Psychological aspects of native children in a Blackfeet language and culture program: The immersion paradigm

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Running Head: Immersion Paradigm

Psychological Aspects of Native Children in a Blackfeet Language and Culture

Program:

The Immersion Paradigm

By

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Abstract

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Differences of Native Children in a Blackfeet Language and Culture Program: The Immersion Paradigm

Director: Paul Silverman, Ph.D.

The Native American child continues to be the most overlooked and misinterpreted in research related to intellectual assessment. Research continues to report the low scores that the Indian child obtains on national tests. These results need to be challenged and modified to fit the unique learning and cognitive processes of the American Indian child. Thus, this study investigated a Blackfeet language and culture program that is attempting to build curriculum and program around the rich cultural heritage of the Indian child. Results indicate that children in the immersion program score better than children in a nationally certified Headstart program on verbal scales of intelligence. Also, findings from this study suggest that variation in cultural identities reported by the parents (as measured by the Northern Plains Bicultural Immersion Scale) may have played a role in program differences.

Self-esteem of the Indian child is often impacted by social problems of a severely disadvantaged minority. The school environment is often inconsistent with the values and self-esteem of the native family and child. This has resulted in an emergence of emotional problems with young Indian children. This study looked at differences between children enrolled in the culturally supportive Immersion program and in Headstart programs, but failed to find significant differences in measures of self-esteem. Furthermore, racial identity was also examined for programmatic differences and no significant differences were found.

Interpretations of test performance of American Indian children are often influenced by cultural bias in the measure and in the assessor. This study examined two measures of intelligence, The Kaufman Assessment Battery for Children (K-ABC) and the Weschler Preschool and Primary Scale of Intelligence-Revised (WPPSI-R), for differences in scores attained on each measure by native children. Significant differences were not found. However, overall the native children obtained higher scores on the K-ABC than on the WPPSI-R.

This study provides interesting information about test usage and results for future replication. It was an attempt to provide scientific direction to substantiate the importance of culture and language in the success, education, and mental well being of the American Indian child.
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Psychological Aspects of Native Children in a Blackfeet Language and Culture Program:

The Immersion Paradigm

Among groups of minority children in the United States, the Native American child has long been neglected in research related to intellectual assessment. Even though generalizations from the assessment of other minorities have been applied to children of American Indian ancestry, psychologists are becoming aware that there are unique language differences specific to the Native American child. Consequently, educational curricula have inadvertently failed to address the unique learning processes that Indian children possess through connection to their native language and culture. The obvious failure to build education around an enormously rich heritage deprives Indian students of an important basis for self esteem development that is crucial to their academic growth. The purpose of this study is to investigate an immersion program that may improve measured intelligence, achievement, self esteem, and cultural identity of Native American children in school settings and review the evidence for cultural bias in intelligence testing and its effect on Indian children’s self esteem.

American Indian children are the most severely disadvantaged of any population within the United States. School achievement is emphatically compromised, and many youths drop out before graduation from high school. Indian children produce consistently low scores on the verbal scales of intelligence tests, but their scores on the performance scales approximate the norms of the majority culture (Yates, 1987). The Indian child’s facility in English is among the poorest of any group in the United States, even when he or she is reared in homes where English is spoken (Yates, 1987). In the dominant culture academic and vocational success is largely dependent on language skills. The construction of the Indian language is unlike that of the English language. English language skills are not procured easily by Indian children, and academic achievement deteriorates. This may result in cycles of depression, discouragement, and negative self esteem that further impair their abilities.
Intelligence Testing: Research, Results and Implications

Research on intelligence testing of Native American children ranges from the historically biased to the current biases of the most respected intelligence assessments. These biases and problems with intelligence tests have been the focus of research both past and present. In 1934, on the Blackfeet Indian Reservation, a program was undertaken which included the intelligence testing of all children enrolled in the twelve schools within the boundaries of the Blackfeet Reservation. An intelligence test was administered to a sample of 1000, but later eliminations reduced the number of records of children tested to 548. "The eliminations were made for several reasons: first, only white children and those of definitely known degrees of Blackfeet Indian Blood were desired in the study." (Gold, 1934, p. 35). The Otis Group Intelligence Scale, Primary Examination-Form A, and the Otis Self-Administering Tests of Intermediate Examination-Form A were used because of their generally acknowledged quality at the time and acceptance in the field of intelligence testing.

The following are the results from this program of intelligence testing (Gold, 1934):

1. Blackfeet Indians decrease in intelligence as they increase in degree of Indian Blood.

2. Blackfeet girls are more intelligent than boys in the full blood, three quarter, and half blood divisions. There is little difference in the quarter bloods.

3. Blackfeet children do better on those problems which deal with subject matter common to their environment, than they do with other problems. In the lower grades they do better than white children of the same grade, (not of the same age). In the upper grades they do not do as well as white children in the same grade; and as a group they do not do as well as white children on these selected problems (p. 48).
The assumptions and interpretations of this study correlated intelligence of the Blackfeet children to blood degree. This, combined with the use of measures that presented stimuli that were unknown to the children, epitomizes the type of cultural bias in much research on intelligence testing. Although this study is an extreme and crude historical example of intelligence testing bias attributable to cultural and language factors, current intelligence testing often continues to include such biases. Intellectual assessment of American Indian children continues to be carried out utilizing tests that have not been standardized on these populations and that are generally inappropriate for description of their intellectual functions or prediction of their educational outcomes (Dana, 1984).

Furthermore, interpretations of test performance of American Indian children are often influenced by assessor bias or lack of specific cultural information concerning typical patterns of behavior within native cultures. Garcia and Hynd (1979) have observed that typical behaviors manifested by Native American Navajo children include: (1) a general attitude of non-assertiveness resulting in little spontaneous verbal interaction and decreased levels of rapport; (2) a lack of eye contact and to some degree other avoidance behaviors; and (3) lowered measures of performance on less culturally biased subtests such as Block Design, Object Assembly, or Coding on the WISC-R due to the timed nature of the tests. Without measures of adaptive behavior and a thorough comprehension of the cultural values of the native child, it would be relatively easy to draw negative conclusions regarding the social or emotional well-being of children evidencing these behavioral characteristics.

Another factor not typically considered when assessing these children is the uniqueness of their cultural-religious beliefs. Among many Native American tribes it is believed that disclosing information about oneself will enable a stranger to gain control over one's behavior (Garcia & Hynd, 1979). Clearly, such a belief could influence the amount of information volunteered to the examiner and result in a minimum of disclosures.
What may be appropriate test taking behavior in the Anglo culture may contradict values and cultural mores of the American Indian culture.

Frequent criticisms of tests relate to the unfairness of using a single measuring instrument in predicting a common criterion across various cultures. This approach to validity focuses on the predictive relationship between test scores and criterion measures such as academic success and job performance. Tests that are culturally biased and under-predict criterion measures in some groups may unjustly influence the future of many minority children.

Effects of language on Intelligence Tests

Studies examining the Weschler Intelligence Test Scale for Children-Revised (WISC-R) alternate from the positive to negative positions regarding predictive validity, performance homogeneity across groups, and cultural bias. Among the most prominent pieces of research are factor analytic studies supporting the construct validity of the WISC-R with Native American Navajo children (Kaufman, 1979; Reschly, 1978). Two factors, similar in structure to the Verbal Comprehension and Perceptual Organization factors found in Anglo groups were derived. These analyses suggest that the WISC-R is, in fact, measuring the cognitive abilities it purports to be measuring for Native American children.

In contradiction to this research is the study of Hynd, Quackenbush, Kramer, Conner, and Weed (1979) which examined a sample of 44 non-referred Navajo children and reported a mean Verbal IQ score of 64.14, a mean Performance IQ score of 95.41, and a mean Full Scale IQ score of 77.06. Hynd, et al. suggested using a prorated Performance IQ as the least biased measure of learning potential for this group, as both Verbal and Full Scale measures were negatively affected by language factors. The slightly depressed measure of the Performance IQ is inferred by Hynd, et al. to be attributed to the significantly low performance of the children on the Picture Arrangement subtest. This one Performance Scale subtest does result in a biased estimate of ability according to
Flaugher’s (1978) definition of test bias. Some of the performance items found in the Picture Arrangement subtest appear to be culturally biased, as the irrelevance of some items (e.g. “Fire,” “Sleeper,” and “Artist”) to the cultural lifestyle found on the reservation is manifested in the lowest mean performance on computed overall performance subtests on the WISC-R. According to this study when this subtest was eliminated from consideration and the remaining subtests were used to arrive at a prorated measure of ability, the Performance IQ resembled that of the standardization sample.

A follow up study by Teeter, Moore, and Petersen (1982) analyzed sample scores of 452 Navajo children on the Navajo Indian Reservation and compared them with data reported by Hynd, et al. (1979) to determine whether the groups differed in performance on specific subtests, and to investigate the generalizability of the findings for primary grade Navajo children. The results of the study lent support to the previous findings of Hynd, et al. that suggested: (1) the Performance Scale of the WISC-R can be used as a least biased measure, and (2) Navajo children score lower than the standardization group on verbal subtests. However, Teeter et al. (1982) concluded that the lower verbal scores should be interpreted as reflecting divergent language, cultural, and experiential factors, rather than deficits in intellectual potential.

An item analysis of the WISC-R for cultural bias was completed with Native American Navajo children (Mishra, 1982). Findings revealed that performance of subjects was homogeneous across groups of fourth and fifth grade Navajo children and Anglo children matched for grade level on most of the items of three verbal subtests. However, fifteen (19%) of the seventy-nine items comprising Information, Similarities, and Vocabulary subtests were found to be biased against the Navajo sample. Such a finding of nonhomogeneous performance on these 15 items across ethnic groups is consistent with findings of studies employing black-white and Hispanic-white comparisons (Sandoval, 1979). Mishra (1982) states that the results should not be interpreted as implying that these items should be discarded from the test. However, caution should be
exercised in interpreting the performance of subjects from minority cultures on the items identified as biased.

The WISC-R and the Standard Raven Progressive Matrices (SPM) Tests were evaluated in the context of an intervention/program evaluation study and in terms of a proportionate representation model of test bias by Sacuzzo and Johnson (1995). In the proportionate representation model of test bias, a test is considered fair only if scores of individuals from different genders and ethnic backgrounds are distributed in proportion to the population of the community from which they are selected. The SPM is purportedly a study of pure thinking processes in the absence of the influence of specific content acquisition, and its stimuli are presented visually; therefore, it is assumed to be fair to individuals with disparate linguistic ability. The SPM correlates highly with measures of general intelligence and moderately with measures of linguistic ability. Use of the SPM did lead to proportionate representation for Native American children. Thus, the SPM can have clear advantages for measuring abilities for individuals who speak a language other than English, or who are from a different culture. Moreover, because it does not depend on an explicit knowledge base, as does the WISC-R and other verbally weighted standardized tests, the SPM appears to be better suited to traditionally under-represented children (Sacuzzo & Johnson, 1995).

A study investigating performance differences in receptive vocabulary and general verbal reasoning ability of Hualapai Indians as compared to the national norms was conducted by Wolf, Schwartz, and Petersen (1996). The study gathered preliminary data regarding aspects of language proficiency of children belonging to the Hualapai Indian Tribe in Arizona. The Peabody Picture Vocabulary Test Revised (PPVT-R) and the Verbal portion of the Cognitive Abilities Test (CogAT), Form 4 were administered to 206 Hulapai Indian children ranging in age 5 years, 3 months to 15 years, 7 months. Their scores were compared at each grade level to the national norms for these measures. The findings support the assertion that at all grade levels Hualapai school children perform
significantly lower on measures of receptive language when compared to the national norms. At each grade level the Hualapai students scored approximately 1 to 1.5 standard deviations below the national sample. Scores obtained were below the 20th percentile at each grade level, with little variability in performance among grade levels. On the Verbal scale of the CogAT, scores obtained were below the 35th percentile at each grade level. In comparison to the performance of the children of different Native American tribes, the Hualapai children performed basically at the same level. This supported the author's fundamental hypothesis that there is homogeneity with respect to certain cognitive characteristics across various American Indian tribes.

Also supported by these findings was the conclusion that various structural and other linguistic differences common to the American Indian child are likely to be operative factors in the performance differences. Little Soldier (1992) investigated these differences and found that (1) Navajo pupils replace consonant clusters with glottal stops due to missing consonants in the Navajo alphabet, (2) Navajo speakers talk with little lip movement, (3) the Navajo language does not have gender distinction in its third person pronoun forms, and noun phrases in Navajo do not indicate number; therefore, the plural inflection of English nouns can be troublesome, and (4) Navajo speakers tend to use the present tense of verbs instead of the past and to omit verb endings.

Hynd and Garcia (1979) concluded that performance subtests provide an estimate of intellectual potential of the American Indian child, while verbal subtests measure acculturation or current functioning within an English language academic setting. Harris (1985) reported on a number of other considerations also relevant when assessing English language performance of American Indian children. These include the following factors which are common to almost all Indian children: they are generally bilingual; they have been raised with an oral language culture, and in some cases, a nonverbal tradition; and, they share a value-system which is in many ways vastly different from that of the Anglo population.
Appropriate Intelligence Tests without Language Barriers

The number of language factors and the factorial structures are culturally distinct for Native American children, and the use of WISC-R interpretation may need to be reconsidered since the Performance Scale measure appears to provide a more reliable estimate of intellectual functioning. The Kaufman Assessment Battery for Children and other tests of intelligence should be given consideration as alternative scales for use with Indian children.

The purpose of the K-ABC was to provide a test that would be sensitive to the needs of preschool and exceptional children. Kaufman and Kaufman (1983) attempted to achieve this goal through their developing the structure and through the standardization of the test. Their premise was that the inclusion of teaching items and flexible instructions to the child on all Processing scale subtests would ensure that young children had a good opportunity to learn what was required of them on each new task. Verbal instructions and responses required for the Mental Processing scales were minimized so that assessment of a child’s problem-solving abilities would be less confounded with the child’s level of language development (Williams, Voelker, & Ricciardi, 1995).

The relationship among various cognitive ability measures was examined by Lassiter and Bardos (1995). Significant correlations were noted between the K-ABC, the Kaufman Brief Intelligence Scale (K-BIT), and the Wechsler Preschool and Primary Scale of Intelligence-Revised (WPPSI-R). High correlations were obtained between the K-ABC Global Achievement score and the three subtest WPPSI-R scores of Information ($r=.66$), Arithmetic ($r=.57$), and Similarities ($r=.66$). The K-BIT and the WPPSI-R demonstrates significant high correlations between the K-BIT Vocabulary subtest and the WPPSI-R subtests of Vocabulary ($r=.70$), Similarities ($r=.60$), Information ($r=.70$), Comprehension ($r=.51$), and Global Verbal IQ scale score ($r=.75$). More traditional measures such as the WISC-R and WPPSI-R may underestimate the overall cognitive abilities of children with diverse language skills. The K-ABC may yield substantially higher and also more valid
results than do the more language-dependent tests, and the high correlations substantiate that both are measuring the same intellectual constructs.

The use of the K-ABC in relation to the WISC-R as an alternative measure of cognitive ability for three 10 year old children who were not native English speakers was examined by Flanagan (1995). In each case, results derived from the WISC-R indicated borderline to deficient intellectual ability, whereas the K-ABC indicated that subjects probably had greater cognitive ability than was measured by the WISC-R. Clinical judgment suggested that the WISC-R scores were minimum estimates, and opinions of the classroom teachers supported the higher level cognitive ability measured by the K-ABC. Thus, the K-ABC as part of an assessment battery appears to be useful for limiting possible educational misdiagnosis of children with a variety of linguistic backgrounds.

In a study by Davidson (1992) fifty-seven American Indian students and sixty Caucasian students completed the K-ABC. Indian subjects scored higher than the Caucasian subjects in Simultaneous Processing, while Caucasian subjects scored higher than Indian subjects in Sequential Processing (Davidson, 1992). A comparison of Native American and Caucasian students’ cognitive strengths as measured by the K-ABC resulted in indications of equal strengths in the area of overall intelligence.

Knowledge of the limitations of standard intellectual assessments with Indian children is necessary. Intellectual assessment has cultural limitations, and selection and/or modification of appropriate existing tests is required for valid assessment with children who are linguistically and culturally different. American Indian children may obtain WISC-R Performance Scale IQ scores that are as much as 25 to 30 points higher than their Verbal Scale IQ scores (Sattler, 1992, p. 588). Similarly, their PPVT-R scores may be much below scores obtained on performance tests. Thus, it is important to examine carefully the IQ scores generated by different tests, acknowledging that verbal tests should seldom be used alone to estimate American Indian children’s level of cognitive ability, and that the PPVT-R should never be used with young American Indian children to obtain an
estimate of intelligence. In addition to the Stanford-Binet or Weschler scales, the Draw A
Man Test and, on some occasions, other nonverbal tests, such as Raven's Progressive
Matrices or the Kaufman Assessment Battery for Children (K-ABC) can be used to
evaluate the cognitive skills of Indian children. In general, American Indian children's
visual-spatial abilities appear to be much better developed than their verbal skills, and
misleading results may be obtained if reliance is placed primarily on the scores provided by
verbal tests (Sattler, 1992).

An important, but hitherto poorly understood finding regarding the distinct
cognitive style of American Indians. For centuries, Indian people depended heavily on
visual sensory/perceptual pathways. They followed animals by sign and track and
memorized visual aspects of their territory. The women were able by sight to single out
edible plants from a mass of vegetation. Predictions of weather changes and the migration
of animals were made by studying the visual aspects of the sky and the earth. The
principle of visual observation was central in the culture.

The emphasis on visual observation and form is reflected in language, and
Indian children may excel in visual modes. For instance, Navajo children begin to sort by
form rather than by color at an early age, attaining these norms in advance of other
children and those children who speak only Navajo exhibit a pronounced tendency for this
attribute. This may be a direct result of the Navajo native tongue, where the verb form
depends on the shape of the object of reference. An unusual ability to memorize visual
patterns, visualize spatial concepts, and produce descriptions that are rich in visual detail
and graphic metaphors is characteristic of the majority of Indian children (Kienfield,
1974). Cognitive problems appear to arise in Indian children when they are required to
recall content that is presented verbally and not portrayed visually. These deficits are
fundamental to the "crossover phenomenon," where Indian children appear to do well in
school until the third grade (McShane, 1983; Noley, Armstrong, Downing & Figueroa,
1995; Yates, 1987), when grades suddenly drop to a startlingly low level.
American Indian children’s representational function seems to be mediated visually rather than linguistically, and they do not spontaneously analyze their experience in verbal terms but, rather, as a whole (Tharp, 1994). Thus, it is suggested that intuitive “right brain” mechanisms are predominant (Witelson, 1971). A review of the literature (Kaulback, 1984) reveals near total consistency in available research: Indian children are most successful at processing visual information. Relatively high visuo-spatial ability in American Indians has been attributed to a functional adaptation to the demands of an environment in which perceptual-motor skills are highly useful, as noted above. This visual style supports the holistic versus analytic cognitive style that is characteristic of American Indians. This holistic pattern of cognition is associated with an entire “observation-learning complex” (Tharp, 1994). Perceptual, cognitive, neurological, semiotic, sociological and interpersonal dimensions are each aspects of a unified whole, and American Indian children experience and process these dimensions as inseparable and interacting aspects of the same unity.

Intellectual assessment that is fair and ethical requires instruments constructed on the basis of theory, or especially designed for American Indians and using these persons as the primary reference group with administration conditions, instructions, and tasks that are culturally appropriate (Dana, 1984). Sabatino, Hayden, and Kelling (1972) reported that Navajo children referred for special class placement experienced school learning problems predominantly due to a lack of knowledge of the linguistic rules underlying the English language, rather than to visual perceptual difficulties. A study by Ricciardi et al. (1991) found that language impaired children obtain significantly higher scores on the K-ABC. This finding supports the hypothesis that the K-ABC may yield substantially more optimistic predictions of academic success for preschoolers with language differences, such as American Indian children (Dana, 1993).
Self Esteem

As children develop, they not only come to understand more and more about themselves and to construct more intricate self-portraits, but they also begin to evaluate the qualities that they perceive themselves as having (Shaffer, 1994). Children with high self-esteem are fundamentally satisfied with the type of person they are; they recognize their strong points, can acknowledge their weaknesses, and generally feel quite positive about the characteristics and competencies they display. By contrast, children with low self-esteem view the self in a less favorable light, often choosing to dwell on perceived inadequacies rather than on any strengths they may display (Dweck & Elliott, 1983; Zupan, Hammen, & Jaenicke, 1987). According to Damon (1983) self-esteem is an evaluative orientation toward the self and is generally assessed in terms of its positive or negative value. As a psychological construct, self-esteem is concerned with whether or not children evaluate themselves in a positive manner, and if so, the strength of their positive self attitudes.

As early as five years of age children have been shown to begin to assess their own competence in two important domains: academic and social (Beiser, Lance, Gotowiec, Sack, & Redshirt, 1993). Throughout childhood and into young adulthood, these remain identifiable dimensions of self-perceived competence, different from but influenced by the perceptions of others and by objective test performance. Furthering this theoretical framework, Harter (1984) indicates that self-esteem is an evaluation of competencies by children in many different domains; only later do they integrate these impressions into an overall self-evaluation. She proposes that children’s opinions of their overall self worth, as well as their evaluations of their competencies in five separate domains, are the basis for self-esteem. These five domains are scholastic competence, athletic competence, behavioral conduct, social acceptance, and physical appearance.

Coopersmith (1967) identifies two factors that are especially important to the development of self esteem: (1) the amount of respectful, accepting and concerned
treatment that an individual receives from the significant other people in his life; and (2) the individual's history of success and failure, including the objective status and social position the individual has achieved. Coopersmith found that an objective basis for self esteem did exist among children: Those with high self-esteem were doing better in school and were more often chosen as friends by other children than the low self-esteem children.

A meta-analysis of research done during the past 25 years points out that not only is there a consistent and moderately strong relationship between self esteem and academic ability, but that these two variables are highly interactive and reciprocally related (Hamachek, 1995). Furthermore, this review of the research found that self-esteem will rise significantly commensurate with higher academic achievement. Included in this meta-analysis were data by Wattenberg and Clifford (1964) who found that self-concept scores of kindergarten children predicted reading achievement more accurately than did intelligence tests. Multiple sources of research data reviewed in this meta-analysis suggested that beginning with a positive self-concept is an important prerequisite to doing well academically. However, Hamachek (1995) proposes that the interactive and reciprocal dynamics of self-esteem and academic achievement indicated a mutually reinforcing relationship, such that a positive (or negative) change in one facilitates a commensurate change in the other.

Self esteem of American Indian children

Self-esteem of Indian children becomes interwoven with the problems of an extraordinarily disadvantaged minority. The pervasive emotional, physical, and social problems create a legacy of hopelessness and helplessness from which Indian youths must struggle to emerge. The dissonance in cognitive style between the American Indian child and the Anglo school is a precipitating factor in the emergence of emotional problems, depression, hopelessness, alienation and behavioral difficulties (Halpin, Halpin, & Whiddon, 1981; Robinson-Zanartu & Majel-Dixon, 1996; Stillsmoking, 1997; Yates, 1987).
Since the start of the boarding school era, the education of American Indian children has not been predicated on the wisdom of their elders, and all too often the children have not been honored as learners (Child, 1997; Lomawaima, 1996). Despite enormous assimilative and acculturative pressures, many native people do not adopt majority culture values. Consequently, in comparison with non-natives, Indian children are more likely to be challenged by school values and socialization practices that are discrepant with their culture. The school is an environment that is incongruent with other major arenas of socialization (Beiser, et al., 1993). For native children, school-based symbols of success, such as competitive awards, academic status, and grades may be less relevant reinforcement contingencies for the development of self-perceived competence than they are for non-native children. If the school is a place where native youngsters learn to expect failure rather than success (Beiser, et al., 1993), it would not be surprising to find them turning to other areas for validation of their self-concept. This turning away from school is illuminated by the Senate Select Committee on Indian Affairs in 1990, which listed in its report the following crucial problems of the Native-American adolescent: developmental disabilities, depression, suicide, anxiety, alcohol and substance abuse, low self-esteem and alienation, running away, and dropping out of school (Choney, 1995).

Davis and Pyatskowit (1976) point out that not only are white and Indian values different and often in conflict, but that the values of an ethnic group essentially determine that group’s educational system. When the two systems are merged together or one system dominates, the result is poor performance by the child whose ethnic group is in the weaker position within the school system. Research suggests that Indian students have a poor self concept within the school setting, and that this seriously affects the Indian child’s ability to successfully complete academic requirements (Beiser, et al., 1993; Halpin, et al., 1981; Joe, 1994; Little Soldier, 1992; Yates, 1987).
The Department of the Interior Inspector General's 1991 Audit Report found that, nationally, Indian students ranked in academic standing from a low of twenty-fourth percentile in the third grade to a high of only the thirty-second percentile in the twelfth grade (Reyhner, 1992). In 1994-95 the Montana State Office of Public Instruction reported that 10.4 percent of the state’s Indian students were known to have dropped out of high school, compared with 3 percent of the state’s white students recorded that same year. Indian students in the seventh and eighth grade were five more times likely to drop out of school (Jahrig, 1997). A recent report by the Associated Press analyzed standardized student test scores for the 1995-1996 school year. Findings of this analysis indicate that schools on and near Montana’s Indian reservations post the lowest scores in the state, with only about a third of the students performing at or above their grade levels (Anez, 1998).

Moreover, the use of culturally inappropriate measures for educational assessment may affect the self-perception of American Indian children. Discrepancies in results from culturally inappropriate measures can stem from factors such as acculturation level, ethnic group mixture, socioeconomic status, language of administration, examiner characteristics, and the context of test administration (Beiser, et al., 1993). Current assessment interpretations tend to locate the cause of academic problems in minority children themselves rather than in the school and its curriculum (Reyhner, 1992). These interpretations disregard culture-specific experiences that affect children's test results and their academic performance, and present minority languages as negative influences on children's lives. Unfortunately, this practice negatively affects the self esteem of American Indian children and, as studies of children from the majority culture and those from minority groups indicate, self-esteem is one of the factors that predict whether or not children remain in school and how well they perform at school (Beiser, et al., 1993).
Cultural Identity

Three-to-five year old children have been shown to become increasingly aware of racial and ethnic differences. Although Native American preschoolers can easily discriminate Indians from Anglos in photographs, they are less accurate in correctly specifying the category that they themselves most resemble (Spencer & Markstrom-Adams, 1990). A contrast to the “misidentification phenomenon” was addressed by the earlier study of Annis and Corenblum (1987) that determined that young Native Americans have shown a stronger identification with their own race when tested in their native language. The inability of the Native American preschoolers to identify with the photographed Indians may reflect their growing awareness of negative stereotypes attached to their own culture and an egocentric tendency to view themselves as valuable by expressing a preference for majority desirable attributes (Spencer & Markstrom-Adams, 1990).

According to social identity theory and related research findings, the nature of the relationship between self-esteem and own group attitudes differs for minority children and majority children: higher self-esteem is negatively associated with own group attitudes for minority children, but positively associated for majority children (Correnblum & Annis, 1993). The understanding of the consequences and implications of these social comparison processes will lead to different outcomes of own group identification and preference in minority and majority group children. Minority children, unlike their majority peers, are confronted with a discrepancy between positive attitudes associated with the development of own group identity and awareness of the value of that identity in the dominant culture (Correnblum & Annis, 1993). One consequence of this affective discrepancy is that many minority children develop negative or ambivalent attitudes about own group members (Cross, 1987).

Cognitive developmental theory (Aboud, 1988; Katz, 1976; Piaget & Weil, 1951) posits that what children know about race is based on the attainment of operational skills
such as conservation and classification. This suggests that children's cognitions concerning social categories are subject to the same general cognitive processes that govern their encounters with the physical world (Piaget & Weil, 1951; Kohlberg, 1966, Kowalski, 1995). This position was further supported by Clark, Hovecar, and Dembo (1980), who found that children who demonstrated conservation and race constancy (knowledge that self and other's attributes remain constant despite superficial external changes) were able correctly to explain the origins of skin color.

Due to limitations placed on their information processing abilities by their level of development, preschool-age children's thinking about cultural identity is thought to possess characteristics of highly prejudiced adults (Bigler & Liben, 1993; Doyle, Beaudet & Aboud, 1988; Katz, 1976; Kowalski, 1995). These characteristics include minimizing variance within ethnic out-groups and exaggerating between-group differences (Tajfel, 1982; Kowalski, 1995). Also, preschoolers have difficulty considering out group members according to multiple dimensions. Since Piaget (1965) researchers have demonstrated that preschool age children have difficulty with multiple classification tasks; they find it hard to understand that the same person, object, or event, can be simultaneously classified along a number of dimensions (Kowalski, 1995). They also tend to focus on perceptual characteristics and to view these visible characteristics as defining attributes of category membership (Jones & Smith, 1993; Keil, 1988; Kowalski, 1995).

Kowalski (1995) found in his investigation of the emergence of ethnic/racial awareness in preschool-age children that these attitudes emerge from a complex process driven by multiple factors: “Social relationships and the information encoded therein, the perceptual characteristics of certain physical features associated with ethnic/group membership, children's need for self definition and positive self regard, societal values concerning fairness and equality, and the developmental level of children's information processing capacities play a role in the emerging ethnic/racial identities and attitudes” (p. 104).
Oetting (1993) describes cultural identification as a personality trait, that is a persistent, long-term underlying characteristic that organizes cognitions, emotions, and behaviors. Furthermore, cultural identity develops and is maintained through interactions with the environment. This social learning process occurs within the family, and the family is the primary source for the transmission of culture. Therefore, early childhood cultural identification is linked to the family's level of cultural identification and is derived almost entirely from the family.

As noted above, research suggests that Indian students have low self esteem within the school setting, and this seriously affects the Indian child's ability to complete academic requirements successfully (Davis & Pyatskowit, 1976). It is important to build upon the Indian values that are a part of the child's cultural identity and to promote understanding, respecting and balancing culture as central to the education experience. Educational programs that accommodate culturally and linguistically different learning styles can improve student achievement, attitudes toward learning, and retention of information (Gopaul-McNicol & Thomas-Presswood, 1998). When children are allowed to learn academic skills through their preferred learning modalities, they tend to achieve statistically higher test scores (Dunn & Dunn, 1978). Relevant to the promotion of culture and language in an academic setting is the concept of immersion programs.

Effects of Immersion Programs

The cultural difference model in education posits that educational programs for different cultural groups should be based on the unique differences and experiences that these groups bring to the educational setting. The stance of the cultural difference model encourages teachers to raise their expectations of student performance via teaching-learning strategies that are culturally compatible (Tobias, 1993). Cummins (1989) supports this model by suggesting that educational programs that seek to replace native language and culture with English language and culture cause students to fail, while additive programs, such as bilingual and immersion programs, that teach English language
and culture in addition to the native language and culture, create conditions that enable
students to succeed in school. Bilingualism has been associated with various cognitive and
social benefits. It has been found that bilingualism can positively affect mental flexibility
and metalinguistic awareness. According to Cummins' (1987) interdependence
hypothesis, if instruction in one language is effective in promoting proficiency, the transfer
of this proficiency to another language will occur, provided there is adequate exposure
and motivation.

Immersion programs were developed to teach an official national language with
international status to children whose first language is important nationally and
internationally. These programs can also help to maintain and promote the use of heritage
or indigenous languages (Cenoz & Valencia, 1994) and have been reported to be suitable
for English-speaking children who present characteristics associated with poor academic
achievement, such as children from low socioeconomic backgrounds or children with low
levels of first language ability or low IQ scores (Genesee, 1991). Emerging from the
studies of bilingual children are performance advantages shown by the bilingual children as
the result of greater mental flexibility and a more diversified structure of intellect.

Providing further confirmation of these findings was the study of the immersion
program of second language acquisition in the Canadian St. Lambert experimental school
program (Lambert, Genesee, Holobow, & Chartrand, 1993). In this program English
monolingual children were enrolled in a 5 year program of bilingual instruction starting at
kindergarten. They were evaluated yearly up to the fourth grade. They were compared to
monolingual English-speaking children in a monolingual English curriculum and
monolingual English-speaking children in a monolingual French curriculum. Children in
the three groups were matched on social class variables and nonverbal intelligence while in
kindergarten.

The experimental group was instructed only in French in kindergarten and the first
grade. In the second grade, instruction in English language arts was begun and served as
the only classroom instruction in English. Instruction in English increased for the experimental group until the fourth grade, at which point half of the class time was spent in English. The English and French monolingual control groups received all their instruction in their native language.

Testing was conducted yearly to examine achievement levels and attitudes of the immersion group children and the control groups. Testing at the end of the fourth grade revealed the following findings: The experimental group’s level of English proficiency was equivalent to that of the English control group, with both groups scoring above the 80th percentile on national norms. The children in the experimental group, who were English language natives, did not suffer any impairments in their English language ability and they performed as well as monolingual English children; both reached a relatively high level on some tests. Compared to the French control group, the experimental group matched their performance in French language in areas of vocabulary, listening comprehension, and knowledge of French concepts. In essence, the members of the originally English native experimental group children were functionally bilingual by the end of the fourth grade. Measures of general intelligence in the experimental group matched the monolingual control groups. The experimental group also seemed more capable of generating more imaginative and unusual uses for everyday objects, regardless of the language of the test. It was also noted that the experimental group children could readily transfer a skill learned in one language to the other language. The researchers speculated that a higher level of abstract cognitive processing might exist that allows the transmission of information between languages.

A recent study of 137 bilingual (French and English and Chinese and English) and monolingual (English) four and five year olds was conducted by Bialystok (1998). These preschool age children came from literacy-rich environments, including the bilingual children in both languages. The children were given two word tests that assessed their understanding of the symbolic function of letters. According to Bialystok (1998) children
who go beyond treating letters as visual objects and recognize the symbolic relation between letters and sounds are on their way to learning how to read.

The first test involved showing the children a card with a word printed on it that was placed under a picture of the named object. The children were asked what the word was after the card was moved to another picture. The bilingual children scored twice as high on this test as the monolingual children. Furthermore, the bilingual children knew that the written form carried the meaning and that the picture was irrelevant. They understood this principle equally in both languages. Also, the four-year-old bilingual children were better at this exercise than the five-year-old monolingual children.

The second test involved asking the children to judge a word’s length when the object size was the same and when it conflicted with the word size. When the word was long and the picture was big, no difference was found between the groups. However, the Chinese-English speaking children scored higher when the length of the word conflicted with the object size. This was interpreted to represent an ability to deduce the rules for two different kinds of writing systems in the bilingual children. Bialystok (1998) concluded that, by four, bilingual children have progressed more than monolingual children in understanding general properties of the symbolic functions of written language. Bilingual preschoolers can read sooner because they are able to recognize symbolic relations between letters/characters and sounds without having visual objects present.

A Hawaiian language stream of the Keaukaha Elementary School was established in 1987 to teach through the Hawaiian language. This stream, called “Kaiapuni Hawaii” was originally established to accommodate children coming out of the Punana Leo Immersion Program, a preschool taught entirely through the Hawaiian language. However, some of the children in the Kaiapuni Hawaii immersion program entered with no knowledge of Hawaiian at all (KeKiamo’o, 1994). The Hawaiian sixth grade class, which was the focus of this study, included only children of Hawaiian ancestry; the percentage of Hawaiians in the English mainstream classes was also very high. However,
there were no Hawaiian speakers at all in the English class. It is unknown from the literature review on which variables the children were matched.

The Kaiapuni Hawaii (Hawaiian medium) sixth grade children took the SAT in English along with the English medium children. Despite the handicap of not being able to take the test in their classroom language, the Kaiapuni Hawaii children outperformed the English class program, scoring better in English and all other areas, including math, science, and social science. Significant is the fact that the Kaiapuni Hawaii children outperformed the English mainstream children in English. Their English instruction was through the medium of Hawaiian, and they received less than 10% of the English instruction received in the English mainstream when the Scholastic Achievement Test was given. As stated above, children in immersion programs have been suggested to acquire performance advantages as a result of greater mental flexibility.

**The Blackfeet Immersion Program**

Modeled after the Kaiapuni Hawaii immersion program is the Blackfeet Language Immersion Program on the Blackfeet Indian Reservation in Montana, which forms the focus of the current research. The staff at the Piegan Institute, which administers the Blackfeet Language Immersion Program, believe that immersing native children in their language makes them healthy, self-confident and knowing. Furthermore, this institute proposes that children in immersion programs will become academic achievers with intellectual and holistic pursuits (Kipp, 1996). The curriculum, which is extracted from the Browning Public Schools Primary Curriculum, is taught entirely in the Blackfoot tongue. Children in preschool to sixth grade receive education through the Blackfeet language on library skills, study skills, grammar, listening and speaking, reading, composition, and culture.

This immersion program was developed to create an impetus for children to achieve academic excellence and maintain a cultural connection to a fading language. The need for a different educational paradigm became apparent when, in 1988, the Basic
Inventory of Natural Language (BINL) was administered to 133 English-speaking-only kindergarten students on the Blackfeet Reservation. The test measured student language skills in standard English. Out of the 133 students, only 28 or 21.05% were classified as Proficient English Speaking. In other words, in spite of a multi-generation English-only background, Blackfeet children were not mastering the English language at an acceptable level (Kipp, 1996).

As noted above, generally, American Indian children appear to do well in school until the third grade, only to begin a progressive downhill course at this time. Achievement and emotional problems are interrelated, and it is the children with low achievement scores who exhibit anomie and low self-esteem. Preschoolers with signs of emotional disturbance are more likely to see themselves as poor learners. Political climate and the personal inclinations and interpretations of those in power have had a profound influence on the education of Indian children. Historically, teaching American Indian languages was banned, few valued the cultural context and style which would provide meaning from which to proceed with learning, and many disgraced and dismissed outright the culture from which the children had come (Roninson-Zanartu & Jamel-Dixon, 1996). Immersion programs need to be examined as teaching programs that can influence academic achievement and measured intelligence and promote Native children's self esteem and cultural identity, thereby changing the past historical trends of high drop out rates, social diseases, and adolescent suicide.

Aims of the Research

The purpose of this study involves investigating research questions concerning intelligence testing, preschool immersion programs, cultural identity and self esteem of young American Indian children. Previous research shows that academic achievement has been increased by children's participation in immersion programs (Genessee, 1987; Hollowbow, Genesee, & Lambert, 1991; Swain & Lapkin, 1982), but several questions remain: Will intelligence be affected by participation in an Immersion Program? How will
self esteem and cultural identity be influenced? What are the relationships among these constructs? And, are there general cultural differences in intelligence tests, and are some instruments more culturally sensitive?

To investigate these questions this study gathered evidence regarding the psychological functioning of native children enrolled in a Blackfeet language immersion program. A secondary purpose of this study was to identify and analyze cultural bias in intelligence tests. This study administered the Racial Recognition Test (RRT), Harter and Pike's (1984) Pictorial Scale of Perceived Competence and Social Acceptance for Young Children (PCSA), the Kaufman Assessment Battery for Children (K-ABC), and the Weschler Preschool and Primary Scale of Intelligence-Revised (WPPSI-R) to Blackfeet children who attend the Moccasin Flat School (Blackfeet immersion program), Blackfeet children who attend the Blackfeet Headstart Program, and Indian children who attend the Missoula Headstart Program. The Blackfeet Headstart and the Missoula Headstart are similar programs, in that they follow the overall educational practices of Project Headstart. A difference between the Missoula Headstart Program and the Blackfeet is that children in the Blackfeet Headstart learn about 75 words in the Blackfeet language. Also, the Moccasin Flat School and the Blackfeet Headstart Program are both located in Browning, Montana on the Blackfeet Indian Reservation, whereas the Missoula Headstart Program is in Missoula, Montana in a predominantly white, urban setting. Overall, the study assessed racial identity, self-esteem, and intelligence of American Indian children attending different educational institutions with differing didactic approaches, in addition to investigating intelligence testing itself for appropriateness with these populations.

Hypotheses

The following hypotheses were investigated to compare native children in the Blackfeet Immersion Program, native children in the Blackfeet Headstart Program, and native children in the Missoula Headstart Program.
Hypothesis One: Native children in the Blackfeet Immersion Program will obtain significantly higher mean IQ scores on the WPPSI-R than native children in the comparison groups.

Hypothesis Two: Native children in the Blackfeet Immersion Program will obtain significantly higher mean Composite and Processing scores on the K-ABC than native children in the comparison groups.

Hypothesis Three: On average, the native children in all programs will obtain significantly higher mean IQ scores on the Performance subtests of the WPPSI-R as compared to their mean IQ scores on the Verbal subtests.

Hypothesis Four: On average, the native children in the three programs will obtain significantly lower Full Scale mean IQ scores on the WPPSI-R than the mean scores on the K-ABC Mental Processing Composite scale.

Hypothesis Five: On average, children in the Blackfeet Immersion Program will produce significantly higher mean scores on the measures of self-esteem.

Hypothesis Six: On average, children in the Blackfeet Immersion Program will produce significantly higher mean scores on the measure of cultural identity. Overall scores will be lower for native children enrolled in the Missoula Headstart Program.

Hypothesis Seven: The self-esteem scores will correlate positively with the racial identity scores across children in all programs.

Method

Participants

The research subjects consisted of a total of 45 children, both female and male. The children ranged from age 3 years 7 months to 6 years 4 months (M=5 years 2 months) and were identified by their parents as American Indian. The immersion group subjects consisted of 15 children enrolled in the Moccasin Flat Preschool. The comparison groups consisted of 30 subjects, 15 from the Blackfeet Headstart program and 15 from the Missoula Headstart program. Table 1 presents demographic information on subjects.
Parental consent was obtained, and only those children whose parents gave written permission were included in the study. Due to the vulnerability of the population and to fulfill Institutional Review Board (IRB) guidelines and requirements, an IRB Protocol was submitted and approved.

Children from the Moccasin Flat Preschool were selected from the available subject pool, which consisted of all the children enrolled in the school. Children from the Blackfeet Headstart Program were selected by class membership; the director selected the class that she perceived would best fit the study, and all children in that particular class became participants after parental consent was obtained. The Missoula Headstart children were selected by availability, as the percentage of Indian children in the program is relatively low (about 12%). The preschool programs on the Blackfeet Reservation have a 100% American Indian enrollment.

All three preschool programs follow the Program Performance Standards for Head Start issued by the Administration for Children and Families, Department of Health and Human Services. The overall goal of the programs is to foster a greater degree of social competence in preschool children from low-income families (ACF Head Start Program Final Rule, 1996). Social competence refers to the child’s everyday effectiveness in dealing with his or her environment and later responsibilities in school and life. This takes into account the interrelatedness of cognitive, intellectual and social development, physical and mental health, and nutritional needs. The Blackfeet Headstart and the Moccasin Flat Preschool are under the direction of Dr. Dorothy Stillsmoking. She reported that both reservation programs are in effect identical, except that the Immersion Program involves complete immersion in the Blackfeet language and culture. It also needs to be noted that an important component of the Blackfeet language is the use of native sign language. Native sign language is the tribal distinct use of facial expression, hand movement, and language to convey information. This, too, is a difference between the Immersion Program and the Blackfeet Headstart. Daily schedules of the three programs include
activities that support the requirements regarding the developmental and educational needs of the children (See Appendix A).

Parents of the children completed the Northern Plains Bicultural Immersion Scale. All parents were tribally enrolled and are estimated to have ranged in age from eighteen to elderly, which is characteristic of native families where grandparents may be guardians of children. Social economic status, age, and gender were not recorded for parents completing the measure, as these variables are not a focus of this study.

Table 1
Demographic Information

<table>
<thead>
<tr>
<th></th>
<th>Immersion</th>
<th>Blackfeet Headstart</th>
<th>Missoula Headstart</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>Mean</strong></td>
<td>5 yrs. 6 mos.</td>
<td>5 yrs. 4 mos.</td>
<td>4 yrs 8 mos.</td>
</tr>
<tr>
<td><strong>SD</strong></td>
<td>7.61 mos.</td>
<td>6.21 mos.</td>
<td>9.45 mos.</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
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</tr>
<tr>
<td><strong>Male</strong></td>
<td>4</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td><strong>%</strong></td>
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<td>46.7</td>
<td>60.0</td>
</tr>
<tr>
<td><strong>Female</strong></td>
<td>11</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td><strong>%</strong></td>
<td>43.3</td>
<td>53.3</td>
<td>40.0</td>
</tr>
</tbody>
</table>

Measures

Kaufman Assessment Battery for Children (K-ABC) (Kaufman & Kaufman, 1983). Designed for children ages 2-6 through 12-5 years, four scales are included in this multi subtest battery: Sequential Processing Scale, Simultaneous Processing Scale, Achievement Scale, and Nonverbal Scale. The K-ABC is intended for use in school and
clinical settings, with administration time being approximately 45 minutes for preschool children. Not all subtests are administered at every age. Only three subtests run throughout the ages covered by the battery: Hand Movements, Gestalt Closure, and Faces and Places. Subtests for preschool are Magic Window, Face Recognition, Number Recall, Triangles, Work Order, Expressive Vocabulary, Arithmetic, and Riddles; thus composite scores are derived from different combinations of subtests, depending on the child’s age.

Composite scores are computed, with a mean of 100 and a standard deviation of 15. The psychometric properties of this test are sound, with internal consistency reliabilities for preschool children ranging from .94 and .97. Concurrent validity assessed through correlation of the K-ABC Mental Processing Composite Scale with the WPPSI-R is .50 for the Verbal Scale, .65 for the Performance Scale, and .70 for the Full Scale. For the purposes of the current study the Achievement Scale subtests were omitted.

Weschler Preschool and Primary Scale of Intelligence-Revised (WPPSI-R) (Wechsler, 1989). The WPPSI-R includes 12 subtests, 6 in the Performance scale and 6 in the Verbal Scale. Five of the six subtests making up each scale are designated as the standard subtests. These are Object Assembly, Geometric Design, Block Design, Mazes, and Picture Completion on the Performance Scale, and Information, Comprehension, Arithmetic, Vocabulary, and Similarities on the Verbal Scale. The optional tests are Animal Pegs on the Performance Scale and Sentences in the Verbal Scale. Essentially the WPPSI-R can be considered a downward extension of the WISC-R (Weschler, 1989).

The WPPSI-R Performance, Verbal, and Full Scale IQs have excellent reliability in the age range of 3 through 6 1/2 years. Reported internal consistency reliability coefficients range from .90 to .97 for each of the three IQ scores. Administration of the regular battery of subtests requires approximately 50-70 minutes. The children in this study were administered all of the Verbal subtests and four of the Performance subtests (the Mazes subtest was omitted). The Performance scale was prorated for the administration of four Performance subtests according to the procedure in the manual.
Racial Recognition Test (RRT; Corenblum, 1993). This test was administered to measure racial identity (see Appendix B). It consists of six life-like, water color drawings of Black, White and Indian children of each sex. Except for skin color and other racial features, the head and shoulder pictures are similar. All drawings are mounted on 17.5 cm x 12.5 cm cardboard backing. Children were asked questions about racial recognition (e.g., “Point to the child who is a White girl”); six questions about racial identity, with three worded positively (e.g., “Point to the one who looks most like you/that your mother would say looks most like you”), three worded negatively (e.g., “Point to the one who does not look like you/that your mother would say does not look like you”); questions about racial preference, three worded positively (e.g., “Point to the one who is friendly”), three negatively (e.g., “Point to the one who gets into fights”); and four social distance questions (“Point to the one you would like to eat lunch with”). Subjects answered the questions in the same fixed random order; to control for position preference, the pictures are shuffled twice during questioning.

The Racial Recognition measure consists of seven subscales: (1) negative evaluation; (2) positive evaluation; (3) negative social distance; (4) positive social distance; (5) similarity; (6) dissimilarity; and (7) recognition. Cronbach’s measure of internal consistency for each scale follows respectively: -.39, -.05, -.26, .09, .54, .21, .27. Responses to the positive and negatively worded preference questions were scored so that answers would reflect selections indicating that subjects preferred a picture that was similar to themselves in terms of both race and sex (scored 3); same race but different sex (scored two); same sex but different race (scored 1); or different on both (scored 0). Responses to the racial recognition questions were scored to indicate whether subjects did (scored 1) or did not (scored 0) recognize race cues contained in the six pictures.

Harter and Pike's Pictorial Scale of Perceived Competence and Social Acceptance for Young Children (PCSA; see Appendix C; Harter & Pike, 1984). Designed to access self-concept and self-esteem, this measure is a downward extension of the Perceived
Competence Scale for Children (Harter, 1982). This scale assesses perceived competence and perceived social acceptance in young children ages 4-7. The scale contains four separate subscales: cognitive competence, physical competence, peer acceptance, and maternal acceptance. Each subscale contains six items. The question format is similar to that of the Self-Perception Profile for Children, ages 8 through 18, but provides a greater range of responses for each item (four choices rather than the more typical true/false format) and reduces children's tendency to give the socially desirable response.

Picture plates accompany each of the subscale items. There are two books of plates, a boys' and girls' set for preschool-kindergarten; each book contains 24 plates. The activities depicted in each item are identical for girls and boys. Only the gender of the target child is different, so that a subject can respond to pictures depicting a same-gender child. Items occur in the order of cognitive competence, social acceptance, physical competence, and maternal acceptance, and continue to repeat in that order. Within each subscale items are counterbalanced so that three of the pictures depict the most competent or accepted child on the left and three of them depict the most competent or accepted child on the right.

The scale was individually administered. The child was first read a brief statement about each child depicted (i.e. the female subject would be told that the girl on the left is good at puzzles, but the child on the right is not very good at puzzles). The child then was to indicate which of the two girls she is most like. After making that decision, the child was asked to think only about the picture chosen and to indicate whether she is a lot like that girl or just a little bit like that girl. The book of plates is constructed so that, as the picture for a given item is presented to the child, the item description to be read by the examiner sitting opposite the child is printed on the back of the preceding picture.

Each item is scored on a four-point scale, where a score of 4 is the most competent or accepted and a score of 1 designates the least competent or accepted. Item scores are averaged across the six items for a given sub scale, and these four means
provide the child’s profile of perceived competence and social acceptance. Reported sub-scale reliabilities range from .50 to .85, and, when the subscales are combined according to their designated factors, these reliabilities increase to .75 to .89. The reliability of the total scale composed of all 24 items ranges from .86 to .89.

Northern Plains Bicultural Immersion Scale (NPBI; see Appendix D; Allen & French, 1994). This instrument is designed to provide a measure level of cultural immersion among Northern Plains American Indians for both American Indian and European-American cultures. This scale was administered to the available parent/grandparent/guardian of the children in this study and is used as a covariate in comparisons among the three preschool groups. The scale is a brief, 24-item measure of immersion in Northern Plains American Indian and European-American culture. The inventory focuses largely upon social behavior, which is assumed to be directed by underlying constructs that various authors have described as attitudes, beliefs, worldview, and cultural identification.

The NPBI is composed of four scales: The American Indian Cultural Identification (AICI), the European American Cultural Identification (EACI), the American Indian Language Immersion (AILI), and the European American Language Immersion (EALI) scales. A high level of American Indian cultural immersion is indicated by a high score on the AICI Scale and the AILI Scale. European-American cultural immersion is identified through high scores on the EACI Scale and the EALI Scale. High scores on both the AICI and EACI scales identify individuals who possess bicultural immersion. Low scores on both scales identify a person characterized by “marginality” (Dana, 1993; Pinderhughes, 1982), in this case representing being immersed in neither American Indian nor European-American cultural practices. Higher scores on the Language scale indicate higher levels of immersion (speaking, thinking, and family use) in an American Indian language or European American language (See Appendix E).
The AICI, EACI, AILI, and EALI scale raw scores are computed by summing the number of the responses for each of the items belonging to a particular scale. This score is compared with norms developed on American Indians. Scoring of the NPBI uses a median split procedure. In this procedure, the median score is calculated for the AICI, EACI, and Language scales using the suggested norms. A score above the median is considered high, and a score below the median is considered low. A high score on the AICI scale along with a low core on the EACI scale indicates American Indian cultural immersion, while a low score on the AICI scale and a high score on the EACI scale indicated European American cultural identification. If both AICI and EACI scores are above the median the person is biculturally identified. If both AICI and EACI scores are below the median, the scales identify a person characterized by marginality. Scores above the median on the Language scale indicate an orientation toward greater American Indian Language usage, while high scores on the EALI indicate more of an orientation to English on the dimension. Test-retest reliability are $r=.82$ for the AICI scale, $r=.70$ for the EACI scale, and $r=.74$ for the Language scale. Cronbach's alpha for each scale is as follows AICI=.64, EACI=.55, AILI=.84, EALI=.56.

**Procedure**

The K-ABC, the WPPSI-R, the RRT, and the PCSA were administered to children in the three groups (Moccasin Flat Preschool, Blackfeet Headstart, and Missoula Headstart). Subjects were individually assessed, at their respective schools, in a quiet room. Testing occurred over three separate sessions at three different times for each child. Order of administration was determined by availability of subjects and tester; there was not a fixed sequence in testing. When all testing was completed, Blackfeet elders administered the RRT again in the Blackfeet language to subjects in the Immersion Program. The results of this testing are not a focus of this study and are not presented here. This was done at the end of all testing. Subjects were administered the K-ABC and
the WPPSI-R by the researcher (an enrolled Blackfeet tribal member), Caucasian graduate students and a Caucasian school psychologist. All graduate students were trained at the University of Montana Clinical and School psychology programs. Ethnicity of the tester was not controlled systematically. The RRT and the PCSA were administered by the researcher to each subject. Parents completed and returned the NPBI. For this study the NPBI is presented as a control for degree of biculturalism in each family.

The WPPSI-R and K-ABC protocols were rechecked for scoring and clerical errors. The Verbal IQ score and the Performance IQ score of the WPPSI-R were computed using the subtest scaled scores.

Results

A series of ANOVAs and MANOVAs was conducted for test subscales. Results are presented according to the hypothesis that they test. Significant findings at the .05 and .01 level are reported below.

Hypothesis One: The first series of analyses investigated the program differences for the WPPSI-R mean scores. A one-way Analysis of Variance was performed for the three programs on each dependent variable to determine if significant between group differences existed for the Verbal, Performance and Full scale scores on the WPPSI-R. The Tukey-HSD procedure (with alpha set at the .05 level) was employed as the follow-up test of significance. The One-way Analysis of Variance conducted on the Verbal Scale subtest scores yielded near significant differences [$F(2, 44)=3.16, p=.053$] (See Table 2).
Results did not support the prediction that the children in the immersion program would have higher mean scores than the comparison groups. However, multiple comparison tests indicate a trend toward significance, with the Immersion subjects' and Missoula Headstart subjects' scores being greater than the Blackfeet Headstart subjects' scores (p=.10, p=.08 respectively). It is important to note that the difference between the Immersion Program scores and the Blackfeet Headstart scores was large in terms of effect size (.83) (Cohen, 1992). The near significant findings given the small sample size warranted exploratory analyses to examine the nature of the differences further.

A MANOVA across groups was conducted on the NPBI subscales to measure cultural differences of family environments and as a prelude to investigating possible effects on the children's Verbal scores. Mean endorsements of American Indian cultural and language immersion and European cultural and language immersion are presented in Table 3. The results indicate that the parent reports differ significantly among the groups on the NPBI scales [(F(8,78)=6.31, p<.0001]; (See Table 3). Univariate F ratios indicate
that the scores are higher for the immersion parents on the American Indian Cultural Immersion scale and American Indian Language Immersion scale $[F(2,42)=6.16, \text{ and } 22.20$, $p=.005 \text{ and } .0005$, respectively]. These findings indicate that parents of the children in the immersion program identify themselves as individuals with higher levels of American Indian cultural immersion and higher levels of immersion (speaking, thinking, and family use) in American Indian Language. Also, the immersion parents reported a lower level of European cultural immersion than the comparison groups $[F(2,42)=4.52$, $p=.01]$.

When WPPSI-R Verbal Scale scores across programs were compared, controlling for parents’ Northern Plains Bicultural Immersion scores using Analysis of Covariance, differences for program were non-significant $[F(2,42)=2.00, p=.15]$. This finding makes intuitive sense, as parents who choose to enroll their children in the immersion program would pragmatically endorse behaviors that are American Indian culturally specific. It is possible that language and culture exposure by both parents and the Immersion Program interact to have an impact on the children’s scores on Verbal Scales of the WPPSI-R.

Pearson Product Moment Correlations were conducted on the Verbal Scale and the NPBI scores and no significant relationship was found.
A MANOVA on the WPPSI-R subtests indicated only a trend toward significant differences among groups for all Verbal subtests considered simultaneously
\[ F(10,76)=1.62, p=.12 \]. Univariate tests indicate a significant difference on Information \[ F(2,42)=3.98, p=.026 \] and a strong trend on Similarities \[ F(2,42)=3.13, p=.054 \]; (See Table 4). Post-hoc comparisons of the Information subtest scores of children in the three programs using Tukey-HSD indicated that the Blackfeet Headstart scores were lower than those of the Missoula Headstart children, but the Immersion group's scores did not differ significantly from those of the other groups at the .05 level. When all of the Northern Plains scale scores were entered as covariates into a MANCOVA, the overall effect for program was, again, non-significant \[ F(10, 68)=.74, p=.36 \]. Univariate ANCOVA's revealed trends toward significant program effects for the Vocabulary subtest and Similarities subtest (Immersion >Blackfeet Headstart; \[ F(2,38)=2.79, 2.69, p=.07, .08\]

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respectively]) The effects for Information subtest was non-significant \([F(2,38)=1.23, p=.30]\).

Table 4

### Mean Scores for WPPSI-R Verbal Subtests

<table>
<thead>
<tr>
<th>Subtest</th>
<th>Immersion</th>
<th></th>
<th>Blackfeet Headstart</th>
<th></th>
<th>Missoula Headstart</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>s.d.</td>
<td>M</td>
<td>s.d.</td>
<td>M</td>
<td>s.d.</td>
</tr>
<tr>
<td>Information</td>
<td>8.08</td>
<td>1.94</td>
<td>7.33</td>
<td>1.88</td>
<td>9.60</td>
<td>2.80</td>
</tr>
<tr>
<td>Comprehension</td>
<td>17.00</td>
<td>26.43</td>
<td>8.93</td>
<td>3.17</td>
<td>9.06</td>
<td>2.53</td>
</tr>
<tr>
<td>Arithmetic</td>
<td>9.33</td>
<td>1.99</td>
<td>7.93</td>
<td>2.80</td>
<td>9.00</td>
<td>3.16</td>
</tr>
<tr>
<td>Vocabulary</td>
<td>9.80</td>
<td>3.03</td>
<td>7.47</td>
<td>2.83</td>
<td>9.00</td>
<td>3.52</td>
</tr>
<tr>
<td>Similarities</td>
<td>8.47</td>
<td>2.36</td>
<td>6.60</td>
<td>1.92</td>
<td>8.07</td>
<td>2.15</td>
</tr>
</tbody>
</table>

**Hypothesis Two:** Univariate ANOVAs did not reveal differences among the program groups on the K-ABC scales of Sequential Processing, Simultaneous Processing, Mental Processing Composite \([F(2,44)=1.27,.48, 1.27,p=.29,.62, and .29, respectively]\) and NonVerbal \([F(2,41)=1.26,p=.29]\). A MANOVA on the K-ABC scales did not indicate significant differences \([F(8,72)=.54, p=.82]\). Table 5 presents the K-ABC mean scores of the respective programs.
Table 5

<table>
<thead>
<tr>
<th></th>
<th>Immersion</th>
<th>Blackfeet Headstart</th>
<th>Missoula Headstart</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>s.d.</td>
<td>M</td>
</tr>
<tr>
<td>Sequential Processing</td>
<td>105.53</td>
<td>12.52</td>
<td>98.47</td>
</tr>
<tr>
<td>Simultaneous Processing</td>
<td>106.20</td>
<td>11.67</td>
<td>103.06</td>
</tr>
<tr>
<td>Mental Processing</td>
<td>106.73</td>
<td>11.58</td>
<td>101.00</td>
</tr>
<tr>
<td>Composite</td>
<td>106.67</td>
<td>10.15</td>
<td>100.93</td>
</tr>
</tbody>
</table>

**Hypothesis Three:** There was evidence supporting the hypothesis that on average, the native children in all programs would obtain significantly higher mean IQ scores on the Performance subtests of the WPPSI-R as compared to their mean IQ scores on the Verbal subtests. A paired sample t-test was conducted on the differences between the Performance IQ scores and the Verbal IQ scores. There was a significant difference in the scores; as expected, overall the children scored higher on the Performance IQ scores than the Verbal IQ scores (t(44)=4.6, p<.001; See Table 6), with a medium to large effect size (estimated between .71 and .89).
Table 6

Mean scores of Programs Combined Scores on Intelligence Tests

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>M</th>
<th>s.d</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>WPPSI-R</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Performance</td>
<td>45</td>
<td>102.38</td>
<td>15.54</td>
</tr>
<tr>
<td>Verbal Score</td>
<td>45</td>
<td>91.71</td>
<td>12.75</td>
</tr>
<tr>
<td>Full Scale</td>
<td>45</td>
<td>96.69</td>
<td>12.59</td>
</tr>
<tr>
<td><strong>K-ABC</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sequential Processing</td>
<td>45</td>
<td>101.64</td>
<td>12.42</td>
</tr>
<tr>
<td>Simultaneous</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Processing</td>
<td>45</td>
<td>103.73</td>
<td>12.23</td>
</tr>
<tr>
<td>Mental Processing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Composite</td>
<td>45</td>
<td>103.00</td>
<td>11.21</td>
</tr>
<tr>
<td>Nonverbal</td>
<td>42</td>
<td>103.07</td>
<td>11.01</td>
</tr>
</tbody>
</table>

Notes: Nonverbal Scale not applicable to children under 4 years old.
N=20 boys
N=25 girls
Hypothesis Four: A paired sample t-test on the WPPSI-R Full Scale mean scores and the K-ABC Mental Processing Composite mean scores yielded significant differences. Overall, as predicted, the native children performed better on the K-ABC as compared to the WPPSI-R ($t(44)=4.07$, $p<.001$), a medium effect estimated between .71 and .89. (See Table 6).

Hypothesis Five: MANOVA results did not lend support for the hypothesis that children in the Blackfeet Immersion Program would produce significantly higher mean scores on the measures of self-esteem [$F(2,38)=2.02$, $p=.11$]. Because the MANOVA results indicated a trend toward significance, ANOVAs were run on the Cognitive Competence scale [$F(2,44)=.20$, $p=.82$], Peer Acceptance scale [$F(2,44)=2.55$, $p=.09$], Physical Competence scale [$F(2,44)=.394$, $p=.68$], and Maternal Acceptance scale [$F(2,44)=.31$, $p=.74$]. Significant difference among groups at the .05 level was not found. In exploratory analyses, the Tukey-HSD procedure was run on the Peer Acceptance scale, resulting in a near significant level of .07. Even though these differences are non-significant, effect size (.73) was medium to large for the difference between the two headstart programs. Children in the Blackfeet Headstart endorsed higher indices of popularity and peer acceptance than Indian children in Missoula Headstart (See Table 7). ANCOVAs were performed on the peer acceptance subscale with age and the subscales of the Northern Plains Bicultural Immersion Scale as covariates. There were no overall effects for program on the self-esteem scale with age as a covariate. When effects of the Northern Plains Bicultural Immersion Scale (especially the European language subscale) were controlled, the effects of the program on peer acceptance are non-significant [$F(2,38)=.95$, $p=.40$].
Table 7

Mean scores of Self Esteem scales

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Peer Acceptance</td>
<td>3.11</td>
<td>.400</td>
<td>3.30</td>
<td>.414</td>
<td>2.92</td>
<td>.551</td>
<td>3.11</td>
<td>.476</td>
</tr>
<tr>
<td>Physical Competence</td>
<td>3.17</td>
<td>.507</td>
<td>3.10</td>
<td>.454</td>
<td>3.25</td>
<td>.474</td>
<td>3.17</td>
<td>.472</td>
</tr>
</tbody>
</table>

Hypothesis Six: A MANOVA revealed that programs did not differ significantly on the scales of the Racial Recognition measure \( F(14,72)=.68, p=.78 \); (See Table 8). It is important to note that 68.9% of the native children correctly identified pictures as Indian, 13.3% correctly identified black pictures, and 57.8% correctly identified white pictures. In addition, 28.9% of the children assigned negative attributes (“is bad”, “gets into trouble”, and “gets into fights”) to Indians, 24.4% attributed positive attributes to Indians (“is nice”, “is friendly”), 28.8% preferred less contact with Indians, and 45% preferred more contact with Indians.
### Mean Scores of Racial Recognition Scales

<table>
<thead>
<tr>
<th></th>
<th>Immersion</th>
<th></th>
<th>Blackfeet Headstart</th>
<th></th>
<th>Missoula Headstart</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>s.d.</td>
<td>M</td>
<td>s.d.</td>
<td>M</td>
<td>s.d.</td>
</tr>
<tr>
<td>Negative Evaluation</td>
<td>3.80</td>
<td>1.56</td>
<td>2.73</td>
<td>1.62</td>
<td>3.66</td>
<td>1.40</td>
</tr>
<tr>
<td>Positive Evaluation</td>
<td>2.60</td>
<td>1.50</td>
<td>2.60</td>
<td>1.96</td>
<td>2.47</td>
<td>1.13</td>
</tr>
<tr>
<td>Negative Social Distance</td>
<td>4.06</td>
<td>1.87</td>
<td>4.80</td>
<td>1.61</td>
<td>4.66</td>
<td>1.88</td>
</tr>
<tr>
<td>Positive Social Distance</td>
<td>5.86</td>
<td>2.09</td>
<td>6.20</td>
<td>1.52</td>
<td>6.80</td>
<td>2.80</td>
</tr>
<tr>
<td>Similarity</td>
<td>4.73</td>
<td>2.21</td>
<td>4.00</td>
<td>2.65</td>
<td>4.80</td>
<td>2.21</td>
</tr>
<tr>
<td>Disimilarity</td>
<td>4.26</td>
<td>2.31</td>
<td>4.33</td>
<td>1.88</td>
<td>4.60</td>
<td>2.09</td>
</tr>
<tr>
<td>Recognition</td>
<td>3.93</td>
<td>1.22</td>
<td>3.40</td>
<td>1.05</td>
<td>3.93</td>
<td>1.39</td>
</tr>
</tbody>
</table>

**Notes:**
- Negative Evaluation: Subjects attribute negative attributes to Indians.
- Positive Evaluation: Subjects attribute positive attributes to Indians.
- Negative Social Distance: Subjects do not prefer more contact with Indians.
- Positive Social Distance: Subjects prefer more contact with Indians.
- Similarity: Subjects choose a picture of Indian as looking like themselves.
- Dissimilarity: Subjects choose a picture of black or white as looking like themselves.
- Recognition: Subjects recognized race cues that distinguish differences.

**Hypothesis Seven:** There was one significant correlation out of 24 comparisons of 8 racial identity subscales and 4 self-esteem scales of all 45 subjects. Since one would expect approximately 2 of 24 to be significant in this case, these results will not be discussed or interpreted.
Discussion

This study focuses on differences among American Indian children enrolled in preschool programs, specifically investigating the psychological aspects of children enrolled in a Blackfeet cultural and language immersion program. Historically, the investigation of intelligence of American Indian children has been biased and methodologically flawed. While psychologists have become increasingly aware of the cultural and sociological factors related to assessment, it is important to note that research has centered on only two groups of minority children: Black and Chicano (Hynd & Garcia, 1979). Little is known about the American Indian child, and yet generalizations concerning the assessment of other minority children are repeatedly applied to children of a very different culture, with a distinct language and influential heritage. The results of the present investigation contribute to understanding and scientific formulation of culture and language. Conceptually, it offers a framework on which future research may build. In practice, it brings new dimensions and prospects for culturally appropriate education and testing.

In the present study, investigation of Indian children in the three different educational programs provided several useful conceptualizations about educational implications for children of native heritage. For example, children who are taught in their “mother tongue” may be developing increased cognitive abilities, positive linguistic and academic outcomes, and a basis for identity. While all three programs are attending to greater social competence of the child, the Immersion Program considers a reservation lifestyle that preserves belief systems constituting the basis for identity. Language and culture can provide a meaningful and advantageous personal future for the American Indian child. Furthermore, because the continued use of standardized, norm-referenced assessment instruments with American Indian children is highly suspect with regard to reliability and validity, this study focused on two major intelligence assessments, the WPPSI-R and the K-ABC, investigating possible cultural implications.
The results of this study did not support the hypothesis that children enrolled in the Blackfeet Immersion Program would obtain significantly higher mean IQ scores on the WPPSI-R than children in the comparison groups. However, due to the small number of subjects, the near significant results, and the large effect size, the differences need to be considered important. Trends toward significance were found for positive effects of the immersion program on children’s WPPSI-R Verbal Scale IQ scores, positive effects of American Indian language and culture on children’s Vocabulary and Similarities subtest scores, and reported higher peer acceptance of children living on the Blackfeet Reservation.

The immersion of children in language and culture has been associated with cognitive and social benefits. It has been found that bilingualism can positively affect mental flexibility and metalinguistic awareness (Cenoz & Valencia, 1994). Children in the Blackfeet Immersion program may have developed this mental flexibility due to the additive consequences of good development of the first language. Also, immersion students achieve native-like levels of proficiency in second language comprehension and high levels of language proficiency in the productive skills; they learn the second language in a meaningful communicative context.

Another potential explanation for the higher mean Verbal IQ scores of children in the immersion program is the incorporation of Indian sign language in the teaching of the language. Children not only learn to speak the Blackfoot language, but they see the language demonstrated through the use of sign. This may tap the visual pathway of learning for native children and optimizes their learning experience. Furthermore, the language is valued by the school and the community that promotes and supports the children’s learning abilities in the Immersion Program.

The near significant difference between the Immersion Program and the Blackfeet Headstart on the Verbal Scale IQ scores (p=.09) is critical in understanding the effect and value of the culture and language. This difference in particular, when children are similar
on many variables, i.e. reservation life, economic status, tribal membership, and similar preschool curriculum, except for the language and culture component, is noteworthy. The Immersion Program and its factors may be important to development of and achievement of Indian children.

Results also indicate that parental reports on the Northern Plains Bicultural Immersion Scale appear to be related to the mean scores of the WPPSI-R, especially on the Verbal Scale IQ scores. The higher Vocabulary subtest scores of the Immersion Program (compared to the Blackfeet Headstart) could be influenced by cultural opportunities at home, second language experience, intellectual curiosity and striving, richness of early environment, and school learning (Kaufman & Lichtenberger, 2000). In addition, the higher Similarities subtest scores of the Immersion Program (compared to the Blackfeet Headstart) may be influenced by flexibility, interests, outside reading, and concrete thinking (Kaufman & Lichtenberger, 2000).

The evidence of the relationship between the NPBI and Verbal Scale IQ scores exemplifies the influence of language and culture on Indian children's intelligence. The intention of the NPBI is to assess dimensions of behavioral immersion in cultural practices associated with Northern Plains Indian and Northern Plains European cultures (Allen, 1998). Parents of children in the Immersion Program have significantly endorsed practices of the Indian culture and language and have significantly lower scores on degree of English usage and practices of European culture. This finding contradicts previous research, which suggests that verbal skills developed among American Indians are predictors of level of acculturation to middle-class, white society (Dana, 1984). Verbal subtest measures have been suggested to be an indicator of current English functioning in an academic setting. The present findings suggest that Blackfeet children whose Indian culture and language are an integral part of their environment are gaining positive linguistic and academic outcomes in English as well as Blackfeet language.
Another interpretation of the findings in relation to the Verbal scales emphasizes the influence of environmental process variables (e.g., parental attitudes, parent-child interaction patterns). Previous research has suggested that parental behavior is a stronger predictor of children's intellectual functioning than ethnic group membership (Suzuki & Valencia, 1997). This is a well-established empirical fact about intelligence, and one that needs to be presented here. Again, the combination of parental behaviors and language and cultural practices may be impacting the children's intelligence.

This study addresses the heterogeneity among Indian people and the magnitude of diversity within tribes. The NPBI attempts to measure this diversity by exploring bicultural identity. This scale taps underlying constructs to measure cultural orientation. The results of this study suggest that the NPBI is capturing these constructs to some extent. However, more research is required on this instrument, including the assessment of validity and reliability among different Northern Plains tribes. Noteworthy, is that there was not a relationship between the children's report of racial identity and the parental report of cultural immersion on the NPBI. The children do not appear to be experiencing the cultural differences that the parents are reporting. The potential effect of cultural immersion factors on the development of children's learning ability needs to be explored and researched further. Difficult in this process is differentiating culture and language for American Indians. These elements are intertwined, and it is difficult to tease out which specific construct has the most impact. Furthermore, doing this may confound social validity. The value of tribal identity research may prove helpful in the identification of Indian people for whom emic-based instruments may be more appropriate. This study supports the need for future testing on Indian children and families to incorporate a cultural identity component.

Although results did not indicate significant differences among the programs on the K-ABC, overall the Immersion Program's mean scores were higher than the two Headstart programs. Also, combined means indicated that native children performed
better on the K-ABC compared to the WPPSI-R, as predicted. This finding is important when considering appropriate intelligence tests. The combined mean of the WPPSI-R Verbal subtest scores were significantly lower than the national norm of 100 with a standard deviation of 15 ($p=.000$). The K-ABC Simultaneous Processing mean score was significantly higher than the national norm of 100 with a standard deviation of 15 ($p=.05$). Overall, the children scored higher than the national norm on all scales of the K-ABC. This finding suggests that the K-ABC may yield substantially more optimistic predictions of academic success for native children.

The K-ABC was designed to measure Sequential-Simultaneous processes. Simultaneous processing is mental activity that involves the integration of stimuli into groups and the recognition of how things are interrelated. According to Tharp (1994) a feature common to descriptions of Native American cognition is "wholistic". In wholistic thought, the pieces derive their meaning from the pattern of the whole. Intelligence as measured by the K-ABC may be measuring this unique cognitive style. Intelligence is defined in terms of an individuals' style of solving problems and processing information by the K-ABC. The K-ABC presents intelligence not as a unitary construct but rather as having two dimensions (Naglieri, 1998). This is an important step away from the general ability construct found in the Wechsler IQ tests. The K-ABC appears to be more culturally relevant for determining the intellectual abilities of linguistically different children. American Indian children have a visual style of learning and the Sequential Processing Scale, the Simultaneous Processing Scale, and the Nonverbal Scale of the K-ABC appear to reduce the effects of verbal processing and tap the Spatial>Sequential>Conceptual>Acquired knowledge pattern of learning of native children (McShane & Plas, 1982). Overall, the K-ABC can be used to appropriately evaluate the cognitive skills of American Indian children, since their visual-spatial abilities are better developed than their verbal skills. Sattler (1992) has indicated that the K-ABC
can be used to evaluate the cognitive skills of Indian children and misleading results may be obtained if reliance is placed primarily on the scores provided by verbal tests.

This study also suggests that Performance subtests are a better index of intelligence of Indian children than the Verbal subtests of the WPPSI-R, supporting what has been claimed in the literature (Dana, 1993, Kaufman & Lichtenberger, 2000, Sattler, 1992, Yates, 1987). The Verbal subtest scores of the native children are negatively affected by language factors. Low verbal scores reflect divergent language, cultural, and experiential factors. Poor functioning on the Verbal subtest is considered to be influenced by being raised with an oral and nonverbal language tradition and a value system that is vastly different from that of the norm referenced population. The Performance scale provides an estimate of intellectual potential of native children. These findings also support previous research of Native American samples where on average, the Performance IQ scores are 10 to 15 points higher than their Verbal IQ scores (Kaufman & Lichtenberger, 2000).

The present study found, on average that the children's Performance IQ scores were 10 points higher than their Verbal IQ scores. The discrepancy between the scores could be due to a number of factors such as: (1) performance skills are better developed than verbal skills, (2) visual-motor discrimination skills are better developed than auditory-vocal skills, (3) immediate problem-solving ability is better developed than knowledge acquired as a result of accumulated experience, and (4) a language deficit may exist (Sattler, 1992). It is important to remember that this study is not proposing causal effects but rather relationships, and further study may help to clarify specifics and gather information on what the nature of the relationship may be.

With this having been said, we return to the issue of the possibility that the K-ABC may be a more culturally appropriate measure of intelligence for native children. Although the children in the three programs did obtain higher mean scores on the scales of the
K-ABC, the children in Missoula Headstart and the Blackfeet Immersion Program obtained scores near the national norms on the Verbal Scale of the WPPSI-R. This might suggest that, indeed, the WPPSI-R is culturally sensitive with Indian children. One interpretation is that the WPPSI-R may be illuminating the variation of intelligence among Indian children. While there are known group differences on intelligence test scores, the majority of the variation lies within racial/ethnic groups (Suzuki & Valencia, 1997). Although general factors may impact the outcome of intelligence testing with particular racial/ethnic groups, the exact weightings of these factors are unknown and this is beyond the scope of this research. The WPPSI-R Verbal scores in this study may represent a staunch reminder of the variation within racial groups and support for the “egalitarian fallacy” (the gratuitous assumption that all ethnic groups are essentially identical or equal in whatever trait or ability tests purport to measure; Jensen, 1980).

However, another possible interpretation is that the homogenous performance on the K-ABC by the children may indicate that this instrument is more stable than the WPPSI-R in assessing intelligence of Indian children. This study promises valuable information to clinicians and supports previous research on the use of the Weschler scales with Native children. It suggests that when using the WPPSI-R, verbal subtests need to be interpreted with the knowledge that low scores on this scale by Indian children may not indicate a deficit, but are “situation-bound”, and interpretation should be modified to reflect this. Also, Verbal-Performance differences should be inspected for cultural performance and cultural optimality (adjustment in criterion scores appropriate to ethnic group membership or cultural differences) in interpretation of the WPPSI-R. This study continues the historical argument of test bias and contributes much needed empirical data on the American Indian child’s performance on two of the most widely used tests.

This study did not produce any significant findings on the measures of self-esteem and racial identity. There were no program differences for the three measures, and the two concepts were not significantly related to each other. There are a number of possible
reasons why the two instruments did not produce significant results. At the preschool age range these measures may insufficiently access the two constructs. Alternatively, self-esteem and racial identity may be so undifferentiated and developmentally primitive in preschoolers that environmental circumstances have relatively little impact on them.

However, it is interesting to note that the children’s performance on the racial recognition measure suggests an awareness of racial group membership and the racial characteristics of the stimuli presented. Low percentage of children correctly identifying black children might be attributed to lack of interaction with black children. As one elder stated, “these children have never seen a black person before; they don’t know what they look like.” It is difficult to interpret what the children’s scores on the measures of negative/positive evaluation and negative/positive social distance may mean given the present findings. This may be attributed to a lack of clear connection between children’s group preferences and attitudes. This has been attempted in the past with controversial results in the research by Clark and Clark (1939) in which interpretations of Black children’s preference for White dolls was interpreted to mean that Black children reject their race. Another interpretation is that measures attempting to gauge preschool-age children’s attitudes toward racial groups will always be contaminated by other factors, because preschool-age children do not as yet have stable well differentiated feelings toward these social groups. Thus, the difficulty in investigating very young children’s racial attitudes is the difficulty inherent in investigating something that is not fully formed. Future research should explore the development of racial identity and racial attitudes with children whose environment is primarily of their own ethnicity, such as children living on Indian reservations.

Potential implications of this study are profound. Perhaps one of the most important contributions of this study is the possible positive effect of language and culture on child development and intellectual growth. This study provides preliminary support for the use of educational programs that preserve belief systems that constitute the bases
for identity, language, medicine, ceremony, and social practices and can provide a meaningful personal future for the American Indian child.

Another important contribution of this study is the presentation of data on American Indian children, specifically the norms produced by the K-ABC and the WPPSI-R. The American Indian child has long been neglected in research related to intellectual assessment (Petersen, 1996) and this data provides much needed information to psychologists and research. Norms on these tests can be produced using the present study and provide direction for interpretation of intelligence testing with Indian children.

This study also substantiates the need for intellectual assessment to address the unique cognitive style of native children. Established measures of intelligence need to be validated in research with American Indians. The development of local norms is desirable and there is an ethical necessity to develop measures that are tribe-specific and setting specific in order to be responsive to local conditions. In addition, there is need for more general theory-derived culture-fair instruments that are primarily descriptive in nature. Intellectual assessment that is fair and ethical requires instruments designed especially for American Indians, using these persons as the primary reference group with administration, instructions, and tasks that are culturally appropriate.

The Indian child continues to regress in mainstream education. Systemic change within schools serving American Indians needs to involve provisions for language and culture. This is crucial for the maintenance of sovereignty and self-determination for generations yet to come. Early intervention practices may set the tone for systemic change, beginning with appropriate assessment that is linked to effective sociocultural instruction leading to a cycle of success for the American Indian child.

Noteworthy in the process of this study was the impact of trauma on the participants living on the Blackfeet Reservation. During the data gathering of this study, five of thirty children were affected by traumatic circumstances such as a mother’s death, domestic violence between parents, a suicide attempt of an older brother, and the moving
to a “safe house” due to spousal abuse. Reservation life is sometimes harsh, and research in reservation communities needs to account for the stress that children are exposed to. This lends support for the need for interpretation of test results that considers the child’s environment and current situation. It also may suggest that these children are highly resilient given their situations and their optimal scores on the instruments, but this is something for another study.

This study generated some interesting and heuristic findings. However design limitations should be noted. The findings were based on small samples, and since the subjects were not randomly selected or assigned, there is the possibility that they were influenced by factors other than program differences such as self-selection. Also, had a pretest-posttest design been utilized a stronger argument could be made for the impact of the Immersion Program.

It is important to note that the children in the immersion program are being immersed in a cultural environment that is not systematically foreign to their uniqueness, but completely congruent with the culture that is a part of their every day experience. The immersion program provides an educational format that transmits tribal culture for future generations by incorporating Blackfeet philosophy and beliefs into the educational system. Culture is closely connected to the spoken language of a society. The monolingual American society has shown a distinct preference for its one language basis (Brod & McQuiston, 1997). Those who do not master the English language are not honored as learners. However, in the immersion program children are honored for their native language, their culture, their uniqueness, and their identity.


Cocking (Eds.), *Cross-cultural roots of minority child development* (pp. 87-105). New Jersey: Lawrence Erlbaum Associates.


Moccasin Flat School

Daily Schedule

7:30 - Preparation for the day
   Greet students and parents
   Set out activities/individualized teaching

8:30 - Students line-up to wash for breakfast
   Breakfast is served
   Prayer
   Clean-up

9:00 - Students line-up to brush their teeth
   Student activity time/free choice
   Individualized teaching

9:50 - Clean-up and preparation for circle-time

10:00 - Circle-time
   Smudge with sweetgrass
   Individualized greets
   Calendar (name and date)
   Weather
   Group movement/exercise activity
   Review of Blackfoot words/phrases
   Introduction of new words/phrases
   Group movement/exercise activity
   Explanation and introduction to group activity

11:00 - Music
   Divide students into small groups for activity
11:45 - Clean-up activity centers
   Students line-up to wash for lunch

12:00 - Lunch is served and prayer

12:15 - Clean-up
   Students line-up for brushing of teeth
   Blankets and mats distributed into sleeping areas
   Shoes are removed
   Music is selected for nap time

12:45 - 2:15 - Nap/rest time for students
   Problem sleepers work on quiet activity

2:15 - 2:30 - Students get-up
   Fold their blankets
   Mat are put away
   Students put their shoes on

2:30 - Snack is served
   Students activity/free-choice

3:00 - Conversation/evaluation about the day

3:30 - Students prepared for home
   Clean-up

4:00 - Closing of school
Appendix A

Blackfeet Tribe Head Start Program
Browning, MT 59417

DAILY SCHEDULE

8:00 - 9:15  Preparation & Bus Run
9:15 - 9:30  Large Circle
9:30 - 10:00 Breakfast/Hygiene
10:00 - 11:00 Free Choice
11:00 - 11:15 Clean Up Time
11:15 - 11:30 Small Circle
11:30 - 11:45 Outdoor Play
11:50 - 12:25 Hygiene/Lunch
12:30 - 1:00 Quiet Time/Story
1:05 - 1:20 Outdoor Play/(Organized)
1:25 - 1:35 Snack
1:35 - 1:45 Preparation & Bus Run
Appendix A

Missoula Headstart

PARENTS—Thought you might like to see this!

ROBIN DAILY SCHEDULE

7:30-8:30 Arrival and Centers (free-choice play)

8:30-9:00 Wash hands; Breakfast

9:00-9:15 Brush Teeth; Centers (free-choice play)

9:15-9:30 Short Circle-time (Daily greeting, choose helpers, songs)

9:30-10:00 Outdoor or gym play (gross motor activities)

10:00-10:20 Circle Time (Presentation of weekly theme, using books, flannel stories, songs, finger plays, discussions, role-play, games, etc...)

10:20-10:40 Small Group Time (varies from day to day)

10:40-11:30 Centers Work Time (Free-choice play); Clean-up Time

11:30-11:55 Outdoor or gym play (gross motor activities)

11:55-12:10 Story Time

12:10-12:40 Wash hands; Lunch

12:40-1:00 Brush teeth; prepare for rest time

1:00-1:15 Story Time

1:15-3:00 Rest time

3:00-3:30 Put away rest time blankets, pillows; wash hands; Snack

3:30-5:30 Centers (Free-choice play); Outdoor or gym play; story time and music
Appendix B - Racial Recognition Response Sheet

Responses to Questions about Pictures

Place pictures of Indian boy, Black girl, white boy, India girl, Black boy, white girl, in front of child and say:

RESPONSES
(circle the child’s answers

1. Point to the child who gets into trouble: IB WB BB IG WG
2. Point to the child who is friendly: IB WB BB IG WG BG
3. Point to the child that your friend would say does not look like you IB WB BB IG WG
4. Point to the child who is bad IB WB BB IG WG
5. Point to the child who is a white girl IB WB BB IG WG
6. Point to the child who is nice IB WB BB IG WG
7. Point to the child you would not like to eat lunch with: IB WB BB IG WG
8. Point to the child who is a white boy IB WB BB IG WG
9. Point to the child you would like to invite to your house IB WB BB IG WG
10. Point to the child you would like to play with IB WB BB IG WG
11. Point to the child who is an Indian girl IB WB BB IG WG
12. Point to the child you would not like to invite to your birthday party IB WB BB IG WG
13. Point to the child your mother would say does not look like you IB WB BB IG WG
14. Point to the child who is an Indian boy IB WB BB IG WG
15. Point to the child you would not like to invite to your house: IB WB BB IG WG
16. Point to the child who looks most like you: IB WB BB IG WG

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17. Point to the one your mother would say looks most like you
18. Point to the child you would not like to go skating or to the movies with:
19. Point to the child who does not look like you
20. Point to the child who is a Black boy

(shuffle cards here)

21. Point to the child you would like to go to skating or to the movies with
22. Point to the child you want to eat lunch with
23. Which one would your friend say looks most like you?
24. Point to the child you would like to invite to your birthday party
25. Point to the one who is a Black girl
26. Point to child who gets into fights.
Appendix C

The Pictorial Scale of Perceived Competence and Social Acceptance for Young Children

Individual Recording and Scoring Sheet, Form P-K

Child's Name ___________________________________________ Age __________ Gender: M F

Class Grade _______________________________ Teacher ________________________ Testing Date ______

<table>
<thead>
<tr>
<th>Item Order and Description</th>
<th>Cognitive Competence</th>
<th>Peer Acceptance</th>
<th>Physical Competence</th>
<th>Maternal Acceptance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Good at puzzles</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2. Has lots of friends</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Good at swinging</td>
<td></td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>4. Mom smiles</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Gets stars on papers</td>
<td></td>
<td></td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>6. Stays overnight at friends</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Good at climbing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Mom takes you places</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Knows names of colors</td>
<td>9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Has friends to play with</td>
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<tr>
<td>11. Can tie shoes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Mom cooks favorite foods</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Good at counting</td>
<td>13</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Has friends on playground</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. Good at skipping</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. Mom reads to you</td>
<td>17</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. Knows alphabet</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. Gets asked to play by others</td>
<td></td>
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</tr>
<tr>
<td>19. Good at running</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>20. Mom plays with you</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21. Knows first letter of name</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22. Eats dinner at friends'</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23. Good at hopping</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24. Mom talks to you</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Column (Subscale) Total: □ □ □ □ □

Column (Subscale) Mean: (Total Divided by 6)

Comments:

*Susan Harter and Robin Pike, University of Denver, 1983

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Appendix D

NPBI

These questions ask you to describe your attitudes, feelings, and participation in Indian and White cultures. Some of the questions may not apply to you. In these cases, an answer 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:

How comfortable are you with paper and pencil questionnaires?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at All</td>
<td>Somewhat</td>
<td>Moderately</td>
<td>Very Much</td>
</tr>
</tbody>
</table>

In this example, the person felt moderate but not complete comfort with paper and pencil questionnaires, so filled in 3.

With attitudes and feelings, your first impression is usually correct. We are interested in how much you are influenced by Indian and White cultures, whatever your own ethnic background.

1. Do you like to be around White people?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at All</td>
<td>Somewhat</td>
<td>Moderately</td>
<td>Very Much</td>
</tr>
</tbody>
</table>

2. Do you like to be around Indian people?

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<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at All</td>
<td>Somewhat</td>
<td>Moderately</td>
<td>Very Much</td>
</tr>
</tbody>
</table>

3. How interested are you in participating in Indian culture?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at All</td>
<td>Somewhat</td>
<td>Moderately</td>
<td>Very Much</td>
</tr>
</tbody>
</table>

4. How interested are you in participating in White culture?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
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<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at All</td>
<td>Somewhat</td>
<td>Moderately</td>
<td>Very Much</td>
</tr>
</tbody>
</table>

5. How often do you think in English?

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<th>1</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Not at All</td>
<td>Somewhat</td>
<td>Moderately</td>
<td>Very Often</td>
</tr>
</tbody>
</table>

6. How often do you think in your tribal language?

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<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at All</td>
<td>Somewhat</td>
<td>Moderately</td>
<td>Very Much</td>
</tr>
</tbody>
</table>

7. When you are sick, do you believe a medical doctor can help you?

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</thead>
<tbody>
<tr>
<td>Not at All</td>
<td>Somewhat</td>
<td>Moderately</td>
<td>Very Much</td>
</tr>
</tbody>
</table>

8. When you are sick, do you believe the medicine man/woman can help you?

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<thead>
<tr>
<th>1</th>
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<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at All</td>
<td>Somewhat</td>
<td>Moderately</td>
<td>Very Much</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at All</td>
<td>Somewhat</td>
<td>Moderately</td>
<td>Very Often</td>
</tr>
</tbody>
</table>

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

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<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at All</td>
<td>Somewhat</td>
<td>Moderately</td>
<td>Very Often</td>
</tr>
</tbody>
</table>

11. How often do you go to popular music concerts and dances?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at All</td>
<td>Somewhat</td>
<td>Moderately</td>
<td>Very Often</td>
</tr>
</tbody>
</table>

12. How often do you go Indian dancing? (Indian, Owl, Stomp, Rabbit, etc.)

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at All</td>
<td>Somewhat</td>
<td>Moderately</td>
<td>Very Often</td>
</tr>
</tbody>
</table>

13. How often do you go to groups where most members are Indian?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at All</td>
<td>Somewhat</td>
<td>Moderately</td>
<td>Very Often</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>14. How often do you go to groups where most members are non-Indian?</td>
<td>Not at All Somewhat Moderately Very Often</td>
</tr>
<tr>
<td>15. How often do you attend White celebrations? (White ethnic group festivals, parades, barbecues)</td>
<td>Not at All Somewhat Moderately Very Often</td>
</tr>
<tr>
<td>16. How often do you attend Indian celebrations? (Pow-Wows, Wacipi, Indian Rodeos, Indian softball and basketball games, Indian running events)</td>
<td>Not at All Somewhat Moderately Very Often</td>
</tr>
<tr>
<td>17. How often does your family speak your tribal language?</td>
<td>Not at All Somewhat Moderately Very Often</td>
</tr>
<tr>
<td>18. How often does your family speak English?</td>
<td>Not at All Somewhat Moderately Very Often</td>
</tr>
<tr>
<td>19. How often do you speak English?</td>
<td>Not at All Somewhat Moderately Very Often</td>
</tr>
<tr>
<td>20. How often do you speak your tribal language?</td>
<td>Not at All Somewhat Moderately Very Often</td>
</tr>
<tr>
<td>21. How often do you talk about White topics and White culture with friends?</td>
<td>Not at All Somewhat Moderately Very Often</td>
</tr>
<tr>
<td>22. How often do you talk about Indian topics and Indian culture with friends?</td>
<td>Not at All Somewhat Moderately Very Often</td>
</tr>
<tr>
<td>23. How Indian is your style of dressing? (Dressing in bright colors, clothes with Native art work)</td>
<td>Not at All Somewhat Moderately Very Much</td>
</tr>
<tr>
<td>24. How White is your style in dressing? (Dressing according to White style and fashion)</td>
<td>Not at All Somewhat Moderately Very Much</td>
</tr>
</tbody>
</table>
Appendix E

Northern Plains Bicultural Immersion Scale

Circumplex Model

For interpretation of the AICI and EACI scale scores, we conceive of the NPBI'S of cultural immersion according to a circumplex:

![Circumplex Model Diagram]

According to this framework, a high level of American Indian Cultural Immersion is indicated by a high score on the AICI Scale. European-American Cultural Immersion is identified through a high score on the EACI scale. High scores on both the AICI and EACI scales identify an individual who possesses Bicultural Immersion. Low scores on both scales identify a person characterized by Marginality (Dana, 1993; Pinderhughes, 1982), in this case, immersed in neither American Indian or European-American cultural practices.

The Language scale is interpreted differently. This scale taps a single bipolar construct, with knowledge and preference for American Indian language usage on one end of the continuum, and English language usage on the other. Higher scores on the Language scale indicate higher levels of immersion (speaking, thinking, and family use) in an American Indian language, while low scores indicate a greater degree of English usage.

Note. From Northern Plains Bicultural Immersion Scale: Preliminary Manual and Scoring Instructions (p.2), by J. Allen and C. French, 1994, University of South Dakota. Adapted with permission.