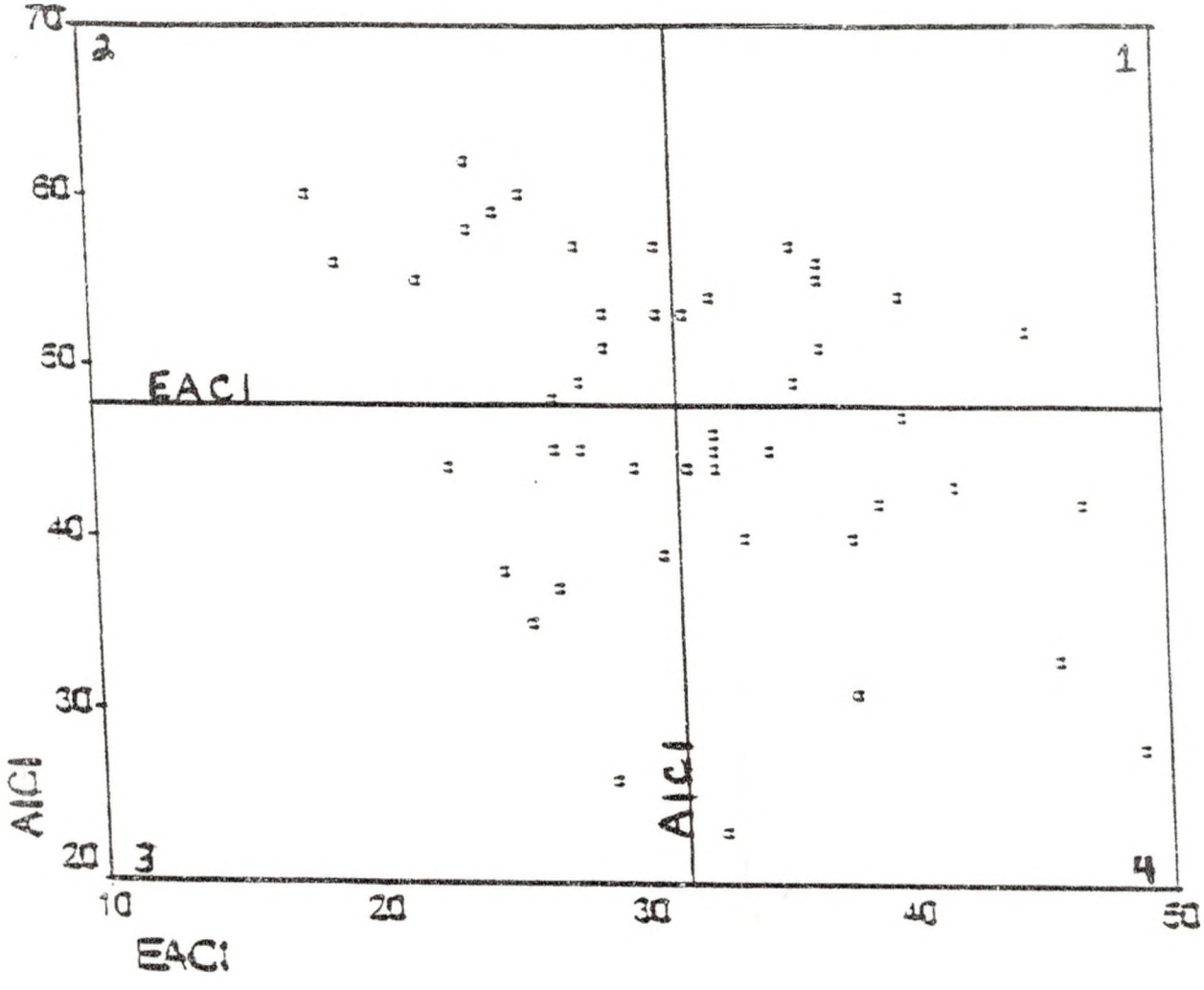

Figure 2. NPBI Subscales Scatterplot for entire sample (N = 48)

Q1 = Bicultural, Q2 = Traditional, Q3 = Marginal, Q4 = Assimilated.

EACI refers to European American Cultural Identification.

AICI refers to American Indian Cultural Identification.

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