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Convergent And Discriminant Validity of Biculturalism And Depression Among Northern Plains American Indians

Laiel I. Baker

CONVERGENT AND DISCRIMINANT VALIDITY OF BICULTURALISM AND
DEPRESSION AMONG NORTHERN PLAINS AMERICAN INDIANS

by

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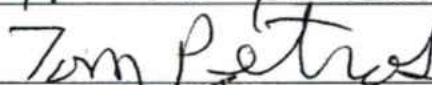Grand Forks, North Dakota
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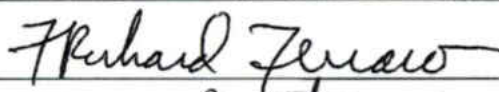
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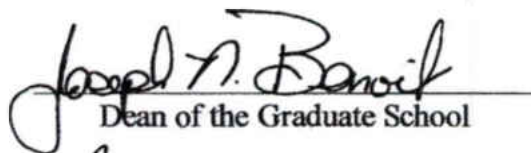Department   Clinical Psychology

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ACKNOWLEDGMENTS

To my grandparents Clyde and Inez Baker

ABSTRACT

In order to further develop the Northern Plains Biculturalism Inventory-Revised into a more valid and reliable research instrument for providing data regarding cultural orientation and identification among Northern Plains American Indians, convergent and discriminant validity was investigated. Two hundred and one Northern Plains American Indians between the ages of 18 and 76 participated in the study.

Convergent validity was established in that both the European American (EA) ($r = -.801$) and American Indian (AI) ($r = -.621$) subscales of the Northern Plains Biculturalism Inventory-Revised (NPBI-R) were strongly and significantly correlated with the similar subscales of the American Indian Biculturalism Inventory-Northern Plains (AIBI-NP). Discriminant validity was adequately established because while the depression measures, the Center for Epidemiological Studies-Depression (CES-D) and the Beck Depression Inventory-Second Edition (BDI-II), exhibited a strong relationship with each other ($r = .684$) the biculturalism measure subscales were not shown to be highly correlated with depression measures. Only small significant correlations were established between the CES-D and both the NPBI-R EA subscale ($r = -.207$) and AI subscale ($r = -.157$). A small significant relationship was found between the NPBI-R EA subscale and the BDI-II ($r = -.205$). The EA subscale of the AIBI-NP exhibited a small but significant relationship with the BDI-II as well ($r = .181$).

Secondarily, the relationship between biculturalism and depression was investigated and those identifying as bicultural on the NPBI-R and AIBI-NP subscales

demonstrated lower overall scores on the BDI-II and CES-D total scores. The

relationship trended toward significance.

CHAPTER I

INTRODUCTION

Background

Culture-centered research among American Indian populations has been attempted across several areas of psychology. As with most areas of research pertaining to American Indian mental health, there has been minimal if any standardization regarding development of instruments measuring different constructs. With growing recognition of the importance of culture as it relates to human behavior the American Psychological Association (APA) has developed multicultural guidelines related to group membership and identity (APA, 2002, pg.4) which are utilized within this study. Establishing the validity of existing biculturalism measures among Northern Plains tribes is necessary if these measures are to be used in recognizing cultural differences as they relate to mental health delivery and research. This study further develops biculturalism research among Northern Plains American Indians and helps to bridge the gap between anecdotal writing and theory development to standardization of measures among this ethnic group. This study examines the role culture plays in psychology related to measurement of cultural identification and competence. It is difficult to find empirical studies centered on validation, norm development or psychometric establishment of biculturalism measurement tools for American Indians. This study takes a step in that direction through use of the multitrait-multimethod correlation matrix design and analysis

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in establishing convergent and discriminant construct validity of depression measures and biculturalism measures geared toward Northern Plains tribes.

Definition of Key Terms

Northern Plains: Geographical area of the United States including but not limited to eastern Montana, North and South Dakota, and Minnesota. Persons indigenous to a "tribe within this region are considered Northern Plains American Indians" (Baker, 2005 pg.3).

Native American, American Indian, Indian, and Native peoples: A person or group of people who can validate blood quantum or ancestry connected to federal, state, or a locally recognized tribe; also, any person who can claim membership to such a tribe by way of ceremonial adoption and attempts to live a traditional Native way of life (McDonald, Morton and Stewart 1993, pg. 438).

Cultural Orientation: Association with and understanding of objective and subjective characteristics including social norms, roles, beliefs, and values which are part of a "highly variable system of meanings learned and shared by a people or an identifiable segment of the population" (Betancourt and Lopez, 1993, pg. 630).

Biculturalism: The Orthogonal Theory of Biculturalism explains "it is not essential to lose contact with one culture while adapting to another; an individual can have a high level of involvement in both cultures" (Oetting and Beauvais, 1991, pg. 661). Biculturalism is being part of one culture while "acquainting" with another, therefore identifying highly with both cultures simultaneously (Oetting and Beauvais, 1991). The four dimensions encompassing cultural identification include traditional, assimilated, marginal and bicultural orientations. These dimensions are independent of each other. A

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traditional orientation is associated with involvement only in one's original culture. Assimilated refers to one who is involved only with the culture to which he or she has adapted. A marginal orientation refers to someone who is neither acquainted nor involved with either culture (Oetting and Beauvais, 1991).

<p align="center">*Cultural Orientation and Competence*</p>

Theory of bicultural competence.

A number of models of cultural orientation and cultural acquisition have been developed and studied within the field of psychology. The Orthogonal Theory of Biculturalism (Oetting & Beauvais, 1991) explains that one's cultural identification is directly related to his or her level of cultural competence and psychological well-being. The theory states that bicultural competence, increased mental health and overall functioning correlate positively. Four categories of cultural identification are specified within the model. The four groups in which an individual may be included are: (1) low identification with dominant culture and high identification with culture of origin (traditional), (2) high identification with both cultures simultaneously (bicultural), (3) high identification with one culture and moderate identification with another (assimilated), and (4) low identification with both cultures (marginal) (Baker, 2005).

It's been suggested by Oetting and Beauvais (1991) that there is a high positive correlation between bicultural competence and better overall functioning and mental health. Furthermore, marginality (low identification within either culture) corresponds with an increase in psychological dysfunction. Independent assessment is recommended when categorizing level of identification with several cultures compared to an individual's dominant culture. For instance, a native individual's American Indian

Cultural Identification and level of European American Cultural Identification must be compared (Oetting and Beauvais, 1991; Baker, 2005).

The alternation theory of cultural acquisition uses six factors in defining the concept of biculturalism; 1) knowledge of cultural beliefs and values, 2) positive attitude toward both groups, 3) bicultural efficacy, 4) communication competency, 5) role repertoire, and 6) groundedness (LaFromboise et al., 1993). The alternation theory of cultural acquisition is based on an additive model emphasizing skills required for becoming effective in a new culture while remaining competent in one's own culture (LaFromboise et al., 1993). This model hypothesizes that one can interchange behavior fitting it to two cultures. As a result, one can experience lower symptoms of anxiety when compared to someone going through acculturation or assimilation. Ideally, if one can effectively alternate their use of culturally appropriate behavior, increased cognitive functioning and mental health will result (LaFromboise et al., 1993; Baker, 2005).

Assimilation and acculturation models describe a linear or unidirectional relationship between the culture of origin and the second culture in which the individual may be living or interacting. LaFromboise et al. (1993) state that the alternation model is different because it includes a bi-directional and orthogonal relationship. The two cultures are assumed to have equal status even if they are not valued the same by a person. It is also noted that one can maintain competence in his or her own culture and simultaneously gain competence in another culture (LaFromboise et al., 1993; Baker, 2005). By identifying the skills necessary for maintaining bicultural competence, future research, as explained by the LaFromboise et al. (1993) can focus on the psychological impact of biculturalism specific to social and work environments. Methods of assessment

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of these skills have been developed but, until this study, further empirical analysis has not been attempted nor have reliability and validity been established related to bicultural functioning, specifically among Northern Plains tribes (Baker, 2005). It has also been suggested that current instruments used to measure cultural orientation and identity are so "study- or sample-specific" that generalizability of research results (external validity) can be difficult to the point where contribution to the field is minimal (Wilke, 2002). Therefore, this study tests this theory with Native Americans to assess bicultural competence and tests the validity and reliability of the theory with this population. Cultural orientation related to depression is also tested in this study. Review of the literature addresses relevance of the techniques and analyses that were used in the study as well as existing measures of cultural orientation.

Literature Review

An attempt was made to locate literature discussing Native American psychological scale development and validation using exploratory and confirmatory factor analysis. No articles were found pertaining specifically to validation of scales of biculturalism among Native Americans in the Northern Plains region of the United States. Despite this, some articles were found pertaining to factor validation and scale development of related cultural research for other psychological constructs.

Cultural Orientation Measures for Northern Plains American Indians

Northern Plains Biculturalism Inventory (NPBI)

Allen and French (1994) created a scale measuring biculturalism among Northern Plains American Indians derived from LaFromboise, Gerton, and Coleman's (1993) alternation model of biculturalism and Oetting and Beauvais' (1990) orthogonal theory of

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cultural identification. The 30-item NPBI assesses areas of social behavior related to attitudes, beliefs, worldviews and acculturation relative to Northern Plains American Indian culture and European American Midwestern culture. The authors identified three factors within the NPBI including American Indian Cultural Identification (AICI), European American Cultural Identification (EACI), and Language. Norms for the NPBI were established with a sample of 73 American Indian college students using a principal component analysis with varimax rotation. AICI scores resulted in an alpha of .89 and EACI scores were associated with an alpha equaling .84. The Language factor alpha equaled .88. Six month test-retest reliabilities were obtained for 34 Northern Plains American Indian college students with $r = .82$ for AICI, $r = .70$ for EACI and $r = -.74$ for the Language factor (Allen & French, 1994). The same analysis was conducted with a Caucasian sample of 438 college students with items loading lower for this sample. Coefficients of factor congruence were computed for the three factors (AICI, EACI and Language). The factors were .81, .85, and .77, respectively (Allen & French, 1994). Results revealed that American Indian college students scored higher than Caucasian students on AICI and Language items and lower on EACI items (p<.0001).

Reliability and construct validity of the NPBI have been called into question. Baker (2005) analyzed the factor structure and validity of the NPBI and developed subsequent validation of a new scale based on the information rendered from the analysis.

Northern Plains Biculturalism Inventory –Revised (NPBI-R)

Shortcomings discovered with the NPBI include small sample size and difficulties with the wording of the instrument. Baker (2005) improved upon this inventory by

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developing a presumably more valid and reliable instrument that was more efficient in measuring cultural identification among Northern Plains American Indians.

A pool of items was refined based on factor analysis of NPBI data. European American Cultural Orientation (EACI) and American Indian Cultural Orientation (AICI) were the factors identified. A prototype biculturalism inventory was created and administered to 130 Northern Plains American Indians. A series of factor analyses and internal reliability analyses showed that three items did not meet statistical criteria for inclusion and were then deleted from the prototype. The resulting scale, the NPBI-R, became the final product of this research consisting of twenty-items. The two factors, or subscales, are American Indian Cultural Identification (subscale 1) and European American Cultural Identification (subscale 2). High internal consistency was shown upon analysis. The original NPBI only had 73 American Indian participants, while this study consisted of 130 participants, thereby increasing the confidence in the results of the factor structure. The utility of the scale is demonstrated by analyzing scores for the subscales thereby providing information about one's level of identification with American Indian culture in the Northern Plains region. A low score on the AICI scale and a high score on the EACI indicate European American Cultural Identification. A high score on the AICI scale along with a low score on the EACI scale indicates American Indian Cultural Identification on the dimensions of cultural immersion. If both AICI and EACI scores are above the median, the individual is identified as bicultural and, if both scores are below the median, the individual is identified as marginal (Baker, 2005).

An analysis of internal stability (Chronbach's Alpha) produced a coefficient of .77 for the final twenty-item scale. The removal of the items did not significantly

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decrease the reliability of the instrument and total variance accounted for was withheld. The American Indian Cultural Identification (AICI) factor obtained an alpha coefficient of .87 while the European American Cultural Identification (AICI) factor obtained an alpha coefficient of .74 (Baker, 2005).

American Indian Orientation Scale (AIOS)

The American Indian Orientation Scale (LaFromboise & Rowe, 1995) is a 27-item self-report scale measuring levels of cultural identification. Oetting and Beauvais' (1990) Orthogonal Theory of Biculturalism was also used in proposing four groups with which American Indiana could identify: Traditional, Assimilated, Diffused, or Bicultural. The Traditional and Bicultural labels can be compared to the same groups on the NPBI. The Assimilated is similar to the Acculturated on the NPBI and Diffused is identified as Marginal on the NPBI. Questions on the AIOS relate to engagement, satisfaction, responsibility, acceptance, and attitude of both American Indian and European American cultures (Wilke, 2002).

The American Indian (AI) scale can be compared to the American Indian Cultural Identification (AICI) subscale of the NPBI and the NPBI-R and the White American (WA) scale is similar to the European American Cultural Identification (EACI) subscale. Reliability testing is currently in process. The manual does offer alpha coefficients of .80 for the WA scale and .89 for the AI scale (LaFromboise & Rowe, 1995).

American Indian Biculturalism Inventory – Northern Plains (AIBI-NP)

Gourneau (2002) states a need for the study and development of the AIBI-NP as "a more valid and reliable instrument which would result in more accurate identification of American Indians' level of biculturalism, which might in turn inform us (if the

Orthogonal Theory is valid) as to the degree of adaptability and functioning of American Indian individuals and even groups" (Gourneau, 2002, pg. 6). The author goes on to state that identification might then lead to earlier and more appropriate interventions with particular at-risk Indian people.

The study used in developing the measure resulted in a 25 item AIBI-NP that consists of two factors or subscales. Subscale 1 is considered an American Indian Cultural Identification subscale, while Subscale 2 is considered a European American Cultural Identification subscale. The overall inventory is reportedly demonstrated high internal consistency. And it was suggested that further study with this inventory and its factors should be undertaken to address other reliability characteristics (Gourneau, 2002).

The utility of the subscales appears to be similar to those of the aforementioned cultural identification scales. Total scores for Subscale 1 and 2 reportedly provide information about a person's degree of identification with American Indian or European American culture. As with the NPBI and the NPBI-R, a low score on the AICI scale and a high score no the EACI scale suggest European American Cultural Identification (Gourneau, 2002). A high score on the AICI along with a low score on the EACI scale indicates American Indian Cultural Identification. The scales identify a person as marginal if both AICI and EACI scores are below the median and, if both AICI and EACI scores are above the median, the person is considered bicultural. The author suggests that it is not necessarily monocultural or bicultural identification that causes significant acculturative stress. "However, it is marginality, or low identification with either culture, that leads to more psychological and sociocultural difficulties. They are

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considered to be more at risk and therefore would likely benefit from more personal attention to his/her personal issues" (Gourneau, 2002, pg. 9).

Statistical result of the AIBI-NP showed a significant negative correlation between the AICI and EACI subscales. However, this negative correlation (r = -.195) was much lower than previous studies and is considered by the research as an improvement. Previous studies, including those by McDonald et. al (1995) and Wilke et. al (1998) both utilized Allen and French's NPBI, which also has the AICI and EACI subscales. These studies identified higher correlations between the scales. McDonald (1995) found a significant correlation of .30 while Wilke (1998) found a significant correlation of .53, with both significant at the .01 level. Allen and French (1993) demonstrated a significant negative correlation of -.57 at the .01 level, which shows the AIBI-NP results to be an improvement on the previous studies (Gourneau, 2002).

This study also improved upon the NPBI (Allen & French, 1993) with its stronger internal consistency on the AICI scale. A higher alpha level of .91 for the AICI scale was produced compared to Allen and French's (1993) .89 on this subscale. Yet Allen and French (1993) did produce an alpha coefficient of .81 on the EACI scale in comparison to .77 on the EACI scale in this study (Gourneau, 2002).

CES-D and BDI-II Depression Measures

CES-D and BDI-II Use with American Indians

As with much of the research surrounding American Indian mental health, a small amount of literature exists associated with measurement of depression, specifically with the BDI-II and the CES-D. Carmody (2005) evaluated the psychometric properties of the BDI-II among 502 college students, ten of which were American Indian. Participants

were broken up into an "ethnically diverse" group and European and White group. Results of the study using psychometric analyses illustrated the BDI-II to be an adequate screening instrument for depression in college populations of diverse ethnicity (Carmody, 2005).

Chaplesky, Lamphere, Kaczynski, Lichtenburg and Dwyer (1997) examined depressive symptom differences among urban, rural off-reservation, and reservation residing American Indians over the age of 55 using the CES-D. The study took place in the Eastern Great Lakes region of the U.S. Chaplesky et al. (1997) concluded that the CES-D is robust and useful for measuring depression among elderly diverse populations. A 12-item shortened version of the scale was found to provide a superior fit than the original version and superior across residential strata. A significant alpha coefficient of .83 for the 12-item scale also lends support to the use of a summary score. Beals, Manson, Keane and Dick (1991), examined the factorial structure of the CES-D among 605 American Indian college students from six state universities. A four factor, three factor, and single factor structure were analyzed with this sample. A confirmatory factor analysis demonstrated that the four and three structure models fit the data better than the single factor model. A high degree of association was found between factors of Depressed Affect and Somatic Complaints, which suggested significant overlap (Beals et al., 1991). Otherwise correlations between the factors were found to be significant at .44 to .64.

CES-D and BDI-II Validity

Two of the most commonly used screening tests for depression are the Center for Epidemiological Studies Depression Scale (CES-D) and Beck Depression Inventory

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Second Edition (BDI-II). The Beck Depression Inventory (Beck, Ward, Mendelson,

Mock, & Erbaugh, 1961) has been used in numerous studies on psychiatrically diagnosed

patients (Piotrowski, Sherry, & Keller, 1985) and normal populations (Steer, Beck, &

Garrison, 1986). The Center for Epidemiologic Studies Depression Scale (CES-D) was

developed as part of a National Institute of Mental Health study to measure depressive

symptoms among adults (Radloff, 1977). The CES-D has been used less frequently with

adolescents than the BDI has. However, it has been validated with adolescents (Radloff,

1991) and adolescent mothers (Colletta, 1983; McKenry, Browne, Kotch, & Symons,

1990).

Wilcox, Field, Prodromidis, and Scafidi, (1998) conducted a study identifying

correlations between Correlations the BDI and the CES-D in a sample of adolescent

mothers. One hundred and fifty-five participants were recruited a large, urban, university

hospital maternity ward. The participants were primarily unmarried, low-socioeconomic-

status African American and Hispanic mothers between the ages of 13 and 21. They had

an average of a tenth-grade education (Wilcox et al., 1998). Their results showed that the

adequacy of the BDI and CES-D as screening instruments for adolescent depression was

determined by the degree to which they agreed with each other. It was indicated that the

BDI and CES-D were highly correlated (r = .58, p >.01). Also, significant correlations

were found between the BDI and the subscales of the CES-D. The highest correlation

was for the Depressed Affect subscale (r = .54, p [less than] .01), followed by the

Interpersonal subscale (r = .44, p [less than] .01) (Wilcox et al., 1998). The BDI and

CES-D were highly correlated, which suggests that they are comparable but not identical.

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In a study conducted by Roberts and his colleagues (1991) a correlation of .70 was found between the CES-D and the BDI for a sample of high school students suggesting that the CES-D and BDI are comparable but different. The authors indicate that the CES-D and BDI may be measuring different aspects of depression. The BDI illustrates a differentiation between non-depressed, moderately depressed, and severely depressed individuals (Beck et al., 1961). The BDI seems to focus more on somatic symptoms than does the CES-D (Campbell & Cohn, 1991). The CES-D is said to focuses primarily on cognitive and "affective" symptomology while emphasizing depressed mood (Radloff, 1977). Also, the CES-D does not assess suicide directly. It includes four reverse-scored positive affect items such as assessment of "the degree to which one feels happy, hopeful, enjoys life, or feels good about oneself" (Radloff, 1977).

But items on the CES-D were originally taken from the BDI and other measures with proven validity (Weissman, Scholomskas, Pottenger, Prusoff, & Locke, 1977), therefore making some elements comparable. Some studies have used the BDI and CES-D interchangeably in defining depressed experimental groups. The measures are considered by some to be equally useful screening instruments with adequate psychometric properties (Kendall, Hollon, Beck, Hammen, & Ingram, 1987). Gotlib and Cane (1989) compared eight commonly used self-report measures of depression using DSM-III criteria and concluded that the BDI and CES-D should be the scales of choice.

Zich, Attkisson and Greenfield (1990) examined the utility of the CES-D and the BDI as screening instruments for primary care clinic patients. The researchers looked at the patients' willingness to complete the scales as well as the level of agreement between the scales and DSM-III diagnosis of Major Depressive Episode, based on the NIMH

Diagnostic Interview Schedule (DIS). They also studied the effect on detection rates of raising the cut-off score for each depression screen and the factor structure of the CES-D in the primary care sample compared to findings from general population studies. The results illustrated a comparable performance between the CES-D and BDI as depression screening instruments. Yet they produced too many false positives when standard (low) cut-off scores were applied. When more rigid cut-off scores were used, results suggested that either the CES-D or BDI might aid physicians in reliably detecting depressed patients, without an overload of false positives (Zich et al., 1990).

Convergent and Discriminant Validity

Multi-trait Multi-method Matrix

The multitrait-multimethod matrix (MTMM) correlation analysis is used to investigate construct validity within an identified measurement or assessment tool. Specific aspects of construct validity analyzed include convergent and discriminant validity. According to Campbell and Fisk (1959), the original researchers and developers of the MTMM theory, these two types of validity make up the construct validity of a psychological test. The researchers define convergent validity as being confirmed with attainment of high correlations between two measures that supposedly measure the same trait or construct. But the two measures must remain uncorrelated with scales measuring different constructs. For example, as described before, the Beck Depression Inventory (BDI) scores should correlate highly with the CES-D, yet both are statistically unrelated to two different measures of intelligence, according to Wilcox and colleagues (1998), Kendall and colleagues (1987) and Zich (1990). According to Campbell and Fiske (1959), discriminant validity is attained when two compared measures that are considered

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conceptually unrelated are in fact orthogonal. Campbell and Fiske (1959) suggest that, to determine convergent and discriminant validity, two theoretically related scales must be correlated and compared with at least two other scales conceptually unrelated to the first two, (as discussed more thoroughly below).

The researchers also talk about four dimensions of the MTMM matrix to consider for both convergent and discriminant validity to be met: 1) validity diagonals (same trait measured with different measures) should be significantly different from zero and sufficiently large to encourage further examination of validity (convergent validity); 2) validity diagonals should be higher than the values in its columns and row in the heterotrait-heteromethod triangle (different traits measured by different measures; dotted triangle); 3) variable should correlate higher with an independent effort to measure the same trait than with measures designed to measure different traits (compare validity diagonals with heterotrait-monomethod triangles (solid triangles); 4) some pattern of trait inter-relationship be shown in all of the heterotrait triangles of both mono- and hetero-method blocks (Campbell and Fiske, 1959, p. 83). Intercorrelations between conceptually unrelated tests should be avoided, which is considered "discriminant invalidity" (Campbell & Fiske, 1959). Discriminant invalidity arises when the values in the heterotrait-heteromethod triangles (as shown in Table 1) are as high as those values in the validity diagonal. Another example of invalidation can occur when values in the monomethod block show heterotrait values as high as the reliabilities.

While using an example of three different traits and three different methods, Campbell and Fiske (1959) provide a MTMM correlation matrix, as shown in Table 1, illustrating the intercorrelations of each trait measured by each method. The three traits

are measured by all three of the methods. Campbell and Fiske (1959) published their study when MTMM literature was scarce. This approach has been considered controversial, yet continues to be used, perhaps due to the fact that few have developed a method containing such simplicity and sophistication (Wilke, 2002). Despite this, follow-up analyses of this method have been conducted in the years following the published landmark article. They include criticisms and examples of this method.

Table 1. Sample Multitrait-Multimethod Correlation Matrix

Traits		Method 1			Method 2			Method 3		
		A1	B1	C1	A2	B2	C2	A3	B3	C3
Method 1	A1	(.69)								
	B2	**.31**	(.69)							
	C1	**.18**	**.17**	(.56)						
Method 2	A2	*.37*	.02	.01	(.73)					
	B2	.02	*.37*	.01	**.48**	(.74)				
	C2	.01	.01	*.26*	**.39**	**.38**	(.64)			
Method 3	A3	*.36*	.02	.01	*.47*	.22	.13	(.74)		
	B3	.03	*.38*	.02	.23	*.46*	.14	**.47**	(.72)	
	C3	.01	.01	*.25*	.14	.12	*.38*	**.38**	**.40**	(.65)

Note. Fictional numbers used (Campbell & Fiske, 1959, p. 82). Validity diagonals are italicized, reliability diagonals are in parentheses. Heterotrait-monomethod triangles are bolded. Heterotrait-heteromethod triangles are underlined (adapted from Wilke, 2003; Campbell & Fiske, 1959).

Van Tuinen and Ramanaiah used the MTMM analysis with self-esteem measures in 1979. Two different types of self-esteem traits, global and social, were used to assess for convergent validity while discriminant validity was assessed with orderliness measures. Researchers implemented use of three different types of self-report measures including true/false, point scale, and self-rating scales in order to help prevent any social desirability confounds that might arise from using authority figures as administrators. Intercorrelations among the nine measures were obtained through use of the MTMM data. Factor analysis was used to examine overall patterns within the intercorrelations. Gender data was analyzed in addition to the sample as a whole with no significant difference found between men and women. Therefore, the overall pattern was discussed. Strong convergent validity coefficients were identified for global and social self-esteem. The two traits were more correlated with each other than with the measures of orderliness, thus illustrating discriminant validity between orderliness and self-esteem (Van Tuinen and Ramanaiah, 1979).

In 1986 Tanaka-Matsumi and Kameoka published a study using MTMM to examine the convergent and discriminant validity of depression and anxiety measures. Three hundred and ninety one college undergraduates completed three depression self-reports and six anxiety measures. Individual trait factor loadings were examined and were significantly different from zero and several were found significantly different from each other indicated by 95% confidence intervals. When assessing discriminant validity between depression and anxiety, the inter-trait correlation was not significantly different from 1.0. This suggests almost perfect overlap between the depression and anxiety factors, thus, a complete lack of discriminant validity.

Among those studies which criticize the 1959 Campbell and Fiske article is that

of Ferketich, Figueredo, and Knapp (1991). Although these researchers acknowledge

Campbell and Fiske's contribution to the study they discuss three specific problems

encountered with the MTMM approach. Ferketich and colleagues exclaim that the

criteria given by Campbell and Fiske do not give specific levels of magnitude criteria for

the correlations. Instead, it is reported that they only suggest the correlation be "of a

sufficient magnitude" implying that it is up to the researcher to decide what the definition

of "sufficient magnitude" should be. Secondly, Ferketich et al. (1991) discuss the

measures that Campbell and Fiske suggest researchers use for their MTMM study,

arguing that the methods must truly be different. An example of truly different measures

is provided suggesting self-report versus an independent observation. The article also

expresses disagreement with studies that use multiple-choice and true/false

questionnaires or long and short forms of a questionnaire. They state that these changes

can create format differences and unaccounted-for effects. Thirdly, choice of traits used

within MTMM is pointed out by Ferketich et al. (1991). A "discriminant trait" is defined

by the authors differently than that described by Campbell and Fiske (1959). Campbell

and Fiske describe discriminant validity as traits being conceptually unrelated but

Ferketich et al. state that it is theoretically similar to what is being examined. The

example given by these authors suggests considering first anxiety and then identifying

measures of fear and stress to "discriminate" from anxiety.

Lowe and Ryan-Wenger (1992) reviewed published studies that focused on

examination of error variance of the MTMM matrix. Error variance has been defined as

variability that is unexplained after accounting for other types of variability. Subject-by-

trait variance is the variability in differentiating between traits and across methods, which is used to identify discriminant validity. Subject-by-method variance refers to the variability across methods for each trait and is also known as the halo effect. After identifying subject-by-trait and subject-by-method variance, the interaction of the subject-by-trait-by-method will comprise the error variance. Lowe and Ryan-Wenger (1992) discuss the use of analysis of variance (ANOVA) in assessing convergent and discriminant validity, criticizing that ANOVA outcomes often demonstrate a large error variance, and subsequently do not actually display convergent and discriminant validity. The authors then suggest the use of confirmatory factor analysis (CFA) instead and include several advantages over use of the ANOVA. The CFA is reportedly more effective because it provides factor loadings, testing of the null hypothesis, separation of trait and method variance, as well as removal of random error. Therefore, Lowe and Ryan-Wenger (1992) emphasize providing a clearer picture of the convergent and discriminant correlations with use of these additional steps.

Wilke (2002) conducted a study analyzing the convergent and discriminant validity of acculturation and eating disorder measures among Northern Plains American Indians through use of MTMM analysis. Two hundred and five participants completed the NPBI (Allen & French, 1993) and the AICOS (LaFromboise & Rowe, 1995) acculturation measures along with two eating disorder scales measuring eating attitudes and behaviors, the Eating Attitudes Test (EAT-26) or the Eating Disorder Inventory-2 (EDI-2). The eating disorder measures were considered to be theoretically unrelated to the acculturation measures. Wilke (2002) hypothesized that the AICOS and NPBI scores would highly correlate with each other (showing convergent validity) while remaining

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orthogonal to the eating disorder measures (showing discriminant validity). Wilke (2002) indeed found positive and significant correlations between the NPBI and the AICOS. It was also found that the NPBI and the AICOS were statistically unrelated to neither EAT-26 nor the EDI-2. Similar to Wilke' 2002 study, this study tests the validity of biculturalism but with use of two different measures, the AIBI-NP and the NPBI-R that have been found to have better validity than the NPBI (Baker, 2005; Gourneau, 2002). There have not been previous attempts to measure the convergent validity of these two measures nor convergent validity with depression measures until this study. Norm development and psychometric establishment of these scales can further our understanding of culture's impact on psychological well-being among Northern Plains American Indians.

Intended Contributions of the Study

The goal of this study was to further develop a more valid and reliable research instrument providing data regarding cultural orientation and identification among American Indians in the Northern Plains region of the United States. Attempts were made to investigate convergent validity between two measures of biculturalism, the NPBI-R and the AIBI-NP, as well as discriminant validity between these and two measures of depression, the BDI-II and the CES-D in hopes that the NPBI-R and the AIBI-NP will correlate significantly higher with each other than with either of the depression measures, thereby displaying convergent validity. Attempts were also made to investigate the effects of biculturalism on depression in hopes that those participants who scored as bicultural on the NPBI-R and AIBI-NP subscales will also demonstrate lower overall scores on the BDI-II and CES-D total scores.

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CHAPTER II

METHOD

Participants

Data from 201 participants was used in the analyses, although 225 participated in the study. Incomplete research packets were not used in the analyses. All participants were legal adults and members of a Northern Plains region Native American tribe. Efforts were made to ensure the sample representation was equal in terms of gender. The sample consisted of American Indian college students attending the University of North Dakota and American Indian community members from rural and urban settings. Participants were not screened by any other demographic variable other than ethnicity so as to maximize representation.

Apparatus/Instrumentation

The research packet consisted of 1) informed consent, 2) a demographic questionnaire, 3) the Northern Plain Biculturalism Inventory-Revised (NPBI-R), 4) the American Indian Biculturalism Inventory – Northern Plains (AIBI-NP), 5) the Beck Depression Inventory Second Edition (BDI-II), 6) and the Center for Epidemiological Studies Depression (CES-D) Scale. These research packet materials are described in greater detail below.

Informed Consent (Appendix A)

This form was created according to guidelines put in place by the University of North Dakota Institutional Review Board (IRB). Participation was strictly confidential

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and anonymous. Participants were advised of the voluntary nature of the study, the amount of time involved, and the potential risks and benefits of participation. Participants were informed that consent forms would be secured in a locked file cabinet by the researcher at the University of North Dakota. Subject names were on the informed consent only and these forms did not contain a subject number so that data could not be matched with associated research materials. Consent forms were kept separate from other materials in the research packet in order to prevent any association of individuals with the study. Participants were informed that they would receive inducements in the form of monetary compensation of $5.00 dollars for their participation. Anticipated risks and provisions were included on the form along with how identifying information would be destroyed. See appendix A for a copy of informed consent. The names and phone numbers of the principal investigator and the advisor were included. The UND IRB's phone number was included in the event that a participant may have questions regarding the study. No physical, emotional, or financial risk was expected, yet a course of action would have been taken and provisions given by the principal investigator in order to minimize any risk to the participants.

Demographic Questionnaire (Appendix B)

The second form in the research packet was the demographic questionnaire which assessed the participant's background and provided information regarding general characteristics of the sample. Items on the questionnaire established age, gender, ethnicity, tribal enrollment, level of education, employment status, and annual household income.

Northern Plain Biculturalism Inventory-Revised (Appendix C)

The NPBI-R is a twenty-item biculturalism measure consisting of two factors or subscales including the American Indian Cultural Identification (AICI) and European American Cultural Identification (EACI). The overall inventory demonstrated high internal consistency and sufficient reliability as mentioned in the literature review. A median split procedure is used in scoring the NPBI-R. A proportion of items assess AICI while the remaining assess EACI. A high score on the AICI scale along with a low score on the EACI scale indicates American Indian Cultural Identification on the dimensions of cultural immersion, while a low score on the AICI scale and a high score on the EACI indicate European American Cultural Identification. If both AICI and EACI scores are above the median, the individual is identified as bicultural. If both AICI and EACI scores are below the median, the individual is identified as marginal.

American Indian Biculturalism Inventory – Northern Plains (Appendix D)

The AIBI-NP also uses the median split procedure in scoring and a proportion of items assess American Indian Cultural Identification (AICI) while the remaining assess European American Cultural Identification (EACI). It is similar to the NPBI and NPBI-R such that a high score on the AICI subscale and low score on EACI subscale result in American Indian Cultural Identification. European American Cultural Identification is determined when scores are low on AICI and high on EACI. A bicultural identification is warranted when both AICI and EACI scores are above the median and a marginal identification follows when both AICI and EACI scores are below the median.

Beck Depression Inventory Second Edition (BDI-II)

The BDI was developed in 1967 and was updated and revised in 1996 in order to

correspond with the revised diagnostic criteria for depressive disorders as listed in the

Diagnostic and Statistical Manual of Mental Disorders 4th Edition (DSM-IV, 1994,

American Psychological Association). The BDI-II is a 21-item scale, with possible scores

ranging from 0 to 63. Higher values correspond to higher depressive symptomology.

Beck et al. (1996) suggest that scores be interpreted in ranges with 0-13 in the depressed

range; 14-19 equaling mild depression; 20-28 in the moderate depression range; and

severe depression between 29-63. Its intended use is to assess existence and severity of

depressive symptoms and items on the BDI-II indicate increases or decreases in sleep and

appetite, agitation, concentration difficulty and loss of energy, and level of suicidality

(Beck et al., 1996). When presented with the BDI-II the client or participant is asked in

the directions to consider each statement as it relates to the way they have felt for the past

two weeks, in order to more accurately correspond with DSM-IV criteria. Each of the 21

items corresponds to a symptom of depression, which is summed to give a single total

score for the BDI-II. There is a four-point Likert scale for each item ranging from 0 to 3.

On two items (16 and 18) there are seven options to indicate either an increase or

decrease of appetite and sleep (Beck et al., 1996). Cut-off score provisions are given for

the BDI-II advising that the thresholds be adjusted based on the characteristics of the

sample as described. For the BDI-II the coefficient alphas were at .92 for outpatients and

.93 for the college students, which were significant at $p < .001$ (Beck et al., 1996). The

correlations for the corrected item-total were significant at .05 level (with a Bonferroni

adjustment), for both the outpatient and the college student samples. Test-retest reliability

was studied using data from 26 outpatients who were tested at first and second therapy

sessions one week apart. The mean scores of the first and second total scores were

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comparable with a paired t (25) =1.08, which was not significant (Beck et al., 1996).

Center for Epidemiological Studies Depression Scale (Appendix E)

The CES-D is a widely used 20 item self-report scale measuring current level of depressive symptoms in the general population. It emphasizes depressed mood during the past week (Radloff 1977). The CES-D integrates the main symptoms of depression and was derived from five validated depression scales including the Beck Depression Inventory (BDI). It is free for use in the public domain and has been validated in community and primary care populations and shows good test-retest reliability (Ensel 1986). Scores on the CES-D range from 0 to 60, with higher scores indicating more symptoms of depression. CES-D scores of 16 to 26 are considered indicative of mild depression and scores of 27 or more are indicative of major depression (Zich et al. 1990, Ensel 1986). Zich, Attkisson & Greenfield (1990) found the stringent cut-off score of 27 more useful for screening medical patients for depression than the standard cut-off score of 16. These classifications have been used in a number of studies by Ensel 1986; Zich, Attkisson et al. 1990; Logsdon, McBride et al. 1994; Geisser, Roth et al. 1997. The CES-D is said to focuses primarily on cognitive and "affective" symptomology while emphasizing depressed mood (Radloff, 1977). Also, the CES-D does not assess suicide directly. It includes four reverse-scored positive affect items such as assessment of "the degree to which one feels happy, hopeful, enjoys life, or feels good about oneself" (Radloff, 1977). But items on the CES-D were originally taken from the BDI and other measures with proven validity (Weissman, Scholomskas, Pottenger, Prusoff, & Locke, 1977), therefore making some elements comparable.

Procedure

Participants were recruited by the principal investigator from the University of North Dakota, public service establishments, and other institutions during the spring and summer of 2007. Participation took approximately twenty minutes. Cautionary steps were taken so participants did not feel coerced or pressured into participating. Information was provided regarding the nature of the study, how the study would benefit participants, as well as confidentiality of participation. Participants received a copy of the informed consent, which was given upon completion and return of the research packet. All signed and returned consent forms were included in data collection. Records will be kept for a three-year maximum at which point they will be shredded in accordance with Institutional Review Board (IRB) guidelines.

Upon IRB approval, recruitment efforts began in each previously described area. Permission was sought initially by these institutions within their facilities. The principal investigator administered and collected the packets. The principal investigator was also available to answer questions participants had pertaining to the survey process and to items in the research packet. Participants were assigned identification numbers, which were attached to each part of the research packet to ensure proper and accurate coding during data analysis. Readability was pre-determined based on a sixth grade reading level. After reading and signing the consent form participants filled out a demographic questionnaire assessing background information. These variables were used to establish general demographic characteristics of the sample. Upon completion of the research packet, participants received their compensation.

Data Analysis

The SPSS 11.0 statistic software package was utilized for all data analyses. Completed research packets were coded and items from the demographic data and other measures were entered. Appropriate frequencies and percentages were calculated for the demographic variables in order to clarify the general characteristics of the sample.

Correlational analyses of all variables (American Indian Cultural Identification and European American Cultural Identification for NPBI-R and AIBI-NP, BDI-II total score and CES-D total score) and demographic variables were performed. The multitrait-multimethod correlational (MTMM) matrix includes the American Indian Cultural Identification and European American Cultural Identification subscales for NPBI-R and AIBI-NP as well as BDI-II total scores and CES-D total scores. Within the MTMM theory, the first criterion for determining convergent validity is to examine the validity diagonals (which is the same trait measured by different methods) and "ensure they are significantly different from zero and sufficiently large enough to warrant further examination" (Campbell & Fiske, 1959: p. 103). Therefore, for the biculturalism measures, validity diagonals consist of depression measure values. The second through fourth criteria involve determining discriminant validity. The second criterion requires the validity diagonal values to be higher than the values in its corresponding rows and columns. The third criterion requires the validity values be the highest values in the correlational matrix. The fourth criterion requests a pattern of intercorrelations among the validity diagonals. Since there is only one validity diagonal in this study, there is no pattern to detect due to the limited number of measures and traits. Linear multiple regression analyses utilizing the two subscales of the NPBI-R as predictor variables for

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the BDI-II and then for CES-D total scores were conducted and the same was done for that of the AIBI-NP. Regression analyses were performed in order to fully investigate the relationships between constructs as well as determine if and how they may interact in as many ways as possible. Analyses if Variance (ANOVA's) investigated how cultural group representations (consisting of bicultural, marginal, assimilated, and traditional) differ in their depression measure scores.

Exploratory analyses were also performed. The relationships between tribal affiliation, cultural group representation and biculturalism subscale scores and depression scores were examined using correlational analysis, ANOVA, and chi-square tests. The differences by tribal affiliation were conducted only for tribes with ten members or more. The remaining tribes were represented by five or less participants (one tribe had five members, two tribes had four participants and the remaining tribes had three or less participants). The cultural group representations consist of bicultural, marginal, assimilated, and traditional based on scores on both biculturalism measures. Relationships between NPBI-R cultural group scores and demographic data were also explored. This was also performed with AIBI-NP group scores and demographic data. Finally, relationships between tribal affiliation and demographic data were examined using tribes that had at least ten members representing them.

CHAPTER III

RESULTS

Participant Characteristics

Descriptive statistics were examined for the entire data set. These analyses

yielded ranges, minimums and maximums, means, and standard deviations for the

appropriate demographic variables. Frequencies and percentages were gathered as well.

No data entry errors were encountered that might have significantly skewed the means

for each variable. All 201 participants reported on all demographic questions. There

were 122 (60.7%) female respondents and 79 (39.3%) males. The mean age for all

respondents was 37.17. Table 2 illustrates tribal representation within the sample.

Table 2. Descriptives: Tribal Representation (N=201)

Tribe	n	% of sample
Oglala Lakota/Pine Ridge	114	56.7%
Turtle Mountain Chippewa	27	13.4%
Rosebud Sioux/Sicangu	18	9%
Cheyenne River Sioux	13	6.5%
Three Affiliated Tribes/Mandan	10	5%
Hidatsa Arikara Nation		

Note. Standing Rock/Hunkpapa Sioux, Yankton Sioux, Ft. Peck Assiniboine Sioux, Spirit
Lake Dakota Sioux, Ft. Belknap, Crow, Metis, and Sisseton Wahpeton Sioux made up the
remaining 5% of sample and each had five or less participants.

All participants also reported level of education and most (41%) reported

achieving an high school education while 16.9% reported earning a two year degree,

15.9% earned a four year degree, 10.9% went on to graduate school and 9.5% went on to

trade school. Less than 5% of the respondents earned an eighth grade education or lower.

When reporting on employment status 46.3% stated they were unemployed, 40.3%

reported being employed and 13.4% stated they were students. Table 3 illustrates

participant responses related to income level.

Table 3. Descriptives: Income (N = 201)

Income Level	% of sample
< $ 15,000	50.7%
$15,000 - 29,999	20.9%
$30,000 - 44,999	11.9%
$45,000 - 59,999	6%
$60,000 – 75,999	5.5%
$75,000 – 89,999	4%
> $90,000	1%

Multi-trait Multi-method Matrix Analysis

The relationship between depressions scores (as measured by the CES-D or the

BDI-II) and scores on the American Indian Cultural Identification (AICI) and European

American Cultural Identification (EACI) subscales of the NPBI-R and AIBI-NP

biculturalism measures was investigated using Pearson product-moment correlation

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coefficient. Bicultural subscale scores were obtained using the median split procedure based on the distribution of scores. A proportion of items assessed AICI while the remaining assessed EACI for both the NPBI-R and AIBI-NP. Scores above the median or below for each participant determined his or her cultural orientation (see Table 4).

Table 4. Median Split Cut-off Scores for Biculturalism Measures

	AICI	EACI
NPBI-R	42	22
AIBI-NP	38	20

Table 5 illustrates the correlation matrices. There was a small significant correlation between CES-D depression scores and scores on the AICI subscale of the NPBI-R biculturalism measure ($r = -.157$, $n = 201$, $p < .05$). As depression scores on the CES-D increased AICI decreased. There was no relationship found between AICI scores and BDI-II scores. The same pattern was found with depression scores and EACI subscale scores on the NPBI-R. The less a person identified with either subscale the higher his or her depression scores. Unlike the NBPI-R, no significant correlations were found between AIBI-NP AI subscale scores and scores on either depression measure. A small but significant correlation was found between EACI subscale scores and BDI-II scores suggesting that the less a person identified as European American the higher his or her depression scores ($r = .181$, $n = 201$, $p < .01$).

The near zero correlations between the NBPI-R EACI and AICI subscales illustrated an almost independent/orthogonal relationship between American Indian and European American identification ($r = -.048$) even more so than the AIBI-NP subscales ($r = -.084$). The original NPBI subscale correlation was much higher ($r = -.57$, $n = 130$, $p <$

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.01) with only 73 American Indian participants (Allen & French, 1993). This further

suggests that the NPBI-R is a construct valid instrument accurately assessing American

Indian and European American cultural orientation.

Table 5. Multitrait-Multimethod Correlation Matrix of Biculturalism Subscale Scores

and Depression Scores

Traits		Method 1			Method 2		
		NPBI-R AICI	NPBI-R EACI	AIBI-NP AICI	AIBI-NP EACI	BDI-II	CES-D
Method 1	NPBI-R						
	AICI	(1.0)					
	NPBI-R						
	EACI	-.048	(1.0)				
Method 2	AIBI-NP						
	AICI	-.801**	.160*	(1.0)			
	AIBI-NP						
	EACI	.084	-.621**	-.084	(1.0)		
	BDI-II	-.056	-.205**	.000	.181**	(1.0)	
	CES-D	-.157**	-.207**	-.108	.134	.684**	(1.0)

Note. Negative correlations are result of scoring. NPBI-R items scored on likert scale
from "never" to "always" and AIBI-NP items scaled from "always" to "never" resulting
in a negative correlation sign. Therefore, the sign should be ignored when examining
similar subscales.
*p < .05. p < .01**.

Regression Analyses

NPBI-R Predictive Ability

Standard multiple regression was used to assess the ability of the NPBI-R to predict depression. The NPBI-R AICI subscale negatively predicted depression on the CES-D scale [F $(1,199)$ =5.02, $p < .05$] and explained about 2.5% of the variance in depression measured by the CES-D. This was not found with depression measured by the BDI-II. The NPBI-R EACI subscale negatively predicted depression for both the CES-D [F $(1,199)$ = 8.87, $p < .01$] (explaining 4.3% of the variance in CES-D) and the BDI-II [F $(1,199)$ =8.69, $p < .01$] (explaining 4.2%). Therefore, the less one identified as American Indian the more depressed they appeared on the CES-D. The less someone identified as European American the more depressed they appeared on both depression measures (see Table 6).

Table 6. Standard Multiple Regression of NPBI-R Predictive Ability (N=201)

Source		CES-D				BDI-II		
Variable	F(1,199)	B	SE B	β	F(1,199)	B	SE B	β
NPBI-R AICI	5.02*	-.17	.08	-.16	.43	-.49E-02	.07	-.06
NPBI-R-EACI	8.87**	-.43	.14	-.21	8.69**	-.39	.13	-.21

*$p < .05$. **$p < .01$.

AIBI-NP Predictive Ability

Standard multiple regression was also used to assess the ability of the AIBI-NP to predict depression. The AIBI-NP AICI subscale did not predict depression on the CES-D nor on the BDI-II. This was also true for the AIBI-NP EACI subscale on the CES-D. The EACI subscale predicted depression on the BDI-II [F $(1,199)$ =6.77, $p < .05$] and explained about 3.3% of the variance in depression measured by the BDI-II. This

suggests that the less one identified as European American, the more depressed they appeared (see Table 7). Through regression analysis, the NPBI-R predicted depression on the CES-D with both subscales and on the BDI-II with the AICI subscale. The AIBI-NP predicted depression with one subscale only (EACI), which shows that the NPBI-R has stronger predictive ability while the AIBI-NP does not.

Table 7. Standard Multiple Regression of AIBI-NP Predictive Ability (N=201)

Source		CES-D				BDI-II		
Variable	F(1,199)	B	SE B	β	F(1,199)	B	SE B	β
AIBI-NP AI	2.34	.13	.09	.12	.00	1.97E-05	.08	.00
AIBI-NP EA	3.62	.33	.18	.13	6.77*	.42	.16	.18

*$p < .05$.

Despite this, only small percentages of variance were explained, ranging from 2.5% to 4.3% as mentioned above. This suggests some predictive ability but not much more than chance demonstrating that, despite some statistical significance, the practical significance of biculturalism measures predicting depression is quite small.

One-way Analysis of Variance

ANOVA for Depression Scores and Biculturalism Scores

A one-way between-groups analysis of variance (ANOVA) was conducted to explore the impact of cultural orientation/identification on depression. Subjects were divided into four groups according to cultural orientation (bicultural, marginal, assimilated, or traditional). These groups were decided based on how each participant scored on biculturalism measures subscales according to median split procedure (see Table 4). Participants who score above the median for both AICI and EACI subscales

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were categorized as bicultural. Those who scored below the median on both subscales were categorized as marginal. Those who scored above the median on AICI and below the median on EACI were categorized as traditional and those who scored above the median on EACI and below the median on AICI were categorized as assimilated. There was a small statistically significant difference in CES-D depression scores for the four groups overall [F $(3,197) = 2.75$, p $< .05$] when looking at NPBI-R group scores. Despite reaching statistical significance, only trends were found between some of the groups. The effect size, calculated using eta squared, was .04 (small to medium effect) regarding the strength of the relationship. Post-hoc comparisons using the Tukey HSD test indicated that the mean score for the bicultural group demonstrated a trend toward significant difference from the assimilated group (p $< .10$; p $= .081$). Refer to Table 8 for mean depression scores for each group. Although significance was not obtained, participants who identified as bicultural on the NPBI-R had lower depression scores than the marginal, assimilated and traditional groups. Depression scores for all groups were in the lowest range of depression for both the CES-D and BDI-II. Refer to apparatus/instrumentation section for specific cut-off scores for depression measures.

Table 8. Mean Depression Scores for NPBI-R Groups

Source	CES-D		BDI-II	
	M	SD	M	SD
Bicultural (n=57)	10.32	8.67	8.82	8.60
Marginal (n=38)	14.87	11.81	11.53	10.97

Table 8 cont.

Assimilated	14.63	9.34	9.44	8.20
(n=54)				
Traditional	14.33	8.80	10.67	8.24
(n=52)				

Note. M = mean; SD = standard deviation
† p < 0.10

No significant differences were found for the BDI-II and biculturalism group

scores on the NPBI-R [F (3,197) = .87, p < .05, p = .456]. No significant differences

were found for the AIBI-NP on either the CES-D [F (3,197) = 1.93, p = .127] or the BDI-

II [F (3,197), p < .05, p = .41]. Refer to Table 9 for mean depression scores for each

group.

Table 9. Mean Depression Scores for AIBI-NP Groups

Source	CES-D		BDI-II	
	M	*SD*	*M*	*SD*
Bicultural (n = 39)	11.10	9.97	8.77	8.66
Marginal (n = 51)	15.78	10.31	10.94	9.76
Assimilated (n = 51)	13.56	8.90	8.80	7.88
Traditional (n = 60)	12.63	9.28	10.95	9.09

Note. M = mean; SD = standard deviation

Exploratory Data Analyses

Relationships Between Tribes with Ten or More Members and Biculturalism Subscale

and Depression Scores

A one-way between-groups analysis of variance was conducted to explore the impact of tribal affiliation on depression scores. No significant differences were detected on either the BDI-II or the CES-D in association with tribal affiliation. An ANOVA was also conducted to explore the impact of tribal affiliation on biculturalism AICI and EACI subscales. Refer to Table 10 for specific means and standard deviations. There was a statistically significant difference in the NPBI-R AICI subscale scores for the tribes overall [$F (4,177) = 3.71$, $p < .01$; $p = .006$)]. The effect size was .08 (medium to large effect) regarding the strength of the relationship. Post-hoc comparisons using the Tukey HSD test indicated that Pine Ridge/Oglala Lakota tribal members identified significantly more than Turtle Mountain Band of Chippewa tribal members ($p = .003$) on the AI subscale of the NPBI-R. Also, Three Affiliated Tribes/Mandan-Hidatsa-Arikara Nation tribal members identified significantly more than Turtle Mountain Band of Chippewa tribal members ($p = .009$) on the AI subscale.

Table 10. Biculturalism Subscale Scores Based on Tribal Affiliation When Eliminated Tribes with Less Than 10 Members

	NPBI-R AICI		NPBI-R EACI		AIBI-NP AICI		AIBI-NP EACI	
	M	SD	M	SD	M	SD	M	SD
Pine Ridge/ Oglala Lakota	43.42*	8.68	21.26*	4.60	37.39	7.70	20.26	3.79
Cheyenne River Sioux	41.00	9.09	21.46	4.70	38.46	7.20	20.23	3.94
Rosebud Sioux/ Sicangu	40.39	10.52	21.39	5.20	40.72	11.34	20.56	4.00

Table 10 cont.

Three Affiliated Tribes	43.78*	8.34	22.26	4.17	37.37	6.91	20.22	3.59
Turtle Mountain Band of Chippewa	33.00*	7.97	26.30*	4.30	44.20	7.32	16.00	2.98

Note. M = mean; SD = standard deviation. See Table 4 for median split cut-off scores.
* p < 0.05.

Statistically significant differences were also found in the NPBI-R EACI subscale scores for the tribes overall [F (4,177) = 2.91, p < .05; p = .023]. The effect size was .06 (medium effect) regarding the strength of the relationship. Post-hoc comparisons indicated that the Pine Ridge/Oglala Lakota tribal members identified significantly less than Turtle Mountain Band of Chippewa (p = .008) as European American according to the NPBI-R. Statistically significant differences were not found in the AIBI-NP AICI subscale scores for tribes overall [F (4,177) = 2.24, p = .067].

Relationships between NPBI-R Groups and Demographic Data

A one-way between-groups analysis of variance was conducted to explore the impact of cultural orientation/identification on demographic variables of age and income as measured on the NPBI-R. Age was not significantly associated with cultural orientation as measured by the NPBI-R. There was a significant difference in income for the four groups overall [F (3,197) = 5.48, p = < .001]. The effect size, calculated using eta squared, was .08 (medium to large effect) regarding the strength of the relationship. Post-hoc comparisons indicated that the bicultural group had a significantly higher income than that of the traditional group (p = .004). The traditional group had a

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significantly lower income than the assimilated group (p =.008). Due to specific characteristics of the sample, which were not controlled for, income levels were not evenly distributed throughout the sample causing a violation of homogeneity. Refer to Table 11 for group means for income.

Table 11. Mean Income Levels for NPBI-R Groups

Group	Income	
	M	SD
Bicultural (n = 57)	2.49**	1.66
Marginal (n = 38)	1.82	1.35
Assimilated (n = 54)	2.44**	1.54
Traditional (n = 53)	1.54**	1.15

Note. M = mean; SD = standard deviation.
** p < 0.01.

A Chi-square test for independence was performed exploring relationships between cultural orientation/identification and gender, education and employment demographic information. No significant associations were found between group identification and gender or education. But a significant association was detected between groups and employment, $\chi2$ (6, n = 201) = 17.31, p = .008, Cramer's V = .207. Table 12 illustrates group percentages, which indicate that the majority of the bicultural group was employed while the majority of the marginal group was unemployed.

Table 12. NPBI-R Group Employment Percentages

	Unemployed	Employed	Student
Bicultural	26.3%	56.1%	17.5%

Table 12 cont.

Marginal	60.5%	34.2%	5.3%
Assimilated	31.5%	48.1%	20.4%
Traditional	50%	42.3%	7.7%

Relationships between AIBI-NP Groups and Demographic Data

A one-way between-groups analysis of variance was conducted to explore the impact of cultural orientation/identification on demographic variables of age and income as measured on the AIBI-NP. Unlike the NPBI-R no significant differences were found for AIBI-NP group scores and demographic variables. Also, NPBI-R groups differ significantly on income and employment while no significance was found with the AIBI-NP.

Relationships Between Tribes with Ten or More Members and Demographic Data

A one-way between-groups analysis of variance was conducted to explore the impact of tribal affiliation on demographic variables of age and income. Income was not statistically different across tribal affiliations. There was a statistically significant difference in age for the tribes overall [$F(4,177) = 4.73$, $p < .001$]. The effect size, calculated using eta squared, was .096 (large effect) regarding the strength of the relationship. Post-hoc comparisons using the Tukey HSD test indicated that the mean score for Pine Ridge/Oglala Lakota demonstrated a significant difference from the Three Affiliated Tribes/Mandan-Hidatsa-Arikara Nation ($p = .009$). Also, the mean score for Pine Ridge/Oglala Lakota demonstrated a significant difference from Turtle Mountain Band of Chippewa ($p = .05$). Due to specific characteristics of the sample not controlled

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for, age levels were not normally distributed when looking at interactions with tribal affiliation causing a violation of homogeneity. Members of the Pine Ridge/Oglala Lakota tribe were significantly older than members of the Three Affiliated Tribes/Mandan-Hidatsa-Arikara Nation and the Turtle Mountain Band of Chippewa. Table 13 illustrates means and standard deviations for age.

Table 13. Mean Age Differences by Tribal Affiliation

	Age	
	M	*SD*
Pine Ridge/ Oglala Lakota	40.57** *	15.17
Cheyenne River Sioux	36.15	17.07
Rosebud Sioux/Sicangu	32.78	12.22
Three Affiliated Tribes/	30.59**	9.81
Mandan-Hidatsa-Arikara Nation		
Turtle Mountain Band	27.80*	6.16
of Chippewa		

Note. M = mean; SD = standard deviation
*$p < 0.05$. ** $p < 0.01$.

A Chi-square test for independence was performed exploring relationships between tribal affiliation on demographic variables of gender, education and employment. No significant association between tribal affiliation and gender or education was found. But a significant association was detected between tribal affiliation and employment, $\chi2$ $(8, n = 201) = 33.12$, $p = .00$, Cramer's $V = .302$. Due to specific characteristics of the sample not controlled for, employment levels were not evenly

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distributed throughout the sample when assessing this relationship. Refer to Table 14 for group percentages.

Table 14. Tribal Affiliation Employment Percentage Differences

Source	Unemployed	Employed	Student
Pine Ridge/ Oglala Lakota	49.1%	43.9%	7%
Cheyenne River Sioux	53.8%	46.2%	---
Rosebud Sioux/ Sicangu	22.2%	55.6%	22.2%
Three Affiliated Tribes	25.9%	55.6%	18.5%
Turtle Mountain Band of Chippewa	20%	20%	60%

Pearson-Product Moment Correlations

Pallant (2007) notes that significance levels for Pearson-Product Moment correlation analyses are determined in accordance with the degree to which the researcher wishes to maximize probable freedom from error. A .05 level of significance is considered an acceptable standard (Pallant, 2007), and was therefore applied as criterion for the first analysis incorporating the demographic variables. The same significance criterion (.05) was employed for examination of subsequent variables.

Correlations between biculturalism subscale scores and demographic data.

The relationship between biculturalism EACI and AICI subscale scores and demographic data was also investigated using the Pearson product-moment correlation coefficient. As EACI scores increased on the NPBI-R, the participant was more likely to be female ($r = .142$, $n = 201$, $p < .05$). Also as EACI increased so did level of education ($r = .218$, $n = 201$, $p < .01$), the .01), likelihood of being employed ($r = .297$, $n = 201$, $p < .01$) and income ($r = .267$, $n = 201$, $p < 01$). Similar trends were found between demographic variables and AIBI-NP scores the only one of significance being between employment and EACI ($r = -.187$, $n = 201$, $p < .01$). When looking at the AIBI-NP, it was shown that those who identified less as American Indian had higher levels of income ($r = .149$, $n = 201$, $p < .05$). This relationship was not found with the NPBI-R.

Correlations between depression scores and demographic data.

The relationship between depression scores (as measured by the CES-D or the BDI-II) and demographic data was investigated using the Pearson product-moment correlation coefficient as well. Similar patterns were found between depression scores and demographics for both the BDI-II and the CES-D and small correlations were identified between BDI-II scores and education ($r = -.145$, $n = 201$, $p < .05$) and income ($r = -.151$, $n = 201$, $p < .05$). Higher levels of education and income were associated with lower depression scores.

In conclusion and as hypothesized, this study provided a more valid and reliable research instrument providing data regarding cultural orientation and identification among Northern Plains American Indians. While a detailed interpretive discussion follows, some global characteristics were suggested. Convergent validity between two

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measures of biculturalism was established in that the NPBI-R and the AIBI-NP subscales correlated strongly and significantly with each other suggesting that the subscales are measuring conceptually related constructs. Further evidence of construct validity was shown through the lack of relationship between the NBPI-R EACI and AICI subscales. An almost independent/orthogonal relationship between American Indian and European American identification shows that the constructs are conceptually unrelated and accurately measuring different facets of cultural orientation. Discriminant validity was also established in that the two measures of depression, the BDI-II and the CES-D, correlated strongly and significantly with each other while exhibiting only weakly significant correlations with only some of the biculturalism measure subscales and not significantly correlating with the other subscales. There was enough of a relationship between both NPBI-R subscales and the CES-D and between the EACI subscale and the BDI-II to analyze the predictive ability of the NPBI-R and depression. But, because the correlations were small and because only small amounts of variance were explained through regression analyses, already established convergent and discriminant validity was not jeopardized. Therefore relationships between depression and cultural orientation could be analyzed. And, as hypothesized, those participants who scored as bicultural on the NPBI-R and AIBI-NP subscales demonstrated lower overall scores on the BDI-II and CES-D depression measures although the relation only trended toward significance. Although similar patterns were found in relationships between depression scores and subscale scores on both biculturalism measures, it appears that the NPBI-R shows stronger convergent and discriminant validity illustrated through cleaner and stronger relationships when compared to the AIB-NP.

CHAPTER IV

DISCUSSION

Although some literature exists suggesting the importance of measurement accuracy for clinical tools used with American Indians, minimal if any psychometric standardization or construct validation studies have actually been done. The validity of existing measures assessing biculturalism among Northern Plains tribes must be established if they are to be used in identifying cultural differences as they relate to mental health delivery and research. This study provides some initial steps toward helping bridge the gap between theory and instrument standardization among this group. It also examines the role culture plays in psychology related to measurement of cultural identification and competence.

According the original developers of the multi-trait multi-method (MTMM) theory, two types of validity comprise the construct validity of a psychological test (Campbell and Fisk, 1959). The first, convergent validity, is defined and confirmed with attainment of high correlations between two instruments that supposedly measure the same trait or construct. These two instruments must remain conceptually unrelated with two instruments measuring a different construct which is defined as discriminant validity. Therefore, to determine convergent and discriminant validity, two theoretically related scales must be correlated and compared with at least two other scales unrelated to the first two.

As predicted, through use of the MTMM correlation matrix design, convergent and discriminant construct validity was established for both depression measures and biculturalism measures geared toward Northern Plains tribes. Both the European American Cultural Identification (EACI) and American Indian Cultural Identification (AICI) subscales of the Northern Plains Biculturalism Inventory-Revised (NPBI-R) were strongly and significantly correlated with the similar subscales of the American Indian Biculturalism Inventory – Northern Plains (AIBI-NP). Convergent validity was established in that these biculturalism measure subscales exhibited a strong relationship. Specifically, the strong relationship between the AICI subscales suggests that the American Indian Cultural Identification construct assessed within each measure was indeed theoretically related. The strong relationship between EACI subscales also demonstrates that the European American Cultural Identification construct in each measure was theoretically related. Therefore, this finding suggests that the NPBI-R is a convergent-valid instrument for assessing cultural identification. Further evidence of NPBI-R construct validity is demonstrated through the lack of relationship between the EACI and AICI subscales. An almost independent/orthogonal relationship between American Indian and European American identification constructs was observed. This orthogonality was shown slightly more so than the AIBI-NP subscales and much more so than the original NPBI subscales. In the original NPBI (Allen & French, 1994) the subscales were actually not orthogonal, but highly correlated. This further suggests that the NPBI-R is a more construct-valid instrument assessing American Indian and European American cultural orientation and is a better indicator of biculturalism than its predecessor. This finding supports the Orthogonal Theory of Biculturalism (Oetting and

Beauvais, 1991) in that cultural identification domains should be both conceptually and statistically independent of each other in order to accurately categorize individuals based on his or her cultural orientation.

Two measures of depression, the Center for Epidemiological Studies – Depression scale (CES-D) and the Beck Depression Inventory – Second Edition (BDI-II), were chosen as tests conceptually unrelated to the measures assessing AICI and EACI within each biculturalism measure in order to aid in establishing discriminant validity. The CES-D and BDI-II exhibited a strong relationship with each other, suggesting that they were measuring a conceptually related construct (depression). Specific to establishing discriminant validity, the relationship between the depression measures and the relationship between biculturalism subscales (AICI and EACI) were not highly related to each other. Only weak significant correlations were found between the CES-D and both subscales of the NPBI-R and between the BDI-II the EACI subscale of the NPBI-R. The EACI subscale of the AIBI-NP exhibited a small significant relationship with the BDI-II. Therefore, the two measures of cultural orientation remained conceptually unrelated to two scales measuring a different construct (depression). Specifically, strongly significant correlations were shown between corresponding biculturalism measure subscales and strongly significant correlations were shown between the CES-D and BDI-II while correlations between depression measures and cultural orientation measures were weakly correlated.

Follow-up analyses of the MTMM method have been conducted in the years following its development. Ferketich, Figueredo, and Knapp (1991) point out that Campbell and Fiske do not give specific levels of magnitude criteria for the correlations.

Instead, they only suggest the correlation be "of a sufficient magnitude" implying that it is up to the researcher to decide what the definition of "sufficient magnitude" should be. A study conducted by Van Tuinen and Ramanaiah (1979) may be an example of this sufficient magnitude decision-making. The authors used the MTMM matrix in assessing the convergent and discriminant validity of two self-esteem traits (global and social) with orderliness measures. Strong convergent validity coefficients were identified for global and social self-esteem. The two traits were more correlated with each other than with the measures of orderliness, thus illustrating discriminant validity between orderliness and self-esteem. Although self-esteem and orderliness may have had some correlation, it was not nearly enough to call validity into question. Therefore, although correlations were small, there seems to be somewhat of a relationship between depression and cultural orientation (between the CES-D and NPBI-R subscales, the NPBI-R EA subscale and BDI-II, and the AIBI-NP EA subscale and the BDI-II). But, the weak correlations do not have enough magnitude to upset the well established sufficient magnitude of correlations illustrating convergent and discriminant validity.

The weak relationship between biculturalism and depression could be considered a slight advantage in analyzing the second hypothesis investigating the effects of biculturalism on depression. As predicted, those participants who scored as bicultural on the NPBI-R and AIBI-NP subscales demonstrated lower overall scores on the BDI-II and CES-D. Accordingly, those identifying as marginal had higher depression scores than other cultural identification group scores. This coincides with Oetting and Beauvais' (1991) theory that there is a relationship between bicultural competence and better overall functioning and mental health. This also coincides with the theory that depression is

related to cultural orientation and an increase in psychological dysfunction corresponds with low identification within either culture, or marginality (DeLeon, 1997; LaFromboise et al., 1993; Oetting and Beauvais, 1991). This theory was further investigated through linear multiple regression analyses utilizing the two subscales of the NPBI-R as predictor variables for the BDI-II and then for CES-D total scores. The same was done for that of the AIBI-NP. Also, as mentioned above, some of the subscales for the NPBI-R and AIBI-NP were significantly correlated to depression measures but only to a small degree. Regression analyses aided in fully investigating this relationships between constructs as well as determining if and how they may interact in as many ways as possible. The NPBI-R demonstrated some predictive ability and a slightly more so than the AIBI-NP. Despite this, only small percentages of variance were explained suggesting some predictive ability but not much more than chance. Therefore, despite some statistical significance, the practical significance in biculturalism measures predicting depression is quite small. The NPBI-R appears to better capture the relationship between cultural orientation and depression than the AIBI-NP and may also provide empirical support for the relation between cultural orientation and depression based on statistical analysis mentioned (slightly stronger correlations and better predictive ability). The results indicate there was such a relationship, although small.

A limitation of the study is difficulty in future replication. There might be a challenge in finding a depression measure that is completely independent from a measure of biculturalism. Yet the fact that there was a slight relationship between depression and cultural orientation actually partially substantiates the premise of the Orthogonal Theory in that the more one identified as bicultural the less depressed he or she was likely to be.

Although there was some overlap between constructs there does not appear to be enough to upset the convergent and discriminant validity established between measures of biculturalism and depression. Furthermore, this research project sought to identify which groups, categorized using biculturalism measures, may be more vulnerable or more resilient to the relation between cultural orientation and depression. It was hypothesized that the bicultural group (high in both European American and American Indian cultural orientation) would have the lowest scores on the depression measures. This was supported by the data. However, the relation only trended toward significance. Perhaps significance could have been obtained if the groups were larger or perhaps the distribution of cultural orientation scores was not wide enough to result in significance with the median split procedure that was utilized. It might also be possible that this trend was an artifact of many statistical analyses and if the entire study was done again there may be no significant results, or even trends. Considering the importance of this area on clinical interventions in depression for American Indians, these results suggest additional research is needed. Also, a larger sample would have resulted in larger group sizes (bicultural, assimilated, marginal and traditional) and would have enabled further exploration of the impact of demographic variables on cultural orientation and depression. Additionally, over half of the respondents were from one tribe, which suggests that the data collected is not necessarily representative of the general description of Northern Plains tribes. Perhaps, if the sample were more homogeneous, data may have come out differently. Although careful steps were taken to produce a scale that was construct valid further psychometric could be performed including test-retest reliability research in order to provide greater assurances as to its utility and consistency.

Exploratory analyses were performed beyond those conducted related to hypotheses. The NPBI-R bicultural group had a significantly higher income than that of the traditional group. Also, the majority of the NPBI-R bicultural group was employed while the majority of the marginal group was unemployed. Also, lower depression scores were associated with higher levels of income and education. The bicultural groups higher levels of income and higher likelihood of being employed could be considered to coincide with Oetting and Beauvais' (1991) theory that there is a relationship between bicultural competence and better overall functioning. It's also been theorized that effective coping in more than one culture leads to better mental adaptation according to societal standards. When looking again at the definition of bicultural competence, LaFromboise, Coleman and Gerton's model focuses on the skills needed in order to be successful at both becoming effective in a new culture and remaining competent in one's culture of origin (LaFromboise et al., 1993). In this way an individual can alternate their behavior fitting it to two targeted cultures while being less anxious and exhibiting increased cognitive functioning and mental health than a person who is assimilating (LaFromboise et al., 1993). DeLeon (1997) states that psychological disturbance is often an initial reaction to situations occurring in majority culture. Therefore, it is imperative to interact effectively between cultures successfully.

Most importantly, the NPBI-R is shown to have established convergent and discriminant construct validity and can be successfully used as a measure of cultural orientation/identification among Northern Plains American Indians. Oetting and Beauvais' Orthogonal theory (1991) was confirmed in that the AICI and EACI subscales of the NPBI-R were shown to be unrelated to each other suggesting that they were not

measuring the same constructs and were, in fact, orthogonal. Therefore, the accurate

categorization of Northern Plains American Indians into bicultural, assimilated,

traditional, and marginal groups determined through the NPBI-R can be accomplished.

This finding is essential to the mental health treatment of Northern Plains American

Indians. When looking at existing mental health functioning information among

American Indians, suicide rates are 1.5 times the national rate. American Indians are

over-represented among high need populations regarding homelessness, incarceration,

and alcohol and drug problems which are variables highly associated with mental health

issues. American Indians are more than twice as likely to be violently victimized than the

national average and the rate of traumatic exposure results in a 22% rate of PTSD for

American Indians compared to 8% in the general U.S. population (http://mentalhealth.

samhsa.gov/cmhs/surgeongeneral/surgeongeneralrpt.asp). Assistance in mental health

treatment of this population is needed in many ways. Specific to this study, assessing the

cultural orientation/identification of this population can aid in determining what types of

treatment are most appropriate based on what category an individual falls into. For

example, if an individual is assessed as assimilated, it may not be appropriate to consult a

traditional healer to aid in depression or posttraumatic stress disorder treatment. The

assimilated individual may instead be more comfortable and more competent with

Western medical treatments. Yet, if an individual is categorized as traditional or

bicultural, this option for a traditional healer consultation might be explored and may be

much more appropriate. If one is assessed as marginal, he or she doesn't identify highly

as either European American or American Indian. If this is known prior to treatment, a

clinician can use time wisely to assess with what other cultures he or she might identify

what other cultures he or she might identify or what challenges prevent him or her from identifying with a culture and how this may be affecting psychological functioning. The Orthogonal theory has come to fruition in this study such that bicultural competence is associated with increased mental health and overall functioning while marginality corresponds with an increase in psychological dysfunction. If clinicians are aware of an individual's marginal disposition, based on assessment with the NBPI-R, time will not be wasted and assumptions will not be made in determining what mental health treatment is most appropriate.

Results of this study indicate the NPBI-R is a more valid measure of cultural orientation in Northern Plains American Indians than other existing similar measures, including its predecessor. It is hoped that this more valid and reliable instrument will result in more accurate identification of American Indian's level of biculturalism to better aid in mental health treatment-planning. This is one of the few studies to go beyond speculation and anecdotal suggestions and offer empirical support for the relationship between cultural orientation and depression in Northern Plains American Indians. These important findings merit additional research and may offer clinicians a specific target to address in more sophisticated and accurate research and treatment with American Indians.

APPENDICES

Appendix A

Participant Information and Consent Form

Purpose: My name is Laiel Baker and I am a clinical psychology doctoral student at the University of North Dakota in Grand Forks. You are being asked to take part in a research study looking at biculturalism among Native Americans in the northern plains area of the United States.

Procedures: If you agree to participate, you will complete surveys that will take about one half-hour to fill out. This packet includes a demographic questionnaire that asks questions about you and your background. It also includes four different surveys.

Compensation/Cost: You will receive monetary compensation for your time in the amount of $5.00 upon completion and return of the research packet. There is no cost for your participation.

Confidentiality: Your records will be kept private and will not be released without your consent as required by law. Your identity will be kept confidential and if the results if this study are written in a scientific journal or presented at a scientific meeting, your name will not be used. The data and the consent forms will be stored separately for at least three years following the completion of the study. Consent documents will be kept in a locked cabinet in the psychology department at the University of North Dakota. Only the researcher, her faculty supervisor, and people who audit IRB procedures will have access to data.

Risks/Discomfort: There is no expected risk in completing the packet. But if any injury including physical, psychological, or social may occur as a consequence of participation, please notify the examiner. Medical treatment will be as available as it is to any member of the general public in similar circumstances. Payment for any such treatment must be provided by you and your third party payor, if any (such as health insurance, Medicare, Indian Health Service, and so forth). By signing this document, you are not giving up any legal rights you may have in case of negligence or other legal fault of anyone that is involved in the study. Two of the measures used in the study, the Beck Depression Inventory (Second Edition) (BDI-II), and the Center for Epidemiological Studies – Depression Scale (CES-D), assess levels of depression and will be looked at upon return of the research packet. If values on either of these scales is highly elevated or there is evidence of suicidal thoughts or thoughts of self-harm, contingency plan and local referral information will be provided to you in the event that you wish to seek services. Voluntary participation/withdrawal: Your decision to take part in this study is entirely voluntary. You may refuse to take part in or discontinue participation at any time for any reason without penalty or loss of benefits to which you are normally entitled. You may be asked to leave the study for the following reasons: 1) failure to follow investigator's instructions; 2) a serious adverse reaction which may require evaluation; 3) the study investigator thinks it is in the best interest of your health and welfare; or 4) the study is terminated. You may be informed of the study's findings by contacting me, the principal investigator, at the number above. You will receive a copy of the consent form upon return of the research packet.

Questions: If you have questions about the research, please call Laiel Baker at 701-777-4231 or Dr. Doug McDonald at 701-777-4497. If you have any other questions or concerns, please call the Office of Research and Program Development at 701-777-4279.

Statement of consent:

"I have read the above description of this research study. I have been informed of the risks and benefits involved, and all my questions have been answered to my satisfaction. Furthermore, I have been assured that the principal investigator or her advisor will also answer any further questions I may have. I voluntarily agree to take part in this study. I understand I will receive a copy of this consent form".

_____   _____

Printed name of participant   Date

_____

Participant's signature

Demographic Questionnaire

Age: ____

Gender: ____Male   ____Female

Race:

____African American   ____Native American/American Indian

____Hispanic   ____Pacific Islander/Asian American

____European American/White

If you marked Native American/American Indian, in which tribe are you enrolled?

_____

Level of Education:

____Below Eighth Grade   ____Two year degree

____Eighth Grade   ____Four Year Degree

____ High School   ____Graduate School

____Trade School

Employment Status:

____Unemployed   ____Employed   ____Student

Annual Household Income:

____Below $15,000   ____$45,000 to $59,999   ____$90,000

____$15,000 to $29,999   ____$60,000 to $74,999

____$30,000 to $44,999   ____$75,000 to $89,999

Appendix C

Northern Plains Biculturalism Inventory-Revised

NPBI-R (Northern Plains Biculturalism Inventory-Revised)
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		Some		Great
comfort		comfort		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		Some		Great
comfort		comfort		comfort

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

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

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

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

4.   How strongly do you identify with White culture?

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

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desire	desire	desire

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

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

6. How much confidence do you have in Western (doctors in hospitals) medicine?

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

7. How much confidence do you have in traditional medicine men/women?

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

8. 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   I trace some   I can trace
of my ancestry   of my ancestry   all of my ancestry
according to   according to   according to
Indian custom   Indian custom   Indian custom

9. How often do you attend traditional Indian ceremonies (sweat lodge, Pipe Ceremonies, Sundance, vision quest)?

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

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

1. ___   2. ___   3. ___   4. ___   5. ___
I never attend   I sometimes   I attend

Christian	attend Christian	Christian
religious	religious	religious
ceremonies	ceremonies	ceremonies frequently

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

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

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

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

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

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

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

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

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

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

16. Do you speak an American Indian language?

1. ___	2. ___	3. ___	4. ___	5. ___
I rarely		I speak		I often

| or never | Indian part | or always |
| speak Indian | of the time | speak Indian |

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

    1. ___   2. ___   3. ___   4. ___   5. ___

| None have | Some have | All have |
| Indian names | Indian names | Indian names |

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

    1. ___   2. ___   3. ___   4. ___   5. ___

I never engage	Sometimes	I engage in
in topics of	engage in topics	topics of
conversation	of conversation	conversation about
about Whites and	about Whites and	Whites and their
their culture	their culture	culture frequently

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

    1. ___   2. ___   3. ___   4. ___   5. ___

I never engage	Sometimes	I engage in
in topics of	engage in topics	topics of
conversation	of conversation	conversation about
about Indians and	about Indians and	Indians and their
their culture	their culture	culture frequently

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

    1. ___   2. ___   3. ___   4. ___   5. ___

I never dress	I sometimes	I often dress
according to	dress according	according to
White style	White style	White style

Appendix D

American Indian Biculturalism Inventory-Northern Plains (AIBI-NP)

The items below ask about attitudes, feelings, and participation in Indian and White culture. Fill in the number above the answer for each question that seems most accurate for you. In the case of attitudes and feelings, your first impression is usually correct. As with the NPBI-R, we are interested in how much you are influenced by Indian and White culture, with the understanding that no two people have the same background. Please fill out the questionnaire completely.

1. How comfortable are you around non-Indian people?

| 1.___ | 2. ___ | 3. ___ | 4. ___ |
| always | almost always | almost never | never |

2. How much do you understand about what goes on at a pow-wow?

| 1.___ | 2. ___ | 3. ___ | 4. ___ |
| always | almost always | almost never | never |

3. How well can you tell the difference between American Indian songs?

| 1.___ | 2. ___ | 3. ___ | 4. ___ |
| always | almost always | almost never | never |

4. How much do you identify with non-Indian culture?

| 1.___ | 2. ___ | 3. ___ | 4. ___ |
| always | almost always | almost never | never |

5. How much do you identify with American Indian culture?

| 1.___ | 2. ___ | 3. ___ | 4. ___ |
| always | almost always | almost never | never |

6. How much do you prefer to socialize with American Indians?

| 1.___ | 2. ___ | 3. ___ | 4. ___ |
| always | almost always | almost never | never |

7. How much do you prefer to socialize with non-Indians?

| 1.___ | 2.___ | 3.___ | 4.___ |
| always | almost always | almost never | never |

8. How often do you attend American Indian gatherings or celebrations?

| 1.___ | 2.___ | 3.___ | 4.___ |
| always | almost always | almost never | never |

9. How often do you attend non-Indian gatherings or celebrations?

| 1.___ | 2.___ | 3.___ | 4.___ |
| always | almost always | almost never | never |

10. Can you speak an American Indian language?

| 1.___ | 2.___ | 3.___ | 4.___ |
| always | almost always | almost never | never |

11. If you can speak an American Indian language, how often do you use it?

| 1.___ | 2.___ | 3.___ | 4.___ |
| always | almost always | almost never | never |

12. Can you understand your American Indian language when it is spoken by others?

| 1.___ | 2.___ | 3.___ | 4.___ |
| always | almost always | almost never | never |

13. When at home with your family how often do you speak an American Indian language?

| 1.___ | 2.___ | 3.___ | 4.___ |
| always | almost always | almost never | never |

14. How comfortable do you feel speaking an American Indian language?

1.___   2.___   3.___   4.___
always   almost always   almost never   never

15. How often do you use American Indian "slang" in your normal everyday speech?

1.___   2.___   3.___   4.___
always   almost always   almost never   never

16. How often do you talk about American Indian topics and Indian culture in your daily conversation?

1.___   2.___   3.___   4.___
always   almost always   almost never   never

17. How often do you talk about different cultures and the topics that are important to them?

1.___   2.___   3.___   4.___
always   almost always   almost never   never

18. Do you wear American Indian jewelry?

1.___   2.___   3.___   4.___
always   almost always   almost never   never

19. Do you collect American Indian cultural art?

1.___   2.___   3.___   4.___
always   almost always   almost never   never

20. How important is it to you to know your American Indian ancestry or descent?

1.___   2.___   3.___   4.___
always   almost always   almost never   never

21. How important is it to you to know your non-Indian ancestry or descent?

1.___   2.___   3.___   4.___
always   almost always   almost never   never

22. How often do you attend American Indian religious ceremonies?

1.___   2.___   3.___   4.___
always   almost always   almost never   never

23. If you had a physical or mental illness how likely would it be for you to seek help from a medicine man/healer?

1.___   2.___   3.___   4.___
always   almost always   almost never   never

24. How likely would it be for you to date someone who is non-Indian?

1.___   2.___   3.___   4.___
always   almost always   almost never   never

25. How likely would it be for you to marry someone who is non-Indian?

1.___   2.___   3.___   4.___
always   almost always   almost never   never

Appendix E

Center for Epidemiological Studies Depression Scale (CES-D)

Center for Epidemiologic Studies Depression Scale (CES-D), NIMH

Below is a list of the ways you might have felt or behaved. Please tell me how often you have felt this way during the past week.

	During the Past Week			
	Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	Most or all of the time (5-7 days)
1. I was bothered by things that usually don't bother me.	☐	☐	☐	☐
2. I did not feel like eating; my appetite was poor.	☐	☐	☐	☐
3. I felt that I could not shake off the blues even with help from my family or friends.	☐	☐	☐	☐
4. I felt I was just as good as other people.	☐	☐	☐	☐
5. I had trouble keeping my mind on what I was doing.	☐	☐	☐	☐
6. I felt depressed.	☐	☐	☐	☐
7. I felt that everything I did was an effort.	☐	☐	☐	☐
8. I felt hopeful about the future.	☐	☐	☐	☐
9. I thought my life had been a failure.	☐	☐	☐	☐
10. I felt fearful.	☐	☐	☐	☐
11. My sleep was restless.	☐	☐	☐	☐
12. I was happy.	☐	☐	☐	☐
13. I talked less than usual.	☐	☐	☐	☐
14. I felt lonely.	☐	☐	☐	☐
15. People were unfriendly.	☐	☐	☐	☐
16. I enjoyed life.	☐	☐	☐	☐
17. I had crying spells.	☐	☐	☐	☐
18. I felt sad.	☐	☐	☐	☐
19. I felt that people dislike me.	☐	☐	☐	☐
20. I could not get "going."	☐	☐	☐	☐

SCORING: zero for answers in the first column, 1 for answers in the second column, 2 for answers in the third column, 3 for answers in the fourth column. The scoring of positive items is reversed. Possible range of scores is zero to 60, with the higher scores indicating the presence of more symptomatology.

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