5-1997

Acculturation, Family Variables, and Cognition of a Subgroup of American Indian Children Ages 3-9

Michael Alan Cummings
Utah State University

ACCULTURATION, FAMILY VARIABLES, AND COGNITION OF A SUBGROUP OF AMERICAN INDIAN CHILDREN AGES 3-9

by

Michael Alan Cummings

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

of

DOCTOR OF PHILOSOPHY

in

Psychology

Approved:

UTAH STATE UNIVERSITY
Logan, Utah

1997

ABSTRACT

Acculturation, Family Variables, and Cognition of a Subgroup of American Indian Children Ages 3-9

by

Michael Alan Cummings, Doctor of Philosophy

Utah State University, 1997

Major Professor: Dr. Marvin Fifield
Department: Psychology

A study was conducted to examine the relationship between specific family variables and measures of cognitive abilities for preschool and young school-aged children of an American Indian ancestry. More specifically, the study used two cognitive measures, the Kaufman Assessment Battery for Children and the Embedded Figures Test, and examined the influence that 23 family variables and cultural background (acculturation) had on measures of spatial abilities.

Past studies suggested that American Indian children, as a group, perform above the standardization sample on measures of visual-spatial skills, have higher simultaneous processing skills, and are more field independent. It was anticipated that at least 40% of the children tested in this study would have statistically significant discrepancy scores in favor of the Simultaneous Scale and have an effect size of .40 or above on subtests reported to measure visual-spatial skills. It was further hypothesized that the children of

this study would be more field independent (reach an effect size of .67 or higher) and that the Embedded Figures Tests would have correlations of $\underline{r} = .50$ or above with the total Simultaneous Scale, Magic Windows, Gestalt Closure, Triangles, and Spatial Memory.

Results found that 40% of this sample did not obtain significant discrepancy scores, and only Gestalt Closure for the preschool children and Spatial Memory for the school-aged children reached an effect size of .40. In addition, only school-aged children were considered more field independent, and field independence was associated with the total Simultaneous Scale, the Mental processing Composite, the Achievement Scale, and the following subtests: Triangles, Arithmetic, and Reading/Understanding.

A principal component analysis was conducted to determine the factor structure of the Acculturation Scale (the Rosebud Personal Opinion Survey). This analysis found that the survey lacked empirical support for the dimensions suggested by the authors and only the first component, Language-Ancestry, was a useful indicator of acculturation. Nine family variables and the Language-Ancestry component were used as independent variables and accounted for or predicted the visual-spatial scores of American Indian children. None of the variables used reached a significance level of $\underline{p} \leq .0056$.

(165 pages)

ACKNOWLEDGMENTS

I want to thank my chairperson, Dr. Marvin Fifield, for his experience and comments that helped me through the various stages of the dissertation process. I am grateful for his advice and patience throughout this process.

I wish to thank Dr. Carolyn Barcus for her continual support and availability. Her help was immeasurable. She worked to obtain financial support for this research and coordinated efforts at Utah State University to continue my efforts in Montana. Also, I wish to thank the members of my committee for their helpful comments and support.

I would like to extend my appreciation and gratitude to the administrative and support staff at the Dull Knife Memorial College at Lame Deer, MT. Appreciation is especially extended to Dr. Art McDonald and Dr. Doug McDonald.

Also, I want to express my appreciation to all the families that welcomed me into their homes and helped provide information for this study. Lastly, I want to thank the 56 patient children of this study, and Melissa Kersey for her patience with me.

Michael Alan Cummings

CONTENTS

Page

LIST OF TABLES

Table Page

CHAPTER I

INTRODUCTION

Several researchers have studied the cognitive abilities of American Indian children. Typically these studies report that American Indian children, when compared with normative data, have relatively higher scores on tasks requiring visual-spatial abilities (McCullough, Walker, & Diessner, 1985; McShane & Plas, 1984; Sattler, 1988; Teeter, Moore, & Peterson, 1982). This conclusion, in part, is based on previous research that assessed the performance of American Indian children on particular subtests found on the Wechsler Performance Scale. These subtests include Picture Completion, Block Design, and Object Assembly and make up the Spatial category associated with Bannatyne's framework of the Wechsler Intelligence Scale for Children (WISC). Whereas, not all American Indian children have high scores on visual-spatial skills, as a group, American Indian children's visual-spatial abilities tend to be relatively higher than their verbal skills, sequential skills, or conceptual and acquired knowledge.

When a statistically significant discrepancy occurs between the Wechsler Verbal and Performance scales on a test protocol and the above three subtests contribute to this discrepancy (either high or low subtest scores), Kaufman (1979) has suggested that a field dependence/independence (FDI) cognitive style interpretation may be utilized rather than "a mere distinction between verbal and nonverbal intelligence" (Kaufman, 1979, p. 39). Although less understood and more controversial, the concept of field dependence/ independence has been closely associated with the Picture Completion, the Block Design, and the Object Assembly subtests.

In defining FDI, this construct reflects how individuals perceive stimuli, as well as their ability to restructure stimuli into component parts when problem solving (Pearson, 1988). Individuals who have high scores on FDI tasks are considered more field independent (they are able to perceive items as discrete from an organized field and are able to break stimuli into component parts). Individuals who score low are considered more field dependent (they tend to fuse stimuli into the organized field and do not restructure stimuli). The FDI was proposed originally by Witkin and Goodenough (1981) and has been found to be a consistent measure of spatial abilities (Kogan & Saarni, 1989) or restructuring abilities (Witkin & Goodenough, 1981).

Two of the most widely used standardized instruments are the Kaufman Assessment Battery for Children (K-ABC) and the Embedded Figures Test (EFT). These tests are designed to measure the visual-spatial skills of preschool and young school-aged children's cognitive abilities.

The K-ABC is purported to measure children's cognitive abilities based in part on Luria's simultaneous/successive modes of processing information (Kaufman & Kaufman, 1983). Two EFT measures, the Preschool Embedded Figures Test (PEFT) and the Children's Embedded Figures Test (CEFT), were developed to measure FDI for children between the ages of 3 to 10 years old. Kaufman and Kaufman (1983) have hypothesized that field-independent children should excel on specific subtests on the Simultaneous Processing Scale (Magic Windows [MW], Gestalt Closure [GC], Triangles [T], and Spatial Memory [SM]). To test this hypothesis, Hall, Gregory, Billinger, and Fisher (1988) utilized preschool children, mostly Caucasian, from a middle-class background.

Their results partially supported Kaufman's claim, but also, they found evidence that Number Recall, on the Sequential Processing Scale, correlated (r = .41) with the PEFT for 4-year-olds.

Researchers using the K-ABC with American Indian children from ages 5 to 12 years old (Brokenleg, 1983; Davidson, 1992; Naglieri, 1984) reported higher scores on those Simultaneous Processing subtests involving visual-spatial abilities (GC, T, and SM). Also, they reported higher scores on the total Simultaneous Processing Scale when compared to the standardization sample.

On the EFT, Halverson (1976) found Seminole children (except the 4-year-old Seminole females) to be more field independent than the normative group of Caucasian children. Also, Dinges and Hollenbeck (1978) reported an older group of Navajo children to be more field independent than the Caucasian sample used in their study. Based on previous research with the EFT, people of cultures that were less integrated into the Western culture, lived in rural environments, and lived in extended families rather than nuclear families tended to be more field dependent (Berry, 1991). Previous studies that used the EFT with American Indians contradict Berry's findings. Although no studies were found utilizing the K-ABC and the EFT measures together with an American Indian sample, evidence suggests that preschool and school-aged American Indian children may be more field independent and score relatively high on subtests purported to be associated with field independence-dependence.

As reported above, there is variability in cognitive skills within and across samples of American Indian children and not all American Indian children exhibit a

performance pattern that reflects high visual-spatial skills. For example, Davidson (1992) and Cummings and Merrell (1993) studied two samples of American Indian children from two tribal groups and reported similar performance profiles. However, the level of performance varied on the Sequential and Simultaneous scales. To date, only 5- to 12-year-old American Indian children have been tested on the K-ABC, and no information was reported in the literature about the performance pattern for preschool American Indian children on the K-ABC. Furthermore, the literature reports very little about the factors that may account for the high scores on visual-spatial tasks or the variability observed within and across American Indian samples.

Laosa (1984), when using the McCarthy Scales for Children's Abilities (MSCA), reported differences in children's cognitive abilities across cultural groups (Chicano vs. non-Chicano) as early as 2.5 years of age. He suggested that the profile of Chicano preschool children matched the profile of older Chicano children. In reporting these findings, Laosa suggested that the cognitive profile for Chicano children was due to ethnic group membership, and the profile remained invariant when language, family structure, and socioeconomic status were held constant as separate covariates. However, when language use and socioeconomic status were simultaneously held constant, ethnic group differences in profile patterns disappeared. For Laosa's sample, socioeconomic status and language use, together, accounted for group differences in the ethnic group profiles. In addition to this finding, Laosa attempted a classification analysis to compare individual performance profiles with that of the ethnic group profile. However, he found that 73% of the Chicano children were not correctly classified, although language

appeared to be significantly related to individuals who were correctly classified.

While Laosa used language use and declared background (identification of ethnic background by calling oneself a particular ethnicity), Gonzales and Roll (1985) recommend a more objective measure of ethnicity. Based on their research, declared background is too general a measure of ethnicity and may not delineate variables that characterize a particular ethnicity. They pointed out that an instrument designed to measure cultural behavior and attitudes will better delineate variables that account for acculturation within a sample.

Dana (1992), Berry (1980), and Olmedo (1979) have discussed the importance of acculturation as a moderator variable, and the importance of assessing moderator variables such as acculturation "to determine the potential contribution of cultural variance to an assessment procedure" (Dana, 1992, p. 113). For American Indian children, the variability found on measures of cognitive abilities within a particular tribe may be attributed to this acculturation of the tribe or factors associated with Indian culture in general. In response to these possibilities, two types of acculturation scales have been developed for the American Indian population (pan-Indian and tribe-specific measures). Unfortunately, the psychometric adequacy of these instruments is lacking. Although Dana (1992) provides a listing of these acculturation measures, an adequate measure of acculturation is needed before the influence of acculturation can be measured and interpreted with meaning.

Although studies of American Indian preschool and young school-aged children using the K-ABC and the EFT are limited, evidence suggests that different performance

patterns on the K-ABC (simultaneous/sequential differences and subtest scores) between and within tribal groups may be more pronounced in American Indian cultures that adopt more traditional cultural orientations and are less integrated into the majority culture (Barcus & Merrell, 1992). Also, evidence suggests that FDI may have a significant and positive association with American Indian children's performance on the Simultaneous Processing Scale and subtests thought to measure visual-spatial skills.

Few studies have examined the relationship between acculturation and tests of cognitive abilities for preschool and young school-aged children of American Indian ancestry. Even less research is available to identify what moderator variables may contribute to the relatively high scores on visual-spatial tasks observed in American Indian children. More specifically, no study has used the K-ABC and the EFT as measures of cognitive abilities nor examined the influence that the family and cultural background (acculturation) may have on cognitive development for American Indian children at the preschool and young school-aged level.

CHAPTER II

REVIEW OF THE LITERATURE

Introduction

Data collection was facilitated by identifying published studies after 1979 about American Indians that examined the relationship between acculturation, cognitive abilities, and families. Computer-assisted searches of *Dissertation Abstracts*, *ERIC*, and *Psychological Abstracts* were conducted. Key words included acculturation, cognitive abilities, families, child development, field independence, EFT, cognitive development, preschool, and school-aged. From this literature search the author found no studies that used American Indian children or families and included acculturation scales, the K-ABC, or the EFT.

The limited number of studies that are examined in this literature review include: (a) the cognitive abilities of American Indian children as measured by the K-ABC and two EFT (the PEFT and the CEFT, and (b) the influence that acculturation and specific family variables have on cognitive development.

Socialization is a process of development that occurs throughout the lifespan of an individual. It is generally agreed that socialization practices influence learning behavior, and that learning behavior will vary from culture to culture depending upon cultural variations in socialization patterns (Kagitcibasi, 1988).

For children, the first influences on cognitive development are through the home, family, and community (Laosa, 1984). Early investigators of the Binet Scale found

social-class difference in intelligence instruments (Angoff, 1987); however, there was little consensus among researchers in explaining this difference. In cross-cultural studies, differences in performance patterns on measures of cognitive or intellectual skills have been reported on tests of memory and perceptual analysis, as well as classification and concept development (Rogoff, 1981). Shade (1989) suggested that from an information processing model, culture is most influential in the sensory registration and conceptual discrimination process. It would appear that perceptual processes become the bridge between the individual and the environment, resulting in individual and/or cultural differences.

Speculation about the influence of culture and socialization practices within a culture have varied. The same is true for cognitive testing and the relationship between a test and measurement of ability. As a group, the relative strength of American Indian children's visual-spatial skills is well documented; however, it is also clear that visual-spatial skills vary throughout this population (Davidson, 1992). This variability within tribal groups reflects the complexity of influences that culture and socialization practices may have upon behavioral outcomes, including cognitive development.

The concept of acculturation is defined "as culture change that results from continuous, first hand contact between distinct cultural groups" (Berry, 1980, p. 11). Acculturation is considered a group-level, as well as an individual-level phenomenon. A consistent finding in several cross-cultural studies, when using acculturation as a variable, suggests that performance tends to shift more toward the norm on cognitive tests, and the experience of formal education appears to be the agent most responsible in that shift.

Other factors that may account for this variability include culture-specific attitudes and values (i.e., family structure and roles) and family language preference and use.

Given that the family is the first or primary socialization agent of children's cognitive development, it is important to understand the influences that the family as well as culture may have on measures of cognitive or intellectual ability.

The K-ABC and Performance Patterns of American Indian Children

The K-ABC was developed in 1983 and promoted as a relatively biased-free assessment for minority children (Kaufman & Kaufman, 1983). The first goal in developing the K-ABC was to assess intelligence from a strong theoretical and research base. The scale was based on a sequential and simultaneous processing model and stemmed principally from research and theory in areas of cerebral specialization, cognitive psychology, and clinical neuropsychology (Kamphaus & Reynolds, 1987). Kaufman and Kaufman drew much of the theoretical and research foundation from Luria's clinical neuropsychology and from factor analytic research completed by Das and his associates (Kaufman & Kaufman, 1983). According to the authors, the Mental Processing Composite (the Simultaneous plus the Sequential Scale scores) measures a child's ability to solve problems either simultaneously or sequentially. On the Sequential Processing Scale, a child solves problems by mentally arranging the stimuli in sequential or serial order. On the Simultaneous Processing Scale, the child solves the problems by simultaneously integrating and synthesizing the information. These tasks are spatial,

analogic, or organizational in nature (Kaufman & Kaufman, 1983).

The Achievement Scale on the K-ABC measures a child's acquisition of academic knowledge from the environment by application of his/her mental processing skills (Kamphaus & Reynolds, 1987). Additional features of the K-ABC include a proportional representation of exceptional children within the standardization sample, supplemental sociocultural norms, teaching items for each subtest, and a Nonverbal Scale. These aspects were intended to make the instrument a less biased assessment of preschool, minority, and exceptional children.

During the development of the K-ABC, two American Indian groups were included as part of the standardization sample (Naglieri & Kamphaus, 1983). The Navajo sample of 33 children (5-years-4-months to 12-years-6-months old) were from a rural setting and primarily spoke Navajo. In contrast, the Brokenleg (1983) sample of 40 Sioux children (8-years-2-months to 12-years-6-months old) were from an urban setting whose primary language was English. It was found that these two samples differed considerably on their performance on the Simultaneous and Sequential Processing scales. For the Navajo sample, a 12-point discrepancy was found in favor of the Simultaneous Processing Scale. The Sioux sample had a relatively higher Simultaneous Processing versus Sequential Scale but the difference was slight. An additional study conducted by Naglieri (1984) with Navajo children reported a 13.6 point discrepancy in favor of the Simultaneous Scale. The reported subtest scores for these three samples did indicate a strength in visual-spatial abilities on GC, T, and SM.

Two other studies using the K-ABC with American Indian children included 48

American Indian children between the ages of 8 and 12.5 years (Cummings & Merrell, 1993), and 57 American Indian children between the ages of 7 years and 12.5 years (Davidson, 1992). These studies reported that American Indian children tended to receive higher scores on the Simultaneous Processing Scale than on the Sequential Processing Scale. Also, subtest profiles for these Indian children indicated higher scores on the GC, SM, and T subtests.

On both of these studies, individual scores were examined to determine if a significant discrepancy between the Simultaneous and Sequential scales existed, using the criterion presented in the Interpretive Manual by Kaufman and Kaufman (1983, p. 170). The individual scores for the 57 children in the Davidson study indicated that 27 out of 57 children (47%) obtained a significant discrepancy in favor of the Simultaneous Processing scale. In the other study, 24 out of the 48 (50%) children obtained a significant discrepancy in the same direction. For comparative purposes, 34% of the children in the K-ABC standardization sample obtained a significant discrepancy score of 14 points or more regardless of direction (i.e., Simultaneous > Sequential or Simultaneous < Sequential).

While as a group, both of these samples obtained a higher Simultaneous Processing Scale, individual variability was observed within and across both samples of American Indian children. In fact, the five groups of American Indian children assessed on the K-ABC varied considerably on these scales. Table 1 presents the descriptive statistics for the Simultaneous and Sequential Scale scores for these five studies. The American Indian children from the Davidson study were referred for inclusion in an

Table 1

The K-ABC Simultaneous and Sequential Scale Scores and Standard Deviations of Five Studies Conducted with American Indian Children

Study	N	Age (Yrs.)	Simultaneous Score	Sequential Score
Naglieri, 1984	35	6.0 - 12.5	101.1 (11.5)	87.5 (11.0)
Naglieri & Kamphaus, 1983	33	5.5 - 12.4	99.8 (10.2)	87.7 (11.3)
Davidson, 1992	57	7.0 - 12.5	116.8 (8.57)	106.1 (10.2)
Brokenleg, 1983	40	8.2 - 12.0	101.3 (10.7)	99.6 (12.4)
Cummings & Merrell, 1993	48	8.0 - 12.5	103.8 (8.67)	94.6 (10.9)

Note. Standard deviations in parentheses.

enrichment program, and the high scores are sample specific.

To facilitate subsequent analysis of visual-spatial skills for this study, effect sizes based on the above five studies for subtests on the Simultaneous Scale were calculated. The standardized mean difference (SMD) was used to define effect size. The mean and standard deviation of the standardization sample on the Simultaneous subtests ($M = 10$ and $SD = 3$) was used as the control group score, and the Simultaneous subtest means and standard deviations reported for the above five studies were used as the experimental group scores. Table 2 presents the effect sizes for the individual studies and the total, average effect sizes for the five studies. Because no previous studies included American Indian preschool children, no effect size was calculated for MW, which is given to 4-year-old children and below. Matrix Analogies (MA) was included because this subtest had an effect size that was atypical of previous results, except for the Davidson study

Table 2

Simultaneous Processing Subtests and Effect Sizes for Five Studies

Study	Tests	N	M	SD	ES	Total ES Average
Naglieri, 1984	MW	--	--	--	--	
	GC	35	10.60	2.90	.20	
	T	35	11.30	2.70	.43	
	MA	35	8.70	2.20	-.43	
	SM	35	11.50	3.10	-.50	
						.41
Naglieri & Kamphaus, 1983	MW	--	--	--	--	
	GC	33	10.30	2.60	.10	
	T	33	10.90	2.30	.30	
	MA	33	8.70	2.30	-.43	
	SM	33	11.10	2.80	.36	
						.49
Davidson, 1992	MW	--	--	--	--	
	GC	57	12.67	2.18	.89	
	T	57	13.47	2.01	1.15	
	MA	57	11.79	2.43	.59	
	SM	57	11.72	2.28	.57	
						-.16
Brokenleg, 1983	MW	--	--	--	--	
	GC	40	10.60	2.20	.20	
	T	40	10.20	2.60	.06	
	MA	40	9.80	2.90	-.06	
	SM	40	10.80	2.20	.26	
						.39
Cummings & Merrell, 1993	MW	--	--	--	--	
	GC	48	12.06	2.55	.68	
	T	48	11.60	2.19	.53	
	MA	48	9.52	2.48	-.48	
	SM	48	10.08	1.19	.26	
	FR	--	--	--	--	

(1992). As can be seen, the magnitude of the effect sizes varies from sample to sample and not all subtests reach an effect size above the average effect size. The results of the Davidson study accounted for most of the total effect size for these five studies. Factors that may account for the variability in global and subtest scores such as urban/rural, degree of acculturation, home variables, and other environmental factors have not been studied.

Field Dependence-Independence and Native American Children

Field dependence-independence (FDI) was first conceptualized "to be a perceptual-analytic ability that manifested intself pervasively throughout an individual's perceptual functioning" (Witkin & Goodenough, 1981). A considerable amount of controversy exists as to whether the FDI construct relates to cognitive ability or cognitive style. Within Kogan's classification of cognitive styles, FDI is assessed by accuracy of performance on spatial tasks (Kogan & Saarni, 1989) and is considered by many researchers as an ability because the determination of field independence-dependence is based on the accuracy of performance. For this study, the FDI construct is measured by the EFT (Goodenough, Oltman, & Cox, 1987; McKenna, 1984; Witkin & Goodenough, 1981) and has been found to be correlated highly with tests of visual-spatial skills, fluid abilities, and intelligence tests (Kogan & Saarni, 1989; Witkin & Goodenough, 1981).

At the preschool and school-age level, two tests, the PEFT (Coates, 1972) and the CEFT (Witkin, Oltman, Raskin, & Karp, 1971), were designed to measure FDI for

children between the ages of 3 to 12 years. The PEFT presents 27 drawings of familiar objects, and the child is to disembed a triangle that is within the familiar drawing. The CEFT presents 27 items in two series, and the child is to locate an embedded triangle or an embedded house. The higher a child's score the more field independent the child is thought to be. Both instruments exhibit a developmental trend, suggesting children become more field independent with age (Glynn & Stoner, 1987).

Different embedded figures tests have been used in cross-cultural studies (Berry, 1991), across different social classes (Cecchini & Pizzamiglio, 1975), and in studies that involve childrearing as an antecedent variable to predict field independence (Moskowitz, Dreyer, & Kronsberg, 1981). In general, cross-cultural studies indicate that cultures similar to a Western lifestyle tend to be more field independent. Variables that are positively correlated with field independence are Western education, wage employment, low population density, family type (nuclear family), and childrearing practices that emphasize assertion rather than compliance (Berry, 1991). Cecchini and Pizzamiglio (1975) found differences on the mean CEFT scores for children separated into a high or low socioeconomic status ($\underline{N}$ = 192) with high socioeconomic status associated with field independence. These authors found a rapid development of field independence between the ages of 5 and 6 years, but the development favored the high socioeconomic children in their study.

Halverson (1976), using the PEFT, found Seminole American Indian children between the ages of 3 and 4 to be more field independent than the Anglo children in this study (except for 4-year-old females). A similar study by Dinges and Hollenbeck (1978)

with 40 Navajo children 9.5 years old using the CEFT reported that Navajo children scored higher (more field independent) than their Anglo counterparts. An effect size of .67 occurred between the Navajo sample and the Anglo sample. These authors predicted that the Navajo children would be more field dependent based on the Navajo family organization and cultural isolation. They speculated that the Navajo language and/or cultural and environmental factors favored the development of the cognitive-perceptual skills needed to solve the items presented on the CEFT. Although the authors did not test their hypotheses, other researchers have investigated the influence that language exerts on cognitive-perceptual skills, but these findings have been the subject of much debate (Crabtree & Powers, 1991).

The K-ABC and EFT

Hall et al. (1988) compared PEFT scores and the K-ABC for 59 preschool children. It was the purpose of their study to test Kaufman's hypothesis that field-independent children would score higher on the total Simultaneous Scale with specific strengths on the following subtests: MW, GC, T, and SM. Based on Pearson product-moment correlations, Hall et al. (1988) found partial support for this hypothesis (i.e., Face Recognition [FR], GC, T, and Number Recall [NR] had statistically significant correlations with the PEFT for children 3 to 5 years old). Number Recall is considered a Sequential subtest on the K-ABC and significant correlations were found for 4-year-old children only. In addition to NR, field-independent children had significantly high correlations on Expressive Vocabulary and Arithmetic. Although not all studies that have

compared field independence and achievement tasks report differences between field-independent and field-dependent children, most studies report higher levels of achievement for field-independent children in science, mathematics, and reading (Davis & Cochran, 1989). No studies were found that tested Kaufman's hypothesis with American Indian children.

Acculturation

The study of acculturation has been generally thought to include "those phenomena which result when groups of individuals having different cultures come into continuous first-hand contact with subsequent changes in the original pattern of either or both groups" (Olmedo, 1979, p. 1061).

Acculturation can be viewed as a means of adaptation of the group and individual to another culture. Four modes or typologies of acculturation have been conceptualized as a 2 X 2 matrix based on dichotomous responses (yes/no) to two questions. Table 3 presents these two questions and the four modes of acculturation.

Other models of acculturation emphasize the multidimensional nature of acculturation (e.g., language preference/use, cultural awareness, and ethnicity) that have been tested (Padilla, 1980), and culture-specific typologies have been developed from these dimensions. The value of these typologies is thought to be of confirmatory value, especially if individuals conform to one or another typology specified by a model.

Over the past several years there have been three significant shifts in acculturation research: (a) Although acculturation has been historically viewed as a group

Table 3

Dichotomous Answers to Questions of Acculturation Mode of Acculturation

Acculturation	Retention of Cultural Identity	Positive Relationship to Dominant Society
Assimilation	No	Yes
Integration	Yes	Yes
Rejection	Yes	No
Deculturation	No	No

Note. From Acculturation: Theory, Models, and Some New Findings (p. 15), by J. W. Berry, 1980, Boulder, CO: Westview Press.

phenomenon, recent shifts in the study of acculturation have placed a significantly greater emphasis on the individual rather than the group; (b) a shift toward the study of cultures from European, Asian-American, and Hispanic origins; and (c) a shift in the methodological issues in which additional emphasis is placed on the psychometrics involved in defining acculturation (Olmedo, 1979).

Olmedo and Martinez (1977) pointed out that one drawback in the study of acculturation is the absence of a quantitative methodology. In the past, a simple unidimensional model was used to approach the study of cultural differences. This took the form of "culture A and culture B differ on dependent variable X" (Olmedo & Martinez, 1977, p. 2).

Olmedo and Martinez (1977) offered a multidimensional model for the measurement of cultural differences that utilize factor-analytic theory and techniques. It

is their position that the factorial structures across cultures are equivalent, and researchers may be able to define not only cultural differences across groups but measure an individual's acculturation or biculturalism within a particular culture.

According to Olmedo (1979), three major dimensions are obtained from factor analytic studies. The first dimension is related to language preference/use and culture-specific domains (i.e., tradition, customs, identification). The second dimension pertains to culture-specific values orientation and attitudes (e.g., emphasis on family roles). This dimension appears to reflect an individual's affiliation with a culture and adherence to traditional values. The third dimension, socioeconomic status (SES), comprises items that assess educational level and occupational status.

Factorially derived acculturation scales that included linguistic, behavioral, and sociocultural items yielded correlations between $\underline{r} = .66$ to $\underline{r} = .85$ with ethnic group membership (Olmedo, 1979). Coefficients below .40 were obtained when scales of attitudinal and values orientation were compared to group membership, generation, and length of stay in the U.S. Interrelationships between the three major dimensions indicate that they are either moderately correlated or orthogonal in association.

When socioeconomic status (SES) is measured by the mother's or the father's education and occupation status with acculturation scales, similar correlations ($\underline{r} = .35$ and $\underline{r} = .40$, respectively) are found. Because of this positive relationship between acculturation and SES, Negy and Woods (1992) and Rogler, Cortez, and Malgady (1991) have recommended that when acculturation is used as an independent variable, SES should be included to enable the separate analysis of social stratification and

acculturation. It is conceivable that differences found between samples or within samples may be influenced by SES or acculturation separately as well as by an interaction effect.

Dana (1992) referred to acculturation as a moderator variable defined "as a correction for cultural differences" (p. 113) by means of a formal questionnaire or an interview. The purpose of a moderator variable, at least in the context of acculturation, is to obtain an accurate accounting of the possible cultural variance that may modify a specific assessment procedure and/or the interpretation. Dana identified two types of moderator variables: (a) monolevel moderator variables designed to assess or provide information about the retention of an individual's original culture; and (b) bilevel measures designed to estimate the degree to which an individual has acquired the dominant-society values and behaviors, as well as the retention of traditional values and behaviors (Dana, 1992). It is Dana's position that bilevel measures of acculturation should be used whenever possible.

For the American Indian population, pan-Indian measures (one measure used for many tribal groups) of acculturation have traditionally been used for urban populations, and tribal-specific measures for a particular tribe. Although tribal-specific instruments and pan-Indian instruments have been developed, most of these instruments do not report psychometric data. Even though Dana recommended the Rosebud Personal Opinion Survey (RPOS) for Plains tribes, to date, this instrument lacks cross-tribal validation (Dana, 1992).

The Rosebud Personal Opinion Survey (RPOS) is considered a monolevel measure of acculturation and was developed in 1982 as a pilot study involving 91

Rosebud Sioux to measure life stress, locus of control, world view, and values (Dana, Hornby, & Hoffman, 1984). This instrument included items that had previously been published in acculturation studies and included questions that utilize a rational-theoretical approach to developing assessment items (Hoffman, undated).

The RPOS was used by Hoffman, Dana, and Bolton (1985) with 69 American Indian adults from South Dakota. It was the purpose of their study to determine the influence of acculturation on the Minnesota Multiphasic Personality Inventory-168 (MMPI-168). The RPOS was revised after the above-mentioned pilot study and included 32 items reflecting five dimensions of American Indian acculturation: (a) social behavior, social membership, and social activities; (b) values orientation and cultural attitudes; (c) blood quantum; (d) language preference and usage; and (e) educational and occupational status. The education/occupation dimension of the RPOS was the dimension found to have the most significant effect on the scores on the MMPI-168. To date, the RPOS has not been cross-validated with other tribes nor has it been used as a moderator variable for determining the effects of parental acculturation on the cognitive abilities of preschool and young school aged children. Appendix A presents the RPOS and the scoring key.

The Family and Children's Cognitive Development

In a longitudinal study designed to examine language development across an age span of 7 months to 3 years, Hart and Risley (1995) reported that language development, as measured by the cumulative vocabulary words used across this age span, differed

considerably (professional parents > working class parents > welfare parents).

Correlational data from this study indicated that SES was strongly associated with vocabulary growth ($\underline{r} = .65$), and IQ measured by the Stanford Binet Intelligence Test had a correlation of $\underline{r} = .54$ with vocabulary growth. Of the 42 families, 17 were African American. However, when the authors performed a multiple regression analysis with race among the independent variables, the change in the $\underline{R}$ statistic was less than .01.

In a study using a cross-sectional design, Laosa (1982) addressed the role of the family in preschool-aged children's intellectual development. In this study, Laosa attempted to empirically evaluate a causal model of the family as a facilitator of preschool-age children's intellectual development. Laosa used variables that were found to correlate highly with intellectual development in the research literature. These variables included socioeconomic status, maternal behavior, paternal behavior, maternal expectations and intellectual activities in the home, family size and birth order, television, maternal employment, paternal behavior, and preschool programs. Laosa used a 23-question interview with the mothers to obtain factual information about these family characteristics. Appendix B presents the questions used in the structured interview with the mothers.

Using a form of path analysis, Laosa found that the mother's socioeducational values (mother's education, how much a mother reads to her child, and mother's occupation) accounted for most of the variance on the Preschool Inventory. When the child's age, sex, mother's use of modeling as a teaching strategy, and the amount of time that persons other than the mother in the household read to a child were included in the

analysis, these variables accounted for nearly 75% of the total variance on the Preschool Inventory.

In 1984, Laosa conducted another study to assess the cognitive performance of Chicano and "non-Hispanic White" children using the MSCA. Information concerning family characteristics such as parent's formal schooling, economic status, household family size, and language background were obtained through an interview. From this study Laosa concluded that ethnic group differences were observed on the Verbal, Quantitative, and Memory scales, but not on the Perceptual and Motor scales as measured by the MSCA. These results extended the previous research findings that reported ethnic group differences in school-aged children downward to 2.5 years of age. In addition to ethnic group differences, Laosa did not find support for his belief that ethnic group differences stemmed from a larger family size or sibling structure; but, he did find that socioeconomic level and home language did account for most of the variance on young Chicano children's performance on ability measures.

Acculturation and Cognition

Gonzales and Roll (1985) used a cross-sectional design to determine the relationship between cognitive style, acculturation, and intelligence. In this study they used the following instruments: (a) the Group Embedded Figures Test (GEFT), (b) the Multidimensional Scale of Cultural Differences (MSCD), (c) Cattell's Cultural Fair Intelligence Test (CFIT), and (d) the Vocabulary subtest of the Wechsler Adult Intelligence Scale and the Wechsler Intelligence Scale for Children. The results of this

study indicated that verbal skills more than field independence lead to better performance on a standardized verbal intelligence test; and, the more acculturated Mexican-American children were to the dominant society, the better the individual's verbal skills. Gonzales and Roll reported no differences in level of acculturation and nonverbal (analytic) abilities between a group of Mexican-American children and Anglo children. These authors suggested that persons acculturated to Anglo-American society, regardless of culture, will not have score differences on tests of intelligence.

Evidence from a meta-analysis (Moyerman & Forman, 1992) suggested similar results. From their analysis using the EFT and measures of intelligence and achievement, a positive correlation with acculturation occurred on both types of measures. For field independence-dependence, increased acculturation predicted an increase of field independence, and an increase in acculturation predicted an increase in intelligence and achievement scores.

Summary

American Indian children ages 5 to 12.5 years have been found to score higher on measures such as simultaneous tasks on the K-ABC, and as being more field independent as measured by the EFT. As a group, American Indian children tend to obtain higher scores on tasks that involve visual-spatial skills. This, however, is not the pattern for every child within this cultural group; studies have indicated that American Indian children vary considerably on visual-spatial skills.

Family research data reviewed indicated that differences in cognitive abilities

between cultural groups appears as early as 2.5 years of age. In two studies conducted by Laosa (1984), socioeconomic status and language use in the home accounted for most of the variance on ability scores for young children and differentiated between two cultural groups, whereas family size or birth order did not differentiate between groups.

Factor analytic studies of acculturation indicated the emergence of at least three factors: (a) nationality-language defined by language use and/or preference, and items regarding knowledge in culture-specific domains; (2) values acculturation or ethnic loyalty defined by affiliation with the original culture and adherence to traditional values; and (3) SES that reflects the educational level and occupational status of the respondent (Olmeda, 1979, p. 1069).

The research reviewed indicates that when acculturation and intellectual processing patterns are studied, the patterns varied between cultural groups, but these differences disappeared as the culture and individual within that culture adopted or experienced majority culture norms. For the American Indian culture, the lack of research on the effects of acculturation on cognitive skills, and the antecedent conditions accounting for the visual-spatial abilities, remains conjecture rather than empirically based.

Objectives and Purpose of Study

The objectives for this study were as follows:

1. Determine the factor structure of the RPOS with a Northern Plains Tribe (Northern Cheyenne Tribe).

2. Determine if American Indian children at the preschool level obtain high scores on the total Simultaneous Processing Scale and subtests measuring visual-spatial tasks as measured by the K-ABC: MW, GC, T, and SM.

3. Determine the relationship between preschool and school-aged children's scores on the K-ABC and the PEFT and CEFT. Positive correlations on the total Simultaneous Scale and subtests hypothesized by Kaufman's MW, GC, T, and SM were expected.

4. Determine the field-independence-dependence abilities as measured by the PEFT and the CEFT of Northern Cheyenne children.

5. Determine the relationship and its significance between visual-spatial abilities (the K-ABC and the EFT) and measures of acculturation, and specific family variables (Home Language Survey, RPOS, and Family Questionnaire).

The hypotheses for this study were as follows:

1. The RPOS psychometric properties from this sample will be proportionally similar to that of the original sample of 69 Rosebud Sioux, and the factors obtained from this sample will be similar to the dimensions believed to make up this acculturation scale. Significant discrepancies between the suggested dimensions for the RPOS and those obtained from the Pearson product-moment correlation and the principal component analysis for this study will result in the rejection of this hypothesis.

2 a. Preschool children will obtain relatively high scores on the total Simultaneous Scale and subtests measuring visual-spatial skills that have been found with older American Indian children. Forty percent of the preschool and 40% of the school-

aged children will obtain statistically significant discrepancy scores (Simultaneous Scale score minus Sequential Scale score). For the standardization sample, a 1:3 discrepancy ratio is obtained. For this study, a ratio approximating 2 out of 3 scores will determine a significant discrepancy score.

2 b. For the subtests (MW, GC, T, and SM), an effect size of .40 must be reached before visual-spatial skills for preschool and school-aged children are considered relative strengths or high scores. Table 2 presents the effect sizes for these subtests.

3. The preschool and school-aged children will obtain significant correlations between the EFT measures and the total Simultaneous Processing Scale and the following Simultaneous subtests: MW, GC, T, and, SM. A correlation of $\underline{r} = .50$ is needed to be of practical significance versus statistical significance.

4. American Indian children will be more field independent than the standardization samples on the PEFT and the CEFT. An effect size of .67 was obtained between the standardization sample and a sample of Navajo children. This effect size will be used to determine field independence for each age level.

5. The use of language, the degree of acculturation, mother's educational values, and SES will predict a statistically significant amount of the variance in visual-spatial skills of American Indian children.

CHAPTER III

PURPOSE AND OBJECTIVES

The purpose of this study was to determine the antecedent conditions that may account for the relatively high scores on visual-spatial abilities of American Indian children as observed on two standardized measures of cognitive abilities. The variables that were hypothesized to account for the visual-spatial abilities were measured by an acculturation scale and a family questionnaire. Because the acculturation scale was standardized within the standardization sample, a principal-component analysis was conducted to determine the psychometric properties of the instrument. In more specific terms, this study examined the visual-spatial skills (K-ABC and EFT) of preschool and school-aged children from an American Indian ancestry and determined to what extent acculturation (RPOS) and specific family variables accounted for American Indian children's relative high scores on visual-spatial tasks.

Population and Selection

To address the objectives of this study, the Northern Cheyenne Tribe was selected as the target population. Their location is primarily rural, and the total tribal enrollment for the tribe is estimated at 6,386 tribal members. The total enrollment of children between the ages of 3 to 9 is estimated at 972. Of these children, 478 are males, and 494 females (Davis, 1993).

Children were selected from eight Head Start schools located throughout the

Northern Cheyenne Reservation and one elementary school operated by the Bureau of Indian Affairs (BIA). The Head Start program had an enrollment of 156 children (85 females and 61 males). The BIA elementary school consisted of kindergarten through sixth grade. Because this study was interested in children between 3 years old and 8 years old, kindergarten through third-grade students were considered appropriate subjects; therefore, 242 children were identified as eligible for this study (119 females and 123 males). From this population, 56 children were volunteered for this study. To be a volunteer the parent had to agree to participate in a parent interview by written permission, and the child consented to be tested (see Appendix C).

Once the permission letters were received, two graduate students trained in the administration of the K-ABC and the EFT measures administered the tests. The data were collected from February 1993 to May 1993. The instruments were administered during school hours.

The age range for this study was from ages 3 to 9, and any child who was in special education, retained in a grade, or was beyond the age of 9 years old was not included in this sample. Although 13 to 15 children were expected at each of the six age levels, the number of volunteers fluctuated from one age level to the next.

Table 4 presents the descriptive statistics for age on all the children included in this sample. The ages of these children ranged from 43 months to 112 months, with a mean of 76.29 and a standard deviation of 20.17. There were 29 females and 27 males. Fifty-six children completed the K-ABC; one child did not complete the Achievement Scale and only 55 scores were analyzed for this scale. For the EFT, 25 children

Table 4

Descriptive Statistics for the Total Number of Children in Study

Age (in years)	N	M	SD	Range
3 years	4	45.00	1.83	43-47
4 years	12	52.83	3.64	48-59
5 years	9	66.89	2.37	63-70
6 years	6	78.67	3.67	74-83
7 years	13	88.54	3.48	84-95
8 and 9 years	12	102.75	4.97	96-112
Total	56	76.29	20.17	43-112

Note. Means, standard deviations, and range reported in months.

completed the PEFT, and 31 children completed the CEFT.

A total of 46 parents completed the Home Language Survey and the Family Questionnaire. The descriptive statistics for the 46 respondents on the Family Questionnaire and the frequency count for the Home Language Survey are presented in Appendix D (Tables D-1 through D-4). All respondents in the Home Language Survey were the mothers of the children; however, not all the respondents answered every question on the Family Questionnaire (N = 44-46) or the Home Language Survey (N = 44-46).

The RPOS was completed by 44 parents. Because the RPOS was to be used in an exploratory factor analysis, nine additional surveys were given during an introductory

psychology class at a local community college. This brought the total number of respondents to 53. All questions on this instrument had missing data (N = 49-53). In addtion to the RPOS, the respondents were asked to rate themselves on a lifestyle rating. Of the 53 respondents on the RPOS, 43 respondents answered the lifestyle rating, and 29 respondents gave explanations. The explanations for the ratings are discussed in Chapter IV (Results).

Design

This study utilized a cross-sectional design to determine the relationship between visual-spatial abilities, acculturation, and specific family variable for children between the ages of 3 to 9. Fifty-six children were given the K-ABC and the PEFT or the CEFT. The order of the K-ABC and the EFT was counterbalanced so that half the children received the EFT first and half the children received the K-ABC first. A structured personal interview with the parent or guardian was conducted when possible utilizing the Home Language Survey, the Family Questionnaire, and the Rosebud Personal Opinion Survey. There were 69 questions in this structured interview. Parents who did not attend the interview were mailed questionnaires to be completed and returned. However, none of these mailings were returned. One of the child's parent/legal guardians was interviewed and given the Home Language Survey, the Family Questionnaire, and the RPOS, in that order.

Because the RPOS was not cross-validated and the survey was standardized within the research sample itself, the dimensions did not have any comparative or

interpretive value; therefore, only a factor analysis was used.

The "subject as collaborator" approach (Jones & Thorne, 1987) was used to assess the content validity of the RPOS. Using this approach, parents were asked to rate themselves based on a scale of 1 to 5 (1 having a "mainstream" lifestyle, and 5 having a "traditional" lifestyle). The parents were then asked to explain their reason(s) for this rating. Although this approach does not have the formal psychometric properties for cross-validation, it does provided an emic approach (use of criteria relative to a particular culture) to acculturation. In this case, the emic approach consists of the question: "How do the people explain their lifestyle from their own cultural perspective?" The format of this question is presented, along with the RPOS (see Appendix A).

The RPOS, the Home Language Survey, and the Family Questionnaire are self-report measures. Self-report measures of this nature have a long history in psychological research with both assets as well as liabilities. Liabilities include the assumption of validity and response bias (i.e., social desirability). Assets include their easy use, the ability to standardize administration, and face validity.

To reduce the possibility of confounds (i.e., random answering or acquiescence), respondents were interviewed either individually or, in the case of the nine college students, the questions were read to the students. This was done to ensure that all students had the chance to complete the question before the next question was read. For this study, the validity of the RPOS was examined before an analysis with cognitive measures occurred. The Family Questionnaire was developed by Laosa (1982) from research literature thought to affect child development. Although no other studies have

used Laosa's questionnaire, it has the advantages of being easily scored, and means and standard deviations are provided for comparative purposes. The Home Language Survey asked for information about the child's use of their tribal language, their language environments, as well as the parent's and the grandparent's use of tribal language. This survey is easily administered and can be cross-checked with the RPOS language component. The Home Language Survey was used in a previous study conducted by the author to determine language fluency.

Instrumentation

Kaufman Assessment Battery for Children (K-ABC)

The standardization of the K-ABC was administered to 2,000 children between the ages 2.5 to 12.5 and stratified on the variables of age, sex, socioeconomic status, race, geographic region, residence (urban/rural), and class placement. The subtest format of the K-ABC differs for different age levels, thus certain subtests may be exclusive for one age while overlap of subtests also occur. There are nine subtests for age 3, and eleven at ages 4 and 5. The K-ABC subtests for these different age levels are presented in Appendix E.

Confirmatory factor analysis demonstrated three factors for all age levels on the K-ABC (simultaneous, sequential, and achievement factors). It should be pointed out that Telzrow (1984) found only two factors (sequential and a combination simultaneous/achievement). This difference in factor structure has been explained by age-dependent changes in problem solving as well as the variations in the subtests at

different age levels (Telzrow, 1984).

The mean reliability coefficients (internal consistency) on the K-ABC global scales for preschool children are as follows: Sequential scale (.90), Simultaneous (.86), and Achievement (.93). For school-aged children the same reliability coefficients are .89, .93, and .97, respectively. All split-half reliability coefficients for the K-ABC subtests are between .71 to .92 (Kaufman & Kaufman, 1983).

Pre-school Embedded Figures Test (PEFT)

The PEFT (Coates, 1972) is a measure of field dependence-independence designed for children between the ages of 3 to 5 years of age. In this test, the child is administered a warm-up exercise that consists of five matching tasks. The child is then given all PEFT items. The score range for the test is between 0 to 24.

Coates (1972) reported she used a standardization sample of 248 children ranging in age from 3.0 to 5.8 obtained from private nursery schools for middle-class children. Reliability estimates ranged from .74 to .91 (Hall et al., 1988). The construct validity of this test is supported by the high correlations with the EFT, which is an upward extension of the PEFT. Additional construct validity is the substantially lower correlations with tests of verbal ability (Coates, 1972).

Children's Embedded Figures Test (CEFT)

The CEFT (Witkin et al., 1971) is a measure of field dependence-independence for children ages 5 to 12 years. Reliability estimates (internal consistency coefficients) ranged from .83 to .90 for children ages 7 to 10 years; test-retest reliability was .87 for

children ages 5 to 8 years (Glynn & Stoner, 1987). This 29-item test is separated into two series. In the first series (14 items) a triangle or "tent" must be disembedded or found in each figure, and each correct response receives one point. In the second series, a house must be disembedded or found to obtain one point. The test continues through the two series if a child passes at least one item of the last five items in the tent series. The test is discontinued after five consecutive failures.

Dinges and Hollenbeck (1978) used this test on a sample of Navajo children ($\underline{N}$ = 40). They reported a mean of 21.1 and $\underline{SD}$ of 4.0. This sample was compared to the Anglo normative means and standard deviation ($\underline{M}$ = 16.4, $\underline{SD}$= 5.5). They reported that the Navajo sample was determined to be more field independent as measured by his test. Additional findings indicated no differences between Eskimo and Scottish comparison groups on the EFT at older age levels (Kleinfeld, 1973).

The CEFT has correlations between .42 to .68 on Spatial Relations (McKenna, 1984). Although these correlations are small, when sample sizes are larger (above an $\underline{N}$= 25) the correlation with spatial ability is substantial. The EFT has been found to discriminate between different socioeconomic variables, family groups, and Western versus non-Western orientations. The CEFT has not been used as widely as the EFT, but the CEFT was shown to discriminate between groups on SES and sex (Cecchini & Pizzamiglio, 1975; Moskowitz et al., 1981), although this varies with samples (Hall et al., 1988).

Rosebud Personal Opinion Survey (RPOS)

During the development of the RPOS, a pool of 194 questions was used. These questions came from three sources: (a) The Howe Chief questionnaire, which was used in a previous study of "assimilation." The Howe Chief questionnaire was first used in 1940 as a 40-item, assimilation instrument. It was administered to 100 American Indian females (age in months: $\underline{M} = 214.8$; $\underline{SD} = 10.79$) from various tribal groups. Test-retest reliability was .91 after 2 weeks, and validity was established by submitting the instrument to authorities on "race psychology" and "Indians" (Chief, 1940). The majority of items on the RPOS were from this instrument, approximately 20 items. (b) Measurements of Locus of Control (LOC) adopted from Sue (1978) to assess perceived loci of power and responsibility (Dana et al., 1984). The LOC measure is purported to measure two psychological constructs used to make attributions of human behavior and motivation. Data is not available on the reliability or validity of this scale. Results from the Dana's 1984 study suggested that a majority of their sample believed in an internal loci of power and responsibility. Four items were included in the final RPOS. (c) the Values Orientation Questionnaire (VOQ) that represents organized conceptions of Time, Human Nature, Human Relationships, Activity, and Person-Nature (Dana et al., 1984). These five categories were originally proposed by Kluckhohn and believed to influence broadly defined areas of human behavior (Ibrahim & Kahn, 1987) such as lifestyles, motivations, and decisions. Reliability studies have not been reported, and the validity of the VOQ is based on authority agreement. For the final RPOS, six items representing the Time, the Human Relationships, and the Person-Nature categories were used. The last

two items related to socioeconomic status (employment and education).

The final RPOS consisted of a 32-item, acculturation scale. Items were selected based on a response rate of 90%, having face validity, having the highest positive intercorrelations with demographic variables, and having a representative frequency distribution and variability of responses (Hoffmann et al., 1985). There are five dimensions of acculturation, and each of the questions in a dimension are averaged to arrive at a mean score for each dimension. These subscales or dimensions are not compared to each other in terms of importance or representativeness, and a total acculturation score is not computed. Scores greater than $\underline{T} = 50$ reflect a more traditional lifestyle and those below a $\underline{T}$-score of 50 reflect a more mainstream lifestyle (Hoffman et al., 1985). Since the development of the RPOS, there have been no published articles which have used this instrument in research.

The subscales of the RPOS include the following: (a) social behavior, social membership, and social activities; (b) values orientation and cultural attitudes; (c) blood quantum; (c) language preference and usage; and (e) educational and occupational status. Intercorrelations between the subscales are as follows: social and language ($\underline{r} = .60$, $\underline{p} < .001$); social and blood quantum ($\underline{r} = .55$, $\underline{p} < .001$); and language and blood quantum ($\underline{r} = .54$, $\underline{p} < .001$). The values dimension was orthogonal (uncorrelated) to the above dimensions (Hoffman et al., 1985).

Family Questionnaire

The Family Questionnaire is a 25-item questionnaire, 23 of which have been

taken from a study by Laosa (1982). The 23 questions from the Laosa study were used in a path analysis (causal-inference methodology) study. The current study does not replicate Laosa's study, but it used the questions for comparative purposes.

The path analysis indicated that (a) the mother's education, (b) how much the mother reads to the child, and (c) the mother's occupation accounted for most of the variance in scores on the Preschool Inventory. When other variables including (a) modeling as a teaching strategy, (b) whether the child was male or female, (c) child's chronological age, and (d) amount of time others in the home spent reading to the child were added to the analysis, these variables accounted for nearly .726 of the variance of scores on the Preschool Inventory (Laosa, 1984).

Home Language Survey

The Home Language Survey is divided into two areas. The first area pertains to the family's ability to both speak and understand their native language. The survey includes the child, the child's parents, and the child's grandparents. The scale is divided into four categories: speaks/understands: 0 = none; 1 = more than 10 words; 2 = more than 100 words; 3 = fluently. The second area pertains only to the child and the child's language environment and experiences in the home, school, and community (including friends and adults). The child's language environment and experiences are scored from 1 to 5, 1 representing all the time and 5 representing none of the time. Appendix F (Table F-1 through F-4) presents the Home Language Survey.

Items from the Home Language Survey that were used in this analysis included

the child's ability to speak and understand their tribal language, the mother's and father's ability to speak and understand their tribal language, and the use of the tribal language in the home. These variables were included in the Family Survey as the language variable.

Analysis

The data collected for this study were analyzed on a computer using SPSS/PC Version 3. The data were organized with the child representing one case, and all the instruments used were coded under a single child's code number (i.e., 01, 02 ... 56).

Hypothesis One was tested through an exploratory factor analysis to determine the factor structure of the RPOS. It was expected that the five dimensions on the RPOS would be similar to those stated by the authors of the RPOS. Because the raw data for the RPOS were not available (R. H. Dana, personal communication, January 1993), raw score comparison with the original sample was not completed. The only data that were available came from published articles (Dana et al., 1984; Hoffman et al., 1985). In addition, the "subject as collaborator" question was analyzed for content (statements made by respondents explaining their lifestyle rating).

Hypothesis Two was tested by comparing the obtained mean scores for the American Indian children of this study with the standardization sample for each age range. Since 3- to 5-year-olds do not receive the same Simultaneous Processing subtests as the 6- to 8-year-olds, the standardization sample was used as the comparison group. The standard score difference formula presented in the K-ABC Interpretive Manual (Kaufman & Kaufman, 1983, p. 170) was used to determine statistically significant

discrepancies between the subject's Simultaneous and Sequential Processing scores. Significant discrepancies favoring the Simultaneous Scale are reported for two samples of American Indian children (Cummings & Merrell, 1993; Davidson, 1992). These ranged from 47% to 50% of the samples favoring the Simultaneous Scale over the Sequential Scale. This compared to approximately 35% of the standardization sample. At least 40% of this sample aged 3 to 5, and 40% of the sample aged 6 to 8 were expected to obtain a significant discrepancy in favor of the Simultaneous Processing Scale.

For the Simultaneous Processing subtests (MW, GC, T, and SM), an effect size of .40 was needed to be considered a relative strength or high score in visual-spatial abilities. This effect size (SMD) was based on five studies involving American Indian children using the mean of 10 and an SD of 3 for the GC, T, and SM subtests as the control group scores (see Table 2). No scores in the literature review for American Indian children were reported for MW.

To test Hypothesis Three, the magnitude of the relationship between the EFT measures and the K-ABC global and subtest scores was compared. Based on the sample size, a correlation coefficient of .205 is considered statistically significant at the .05 level of significance. From the study conducted by Hall et al. (1988), the magnitude of the relationship between the PEFT and the total Simultaneous Scale and subtests ranged from .39 to .19. Given that field independence-dependence is hypothesized by the Kaufmans to be directly related to competent performance on selected processing tasks, the correlations should be $r = .50$ to be of any practical significance (Borg & Gall, 1983).

Hypothesis Four stated that the American Indian sample will score higher, will be

more field independent, than the normative sample. An effect size of .67 was needed at each age level for the American Indian children to be considered more field independent. This effect size was calculated from the Dinges and Hollenbeck (1978) study that compared bilingual Navajo children with the standardization sample.

For Hypothesis Five, a multiple regression analysis was conducted to determine the amount of variance explained by the RPOS, the Family Questionnaire, the Home Language Survey, and scores measuring visual spatial skills (the K-ABC and the EFT). Based on previous research, the use of language, acculturation, mother's educational values, and SES will predict a statistically significant amount of the variance in visual-spatial skills of American Indian children ($p \leq .05$). Because of the number of independent variables, the p-value was determined by the equation: p/k , where p is the alpha level and k is the number of independent variables.

CHAPTER IV

RESULTS

The Rosebud Personal Opinion Survey (RPOS)

Appendix F presents the raw score descriptive statistics (Table F-1) and the t-scores for the 32 items from the RPOS, and the five dimensions (blood quantum, language, social, values, and education/occupation) chosen by the authors of the RPOS (Table F-2). These items and dimensions were based on the frequency of usage in past studies of acculturation and factors that emerged in other studies of acculturation (Hoffman et al., 1985). As reported previously, this instrument lacked cross-validation and was standardized within the research sample. Because of this, the five dimensions do not possess any comparative or interpretive value (Hoffman et al., 1985).

The t-scores are from the scoring key reported by Hoffman et al. (1985). Dimension scores are computed by totaling the number of questions in a dimension and dividing the total score by the number of questions in a dimension. The t-scores above 50 are considered indicative of a traditional American Indian culture and below 50 closer to a mainstream culture.

In comparison to the Hoffman et al. (1985) study, this sample closely approximated the Rosebud sample in education (M=13.00, SD=2.05 vs. M=12.9, SD=2.2, respectively). The Rosebud sample had an employment rate of 49% (34 of 69), and this sample had a 72% employment rate. For the current sample, 75% (37 out of 49) individuals declared themselves 50% or above in blood quantum (percentage of

American Indian ancestry) as compared to 88% (61 out of 69) in the Hoffman et al. (1985) study.

RPOS Dimensions

Correlations between the five RPOS dimensions are presented in Table 5. Those correlations reported for the Rosebud Sioux sample (Hoffman et al., 1985) are presented in the lower triangle. For the Rosebud sample, the values dimension was orthogonal to the other dimensions (no data reported), and the education/occupation dimension was positively correlated with the Language dimension for women only ($\underline{r} = .43$).

In general, the correlations obtained between the language, social, and blood quantum dimensions closely approximated the correlations observed in the Hoffman study. The magnitude of association between these three dimensions is about 50% for the current study and ranged from 29% to 36% for the Hoffman study. Differences occurred between the values and social dimension, as well as the language and education/ occupation dimension.

For the language and education/occupation correlations, education/occupation (EDOCC) is negatively associated with language preference ($\underline{r} = -.28$) for this study, but the correlation was $\underline{r} = .43$ for the Hoffman study and only for females. The authors reported that this response pattern suggested that American Indian women, who preferred to think and speak in English, tended to have more education and jobs at the professional or skilled end of the labor spectrum. For the current study, this relationship between

Table 5

Intercorrelations Between Five RPOS Dimensions

Dimensions	Quantum	Lang	Social	Values	EDOCC
Quantum		.69*	.71*	.29	-.11
Lang	.54*		.70*	.24	-.26
Social	.55*	.60*		.45*	-.28
Values	--	--	--		.00
EDOCC	--	.43**[a]	--	--	

Note. Mean substitution (N= 41-53). Upper triangle current study. Lower triangle contains reported correlations for the Hoffman et al. (1985) study.
[a] Correlation for females only.
* $p < .01$ (two-tailed).
** $p < .05$ (two-tailed).

language preference and the EDOCC dimension was not as clear-cut and did not obtain a statistical significance.

Although no data are reported for the Rosebud sample, Hoffman et al. (1985) reported the values dimension as orthogonal to the other dimensions for the Rosebud sample, suggesting that values had little or no association with the rest of the RPOS. For this study, a correlation of $r = .45$ between the Values and the Social dimension was observed. Although this comparison may reflect differences between the two samples, little is known about the psychometric properties of the five dimensions and items contained within the dimensions. The next analysis of the RPOS addresses this issue.

Principal-Component Analysis
of the RPOS

Principal-component analysis is a procedure that reduces the total number of variables under consideration into derived orthogonal factors or components. The first principal component accounts for most of the variance than any other linear combination. The second principal component is the second best linear combination of variables not accounted for by the first principal component. This procedure is conducted until all the variance in the data is exhausted (Kim, 1984).

Initially, a principal-component analysis was performed on the 32 items of the RPOS. This analysis resulted in an "ill-conditioned" correlation matrix based on the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (MSA) of MSA = .49, and this value is considered "unacceptable" for a factor analysis.

The measures of sampling adequacy (MSA) for the individual items are presented in Table 6. The MSA coefficient ranges from 1.0 to .00. The SPSS/PC+ Version 3 recommends that individual items with low measures of sampling adequacy may be removed to improve the MSA. Items that approached MSA = .40 were retained for analysis, and eight items were removed from the RPOS. The eight items removed in this analysis involved the following: Mother's education (FQMED); Internal/external locus of control (RSLCR1); Internal/external locus of control (RSLCR3); by this author's own standards, he feels that a person is best off when doing or learning things in a group effort (RSGRPEFF); by this author's own standards, he ought to believe that natural forces can never be altered or adequately prepared for (RSNATFOR); what is your degree of social

Table 6

Measures of Sampling Adequacy for 32 Items on the RPOS

Item	MSA	Item	MSA
1. RSMARPRF	.45	17. RSHAIR	.72
2. RSANCTRY	.40	18. RSDRESS	.58
3. RSNAMES	.52	19. RSMEDPER	.53
4. RSBLDQUN	.39	20. RSLCR1	.17[a]
5. RSIDENT	.55	21. RSLCR2	.36
6. RSTHOUGT	.59	22. RSLCR3	.32[a]
7. RSFAMDIL	.34[a]	23. RSLCR4	.59
8. RSOWNDIL	.59	24. RSFUTURE	.38
9. RSMEDICN	.62	25. RSSCIENE	.50
10. RSFUNRAL	.70	26. RSGRPEFF	.28[a]
11. RSRELIG	.70	27. RSNATFOR	.22[a]
12. RSDANCE	.74	28. RSCONTET	.48
13. RSMEMBER	.69	29. RSTRAD	.57
14. RSCELEB	.78	30. RSSOCDIS	.22[a]
15. RSCONVER	.57	31. RSED	.31[a]
16. RSORNAMT	.32[a]	32. RSOCC	.40

[a] Items were elemented from further analysis.

distance to Whites versus Indian? (RSSOCDIS); what is your family's use of English versus tribal dialect? (RSFAMDIL); and, what is your preference in ornaments? (RSORNAMT). A principal-component analysis was then performed on the remaining 24 items.

The MSA for this second analysis reached an MSA of .73, and this value is considered a reasonable magnitude for a factor analysis. Eight factors were extracted with eigenvalues of 1.0 and above and accounted for 77.4% of the variance. Table 7 presents the eight factors extracted from this procedure.

A varimax rotation was performed to correct for the amount of explained variance that may have been distorted because of the initial, orthogonal extraction procedure. Table 8 presents the factor loadings for the 24 items on the eight factors. Based on the individual items, the separation of the RPOS into five dimensions is not supported nor is the placement of items within these five dimensions. In addition to the varimax rotation, an oblimin rotation was conducted to determine the best terminal solution for the RPOS (i.e., orthogonal vs. oblique rotation). Appendix G (Tables G-1 through G-3) presents the pattern matrix, the structure matrix, and the factor correlation matrix. Because a varimax rotation is an orthogonal or an uncorrelated solution for the derived components, an oblimin rotation was conducted to allow for correlations between the derived components. Based on the low correlations between the factors (refer to Table G-3 in Appendix G) obtained from an oblimin rotation, a varimax rotation was used for further analysis. It should be noted that simple structure was not obtained from either the

Table 7

Principal-component Analysis for 24 Items of the RPOS

Item	I	II	III	IV	V	VI	VII	VIII	h^2
RSRELIG	.78	-.25	.10	-.22	-.01	.06	.06	-.26	.81
RSTHOUGT	.76	.38	.05	.01	-.24	-.18	-.13	-.00	.83
RSMEDICN	.74	-.28	.04	-.27	.07	-.03	.13	.06	.72
RSMEMBER	.74	-.03	-.14	-.02	-.10	.25	.26	-.07	.71
RSCELEB	.74	-.44	.10	.05	-.01	-.16	-.00	.12	.79
RSNAMES	.66	.09	-.31	-.13	-.19	.08	-.37	.15	.76
RSDANCE	.64	-.08	.18	.00	.46	-.34	-.16	.04	.81
RSIDENT	.63	-.45	-.02	.30	-.20	.25	-.03	.11	.81
RSMEDPER	-.58	.19	.51	.11	.17	-.33	.01	-.07	.80
RSMARPRF	.56	-.44	-.00	.28	.30	.04	.06	-.31	.78
RSHAIR	.55	.48	-.21	.14	.25	.01	-.16	.13	.70
RSFUNRAL	.52	-.06	.45	-.11	-.44	-.06	-.07	.31	.79
RSANCTRY	.52	.42	-.16	.24	-.15	.07	.19	-.27	.67
RSBLDQUN	.46	.63	-.00	.27	-.15	-.31	.05	-.23	.86
RSOWNDIL	.55	.55	.28	-.08	-.07	.05	-.19	.16	.77
RSSCIENC	-.25	-.00	.70	.32	-.31	.20	.01	-.03	.79
RSCONTET	.40	.15	.55	-.20	.42	.18	.16	.14	.80
RSLCR4	.45	-.09	.54	-.16	-.12	.32	-.05	-.25	.72
RSFUTURE	-.20	.22	.24	.58	.34	.25	-.02	.17	.69
RSLCR2	.45	.30	-.02	-.50	.35	.23	-.21	-.02	.73
RSDRESS	.43	.08	-.30	.38	.04	.58	-.11	-.11	.79
RSTRAD	.56	.19	.00	.04	.04	.01	.63	-.09	.76
RSOCC	-.32	.34	-.13	-.42	-.06	.33	.47	.22	.80
RSCONVER	.46	-.14	-.12	.35	.09	-.13	.22	.65	.80
V_p	7.79	2.36	2.05	1.69	1.33	1.31	1.14	1.11	18.78
Vp/24	32.6%	9.8%	8.6%	7.0%	5.6%	5.4%	4.7%	4.6%	77.4%

Table 8

Varimax Rotation of Eight Factors From Principal-component Extraction

Item	I	II	III	IV	V	VI	VII	VIII
RSBLDQUN	**.89**	.10	-.06	-.06	-.04	-.02	-.04	.23
RSTHOUGT	**.78**	.18	.13	.19	.27	.19	.18	.06
RSOWNDIL	**.66**	-.07	.06	**.46**	-.00	.28	.13	-.07
RSANCTRY	**.63**	.04	.32	-.03	.00	.01	-.07	**.40**
RSHAIR	**.61**	.09	.27	.36	-.11	-.27	.19	.00
RSMOCC	-.15	**-.83**	-.03	.16	.03	-.09	-.03	.24
FQMARPRF	-.06	**.72**	.32	.10	.01	-.09	.21	.08
RSDANCE	.26	**.67**	-.11	**.47**	.09	-.09	.21	.09
RSCELEB	.07	**.57**	.17	.15	.35	.21	**.46**	.16
RSDRESS	.21	.11	**.82**	.07	-.22	-.02	-.01	.11
RSMEDPER	-.07	-.03	**-.72**	-.08	**-.45**	.10	-.22	-.11
RSIDENT	-.00	.41	**.57**	-.06	.14	.32	**.41**	.13
RSNAMES	**.45**	.12	**.49**	.22	**.41**	-.07	.22	-.23
RSLCR2	.18	-.00	.21	**.76**	.22	-.11	-.11	-.04
RSCONTET	.06	.07	-.11	**.75**	-.17	.29	.16	.28
RSFUTURE	.02	.00	.05	.04	**-.82**	.03	.09	-.02
RSRELIG	.14	.44	.28	.34	**.50**	.25	.03	.35
RSMEDICN	.05	.33	.18	.40	**.46**	.12	.32	.30
RSSCIENC	-.06	-.05	-.17	-.19	**-.42**	**.73**	-.10	-.04
RSLCR4	.06	.22	.17	.37	.12	**.66**	-.17	.17
RSFUNRAL	.27	.07	-.02	.14	.32	**.64**	**.42**	-.06
RSCONVER	.12	.15	.15	.01	-.09	-.09	**.87**	.15
RSTRAD	.32	.01	.10	.15	.07	.03	.19	**.76**
RSMEMBER	**.40**	.30	.12	.06	**.42**	-.01	.28	**.44**

varimax or oblimin rotation. For the varimax rotation, 12 items loaded on two or three factors.

From factor analytic studies of acculturation, the major first-order factor reflects culture-specific items and is primarily defined by language proficiency, preference, and/or use. Researchers have labeled this component "Nationality-Language," "Cultural Awareness" and "Acculturative Balance" (Olmedo, 1979). Based on the item content for Component I, this component will be referred to as Language-Ancestry.

Component II is composed of marriage preference (FQMARPRF), identity preference (RSIDENT), mother's occupation (RSMOCC), and participation in traditional activities (i.e., dance [RSDANCE], celebration [RSCELEB], and religion [RSRELIG]). Based on previous research, although not specific to American Indian studies, questions related to family and social roles and items that pertain to cultural preference (i.e., ethnic identification or ethnicity of spouse or friends) are generally related to Component II or the next major component. From previous factor analytic studies, names that are associated with Component II are "Traditional Orientation" versus "Anglo Face" and "Values Acculturation."

Mother's occupation has a high negative loading on Component II. This item is weighted from professional (with a low $\underline{t}$-score = 38) to private household worker (with a high $\underline{t}$-score = 64). About 40% of the sample ($\underline{n}$ = 21) reported their occupation as sales or kindred worker ($\underline{t}$-score = 45). With marriage preference, low scores on RSMOCC tended to endorse a preference to marry within their own culture, and high scores (private

household worker; t-score = 64) on occupational level tended to endorse an either/or preference.

In studies of acculturation that have included sociocultural indices (i.e., education and/or occupational level), a third dimension usually emerges (Olmedo, 1979). However, in this study, mother's occupation (RSMOCC) loaded on Component II with items related to preference in religion, celebrations, and marriage preference. Because 40% of the respondents endorsed service or kindred worker on RSMOCC, the data for this item are not evenly distributed and may lead to sample-specific artifacts.

In general, low scores on occupational level tend to indicate a preference to marry within their culture, identify as an American Indian, and prefer attendance at traditional activities. High scores on RSMOCC do not necessarily mean the reverse and may indicate an either/or preference. To a certain extent, Component II for this sample does reflect cultural preference and identification, but the small sample size compounded by the skewed data makes inferences tenuous. In addition, all items that have relatively high loadings on Component II have comparable loadings on other components for this factor analysis; therefore, no inference or label is made for Component II.

Component III is composed of six items, two of which have moderate loadings on Components I and II (RSNAMES and RSIDENT, respectively). RSMEDPER (When you are sick or have problems, do you go to the medicine person?) has a negative loading on this component. The negative loading for RSMEDPER is, in part, due to the 1 = no and 2 = yes coding. Fifty-four percent (30 out of 53) of the respondents reported yes, and 46% (23 out of 53) of the respondents reported no to this item.

Based on the respondent's scoring pattern on RSMEDPER and the scores on other items from this component, those individuals who have gone to a medicine person prefer to be identified (RSIDENT) with both cultures (63%), while 37% strongly identify with a traditional culture. On the other hand, those respondents who have not gone to a medicine person strongly identify with a traditional culture (87%), while 13% identify with either culture.

It is difficult to interpret this component based on the respondent's scoring pattern. It is conceivable that someone who has gone to a medicine person might identify strongly with an American Indian culture; but in fact, there is a trend to identify with both cultures. It may be that in this case, a preference (RSIDENT) may only be weakly associated with actual behavior (RSMEDPER). As reported previously, RSIDENT loads on two other components and is not totally explained by Component III.

Components IV through VIII make-up approximately 27% of the variance accounted for on the RPOS. These components will not be examined extensively. However, it can be noted that questions related to values were spread across the last five components, and neither the LOCl items nor the problem sphere items reflected a recognizable relationship.

Summary

Similarities between this sample and the Rosebud Sioux sample were found when correlations at the dimensional level were analyzed. The social, language, and quantum dimensions were highly correlated with each other in similar fashion for both samples,

but differences were observed between the values dimension and the social dimension, as well as the EDOCC and the language dimensions.

From a principal-component analysis, eight components emerged. The first component was identified as the language-ancestry component and accounted for 42% of the total variance of 77.4%.

Items that loaded on Component II pertain to cultural preferences such as dress style, identity, and marriage preference. RSMOCC, mother's occupation, had a high negative loading on this component, but in other studies, socioeconomic status is generally a distinct component. Because the data on RSMOCC were not evenly distributed, this was felt to be a sample-specific artifact. Similarly skewed distributions were observed on items that loaded on Component III. In addition to the skewed distributions, differences between preference and actual behavior came into question as seen by the analysis between RSMEDPER (When you are sick or have problems, do you go to a medicine person?), and RSIDENT (What is your desire to become identified with White vs. Indian?).

Based on this finding, the RPOS and the dimensions on the RPOS do not have empirical support, although caution is suggested based on the small sample size. Because of this finding, it was determined that only items on Component I would be used in further analysis.

Subject as Collaborator

Each of the 52 parents that completed the RPOS were asked to rate themselves on

a scale from 1 to 5 indicating their current lifestyle (1 = mainstream lifestyle, 3 = both lifestyles, and 5 = traditional lifestyle). Seven out of 52 (13.2%) indicated a mainstream lifestyle, while 45 (86.5%) respondents indicated both lifestyles (Mean = 2.73, SD = .69). None of the respondents rated themselves as having a traditional lifestyle.

As with RSIDENT (What is your desire to become identified with White vs. Indian?), the response pattern on this question is attenuated; none of the respondents reported a traditional lifestyle and most of the respondents endorsed both lifestyles (45 out of 52 respondents); but, when asked about Indian identity, 13% endorsed a desire to become identified with both cultures, while 87% endorsed a desire to become identified strongly as American Indian. This suggests that the distinction between preference and actual behavior is not in agreement and the construct of identity is a more complex issue.

Of the 53 respondents whot rated themselves on the lifestyle scale, 35 provided additional information that described their self-rating. These answers were either positive statements about their rating (e.g., understand tribal language, survival, dress mainstream) or negative statements that described their rating (e.g., only know English, family's not traditional, not materialistic, job not traditional). Whether the statement was negative or positive, each answers was counted and broken out into categories.

There was a total of 82 separate responses from these 35 individuals. The largest category (17 items) was descriptive of being raised in a traditional manner, teaching their children traditional ways, or the respondent's family not being traditional. The next category (15 items) included broad statements about survival (e.g., need to survive in both cultures, can't live in the past, need to make a living for my family, everything else

is going the White way). The third category included items that were beliefs or values (e.g., generous, have modern things, materialistic, believe in the medicine man, value the old ways). The next two categories had 10 items. The first was language (e.g., only know English, bilingual, speak native language), and the other category included arts and crafts or activities (e.g., attend Pow Wows, bead, and dance). Five responses were about their locations, either living off the reservation for a time or living on the reservation their entire life. Religion and ceremonies had four responses, as did education/occupation (e.g., my job is not traditional, I was educated White), three responses indicated that they did not dress Indian, and two responses indicated that they identified strongly with their Indian culture.

Analysis of the K-ABC Test Scores

The means, standard deviations, and ranges for the K-ABC global scales and the subtests for the total sample are presented in Table 9. For the global scales (standardized mean = 100; standardized SD = 15), the Simultaneous Processing Scale was approximately six standard score points above the Sequential Processing Scale. The MPC for this group was higher than the Achievement standard score by approximately 10 standard score points. Based on the Interpretive Manual (p. 172) for the K-ABC, this is considered a significant discrepancy score for 5- to 12-year-old children at the .05 level. For younger children, the manual suggests that a 14-point discrepancy score is needed to be considered a significant discrepancy. Examination of the Simultaneous Processing subtests indicated relatively high scores in FR, GC, MA, and SM. This sample obtained

Table 9

K-ABC Global Scale and Subtest Means, Standard Deviations, and Ranges for the Total Sample

Global Scales	N	M	SD	Range
Simultaneous Processing	56	106.68	10.79	80-137
Sequential Processing	56	100.64	10.76	80-119
Mental Processing (MPC)	56	104.55	10.17	83-127
Achievement Scale	55	94.15	10.57	74-125
Simultaneous Scale				
Magic Windows (MW)	16	10.94	2.49	7-17
Face Recognition (FR)	16	11.19	2.99	6-16
Gestalt Closure (GC)	56	11.77	2.40	7-16
Triangles (T)	52	10.63	2.26	6-17
Matrix Analogies (MA)	40	11.28	2.03	7-15
Spatial Memory	40	11.18	2.04	6-16
Photo Series	31	9.48	2.06	6-15
Sequential Scale				
Hand Movements (HM)	56	10.39	2.13	5-15
Number Recall (NR)	56	9.71	2.16	5-14
Word Order (WO)	52	10.33	2.23	5-16
Achievement Scale				
Expressive Vocabulary (EV)	16	95.5	8.65	80-112
Faces & Places (F&P)	55	88.25	12.60	57-115
Arithmetic (A)	55	97.36	12.10	69-135
Riddles (R)	55	93.51	9.34	76-123
Reading/Decoding (R/D)	39	100.36	11.74	74-120
Reading/Understanding (R/U)	24	102.96	13.32	78-126

scores above 10-scaled score points on all these subtests (standardized mean = 10; standardized SD = 3). MW and T were slightly above the mean scaled score of 10. This pattern of subtest scores on the Simultaneous Processing Scale was in accord with other studies conducted with American Indian children and the K-ABC. The relatively high score on the MA subtest was found in only one study (Davidson, 1992).

The Sequential Processing scores were near the mean scaled score of 10. The Achievement subtests were below or near the mean scaled score (standardized mean = 100; standardized SD = 15). The sample obtained the lowest Achievement standard score on Faces & Places (F&P) and this subtest is considered the most culture-loaded K-ABC subtest (Kaufman & Kaufman, 1983). Reading/Decoding (R/D) and Reading/ Understanding (R/U) were the highest scores on this scale.

K-ABC Scores and Sex

Table 10 presents the means and standard deviations for the total sample by sex. The females obtained higher scores on all global scales, although the general pattern (Simultaneous Processing > Sequential Processing > Achievement Scale) was the intelligence scales (Simultaneous Processing, Sequential Processing, and Mental Processing) and by one half a standard deviation on NR, WO, and FR (Kamphaus & Reynolds, 1987). According to these authors, this difference disappeared at the school-aged level. In this study, females outperformed males on all the intelligence scales. The differences ranged from 5.5 standard score points on the Simultaneous Scale to 3.89 on

Table 10

K-ABC Global Scale and Subtest Means, and Standard Deviations by Sex

		Female		Male	
K-ABC Global/Subtests	N	M	SD	M	SD
Sinultaneous Processing	29/27	109.34	11.91	103.81	8.78
Sequential Processing	29/27	102.52	10.21	98.63	11.16
Mental Processing	29/27	107.10	10.48	101.81	9.26
Achievement	29/26	96.03	10.39	92.04	10.56
Sinultaneous Scale					
Magic Windows	11/5	11.36	2.77	10.00	1.58
Face Recognition	11/5	11.27	3.58	11.00	1.22
Gestalt Closure	29/27	11.72	2.59	11.81	2.24
Triangles	25/27	10.76	2.54	10.52	2.01
Matrix Analogies	18/22	11.89	1.68	10.77	2.18
Spatial Memory	18/22	11.61	1.85	10.82	2.15
Photo Series	12/19	10.42	2.35	8.89	1.66
Sequential Scale					
Hand Movements	29/27	10.86	2.18	9.89	1.99
Number Recall	29/27	9.93	2.15	9.48	2.17
Word Order	25/27	10.56	2.36	10.11	2.31
Achievement Scale					
Expressive Vocabulary	11/5	94.82	9.25	97.00	7.91
Faces & Places	29/26	91.48	12.71	84.65	11.69
Arithmetic	29/26	100.07	12.85	94.35	10.64
Riddles	29/26	94.41	9.85	92.50	9.02
Reading/Decoding	18/21	101.78	10.28	99.14	12.97
Reading/Understanding	9/15	105.78	11.86	101.27	14.24

the Sequential Scale. However, these differences were not significant.

K-ABC Scores and Age

Table 11 presents the means and standard deviations for the total sample by age. Because different subtests are given at each age range, the dashes in Table 11 indicate subtests that were not given at the specified age levels.

Both age ranges have similar patterns (Simultaneous > Sequential > Achievement), but a 10-point difference is noted in favor of the Simultaneous Processing Scale at the preschool level, whereas only a 3-point difference was noted in favor of the Simultaneous Scale for the school-aged children. Also, Kamphaus and Reynolds (1987) noted that preschool children, in general, score higher on the Simultaneous Processing Scale than the Sequential Scale. They suggested that "some developmental phenomenon may be at work" (Kamphaus & Reynolds, 1987, p. 59).

Bracken (1985) and Jensen (1984) caution that a low floor effect on some K-ABC subtests can result in meaningless interpretations on the K-ABC. Kaufman and Kaufman (1983) reported that raw scores of zero may convert to scaled scores of 8 or 9 and standard scores of 80. For this sample, examination of raw score totals revealed that three 5-year-olds obtained raw scores of zero on Reading/Decoding, and one 4-year-old subject obtained a raw score of zero on Riddles. Thus, for this sample, a low floor effect did not appear to be a problem.

Test of Hypothesis Two

Hypothesis Two stated that preschool children (ages 3 to 4.11) will obtain the

Table 11

K-ABC Global Scale and Subtest Means and Standard Deviations by Age (43-70 months and 74-112 months)

		43-70 months		74-112 months	
Global and Subtests	N	M	SD	M	SD
Sequential Scale	25/31	97.04	9.80	103.55	10.77
Mental Processing	25/31	103.00	10.66	105.81	9.76
Simultaneous Scale					
Magic Windows	16/--	10.94	2.49	--.--	--.--
Face Recognition	16/--	11.19	2.99	--.--	--.--
Gestalt Closure	25/31	11.68	2.30	10.68	2.30
Triangles	21/31	10.05	2.18	11.03	2.26
Matrix Analogies	9/31	11.33	2.12	11.26	2.03
Spatial Memory	9/31	10.89	2.37	11.26	1.97
Photo Series	--/31	--.--	--.--	9.48	2.06
Sequential Scale					
Hand Movements	25/31	10.04	1.88	10.68	2.30
Number Recall	25/31	9.32	2.12	10.03	2.17
Word Order	21/31	9.19	1.75	11.10	2.37
Achievement Scale					
Expressive Vocabulary	16/--	95.50	8.65	--.--	--.--
Faces & Places	25/30	88.12	13.11	88.37	12.39
Arithmetic	25/30	95.80	12.92	98.67	11.43
Riddles	25/30	92.56	9.12	94.30	9.74
Reading/Decoding	9/30	94.22	14.47	102.20	10.36
Reading/Understanding	--/24	--.--	--.--	102.96	13.32
Age (Total Sample)	25/31	56.64	8.81	92.13	10.15

same high scores on the total Simultaneous Scale and subtests measuring visual-spatial skills as exhibited by older American Indian children (ages 5 to 8). To test this hypothesis, the standard score difference formula presented in the K-ABC Interpretive Manual determined significant discrepancies between the subject's Simultaneous and Sequential Processing scores (.05 significance level = 14 standard score points for children 2.5 to 4.9 years of age, and 12 standard score points for children 5.0 to 12.5 years of age). Previous research indicated that between 47% and 50% of two samples of American Indian children obtained significant discrepancies in favor of the Simultaneous Scale. This is compared to approximately 35% of the standardization sample, regardless of the direction (i.e., Simultaneous > Sequential or Sequential > Simultaneous). For this hypothesis to be accepted, the criteria of at least 40% of each age range for the sample were required to have significant discrepancies in favor of the Simultaneous Scale.

Table 12 presents the difference scores (Simultaneous score minus the Sequential score) for the two age groups. As observed in Table 12, 16 children obtained significant discrepancies in favor of the Simultaneous Processing Scale. This accounted for 28.5% of the total sample. For the preschool sample, 5 out of 16 children or 31% obtained significantly higher Simultaneous scores. For the school-aged sample 11 out of 40 or 27% obtained significant discrepancies in favor of the Simultaneous Processing Scale. Although the preschool American Indian children exhibited a relative strength on the Simultaneous Scale, neither the preschool nor school-aged American Indian children in this study obtained a discrepancy similar to previous studies that used the K-ABC. As previous research has cautioned, not all American Indian children exhibit a strength on

Table 12

Individual Student's Simultaneous and Sequential Processing Difference

			Total Number	
Age (in Yrs)	N	Sig. Level	SEQ > SIM	SIM > SEQ
2.5 to 4.9	16	.05	0	3
		.01	0	2
5.0 to 12.5	40	.05	0	4
		.01	3	7

the Simultaneous Processing Scale, and generalization of this assumption to all Native American children is misleading. For Hypothesis Two, preschool American Indian children do exhibit high scores on the Simultaneous Scale as do school-aged children, but neither the school-aged children nor the preschool children obtained significant Simultaneous/Sequential discrepancy scores above 40% as expected. Hypothesis Two was rejected.

The second part of this hypothesis examined the subtests on the Simultaneous Scale purported to measure visual-spatial abilities. These subtests included MW, GC, T, and SM. It was hypothesized that preschool American Indian children would have high scores on the above subtests compared to their school-aged counterparts. Based on previous research with American Indian children, an effect size of .40 or more was determined as the criterion for a subtests score to be considered a strength.

Table 13 presents the means, standard deviations, and total effect sizes for the Simultaneous subtests. The total effect sizes for the Simultaneous subtests ranged from

Table 13

Simultaneous Processing Subtests and Effect Sizes for Current Study

	Current study (43-70 months)				Current study (74-112 months)			
Subtests	N	M	SD	ES	N	M	SD	ES
MW	16	10.94	2.49	.31	--	--	--	--
GC	25	11.68	2.30	.56	31	10.68	2.30	.22
T	21	10.05	2.18	.01	31	11.03	2.26	.34
MA	9	11.33	2.12	.44	31	11.26	2.03	.42
SM	9	10.89	2.37	.29	31	11.26	1.96	.42
FR	16	11.19	2.99	.39	--	--	--	--

MW = Magic Windows; GC = Gestalt Closure; T = Triangles; MA = Matrix Analogies; SM = Spatial Memory; FR Face Recognition.

.41 on GC to -.16 on MA (refer to Table 3). Although MW, GC, T, and SM were the subtests to be examined, MA was included because this subtest had an effect size that was atypical of previous results (Davidson, 1992). Face Recognition (FR) was added because previous research has not used this subtest with preschool American Indian children, and the results of this study indicated an effect size near .40. Table 13 has been divided by age to determine the different effect size of preschool and school-aged children.

At the preschool level, the GC and the MA subtests met the criterion of a .40 effect size. According to Kaufman and Kaufman (1983), shared abilities for thest two subtests include attention to visual detail, perceptual organization, and spatial ability. MW, T, and SM did not meet the .40 effect size. In summary, GC and MA were the only

subtests that reached an effect size of .40.

At the school-aged level, MA and SM met the criterion of the .40 effect size. Shared abilities for these subtests are fluid abilities, perceptual organization, and spatial abilities. For this study, GC and T did not meet the .40 criterion. Although previous studies suggested that American Indian children performed higher, as a group, on subtests purported to measure visual-spatial abilities, the subtests vary from study to study and the magnitude of difference varies considerably. The Davidson study, which tested American Indian children for a gifted program, was the only study that represented high scores on GC, T, and SM.

Summary

Hypothesis Two was tested by examining the difference scores between preschool and school-aged children. For this hypothesis to be accepted, at least 40% of the sample must have a significant discrepancy between the Simultaneous and Sequential scales. However, for the total sample, only 28.5% or 16 scores were found to have significant discrepancy scores. For the preschool children, 31% of scores were found to be significant, while the school-aged children had 27% of the scores that reached significance. Although this sample did not reflect a greater percentage of difference scores between the Simultaneous and Sequential scales, preschool children appear to have the same Simultaneous > Sequential > Achievement pattern as school-aged children.

For the second part of this hypothesis, GC was the only Simultaneous Processing subtest that reached an effect size of .40 for preschool children. Unexpected results were

obtained on MA. However, this subtest was given to only nine preschool children. Matrix Analogies (MA) and SM were found to have a significant effect size for the school-aged children. Based on these results, school-aged children and preschool children for this sample of Northern Cheyenne children exhibited relatively high scores on two tests thought to be associated with visual-spatial skills. Based on this evidence, the first part of Hypothesis Two is rejected. The preschool and school-aged children did not meet or surpass the 40% criteria for this hypothesis. For the second part of the hypothesis, only partial support was obtained. Preschool children's performance met the .40 effect size on GC, but not on MW, T, or SM. The next section will examine the association between selected the K-ABC subtest and field independence-dependence.

Analysis of the K-ABC and the EFT

Table 14 presents descriptive statistics and effect sizes by age, sex, and for the total sample. For comparative purposes the descriptive statistics for the standardization sample for the PEFT and the CEFT are presented in Appendix H. For this study, an effect size of ES = +.67 was established as the criterion for a score to be considered field independent. This effect size was obtained by computing an effect size score between a Navajo sample with that of the standardization sample. From Table 14, only the CEFT for the total sample reached a significant effect size (ES = .71). Because of the small number of children at each age and sex level, analysis by age and sex was not conducted. It should be noted that between 5 and 6 years old an increase in performance appeared to occur, which levels out at 7 years. Other researchers have also noted a rapid increase in

Table 14

Descriptive Statistics and Effect Sizes for the PEFT and CEFT by Age and Sex

	CEFT				PEFT		
Age / Sex	N	M	SD	ES	M	SD	ES
3 / Male	0						
Female	4	12.25	5.35	.41			
Total	4	12.25	5.35	.37			
4 / Male	5	11.20	5.97	-.50			
Female	7	12.00	5.35	-.45			
Total	12	11.66	5.36	-.47			
5 / Male	3	17.33	3.06	.78			
Female	6	16.33	1.37	.03			
Total	9	16.66	1.94	.38			
6 / Male	3				10.67	3.06	1.01
Female	3				12.67	1.15	1.25
Total	6				11.66	2.33	1.14
7 / Male	9				14.00	4.27	.42
Female	4				13.75	1.50	.82
Total	13				13.92	3.56	.59
8-9/Male	7				16.14	6.20	-.09
Female	5				18.40	4.04	.37
Total	12				17.08	5.31	-.18
Total PEFT	25	13.56	4.25	.05			
Total CEFT	31				14.71	4.55	.71

field independence (Cecchini & Pizzamiglio, 1975) at this age level, and Kamphaus and Reynolds (1987) have noted rapid growth curves on tasks such as on the K-ABC.

K-ABC and EFT Correlations

Table 15 presents the correlation coefficients between the EFT and the global and subtest scores on the K-ABC. For the preschool children, no correlation was found to be statistically significant at the global or subtest level. This finding is in contrast to the Hall et al. (1988) study that found significant associations with selected subtests on the Simultaneous Processing scales (FR, GC, and T), the Achievement Scale (Expressive Vocabulary and Arithmetic), and the Sequential Processing Scale (WO).

For school-aged children, the EFT associated with the total Simultaneous Scale (r = .74), the MPC (r = .61), and the Achievement Scale (r = .58). However, no significant association on the Sequential Scale or the subtests was observed. All Simultaneous subtests but GC were found to be significantly correlated, and all Achievement subtests were found to be significantly correlated with EFT. Correlations found to be of "practical significance" (i.e., r = .50) were the Simultaneous Processing Scale and the subtests Triangles and Photo Series, as well as the Achievement Scale and the subtests Riddles and Reading/Understanding.

Hypotheses Three and Four

Hypothesis Three predicted that the total Simultaneous Scale and the subtests MW, GC, T, and SM would have correlations of r = .50 or better with the EFT measures.

Table 15

Correlations Among the K-ABC Subtests and Global Scores with Embedded Figures Test Scores

K-ABC Global and Subtests	Preschool EFT N	r	p	Childrens EFT N	r	p
Simultaneous Processing	25	.23	.27	31	**.74**	.00
Magic Windows	16	.13	.64	--	---	---
Face Recognition	16	.41	.11	--	---	---
Gestalt Closure	25	.12	.57	31	-.01	.96
Triangles	21	.23	.32	31	**.56**	.001
Matrix Analogies	9	-.12	.76	31	.36	.05
Spatial Memory	9	.15	.69	31	.49	.006
Photo Series	--	---	---	31	**.50**	.004
Sequential Processing	25	.15	.45	31	.20	.28
Hand Movements	25	-.02	.93	31	.19	.31
Number Recall	25	.16	.45	31	.22	.24
Word Order	21	.28	.22	31	.06	.77
Mental Processing (MPC)	25	.24	.25	31	**.61**	.000
Achievement	25	.28	.18	30	**.58**	.001
Expressive Vocabulary	16	.44	.08	--	---	---
Faces & Places	25	.08	.70	30	.37	.04
Arithmetic	25	.17	.39	30	.38	.04
Riddles	25	.38	.06	30	**.55**	.002
Reading/Decoding	9	.21	.58	30	.42	.02
Reading/Understanding	--	---	---	24	**.58**	.003

At the preschool level, no correlations reached this level on the PEFT, whereas correlations were found to be significant on the CEFT. The total Simultaneous scale and the subtest T were the only predicted K-ABC scores that had a correlation of $\underline{r} = .50$. Other subtests Photo Series on the Simultaneous Scale and Riddles, and Reading/ Understanding on the Achievement Scale were found to be significant, as were the total Achievement scale and the Mental Processing Composite (MPC). In general, field independence appeared to be related to those tasks that involved simultaneous processing and synthesis of part-whole relationships. Although visual-spatial skills are involved in these tasks, analytic reasoning is also required. For this study, the hypothesized results were only partially supported, and the hypothesis is rejected.

Hypothesis Four predicted that the American Indian sample would be more field independent when compared to the standardization samples for the PEFT and the CEFT. An effect size of $\underline{ES} = .67$ was the criterion for statistical field independence. For this hypothesis, school-aged children were found to be field independent ($\underline{ES} = .71$). At the preschool level, scores were comparable to the standardization sample. Hypothesis Four was supported only at the school-aged level.

The Family Questionnaire and Analysis

Due to the absence of validity and reliability data on the Family Questionnaire, statistical analysis was not appropriate. However, the following information is presented as a descriptive analysis of the Northern Cheyenne sample and the Family Questionnaire. The information reported is presented in Appendix I (Tables I-1 through I-3). In

comparing the Laosa sample with the current sample, the families of the current study tended to have more children as indicated by the averages on the child's birth order (FQBIRORD), the number of brothers and sisters (FQBROSIS), and the child being the only child (FQONLYCH), where FQONLYCH is scaled 1 = yes, 2 = no. The parents from the Laosa study had more years of schooling and higher occupational ratings. Sixty-eight percent of the mothers from the Laosa study worked, whereas in the current sample, 73% of the mothers worked. The mothers, for each sample, rated the ideal (FQMIDEAL), realistic (FQEDREAL), and minimum (FQMMIN) amount of education for their children similarly. Less reading was done by the mothers and fathers (FQMREAD, RQFREAD) of the current sample, although others in the household (FQOTREAD) read more to the children. The mothers for the current sample rated time spent with their children as being more than the Laosa study (FQHRSM). Fathers spent less time and the variability was considerable (FQHRSFA).

The descriptive data for the Family Questionnaire were separated by two age levels. At the school-age level, the amount of time the father spent in an activity with his child (FQHRSFA) was extremely variable. The standard deviation for this item was larger than the mean. The same pattern existed for the FQBKCHLD item at the school-aged level. An analysis of variances (ANOVA) was computed with AGE as the independent variable and FQOTREAD, FQHRSM, FQHRSFA, FQBKCHLD, and FQHRSTV as dependent variables. The F-tests were not statistically significant at the .05 level.

When the current sample was separated by sex, all the means and standard

deviations were found to be similar for males and females. An analysis of variance was computed with SEX as the independent variable and hours spent with the mother (FQHRSM) and number of toys (FQTYCLDS) as dependent variables because of the disparity in scores. The F-tests were not found to be statistically significant at the .05 level.

Clusters of significant correlations were observed between items. Variables related to family size (FQBIRORD, FQONLYCH, and FQBROSIS) have correlations ranging from .44 to .81. The children in this study have, on the average, three siblings. However, because an only child is coded as 1, and not an only child is coded as 2, positive correlations among these variables are observed but are not meaningful.

Another cluster of variables found to have significant correlations pertained to the mother's occupation (FQMOCC), that is, whether the mother is now working (FQMWKNOW), and the amount of time the mother has worked since her child was born (FQMOEMP). The positive correlation between FQMOCC and FQMOEMP of .59 appeared to indicate that either a mother worked full- and/or part-time most of the time since the child was born, and her occupation was toward the skilled or professional end of the job spectrum; or, the mother did not work most of the time and worked in occupations more toward the laborer/service worker part of the job spectrum. The negative correlations between FQMWKNOW, FQMOCC, and FQMOEMP reflected the coded value for the mother now working (FQMWKNOW: 1 = employed, 2 = not employed) and were not meaningful. Most of the mothers (73%) worked. Both the mother's and father's years of schooling correlated positively with their occupations, .49 and .74, respectively.

The number of books a child had available to read (FQBKCHLD) was associated with the mother's and father's education (FQMED and FQFED), the father's occupation (FQFOCC), and the minimum amount of education the mother felt the child should receive (FQMMIN). These correlations ranged from .56 to .42.

Home Language Survey

The Home Language Survey was designed to measure the mother's response to items regarding family members' ability to speak and understand their tribal language as well as the child's language environment and experiences. Appendix D (Table D-2) presents the frequency counts for this sample.

Twenty-eight respondents out of 46 (61%) indicated their children understood and spoke between 10 and 100 words of their tribal language. Nineteen percent of the children were able to understand over 100 words, while 11% were reported to speak over 100 words. Children who could not understand or speak their tribal language ranged between 19% to 28%. None of the 46 respondents felt their children were fluent in either understanding or speaking their tribal language.

More parents were fluent in their tribal language than were their children. For mothers, 33% of mothers considered themselves fluent in understanding while 28% reported they speak fluently. The fathers were reported to be a little more fluent than mothers. Forty-eight percent of the fathers were reported to understand fluently and 39% were reported to be fluent speakers. Whereas fathers were reported more fluent than

mothers, it was found that two more fathers than mothers were reported not able to speak or understand the tribal language. The grandparents were reported to be far more fluent, ranging from 50% to 75%. Based on the ratings of the child's language environment and experiences, 52% of the families spoke English all the time in their homes and approximately 36% spoke English most of the time.

For analysis purposes, the child's and parents' ability to understand and speak as well as the amount of their tribal language spoken at home were used as the language variables. The understand and speak items were recoded from 1 to 4 rather than 0 to 3, and the language spoken at home item was recoded in reverse order so that a high score indicated a high use of the tribal language at home (e.g., 1 = none of the time and 5 = all of the time). The amount of time the tribal language was spoken in the home (LHOME) consisted of the fourth language variable. These scores were then totaled and averaged for a total language score and used as one variable in the final multiple regression analysis. Table 16 presents the descriptive statistics for the four language items and the total anguage score.

Principal-Component Analysis of the Family Questionnaire and the Language Survey

A principal-component analysis was used to reduce the number of variables to a smaller set of dimensions for further analysis with the ability measures. The Kaiser-Meyer-Olkin MSA was .52. This value is considered in the low range for use in factor analysis. Elimination of items with low Measures of Sampling Adequacy (two items) did not increase the overall MSA for this procedure. Because the sample size of each item on

Table 16

Descriptive Statistics for the Home Language Survey

Item	N	Mean	SD	Range
1. LCHILD	46	3.82	1.16	2-6
2. LMOTHER	46	5.26	2.18	2-8
3. LFATHER	46	5.34	2.54	2-8
4. LHOME	46	1.58	.68	1-3
Total Language	46	16.00	4.46	7-24

the Language Survey and Family Questionnaire ranged from 44 to 46 respondents, the use of a principal-component analysis is questionable and results are likely to be spurious or unstable. Appendix J contains the initial extraction and the varimax rotation, but because appropriate statistical assumptions were not made, the analysis will not be addressed.

Multiple Regression Analysis of the Ability Measures and Selected Questions

Because a principal-component analysis was not conducted, items selected in the initial multiple regression were based on (a) item intercorrelations from the family questionnaire to avoid multicollinearity (see Table I-3 in Appendix I), (b) items from the Laosa study (1982) that were found to have statistical significance in his study, and (c)

inferences made about variables likely to influence test scores on measures of intelligence.

Items from the family questionnaire are divided into family size and birth order (FQBIRORD, FQONLYCH, and FQBROSIS), socioeconomic variables (FQMOCC, FQMED, FQFED, FQFOCC, FQBKCHLD, and FQTYCHLD), mother's expectation for the child's educational attainment and reading activities in the home (FQEDREAL, FQMIDEAL, FQMMIN, FQMREAD, FQFREAD, and FQOTHREAD), maternal employment (FQMOEMP and FQMWKNOW), television (FQHRSTV), preschool program (FQMOPRSC), maternal behavior (FQHRSM), and paternal behavior (FQHRSFA).

Data from the Laosa study using a path analysis technique indicated that the mother's education (FQMED), mother's occupation (FQMOCC), and amount of time the mother read to the child (FQMREAD) accounted for most of the variance in Preschool Inventory scores. To substantiate Laosa's findings, these items are kept for further analysis, and other variables within the above-cited categories were eliminated.

Item intercorrelation from Appendix I indicates that the family size and birth order are highly correlated with each other, and the number of brothers and sister (FQBROSIS) was kept for further analysis.

For the socioeconomic indices, father's education and occupation correlated highly ($\underline{r} = .74$) and have moderate, positive correlations with the number of toys and books in the family ($\underline{r} = .54$ and .56, respectively); therefore, FQFED was kept for this analysis, but toys and books were eliminated.

In a longitudinal study conducted by Hart and Risely (1995), whether a parent worked or not, the amount of interaction with a child did not seem to change; therefore, FQMOEMP, FQMWKNOW, FQHRSM, and FQHRSFA were eliminated from this study. Finally, the number of hours spent watching television (FQHRSTV) and number of months the child attended preschool (FQMOPRSC) were retained for analysis. On the average, children in this study spent 15 hours weekly watching television, and the positive effects of preschool programs on children's cognitive development are well documented in other studies. Because language and culture have been found to be associated with performance on intelligence/achievement tests, LANG and FACTOR1 (the first factor in the principal-component analysis) were used as independent variables in this analysis. Nine items were then used in the multiple regression analysis.

Because the number of variables (nine independent variables) is large and the number of participants in this sample is small, the probability of finding at least one significant independent variable by chance increases rapidly. To control for the overall significance level, a conservative approach is to conduct any one test at level a/k, where k is the number of independent variables. Therefore, at $\alpha \leq .05$, the significance level becomes $\alpha \leq .0056$. With this level of significance, a multiple regression analysis was conducted for the total Simultaneous Scale, and the subtests GC, T, SM, and MW. Individual analysis was conducted for the two EFTs.

Simultaneous Scale

Table 17 presents the descriptive statistics for nine independent variables and the

Table 17

Means, Standard Deviations, and Correlations of Nine Independent Variables and the Simultaneous Scale (N = 46)

			Correlations								
Item	Mean	SD	2	3	4	5	6	7	8	9	10
FQBROSIS	3.10	2.11	-26	11	12	00	-23	-26	39*	-12	-39*
FQMOCC	3.70	2.18		45*	-15	-14	-08	38*	-08	20	29
FQMED	12.90	2.09			10	37*	-18	05	16	-02	06
FQFED	12.65	2.01				-08	-13	-25	07	-42	06
FQMRAD	2.90	1.19					02	10	05	14	02
FQHRSTV	14.50	6.81						16	-17	-12	15
FQMOPRSC	12.25	7.41							16	20	25
LANG	16.43	4.25								32*	-32
FACTOR1	.15	1.10									08
SIMULTANEOUS	107.55	11.47									

*p .05; two-tailed test = .312

Simultaneous Scale for the total sample (N = 40). Table 18 presents the results for the backward multiple regression with POUT, F-to-remove, set at 0.10. With this model, variables remained in the equation (FACTOR1 [the acculturation component], FQMOPRSC [number of months the child attended preschool], FQFED [father's education], and LANG [the language variable]). As Table 18 indicated, the overall result was not statistically significant with $p \geq .0056$.

Approximately 20% of the explained variance is accounted for. However, LANG was the only independent variable with a partial F-test that approached statistical significance (Sig t = .004) and accounted for 19% of the explained variance with other variables held constant.

K-ABC Subtests and Multiple Regression

Table 19 presents the backward multiple regression analysis for the nine independent variables and the GC and T subtests. As indicated in Table 19, none of the variables had a t-value of less than $p < .0056$.

For this SM subtest, no statisfically significant variables were obtained. Table 20 presents the results for the backward multiple regression for SM. There were 13 scores for MW. However, because of this small sample size, a multiple regression was not completed.

Multiple Regression and the EFT Scores

The multiple regression analysis for the CEFT did not produce any variables that were statistically significant. For the PEFT, Table 21 presents the results for the

Table 18

Backward Multiple Regression Analysis of Nine Independent Variables and the Simultaneous Scale (N = 40)

R = .53	R^2 = .28		Adj R^2 = .20	SE = 10.76
		ANOVA		
	df		Sum of squares	Mean square
Reg	4		1429.3759	357.34399
Res	35		3706.5240	105.90069
F = 3.3744	Sig F = .0195			
Variables	SE Beta	r	t	Sig t
DANFAC1	.17	.08	1.69	.10
FQMOPRSC	.15	.25	2.26	.03
FQFED	.17	.05	1.79	.08
LANG	.16	-.31	-3.08	.004

backward regression. FQMOPRSC, number of months the child attended preschool, accounted for 40% of the explained variance in the backward regression model, and the t-value reached statistical significance (t =.0033). However, the three variables in this variables had a t-value of less than $p < .0056$.

For this SM subtest, no statisfically significant variables were obtained.

Summary of Regression Analyses

Nine independent variables that represented socioeconomic status, number of

Table 19

Backward Multiple Regression Analysis of Nine Independent Variables and Gestalt Closure (N = 40) and Triangles (N = 37)

Gestalt Closure (GC)

R = .75	R^2 = .57		Adj R^2 = .45	SE = 1.78
		ANOVA		
	df		Sum of squares	Mean square
Req	3		57.8962	14.9740
Res	15		44.5247	3.1803
F = 4.7083	Sig F = .0129			
Variables	r	t	Sig t	
FQMREAD	.19	2.46	.0274	
FQBFOSIS	-.57	-2.384	.0319	
FQMED	-.18	-1.871	.0824	
FQMOCC	.26	2.291	.0380	

Triangles (T)

R = .37	R^2 = .14		Adj R^2 = .11	SE = 2.21
		ANOVA		
	df		Sum of squares	Mean square
Reg	1		28.6511	28.6511
Res	35		171.2407	4.8925
F = 5.1560	Sig F = .0209			
Variables	r	t	Sig t	
FQMCPRSC	.37	2.42	.0209	

Table 20

Multiple Regression Analysis of Nine Independent Variables and Spatial Memory (SM) (N = 27)

Spatial Memory (SM)				
R = .34	R^2 = .12		Adj R^2 = ..09	SE = 1.91
		ANOVA		
	df		Sum of squares	Mean square
Req	1		12.5931	12.5931
Res	25		92.07351	3.6829
FF = 3.4193	SigF = .0763			
Variables	r	t	Sig t	
FQMOCC	34	1.849	.0763	

Table 21

Multiple Regression Analysis of Nine Independent Variables and the PEFT (N = 19)

R = .70	R^2 = .50		Adj R^2 = .40	SE = 3.36
		ANOVA		
	df		Sum of squares	Mean square
Req	3		172.2353	57.411
Res	15		169.4489	11.2965
F = 5.08	Sig F = .0125			
Variables	r	t	Sig t	
FQMOPRSC	.54	3.49	.0033	
LANG	.20	1.78	.0940	
FQMED	-.18	-2.79	.0135	

children in the family, amount of reading the mother does with the child, amount of television watched per week, the number of months the child attended preschool, language, and acculturation were used in a regression analysis with instruments thought to measure visual-spatial skills on the K-ABC and the EFT. Based on the analysis from the total sample, no independent variable included in the regression analyses accounted for a substantial or a statistically significant amount of explained variance.

Summary of Results

Hypothesis One

Results from the RPOS indicated that the social, the language, and the quantum dimensions were similar to those found in the Hoffman et al. (1985) study; however, the five dimensions and items in the dimensions did not emerge as distinct components. Instead, eight components emerged, and a simple structure was not obtained. Based on previous analysis that involved acculturation scales, only the first component was similar to other studies. This component was labeled Ancestry-Language, and it accounted for 42% of the 77.4% of the total variance. This component was the only component used in further analysis, and Hypothesis One was rejected.

Hypothesis Two

Hypothesis Two tested the magnitude of the Simultaneous-Sequential discrepancy for the total sample, and children at the preschool and school-aged levels. It was expected that 40% or more of the sample would have a significant discrepancy score in

favor of the Simultaneous Scale. For the total sample, 28.5% reached this discrepancy score, 31% for preschool children, and 27% for school-aged children, and this hypothesis was rejected.

The second part of this hypothesis stated that the subtests MW, GC, T, and SM would have an effect size of .40. Only GC obtained this effect size for the preschool children, and SM for the school-aged children.

Hypotheses Three and Four

Hypothesis Three tested the relationship between the EFT measures and the Simultaneous Processing scale and selected K-ABC subtests: MW, GC, T, and, SM. A correlation of $r = .50$ was needed to be of practical significance. For the CEFT, the total Simultaneous Scale and T were the only predicted scores to reach significance. For the PEFT, no correlations approached this significance level.

Hypothesis Four predicted that American Indian children would be more field inlependent than the standardization sample for the PEFT and CEFT. An effect size of .67 was needed to be considered significant. Only the school-aged children were found to be more field independent.

Hypothesis Five

Hypothesis Five tested whether certain family variables, language, and acculturation accounted for most of the variance on measures of visual-spatial abilities (Simultaneous Scale, MW, GC, T, and SM). None of the variables used as independent variables reached a significance level of $p \leq .0056$. This hypothesis was rejected.

CHAPTER V

DISCUSSION

The purpose of this study was to determine the relationship between scores obtaned on two measures of cognitive abilities and selected family variables from a sample of American Indian children and their mothers. A discussion of the results will begin with the acculturation instrument used in this study and will be followed by a discussion of the family variables, the cognitive measures, and the relationship among these sets of variables.

Acculturation Instrument

A principal-component analysis was conducted using the Rosebud Personal Opinion Survey (RPOS) to determine the empirical support for the five dimensions that made up this instrument. From this analysis, eight components emerged that accounted for 77.4% of the explained variance. The first component labeled "Ancestry-Language" was composed of items from the blood quantum and language dimensions proposed by the authors of the RPOS. This component accounted for 32.6% of the total explained variance. Other items had little relation to the author's proposed dimensions on this instrument, and in this study there was no attempt to name the components beyond the first component.

Several methodological issues became evident during this study. The first area pertans to the type of acculturation instrument used for data collection. The RPOS is a

monolevel instrument, and the obtained scores are evaluated along one dimension, from a traditional to mainstream culture. The purpose of such an instrument is to obtain information about an individual's retention of his/her culture.

As the lifestyle rating used in this study indicated, 86.5% of the respondents rated themselves as having both elements of a traditional and mainstream lifestyle, and seven (13.2%) reported a mainstream lifestyle. None of the respondents endorsed a completely traditional lifestyle. At least with this sample, the ability to measure cultural variance with a monolevel instrument was limited to either a mainstream lifestyle or the combination of both cultures (the modal response for this sample).

Based on this information, a bilevel instrument would be more appropriate in differentiating specific information, not only about the retention of the traditional culture, but also the acquisition of a more mainstream or dominant culture. As an example, a traditional scale (i.e., 1 = low traditional to 5 = high traditional) as well as a mainstream scale (i.e., 1 = low mainstream to 5 = high mainstream) allows for the measurement of retention of traditional culture and acceptance of the mainstream culture. Although the use of a bilevel instrument is not new to the field of acculturation, the current study supports this position.

A corollary to instrumentation and specific to the RPOS is item selection. Certain items such as dress and ornament preference may not be as important as other items such as language and ceremonial or religious attendance. Items such as dress and ornament preference may only compound problems if the instrument is used with other cultural groups for comparative purposes. Styles in clothing and ornaments are highly

changeable. It would appear that ornaments and dress preferences would be subsumed under attendance at certain ceremonial or religious practices where traditional dress and ornaments are generally preferred. Empirically, the principal-component analysis (see Table 8) suggests that preferences in celebrations and religious practices are more important items than items related to attire and ornaments. Other items such as the Locus of Control items and the Values Orientation items, although important in reference to the interactions of service delivery, do not appear to be a coherent set of items (i.e., components), and these items are scattered throughout the last four components. In addition, Kluckhohn and Strodtbeck theorized five existential categories, but only three categories were presented in the RPOS. At this time, these items only confound the RPOS as an acculturation instrument.

Of particular note was the identity preference question. Half the respondents desired to identify with their traditional culture and half desired to identify with both cultures. When the lifestyle question and the identity question were correlated with each other an $\underline{r} = .13$ was observed. Appendix F presents the correlations between the lifestyle rating and the RPOS items. Although no clear-cut correlations existed between the lifestyle rating and questions about behavior versus preference, prior research suggests that behaviors correlate higher with each other and have less association with items measuring a preference (Padilla, 1980). Although identity preference may have face validity, principal-component analysis suggests that identity is a complex item (loading on three components). Given the complexity of identity, it may be advantageous to omit this question and utilize items that reflect cultural preference and behavior only. Just as

declared background (simply calling oneself a particular ethnicity) becomes too general a term for the comparison of within and between cultural differences, the identity preference item provides little information about cultural variance in a meaningful or psychometric manner.

In addition to methodological issues, theoretical implications were apparent. With American Indians, blood quantum (percentage of American Indian ancestry) is closely associated with language preference and use, but it did not necessarily indicate that identity preference was traditional. Just as many respondents who endorsed a high Indian ancestry endorsed an identity preference for both Indian as well as mainstream. This pattern suggests that typologies of acculturation such as bicultural and/or acculturated may be useful in tapping cultural variance with an American Indian population. Again, a bilevel instrument would be beneficial in this endeavor.

In conclusion, evidence from this study suggests that the RPOS as it is now formatted has some promise as an acculturation instrument. Previous research in the field of accultuation indicates that the first factor that emerges in studies of acculturation is similar to that obtained from the principal-component analysis found in this study. However, the other components had only slight similarity to other factors found in the literature. It should be pointed out that some of the results may be due to the use of volunteers rather than a random sample and to the small sample size. For a factor analysis, a least four to five subjects are needed for one variable/item. In this case, a minimum of 120 to 150 subjects based on 32 items would be needed before confidence in

a factor analysis is obtained. Therefore, the findings in this study should be considered tentative.

Before the RPOS is used in other studies, items need to be in a bilevel format. A separate questionnaire that includes all five existential categories can be used in a format similar to Ibrahim and Kahn's (1987) assessment of world view. In addition, certain questions such as dress and ornament preference, as well as identity, may not be as important as other items such as language and ceremonial or religious attendance.

Family Questionnaire and the Home Language Survey

The family questionnaire was used in a previous study by Laosa (1982). Their results indicated that the mother's socioeducational values accounted for most of the explained variance in their child's Preschool Inventory performance. This was determined by use of path analysis. In the current study, an attempt to reduce the number of items into fewer items failed. Major differences between the two studies were the ages of the children (45.44 months vs. 76.29 months) and the occupations of the parents. It is implied, but not substantiated, that a greater degree of association between family variables and performance on tasks of cognitive abilities occurs at the lower age levels when the effects of schooling are less influential.

The Home Language Survey had little variability in the language used in the home, and the number of words spoken and understood by the child. Extremely low correlations were obtained between the child's language scores and that of the mother's

and father's scores (r = -.02 and .16, respectively), and the correlation between the mother's and father's language was around r =.30 (see Appendix D, Table D-3). Despite the fact that approximately half the parents were fluent in understanding and speaking their traditional language, most of the families spoke little of their language at home, although the schools were beginning to teach Northern Cheyenne in Head Start.

The K-ABC, EFT, and Spatial Abilities

The K-ABC Scores

Hypothesis Two tested the abilities of the American Indian children's total Simultaneous score and subtests purported to measure visual-spatial skills (MW, GC, T, and SM). It was anticipated that the total sample of children would have a significant discrepancy score in favor of the Simultaneous Scale (at least 40% of the total sample) and that the four subtests would reach an effect size of .40 or above. Because there were no studies with American Indian children under the age of 5 reported in the literature, this study was interested in the pattern exhibited by 3- to 5-year-old children in particular.

For the total sample and each age group (3- to 5-year-olds and 6- to 9-year-olds), the total Simultaneous Scale was higher than the Sequential Scale, but the cutoff of 40% was not reached. An examination of scores at the subtest level indicated that the preschool children performed above the effect size of .40 on GC. At the school-age level, SM was above the cutoff level. In addition to these subtests, MA was unexpectedly above the cutoff.

As pointed out by Kamphaus and Reynolds (1987), preschool children tend to

score higher on the Simultaneous Scale than on the Sequential Scale. For this sample, the 3- to 5-year-olds scored ten points higher on the Simultaneous Scale than the Sequential Scale. It should be noted that the variability in the Simultaneous Scale at this age range was larger than the other global scales as indicated by the relatively large standard deviation and could indicate individual fluctuations in perceptual development for 3- to 5-year-olds. The unexpected results for MA at the preschool are likely to be sample-specific in that only nine scores were analyzed at this age level. In addition, the first four items on MA are pictures of meaningful people and objects rather than abstract items such as complex designs.

In summary, a consistent pattern of Simultaneous > Sequential > Achievement is exhibited by this sample, and as a group, this pattern is consistent from study to study with American Indian children. However, this pattern varies from individual to individual. Results obtained from this study indicate that four individuals exhibited a significant discrepancy in favor of the Sequential Scale, and 19 or 33% of the sample had a higher Sequential score that ranged from 1 to 25 points higher than their Simultaneous score.

The K-ABC and the EFT

Hypothesis Three was to determine whether American Indian children were more field independent than the standardization samples for the PEFT and the CEFT; and, Hypothesis Four tested the magnitude of association between the EFT measures and subtests reported by the Kaufmans to measure field independence (MW, GC, T, and SM).

Results indicated that children between the ages of 3 to 5 had scores comparable to the standardization sample, while children 6 to 9 years old were considered more field independent than the standardization sample.

For Hypothesis Four, the PEFT had no significant correlations with the K-ABC global or subtest scores. On the CEFT, every global score but the Sequential Scale correlated above $\underline{r} = .50$. Subtests that correlated above .50 were T and PS on the Simultaneous Scale, and arithmetic and reading/understanding on the Achievement Scale.

In conclusion, there is much controversy about the exact interpretation given to the EFT measures. EFT measures have been found to correlate with general ability measures, visual-spatial skills, and tests of fluid abilities, a combination of intelligence and spatial abilities (McKenna, 1984). In this study, significant correlations were found in all three areas. The highest correlation was with the Simultaneous Scale followed by the MPC, and then the Achievement Scale. No significant correlation occurred with either the Sequential Scale or subtests on this scale. Given the correlations that were obtained for this sample between field independence (EFT) and the K-ABC, significant correlations (practical significance) were obtained when tasks involved simultaneous skills or a synthesis of simultaneous/sequential skills (i.e., arithmetic and reading/understanding).

Multiple Regression Analysis of Selected Variables with the Cognitive Measures

The last analysis was conducted to determine which variables accounted for the

variance in scores obtained on visual-spatial tasks by American Indian children. Nine independent variables were used in a backward regression method for each of the dependent variables thought to measure visual-spatial skills. Because there were nine variables and 40 or fewer scores for each dependent variable, a conservative significance level (.05/9 = .0056) was used. For each separate analysis, no independent variable or combination of variables reached statistical significance to the extent that Laosa found.

Conclusions

Evidence from a principal-component analysis suggests that the RPOS as now formatted, has limited support as an acculturation instrument, and the dimensions suggested by the authors of the instrument do not have empirical support. Empirical evidence does support the first component that emerged from the principal-component analysis, but it was difficult to define the remaining components. Suggestions were made to refine the RPOS by developing some of the item as bilevel items, eliminate the values and locus of control items, and identity preference.

As with previous research with American Indian children using the K-ABC, the familiar pattern of Simultaneous > Sequential > Achievement was found, and to some extent, the pattern of relatively high scores on GC, T, and SM was found for the 74-month-old children and older. The only subtests that had a significant effect size were SM for the school-aged sample and GC at the lower age level.

Correlations between the CEFT and the K-ABC were significant for the older age only. It was found that older children were considered more field independent, but the

younger children were not. The pattern of correlations between the CEFT and the K-ABC suggest that field independence is associated with tasks that involved simultaneous skills or a synthesis of simultaneous/sequential skills.

Based on the results of this study, there was no evidence that acculturation, language, and/or specific family variables accounted for or explained a significant amount of the variance in visual-spatial skills for this sample of American Indian children.

Recommendations

In addition to the above-mentioned difficulties with the RPOS, in this study socioeconomic status (SES) did not correlate as highly with language as it did in the Hoffman et al. (1985) study nor did SES form a distinct component as is usually seen in other studies of acculturation. For the RPOS, the standardization sample had a 51% unemployment rate, and the Northern Cheyenne sample had a 28% unemployment rate. Because of this, SES may be somewhat skewed as a psychosocial variable for American Indians. For the Northern Cheyenne Reservation, the unemployment rate is approximately 54%. Typical studies using education and occupation as a measure of SES obtain correlations between SES and acculturation from r = .35 to .44 (Negy & Woods, 1992). Because of the high unemployment rate on reservations, it is likely that SES and an acculturation scale may not correlate as high as other samples. Care should be taken in examining the role of SES and acculturation with an American Indian sample.

Despite the fact that acculturation, language, and specific family variables did not

appear linearly related to visual-spatial tasks on the K-ABC, when the K-ABC is given as part of a psychoeducational assessment, these variables should be considered during the evaluation. K-ABC studies with American Indian children have shown differences among tribes when variables such as rural versus urban and monolingual versus bilingual children are compared (Brokenleg, 1983; Nagliere, 1984).

In addition, American Indian children, as a group, do exhibit a high Simultaneous score, and this extends downward to the lower age levels. When determining a significant discrepancy between the Simultaneous versus the Sequential score, this should be kept in mind. Whereas 17% of the standardization sample have a significant discrepancy in favor of the Simultaneous scale, samples drawn from an American Indian ancestry have discrepancies that vary from 28% to 50%. Although it is standard procedure to obtain an Achievement score to determine a learning disability, psychologists should never rely on a Simultaneous/Sequential discrepancy score as an indicator of a learning disability. At the subtest level, T and to some extent SM will usually contribute to the relatively high Simultaneous score for American Indian children.

In reference to American Indian children from 6 years old to 9 years old, a field-independent cognitive style at the subtest level appeared to be related to a relatively good performance on T. Other subtests thought to have a significant association with field independence (MW, GC, and SM) did not reach the practical significance level of $\underline{r} = .50$, although SM reached an $\underline{r} = .49$. Evidence from this research indicated that achievement tests (arithmetic and reading/understanding) were significantly correlated with field independence. Should clinicians feel that field independence is a possible explanation for

a particular profile, they might look at the achievement scores that require a synthesis of simultaneous/sequential skills. In the Hall et al. (1988) study, arithmetic was found to significantly correlate with the PEFT for their sample of preschool children.

Limits of Study

This study had several instrumentation and methodological limitations: (a) This study is limited to a Northern Cheyenne sample only; (b) participants were volunteers, and thus the sample may have reflected a bias; (c) the small sample size; and (d) some of the variables used in this study were not normally distributed, and skewed data were not corrected during the multiple regression analysis and no analysis of the residuals was conducted.

Future Research

1. Because this sample was small and there were a limited number of children who had a Simultaneous/Sequential discrepancy, variables that might account for the strengths in visual-spatial skills could not be fully explored. To obtain an adequate sample, at least 200 children (roughly 30 in 100 American Indian children could be expected to have a significant discrepancy) would have to be tested.

2. Children can be selected from various tribal groups that reflect urban versus rural, monolingual versus bilingual, and acculturated versus traditional.

3a. Valid and reliable acculturation instruments are available and should be used, even if the scale is meant for another culture (i.e., MSCD). This instrument has been

given to various samples and is able to account for differences between and within cultures. The results from an American Indian sample can then be compared to the standardization sample.

3b. The RPOS can be developed into a bilevel instrument, and this scale can be compared to the MSCD for criterion validity.

4. Because the age groups of American Indian children used in this study were older than the Laosa study, children should be selected who are closer to the age group used in the Laosa study. The effects of schooling would then be similar and direct comparisons can then be made.

REFERENCES

Angoff, W. H. (1987). Validity: An evolving concept. In H. Wainer & H. I. Braun Eds.), Test validity (pp. 19-32). Hillsdale, NJ: Erlbaum.

Barcus, C., & Merrell, K. W. (1992, March). The American Indian support project of Utah State University. Paper presented at the meeting of the National Association of School Psychologists, Nashville, TN.

Berry, J. W. (1980). Acculturation as varieties of adaptation. In A. M. Padilla (Ed.). Acculturation: Theory, models, and some new findings (pp. 41-52). Boulder, CO: Westview.

Berry, J. W. (1991). Cultural variations in field dependence-independence. In S. Wapner & J. Demick (Eds.). Field dependence-independence: Cognitive style across the life span (pp. 278-308). Hillsdale, NJ: Erlbaum.

Borg, W. R., & Gall, M. D. (1983). Educational research: An introduction (4th ed.). New York: Longman.

Bracken, B. A. (1985). A critical view of the Kaufman Assessment Battery for Children (K-ABC). School Psychology Review, 12(1), 21-36.

Brokenleg, M. K. (1983). Sioux hemispheric and white children: A comparison of hemispheric dominance using the K-ABC. Dissertation Abstracts International, 44, 382-A.

Cecchini, M., & Pizzamiglio, L. (1975). Effects of field-dependency, social class, and sex of children between ages 5 and 10. Perceptual and Motor Skills, 41, 155-164.

Chief, E. H. (1940). An assimilation study of Indian girls. The Journal of Social Psychology, 11, 19-30.

Coates, S. (1972). The Preschool Embedded Figures Test: PEFT. Palo Alto, CA: Consulting Psychologists Press.

Crabtree, M., & Powers, J. (1991). Language files: Materials for an introduction to language. Columbus: Ohio State University Press.

Cummings, M. A., & Merrell, K. W. (1993). K-ABC score patterns of Sioux Children: Mental processing styles, effects of school attendance, and relationship between raw scores and age. Journal of Psychoeducational Assessment, 11, 38-45.

Dana, R. H. (1992). Multicultural assessment perspectives for professional Psychology. Needham, MA: Allyn & Bacon.

Dana, R. H., Hornby, R., & Hoffman, T. (1984). Local norms of personality assessment for Rosebud Sioux. White Cloud Journal, 3(2), 17-25.

Davidson, K. L. (1992). A comparison of Native American and White students' cognitive strengths as measured by the Kaufman Assessment Battery for Children. Roeper Review, 14, 111-115.

Davis, J. K., & Cochran, K. F. (1989). An information processing view of field dependence-independence. Early Child Development and Care, 51, 31-47.

Davis, K. W. (1993). [Report on service population and labor force]. Unpublished raw data.

Dinges, N. G., & Hollenbeck, A. R. (1978). Field dependence-independence in Navajo children. International Journal of Psychology, 13(3), 215-220.

Glym, M. A., & Stoner, S. B. (1987) Construct validity of the Children's Embedded Figures Test. Perceptual and Motor Skills, 64, 1035-1038.

Gonzales, R. R., & Roll, S. (1985). Relationship between acculturation, cognitive style, and intelligence. Journal of Cross-Cultural Psychology, 16(2), 190-205.

Goodenough, D. A., Oltman, P. H., & Cox, W. (1987). The nature of individual differences in field dependence. Journal of Research in Personality, 21, 881-899.

Hart,B., & Risley T. R. (1995). Meaningful differences in the everyday experiences of young American children. Baltimore: Paul H. Brookes.

Hall,G., Gregory, G., Billinger, E., & Fisher, T. (1988). Field independence and simultaneous processing in preschool children. Perceptual and Motor Skills, 66, 891-897.

Halverson, V. B. (1976). Cognitive styles of preschool Seminole Indian children. Dissertation Abstracts International, 30, 4198-A - 4199-A.

Hoffman, T. (undated). Construction of Hornby and Dana acculturation instrument (An addendum to "measures of Native American acculturation"). Unpublished manuscript. University of Arkansas, Fayetteville.

Hoffman, T., Dana, R. H., & Bolton, B. (1985). Measured acculturation and MMPI-168 performance of Native American adults. Journal of Cross-Cultural Psychology, 16 (2), 243-256.

Ibrahim, F. A., & Kahn, H. (1987). Assessment of world views. Psychological Report, 60, 163-176.

Jensen, A. R. (1984). The black and white difference on the K-ABC: Critical implications for future tests. School Psychology Review, 12(1), 377-410.

Jones, E. E., & Thorne, A. (1987). Rediscovery of the subject: Intercultural approaches to clinical assessment. Journal of Consulting and Clinical Psychology, 55(4), 488-495.

Kagitcibasi, C. (1988). Diversity of socialization and social change. In P. R. Dasen, J. W. Berry, & N. Sartorius (Eds.), Health and cross-cultural psychology: Toward applications (pp. 25-47). Newbury Park, CA: Sage.

Kamphaus, R. W., & Reynolds, C. R. (1987). Clinical and research applications of the K-ABC. Circle Pines, MN: AGS.

Kaufman, A. S. (1979). Intelligence testing with the WISC-R. New York: Wiley.

Kaufman, A. S., & Kaufman, N. L. (1983). Kaufman Assessment Battery for Children: Interpretive manual. Circle Pines, MN: American Guidance.

Kim, J. O. (1984). Factor analysis. In C. H. Hull & N. H. Nie (Eds.), SPSS/PC + V2.0 Basic Manual (pp. 468-514). Chicago: SPSS, Inc.

Klenfeld, J. S. (1973). Intellectual strengths in culturally different groups: An Eskimo illustration. Review of Educational Research, 43(3), 341-359.

Kogan, N., & Saarni, C. (1989). Cognitive styles in children: Some evolving trends. Early Child Development and Care, 33, 101-128.

Laosa, L. M. (1982). Families as facilitators of children's intellectual development at 3 years of age. In L. M. Laosa & I. E. Sigel (Eds.), Families as learning environment for children (pp. 1-41). New York: Plenum.

Laosa, L. M. (1984). Ethnic, socioeconomic, and home language influences upon early performance on measures of abilities. Journal of Educational Psychology, 76(6), 1178-1198.

McCullough, C. S., Walker, J. L., & Diessner, R. (1985). The use of Wechsler scales in the assessment of Native Americans of the Columbia River Basin. Psychology in the Schools, 22, 23-28.

McKenna, F. P. (1984). Measures of field dependence: Cognitive style or cognitive ability? Journal of Personality and Social Psychology, 47(3), 593-603.

McShane, S. A., & Plas, J. M. (1984). The cognitive functioning of American Indian children. Moving from the WISC to the WISC-R. School Psychology Review, 13(1), 61-73.

Moskowitz, D. S., Dreyer, A. S., & Kronsberg, S. (1981). Preschool children's field independence: Prediction from antecedent and concurrent maternal and child behavior. Perceptual and Motor Skills, 25, 607-616.

Moyerman, D. R., & Forman, B. D. (1992). Acculturation and adjustment: A meta-analytic study. Hispanic Journal of Behavioral Science, 14(2), 163-200

Naglieri, J. A. (1984). Concurrent and predictive validity of the Kaufman Assessment Battery for Children with Navajo samples. Journal of School Psychology, 22, 273-280.

Naglieri, J.A., & Kamphaus, R. W. (1983, March). Use of the Kaufman Assessment Battery for Children with culturally diverse children. Paper presented at the meeting of the National Association of School Psychologists, Detroit, MI.

Negy, C., & Woods, D. J. (1992) A note on the relationship between acculturation and socioeconomic status. Hispanic Journal of Behavioral Sciences, 14(2) 248-251.

Olmedo, E. L. (1979). Acculturation: A psychometric perspective. American Psychologist, 34(11), 1061-1070.

Olmedo, E. L., & Martinez, S. R. (1977). A general multidimensional model for the measurement of cultural differences. Los Angeles: Univesity of California, Spanish Speaking Mental Health Research and Development Program. (ERIC Document Reproduction Service No. ED 151 647)

Padilla, A. M. (1980). The role of cultural awareness and ethnic loyalty in acculturation. In A. M. Padilla (Ed.), Acculturation: Theory, models, and some new findings (pp. 47-85). Boulder, CO: Westview.

Pearson, C. A. (1988). Cognitive differences between bilingual and monolingual children on the Kaufman Assessment Battery for Children. Journal of Psychoeducational Assessment, 6, 271.-279.

Rogler, L. H., Cortez, D. E., & Malgady, R. G. (1991). Acculturation and mental health status among Hispanics. American Psychologist, 46(6), 585-597.

Rogoff, B. (1981). Schooling and the development of cognitive skills. In H. C. Trinadis & A. Heron (Eds.), Handbook of cross-cultural psychology: Developmental psychology (Vol. 4, pp. 233-294). Boston: Allyn & Bacon.

Sattler, J. M. (1988). Assessment of children (3rd ed.). San Diego, CA: Jerome M. Sattler.

Shade, B. J. (1989). The influence of perceptual development on cognitive style: Cross

ethnic comparisons. Early Child and Care, 51, 137-155.

Sue, D. W. (1978). Eliminating cultural oppression in counseling toward a general theory. Journal of Counseling Psychology, 25, 419-428.

Teeter, A., Moore, C. L., & Peterson, J. D. (1982). WISC-R verbal and performance abilities of Native American students referred for learning problems. Psychology in the Schools, 19, 39-44.

Telzrow. C. F. (1984). Practical applications of the K-ABC in the identification of handicapped preschoolers. Journal of Special Education, 18(3), 311-324.

Witkin, H. A., & Goodenough, D. R. (1981). Cognitive styles: Essence and origins. New York: International Universities Press.

Witkin, H. A., Oltman, P. K., Raskin, E., & Karp, S. (1971). Manual: Children's Embedded Figures Test. Palo Alto, CA: Consulting Psychologist Press.

APPENDICES

Appendix A: Rosebud Personal Opinion Survey and Data

ROSEBUD PERSONAL OPINION SURVEY

These questions provide information on some things that are important to you including values and beliefs as well as Indian identity. The results will be tabulated for the entire group and you will not be identified as an individual.
Please choose one of each pair of items. Check the item that best describes you.

___Some of the good and some of the bad things in my life have happened by chance.
___What's happened to me has been my own doing.

___When I make plans I am almost certain that I can make them work.
___I have normally found that what is going to happen will happen regardless of my plan.

___I like to do things on the spur of the moment.
___I prefer to have things all planned out in advance.

___Often I seem to have little influence over what other people believe
___When I'm right, I can usually convince others.

The following six statements express some of the ways different people feel things should be, and how they should act in the world. They are simply different points of view; thus, there is no right or wrong way to respond. Please read each item carefully and decide whether you agree or disagree with the statement. If you strongly disagree with the item, circle the Zero to the right of the statement, indicating that you do not agree with the statement at all, and could not disagree more. The 1 and 2 column indicate less disagreement, and the 3, 4, and 5 indicate agreement with the statement from slight to strong. PLEASE RESPOND TO ALL STATEMENTS.

	DISAGREE			AGREE	
STRONGLY	MOSTLY	SLIGHTLY	SLIGHTLY	MOSTLY	STRONGLY

By my own standards, I feel that what I am doing should always prepare me for the future.

0 1 2 3 4 5

By my own standards, I ought to believe that discoveries of science (which permit humans to harness and control processes of nature) usually have good effects for humanity.

0 1 2 3 4 5

By my own standards, I feel that a person is best off when doing or learning things in a group effort.

0 1 2 3 4 5

By my own standards, I ought to believe that natural forces can never be altered or adequately prepared for.

0 1 2 3 4 5

By my own standards, I feel that it's best to be content with the way things are.

0 1 2 3 4 5

By my own standards, I feel that it is best to teach children the traditions of the past (customs of the family, country, etc.) for to a very great extent the old ways are best.

0 1 2 3 4 5

We recognize that the culture of Indian people and white people differ. They have different customs, different social and religious beliefs, different institutions, a different language and different attitudes and preferences. This scale attempts to show the extent you have taken over white culture. Read the beginning statment of each item, then mark in the number 1, 2, 3, 4, or 5 of the item which most accurately describes your attitude, feeling, belief, preference or participation in white vs. Indian culture. Write the number in the parenthesis. In the case of attitudes and feelings your first impression is generally the most correct. We are interested only in determining the degree to which you are influenced by white vs. Indian culture, keeping in mind that no two peoples have the same cultures.

( ) What is your degree of social distance to Whites vs. Indians?

1	2	3	4	5
I feel the greatest degree of sympathetic understanding to whites.	I feel the greatest degree of sympathetic understandings to whites than Indians.	I feel as great a degree of sympathetic understanding to Indians as Whites.	I feel a greater degree of sympathetic under-standing to Indians than Whites.	I feel the greatest degree of sympathetic to Indians.

( ) What is your desire to become identified with White vs. Indian culture?

1	2	3	4	5
I definitely wish to become identified with White culture	I would rather be identified with White culture than Indian culture.	I would just as soon be identified with Indian culture as White culture.	I would rather be identified with Indian culture than White culture.	I definitely wish to become identified with Indian culture.

( ) What is your habitual medium of thought, White vs. Indian language?

1	2	3	4	5
I always think in terms of the English language.	I think in terms of the English language more than in terms of Indian language.	I think in term of the Indian language as much as white language.	I think more in terms of the Indian language than the White language.	I always think in terms of the Indian language.

( ) What is your preference in marriage of Whites vs. Indians?

1	2	3	4	5
I would definitely prefer to marry a White person.	I would have less hesitation in marrying a White than an Indian.	I would just as soon marry an Indian as a White.	I would have less hesitation in marrying an Indian than a White person.	I would definitely prefer to marry an Indian.

( ) What is your attitude toward the medicine man vs. a White doctor?

1	2	3	4	5
I have absolute faith in White doctors.	I have more faith in White doctors than Indian medicine people.	I have as much faith in Indian as in White doctors.	I have more faith in Indian than White doctors.	I have absolute faith in the Indian medicine people.

( ) What is your family participation in White vs. Indian funerals?

1	2	3	4	5
They have typical white funerals.	They have had some Indian ceremonies.	They have had as much Indian as White ceremonials.	They have had more Indian ceremonies than White.	They have had typical Indian ceremonies.

( ) What is your manner of tracing ancestry, White vs. Indian?

1	2	3	4	5
I trace ancestry according to White customs entirely.	I trace ancestry more according to White custom than Indian.	I trace ancestry according to Indian custom as much as White.	I trace ancestry more according to Indian custom than White custom.	I trace ancestry according to Indian custom entirely. (Cousins same as brother and sisters, decent more through mother.)

( ) What is your participation in White vs. Indian religious ceremonies at home?

1	2	3	4	5
I attend white church only.	I attend Indian religious ceremonies sometimes.	I attend Indian religious ceremonies as much as White church.	I attend Indian ceremonies most of the time.	I attend Indian ceremonies only. (Indian Peyote church, Sundances, camp meetings)

( ) What is your attendance at White vs. Indian dances? (Indian, Owl, Stomp, Rabbit, Gourd, etc.)

1	2	3	4	5
I attend white dances only.	I attend Indian dances sometimes.	I attend Indian dances as much as White dances.	I attend Indian dances most of the time.	I attend Indian dances only.

( ) What is your membership in White vs. Indian social organizations?

1	2	3	4	5
All of them are white organizations.	Most of them are White organizations.	As many of them are Indian as White organizations.	Most of them are Indian organizations.	All of them are Indian organizations.

( ) What is your attendance at White vs. Indian celebrations when at home?

1	2	3	4	5
I prefer to attend White celebrations only.	I prefer to attend Indian celebrations only now and then.	I prefer to attend Indian celebrations as much as White celebrations.	I prefer to attend Indian celebrations most of the time.	I prefer to attend Indian celebrations only.

( ) What is your family's use of English vs. tribal Indian dialect?

1	2	3	4	5
They speak only English.	They speak English most of the time.	They speak Indian as as much as English.	They speak Indian most of the time.	They speak only Indian.

( ) What is your own use of English vs. Indian?

1	2	3	4	5
I speakand understand Englisl best.	I speak and under-stand some Indian.	I speak and understand Indian as well as English.	I speak and understand Indian better than English.	I speak and understand Indain best.

( ) What kinds of names do members of your immediate family have, white vs. Indian?

1	2	3	4	5
All of tiem have white names.	Most of them have white names.	As many have Indian as white names.	Most of them have Indian names.	All of them have Indian names.

( ) What is your habitual topics of casual conversation White vs. Indian?

1	2	3	4	5
I engag in topics of conversation relative to whites nd their culture only.	I engage in topics relative to whites more than to Indians.	I engage in topics relating to Indians as much as whites.	I engage in topics relative to Indians more than to whites.	I engage in topics relative to Indians and their culture only.

( ) What is your preference in ornaments white vs. Indian?

1	2	3	4	5
I prefer typical white ornaments, bracelets, belts, bads most.	I prefer some Indian ornaments, beaded belts, earrings, bracelets, beads.	I prefer Indian ornaments, as much as white ornaments.	I prefer Indian ornaments more than white ornaments.	I prefer Indian ornaments most.

( ) What is your habitual mode of "hairdress" white vs. Indian?

1	2	3	4	5
I wear ny hair distinctively accordig to prevailing white fahion.	I wear my hair more according to white fashion than Indian fashion.	I wear my hair according to Indian as much as white fashion.	I wear my hair more according to Indian fashion than white fashion.	I wear my hair distincly according to Indian fasion (straight, bob or long braids).

( ) What is your preference in dressing white vs. Indian?

1	2	3	4	5
I prefer to dress distinctly accordig to prevailing white stle.	I prefer to dress according to white style more than Indian style.	I prefer to dress according to Indian style as much as white style.	I prefer to dress according to Indian style more than white style.	I distinctly prefer to dress according to Indian style. (Long dresses, buckskin, bright colors, or other types of Indian dress).

When ou are sick or have problems do you go to a medicine person? ___yes ___no

What i your blood quantum? _____

How fr have you gone in school?_____

Are you regularly employed now? ___yes ___no

If yes, what is your job?_____

CULTURAL ASSESSMENT

We are trying to determine how individuals identify with their traditional culture, including language, lifestyle, religion, and so on. Below you will find a scale from 1 to 5. A score of 1 indicates an Anglo lifestyle, while a score of 3 indiciates both an Anglo and traditional lifestyle. A score of 5 indiciates a traditional lifestyle. From this scale, please indiciate which lifestyle best describes your current lifestyle.

1 = Anglo lifestyle 3 = both lifestyles 5 = traditional

After circling the respondents answer ask:

What is it about lifestyle that explains your rating?

Response(s):

Scoring Key for Rosebud Personal Opinion Survey (RPOS)

BLOOD QUANTUM DIMENSION **QUANTUM**

1. What is your preference in marriage? **RSMARPRF**
   T-score: 1=21 2=31 3=41 4=51 5=61

2. What is your manner of tracing ancestry? **RSANCTRY**
   T-score: 1=21 2=32 3=44 4=55 5=67

3. What kinds of names do members of your immediate family have?
   T-score: 1=38 2=47 3=56 4=65 5=74 **RSNAMES**

4. What is your blood quantum? **RSBLDQUN**
   T-score: 4/4=64 7/8=56 3/4=48 1/2=40 1/4=32 1/8=24

LANGUAGE DIMENSION **LANG**

5. What is your desire to become identified with White vs. Indian
   T-score: 1=24 2=34 3=44 4=55 5=65 **RSIDENT**

6. What is your habitual medium of thought? **RSTHOUGT**
   T-score: 1=36 2=46 3=55 4=65 5=75

7. What is your family's use of English vs. tribal dialect? **RSFAMDIL**
   T-score: 1=35 2=44 3=54 4=63 5=73

8. What is your own use of English vs.Indian? **RSOWNDIL**
   T-score: 1=37 2=48 3=58 4=68 5=78

SOCIAL DIMENSION **SOCIAL**

9. What is your attitude toward the medicine man vs. White doctor? **RSMEDICN**
   T-score: 1=32 2=41 3=50 4=58 5=67

10. What is your family participation in White vs. Indian funerals? **RSFUNRAL**
    T-score: 1=32 2=41 3=49 4=58 5=67

11. What is your participation in White vs.Indian religious ceremonies at home? **RSIELIG**
    T-score: 1=39 2=44 3=52 4=60 5=68

12. What is your attendance at White vs.Indian dances?
T-score: 1=22 2=36 3=49 4=62 5=75 **RSDANCE**

13. What is your membership in White vs.Indian social organizations?
T-score: 1=19 2=33 3=48 4=63 5=78 **RSMEMBER**

14. What is your attendance at White vs.Indian celebrations when at home?
RSCELEB
T-score: 1=20 2=32 3=45 4=57 5=70

15. What are your habitual habits of casual conversation? **RSCONVER**
T-score: 1=16 2=33 3=49 4=65 5=81

16. What is your preference in ornaments? **RSORNAMT**
T-score: 1=16 2=33 3=49 4=65 5=81

17. What is your habitual mode of "hairdress"? **RSHAIR**
T-score: 1=33 2=42 3=52 4=65 5=72

18. What is your preference in dressing? **RSDRESS**
T-score: 1=34 2=44 3=55 4=66 5=77

19. When you are sick or have problems do you go to a medicine man?
T-score: Yes=59, No=39 **RSMEDPER**

VALUES DIMENSION **VALUES**

---

20. Some of the good and some of the bad things in my life have happened by chance (external) vs. What's happened to me has been my own doing (internal). **RSLCR1**
T-score: external=60, internal=40

21. When I make plans I am almost certain that I can make them work.
(internal) vs. I have normally found that what is going to happen will happen regardless of my plan. (external) **RSLCR2**
T-score: external=59, internal=40

22. I like to do things on the spur of the moment. (external) vs. I prefer to have things all planned out in advance. (internal)
T-score: external=59, internal=40 **RSLCR3**

23. Often I seem to have little influence over what other people believe. (external) vs. When I'm right, I can usually convince others. (internal)
T-score: external=59, internal=40 **RSLCR4**

24. By my own standards, I feel that what I am doing should always prepare me for the future. (1=strongly disagree to 6=strongly agree) **RSFUTURE**
T-score: 1=42 2=49 3=57 4=65 5=72 6=80

25. By my own standards, I ought to believe that discoveries of science (which permit humans to harness and control processes of nature) usually have good effects for humanity. **RSSCIENC**
T-score: 1=33 2=40 3=47 4=54 5=61 6=68

26. By my own standards, I feel that a person is best off when doing or learning things in a group effort. **RSGRPEFF**
T-score: 1=30 2=37 3=44 4=51 5=58 6=65

27. By my own standards, I ought to believe that natural forces can never be altered or adequately prepared for. **RSNATFOR**
T-score: 1=28 2=36 3=42 4=49 5=57 6=64

28. By my own standards, I feel that it's best to be content with the way things are. **RPCONTET**
T-score: 1=34 2=41 3=47 4=53 5=60 6=66

29. By my own standards, I feel that it is best to teach the traditions of the past (customs, of the family, country, etc) for to a great extent, the old ways are best. **RSTRAD**
T-score: 1=19 2=28 3=36 4=44 5=52 6=60

30. What is your degree of social distance to whites vs. Indians?
T-scores: 1=24 2=34 3=44 4=55 5=65) **RSSOCDIS**

EDUCATION/OCCUPATION **EDOCC**

---

31. How far have you gone in school? (Number of years) **RSED**
T-score: 7=76 8=71 9=67 10=62 11=58 12=53 13=48 14=44
15=39 16=35 17=30

32. What is your occupation? **RSOCC**

T-scores

38 = professional,technical

42 = small business owner,manager,or administrator

45 = sales, clerical, or kindred worker

48 = craftsmen, foremen, or kindred worker

51 = equipment operator

58 = laborer or farmer

61 = service workers except private household workers

64 = private household workers

Table A-1

Correlation of RPOS Items with Lifestyle Rating

RPOS Item	N	Lifestyle r	RPOS Item	N	Lifestyle r
1. RSMARFPF	52	.34	17. RSHAIR	52	**.36**
2. RSANCTRY	52	**.41**	18. RSDRESS	52	.17
3. RSNAMES	52	**.38**	19. RSMEDPER	52	-.35
4. RSBLDQUN	49	**.40**	20. RSLCR1	52	.22
5. RSIDENT	52	.13	21. RSLCR2	51	**.36**
6. RSTHOUGT	52	**.50**	22. RSLCR3	51	.27
7. RSFAMDIL	52	.26	23. RSLCR4	51	.27
8. RSOWNDIL	52	**.38**	24. RSFUTURE	52	-.20
9. RSMEDICN	52	**.47**	25. RSSCIENC	52	-.26
10. RSFUNRAL	52	.28	26. RSGRPEFF	52	.29
11. RSRELIG	52	**.66**	27. RSNATFOR	52	.17
12. RSDANCE	52	**.56**	28. RSCONTET	52	**.43**
13. RSMEMBER	52	**.67**	29. RSTRAD	52	.34
14. RSCELEB	52	**.48**	30. RSSOCDIS	52	-.04
15. RSCONVER	52	.21	31. RSED	44	-.29
16. RSORNAMT	52	.13	32. RSOCC	44	-.22

Appendix B: Family Questionnaire

FAMILY QUESTIONNAIRE

1. Child's sex (1 = girl, 2 = boy) _____

2. Child's chronological age (in months) _____

3. Child's birth order? (1 = first-born, 2 = second born, etc.) _____

4. Is child an only child? (1 = yes, 2 = no) _____

5. How many brothers and sisters does child have? _____

6. Since child was born has mother been employed outside the home?
   1 = No, mother has not been employed outside the home since child was born.
   2 = Yes, part time, but not most of the time since child was born
   3 = Yes, full time, but not most of the time since child was born
   4 = Yes, part time, most of the time since child was born
   5 = Yes, full time, most of the time since child was born

   _____

7. Is mother now employed outside the home?
   (1 = employed, 2 = non employed) _____

8. Mother's usual occupation
   0 = Private household workers
   1 = Service workers except private household
   2 = Laborers and farmers
   3 = Equipment operator
   4 = Craftsmen, foremen, and kindred worker
   5 = Sales, clerical, and kindred workers
   6 = Small lbusiness owners or managers, or administrators
   7 = Professional and technical
   8 = Large business owners or managers

   _____

9. Mother's education (years of schooling completed) _____

10. Father's education (years of schooling completed) _____

11. Father's usual occupation.
    (Same scale as that used for mother) _____

12. How much education mother thinks child will receive, realistically?
    1 = Complete elementary school
    2 = Complete junior high school
    3 = High school graduate
    4 = Technical or vocational school
    5 = Some college
    6 = College graduate
    7 = Master's degree
    8 = Professional degree (M.D., Ph.D., Ll.D.) _____

13. Ideally, how much education mother would like child to receive.
    (Same scale as above) _____

14. Minimum amount of education mother thinks child should receive.
    (Same scale as above) _____

15. Does mother ever read to child? How much?
    0 = Never
    1 = About once a month or less
    2 = About twice a month
    3 = About once a week
    4 = more than once a week _____

16. Does father ever read to child? How much?
    (Same scale as above) _____

17. Do others in the household ever read to child? How much?
    (Same scale as above) _____

18. Number of hours a week (including weekends) child
    typically spends with mother? _____

19. Number of hours a week (including weekends) child
    typicall spends with father in some activity? _____

20. Number of books and comic books child has of his or
    her own or that he or she shares with others. _____

21. Number of different toys in the house that child
    can play with. _____

22. Number of hours per week (including weekends) child
    typically watches television during school year. _____

23. Number of months child has attended preschool education program. _____

24. How many places have you lived since your child's birth? _____

25. How many schools/preschools has your child attended? _____

Appendix C: Consent Form

CONSENT FORM

I,_____, hereby give my consent for my child (print child's name)_____ to participate in the project being done by Mike Cummings, PhD student, Department of Psychology, Utah State University, Logan, UT.

I understand that my child will be administered the Kaufman Assessment Battery for Children (K-ABC) and the Embedded Figures Test (EFT) once during the 1992-1993 School Year.

I understand that any information that may identify me or my child will be kept confidential and available only to Mike Cummings and Mike "Cummings" Supervisory Committee Chairman, Dr. Marvin Fifield. All identifying papers will be kept under secure conditions in a locked file.

I understand that any information which may identify me or my child will not be used in any publication or presentations concerning the results of this project, and at all times Mike Cummings will make every effort to protect the rights and privacy of any person consenting to participate in this study. If at any time I wish to withdraw my child or my child wishes to withdraw from this study, I understand that I and/or my child are free to do so without any negative consequences.

Signed_____

Date_____

Appendix D: Home Language Survey Data

Tabe D-1

Hone Language Survey

	Understand				Speak			
	none	> 10 words	> 100 words	fluently	none	> 10 words	>100 words	fluently
Chid	0	1	2	3	0	1	2	3
Parnts								
Mther	0	1	2	3	0	1	2	3
Faher	0	1	2	3	0	1	2	3
Grandparents								
Mther's Faher	0	1	2	3	0	1	2	3
Mther's Mther	0	1	2	3	0	1	2	3
Faher's Faher	0	1	2	3	0	1	2	3
Faher's Mther	0	1	2	3	0	1	2	3

CHILD'S LANGUAGE ENVIRONMENT AND EXPERIENCES

Prinary Language (How Often)	Secondary Language (How Often)
HOME	
Engish/Tribal (_____)	English/Tribal (_____)
SCHOOL	
Engish/Tribal (_____)	English/Tribal (_____)
COMMUNITY	
Adut	
Engish/Tribal (_____)	English/Tribal (_____)
Frieds	
Engish/Tribal (_____)	English/Tribal (_____)

Directions: Circle either English or Tribal. Exanple: If English is used at home all the time circle English and use the key at the right and put a 1 in parenthesis for all the time. A 5 would be placed in secondary language because no other language is spoken at home.

Key: 1 = all the time
2 = more than half
3 = half the time
4 = less than half
5 = none

Table D-2

Frequency Count of Simple Speaking and Understanding Tribal

	Language							
	Understand				Speak			
	None	>10 words	>100 words	Fluent	None	>10 words	>100 words	Fluent
Child	9	28	9	0	13	28	5	0
Parents								
Mother	7	14	10	15	10	14	9	13
Father	12	11	1	22	12	13	3	18
GrandParent								
M (F)	10	3	3	29	10	5	3	27
M (M)	7	1	6	32	7	3	4	32
F (F)	6	4	1	34	6	4	1	34
F (M)	4	4	3	34	5	5	1	34

Child's Language Environment and Experiences

	Primary Language (English)					Secondary Language(Tribal)				
Rating	1	2	3	4	5	1	2	3	4	5
Home	24	17	5	0	0	0	0	5	17	24
School	9	35	2	0	0	0	2	0	36	8
Adults	29	16	1	0	0	0	0	1	16	29
Friends	41	2	0	0	3	3	0	0	2	41

Table D-3

Intercorrelations of 14 Home Language Survey Items (N = 44-46)

	CU	MU	FU	MFU	MMU	FFU	FMU	CS	MS	FS	MFS	MMS	FFS	FMS	HS
MU	03														
FU	18	28													
MFU	02	33	-02												
MMU	-03	**55**	04	**59**											
FFU	-06	**48**	25	**66**	**63**										
FMU	14	29	**60**	19	16	**51**									
CS	**75**	-00	21	-05	-13	-10	09								
MS	-03	**94**	22	37	**62**	**57**	25	-08							
FS	11	35	**97**	07	18	36	**58**	11	34						
MFS	02	**39**	-05	**97**	**62**	**66**	20	-04	**41**	04					
MMS	-03	56	00	**54**	**98**	**59**	14	-14	**62**	13	**61**				
FFS	-06	**48**	25	**66**	**63**	**1.0**	**51**	-10	**57**	36	**66**	**59**			
FMS	16	29	**61**	14	13	**46**	**97**	06	26	**58**	16	11	**46**		
HS	-27	-29	**-51**	-00	-11	-04	-37	-05	-23	-51	-03	-14	-04	**-40**	

Note: Pairwise deletion of data. Decimal points deleted. CU=Child Understands; MU=Mother Understands; FU=Father Understands; MFU= Mother's Father Understands; MMU=Mother's Mother Understands; FFU=Father's Father Understands; FMU=Mother's Mother Understands; CS=Child Speaks; MS=Mother Speaks; FS=Father Speaks; MFS=Mother's Father Speaks; MMS=Mother's Mother Speaks; FFS=Father's Father Speaks; FMS=Father's Mother Speaks; HS=Amount of Tribal Language Spoken at Home.

Table L-4

Family Questionnaire Descriptive Statistics for the Laosa Study (1982) and the Current Study

	Laosa Study (N = 46-50)		Current Study (N = 44-56)	
Item	M	SD	M	SD
SEX	1.50	.50	1.48	.50
AGE	45.44	4.40	76.29	20.17
FQBIRCRD	1.86	1.01	2.26	1.53
FQONLYCH	1.20	.40	1.84	.36
FQBROSIS	1.22	.93	2.89	2.11
FQMOEMP	2.56	1.66	3.33	1.45
FQMWKNOW	1.54	.50	1.26	.44
FQMOCC	5.98	1.60	3.76	2.21
FQMED	13.34	1.93	13.00	2.05
FQFED	15.00	2.96	12.78	2.19
FQFOCC	6.45	1.92	3.38	1.84
FQEDRIAL	5.28	1.14	5.28	1.28
FQMIDIAL	6.41	1.17	6.76	1.20
FQMMIX	4.00	1.38	4.00	1.21
FQMREAD	3.42	1.01	2.93	1.20
FQFREAD	2.12	1.60	1.85	1.58
FQOTREAD	1.24	1.73	2.13	1.45
FQHRSM	52.00	20.44	61.82	18.18
FQHRSFA	22.87	12.00	19.30	21.75
FQBKCHLD	43.86	32.31	46.26	52.27
FQTYCHLD	35.86	25.33	54.14	35.49
FQHRSTV	16.88	9.18	14.80	6.94
FQMOPISC	10.48	10.74	11.76	7.27

Appendix E: K-ABC Scales and Subtests Used by Each Age Group

Table E-1

K-ABC Subtests by Age Level

Subtests	3-years	4-years	5-years
Simultaneous			
Magic Windows	X	X	
Face Recognition	X	X	
Gestalt Closure	X	X	X
Triangles		X	X
Matrix Analogies			X
Spatial Memory			X
*Photo Series	(**Given only at age 6 and up**)		
Sequential			
Hand Movements	X	X	X
Number Recall	X	X	X
Word Order		X	X
Achievement			
Expressive Vocabulary	X	X	
Faces & Places	X	X	X
Arithmetic	X	X	X
Riddles	X	X	X
Reading/Decoding			X
*Reading/Understanding	(**Given only at age 7 and up**)		

* Photo Series and Reading/Understanding subtests are given at ages in parentheses and are added to the other subtests given to 5-year-old children.

Appendix F: Rosebud Personal Opinion Survey

Scores and Correlations

Table F-1

Description, Means, and Standard Deviations (Raw Scores) for the Rosebud Personal Opinion Survey (RPOS) by Dimensions

Description	N	M	SD
BLOOD QUANTUM DIMENSION **QUANTUM**	49	11.40	2.56
1. What is your preference in marriage? (White=1 to Indian=5) **RSMARPRF**	53	4.00	1.00
2. What is your manner of tracing ancestry? (White=1 to Indian=5) **RSANCTRY**	53	4.06	1.01
3. What kinds of names do members of your immediate famiy have? (White=1 to Indian=5) **RSNAMES**	53	3.15	1.49
4. What is your blood quantum? (1/16=.063 to 4/4=1.00) **RSBLDQUN**	49	.70	.29
LANGUAGE DIMENSION **LANG**	53	9.40	2.20
5. What is your desire to become identified with White vs. Indian (1=White to 5=Indian) **RSIDENT**	53	4.02	.93
6. What is your habitual medium of thought? (White=1 to Indian=5) **RSTHOUGT**	53	2.55	.99
7. What is your family's use of English vs. tribal dialect? (English=1 to Tribal=5) **RSFAMDIL**	53	2.32	.89
8. What is your own use of English vs.Indian? (English=1 to Tribal=5) **RSOWNDIL**	53	2.04	.76

(table continues)

Description	N	M	SD
SOCIAL DIMENSION **SOCIAL**	53	30.63	5.91
9. What is your attitude toward the medicine man vs. White doctor? (White=1 to Indian=5) **RSMEDICN**	53	2.94	.93
10. What is your family participation in White vs. Indian funerals? (White=1 to Indian=5) **RSFUNRAL**	53	3.32	1.09
11. What is your participation in White vs. Indian religious ceremonies at home? (White=1 to Indian=5) **RSRELIG**	53	3.04	1.18
12. What is your attendance at White vs. Indian dances? (White=1 to Indian=5) **RSDANCE**	53	3.75	.92
13. What is your membership in White vs. Indian social organizations? (White=1 to Indian=5) **RESMEMBER**	53	2.98	.91
14. What is your attendance at White vs. Indian celebrations when at home? (White=1 to Indian=5) **RSCELEB**	53	3.45	.85
15. What are your habitual habits of casual conversation? (White=1 to Indian=5) **RSCONVER**	53	3.13	.52
16. What is your preference in ornaments? (White=1 to Indian=5) **RSORNAMT**	53	3.25	.76
17. What is your habitual mode of "hairdress"? (White=1 to Indian=5) **RSHAIR**	53	2.55	1.37

(table continues)

Description	N	M	SD
18. What is your preference in dressing? (White=1 to ndian=5) **RSDRESS**	53	2.08	.83
/ALUES DIMENSION **VALUES**	52	33.52	4.94
19. When you are sick or have problems do you go to a nedicine man? (no=1, yes=2) **RSMEDPER**	53	1.57	.50
20. Some of the good and some of the bad things in my life have happened by chance. /s. What's happened to me has been my own doing. (1=internal, 2=external) **RSLCR1**	53	1.43	.50
21. When I make plans I am almost certain that I can nake them work. /s. I have normally found that what is going to happen vill happen regardless of my plans. (1=internal, 2=external) **RSLCR2**	52	1.44	.50
22. I like to do things on the spur of the moment. /s. I prefer to have things all planned out in advance. (=internal, 2=external)**RSLCR3**	52	1.48	.50
23. Often I seem to have little influence over what other people believe. /s. When I'm right, I can usually convince others (=internal, 2=external) **RSLCR4**	52	1.48	.50
24. By my own standards, I feel that what I am doing should always prepare me for the future. (Disagree: 1=strongly, 2=mostly, 3=slightly; Agree: 4=slightly, 5=mostly, 6=strongly) **RSFUTURE**	53	5.17	1.03

(table continues)

Description	N	M	SD
25. By my own standards, I ought to believe that discoveries of science (which permit humans to harness and control processes of nature) usually have good effects for humanity.(Disagree: 1=strongly, 2=mostly, 3=slightly; Agree: 4=slightly, 5=mostly, 6=strongly) **RSSCIENC**	53	4.04	1.21
26 By my own standards, I feel that a person is best off when doing or learning things in a group effort. **RSGRPEFF**	53	4.30	1.53
27 By my own standards, I ought to believe that natural forces can never be altered or adequately prepared for(Disagree: 1=strongly, 2=mostly, 3=slightly; Agree: 4=slightly, 5=mostly, 6=strongly) **RSNATFOR**	53	4.92	1.16
28 By my own standards, I feel that it's best to be content with the way things are. (Disagree: 1=strongly, 2=mostly,3=slightly; Agree: 4=slightly, 5=mostly, 6=strongly) **RSCONTET**	53	4.06	1.54
29.By my own standards, I feel that it is best to teach the traditions of the past (customs, of the family, country, etc for to a great extent, the old ways are best. Disagree: 1=strongly,2=mostly,3=slightly; Agree: 4=slightly, 5=mostly, 6=strongly) **RSTRAD**	53	4.89	1.03
30 What is your degree of social distance to whites vs. Indians (whites=1 to Indian=5) **RSSOCDIS**	53	3.60	.82

(table continues)

Description	N	M	SD
EDUCATION/OCCUPATION **EDOCC**	46	10.73	1.92
3. How far have you gone in school? (Number of years) **RSED**	46	12.95	2.05
3. What is your occupation? (0=large business owner or manager 1=professional,technical, 2=small business owner,manager,or administrator, 3=Sales, clerical, or kindred worker, 4=draftsmen, foremen, or kindred worker, 5=equipment operator, 6=laborer or farmer, 7=service workers except private household workers, 8= private household workers) **RSOCC**	46	4.23	2.21

Table F-2

Description, Means, and Standard Deviations (T-scores) for the Rosebud Personal Opinion Survey (RPOS) by Dimensions

Description		N	M	SD
BLOOD QUANTUM DIMENSION	**QUANTUM**	49	52.54	7.94
1. RSMARPRF		53	51.00	10.00
2. RSANCTRY		53	56.00	11.64
3. RSNAMES		53	55.25	10.85
4. RSBLDQUN		49	47.83	13.01
LANGUAGE DIMENSION	**LANG**	53	50.26	6.37
5. RSIDENT		53	54.77	9.76
6. RSTHOUGT		53	50.90	9.48
7. RSFAMDIL		53	47.26	8.46
8. RSOWNDIL		53	48.11	7.95
SOCIAL DIMENSION	**SOCIAL**	53	50.80	5.60
9. RSMEDICN		53	49.30	8.05
10. RSFUNRAL		53	52.03	9.51
11. RSRELIG		53	52.75	8.64
12. RSDANCE		53	58.81	11.93
13. RSMEMBER		53	47.81	13.42
14. RSCELEB		53	50.43	10.55
15. RSCONVER		53	51.11	8.32
16. RSORNAMT		53	52.91	12.17
17. RSHAIR		53	48.19	13.76
18. RSDRESS		53	45.09	8.76
19. RSMEDPER		53	50.32	10.00
VALUES DIMENSION	**VALUES**	52	53.46	4.03
20. RSLCR		52	48.67	10.00
21. RSLCR2		52	48.40	9.52
22. RSLCR3		52	49.13	9.58
23. RSLCR4		52	49.13	9.58
24. RSFUTURE		53	73.52	7.95
25. RSSCIENC		53	54.26	8.48

(table continues)

DESCRIPTION		N	M	SD
26. RSGRPEFF		53	53.11	10.68
27. RSNATFOR		53	56.28	8.36
28. RPCONTET		53	53.83	9.73
29. RSTRAD		53	51.07	8.32
30. RSSOCDIS		53	50.52	8.60
EDUCATION/OCCUPATION	**EDOCC**	46	49.63	6.97
31. RSED		46	49.43	7.39
32. RSOCC		46	49.83	8.41

Table F-3

Item Intercorrelation for the Rosebud Personal Opinion Survey (RPOS)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1.RSMARPRF															
2.RSANCTRY	.20														
3.RSNAMES	.11	.36													
4.RSBLDQUN	.15	**.56**	.25												
5.RSIDENT	**.56**	.15	**.42**	.01											
6.RSTHOUGT	.23	**.44**	**.50**	**.69**	.35										
7.RSFAMDIL	.04	.14	.20	**.41**	.09	**.56**									
8.RSOWNDIL	-.01	**.35**	**.37**	**.53**	.13	**.65**	.29								
9.RSMEDICN	**.47**	.17	**.43**	.15	**.44**	**.41**	.29	.25							
10.RSFUNRAL	.14	.18	.33	.19	.35	**.51**	.16	**.41**	**.42**						
11.RSRELIG	**.54**	**.35**	**.48**	.17	**.49**	**.44**	.15	.30	**.70**	**.38**					
12.RSDANCE	**.50**	.22	.32	.26	.22	**.39**	.14	**.38**	**.52**	.25	**.49**				
13.RSMEMBER	.33	**.41**	**.48**	**.40**	**.38**	**.52**	.22	.28	**.45**	.31	**.62**	**.40**			
14.RSCELEB	**.47**	.18	**.44**	.09	**.59**	**.39**	.15	.16	**.65**	**.49**	**.65**	**.57**	**.61**		
15.RSCONVER	.29	.16	.18	.12	**.47**	.26	.19	.18	.32	.29	.13	.31	**.37**	**.42**	
16.RSORNAMT	.15	.18	.20	.36	.29	.35	.18	.12	.18	.15	**.47**	.06	**.54**	.21	.11
17.RSHAIR	.16	.36	**.52**	**.50**	.19	**.54**	.28	**.44**	.29	.02	.24	.36	.28	.18	.30
18.RSDRESS	**.39**	.36	.32	.20	**.41**	.27	.19	.21	.15	.03	.18	.07	.21	.16	.19
19.RSMEDPEF	-.30	-.33	**-.54**	-.03	**-.48**	-.32	-.32	-.15	**-.47**	-.16	**-.49**	-.15	**-.39**	**-.42**	-.29
20.RSLCR1	.00	**.44**	-.13	.33	-.26	.05	-.05	.10	-.14	-.18	-.00	.15	.14	-.10	-.00
21RSLCR2	.07	.16	.36	.08	.04	.34	-.10	**.37**	.29	.15	**.37**	.30	.25	.18	-.00
22.RSLCR3	.38	-.15	.20	.03	.12	.13	-.00	.05	**.37**	-.05	**.37**	.32	.20	.18	.12
23.RSLCR4	.26	.15	.19	.08	**.37**	.29	.04	.36	**.37**	**.38**	**.50**	.28	.20	.31	-.02
24.RSFUTURE	.07	.05	-.17	-.02	-.10	-.23	.17	.03	.29	-.17	.23	-.02	.24	.10	.07
25.RSSCIENC	-.17	.10	.33	.05	-.00	.13	.10	.00	.24	-.19	.14	.25	.29	.10	.19
26.RSGRPEFF	.07	-.01	-.05	.01	-.00	.08	-.02	.29	.11	.03	.15	.17	.01	.13	-.02
27.RSNATFOR	.25	-.19	-.06	.00	-.05	.06	-.23	.12	.19	.11	.04	.16	.03	.05	-.01
28.RSCONTET	.22	.09	.05	.07	.09	.26	-.06	**.41**	.34	.32	.31	**.38**	.19	.24	.16
29.RSTRAD	.22	**.42**	.17	.36	.32	**.43**	.06	.25	**.39**	.14	**.39**	.25	**.54**	.32	.27
30.RSSOCDIS	.29	.18	.17	-.07	.36	-.03	-.07	-.25	.09	-.08	.19	-.10	.17	.11	.07
31.RSMED	-.24	.28	.11	-.04	-.22	-.16	-.18	.13	-.08	-.09	.14	-.16	.11	-.11	-.31
32.RSMOCC	**-.40**	-.05	-.16	-.11	**-.39**	-.26	-.16	.00	-.12	-.13	**-.24**	**.40**	.23	**-.43**	-.14

(table continues)

	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1.RSMARPRF																
2.RSANCTRY																
3.RSNAMES																
4.RSBLDQUN																
5.RSIDENT																
6.RSTHOUGT																
7.RSFAMDIL																
8.RSOWNDIL																
9.RSMEDICN																
10.RSFUNRAL																
11.RSRELIG																
12.RSDANCE																
13.RSMEMBER																
14.RSCELEB																
15.RSCONVER																
16.RSORNAMT																
17.RSHAIR	.20															
18.RSDRESS	.18	.33														
19.RSMEDPEF	-.17	-.25	**-.47**													
20.RSLCR1	-.03	.24	.15	.07												
21RSLCR2	.21	.35	.20	-.29	**.37**											
22.RSLCR3	.24	**.41**	.10	-.22	.07	**.38**										
23.RSLCR4	.24	.04	.15	-.07	-.08	.22	.07									
24.RSFUTURE	-.07	.05	.13	-.29	-.15	.14	.28	.07								
25.RSSCIENC	-.01	.22	.13	-.34	-.12	-.30	.23	.20	.30							
26.RSGRPEFF	-.08	.00	.15	-.07	.22	.23	-.03	.17	.33	.13						
27.RSNATFOR	.00	.10	-.02	.11	-.10	.27	**.41**	-.01	-.12	-.04	**.21**					
28.RSCONTET	-.02	.26	.07	.03	.29	**.43**	.30	**.37**	.07	.14	**.55**	**.52**				
29.RSTRAD	**.40**	.35	.21	-.24	.13	.23	.20	.20	-.09	-.07	.11	.10	.33			
30.RSSOCDIS	.19	.18	.29	-.28	-.00	-.00	-.02	-.01	.00	-.11	-.31	.01	-.22	.12		
31.RSMED	.08	-.08	-.05	-.14	.24	.14	.03	.13	**-.40**	.14	.01	-.10	.08	.06	-.03	
32.RSMOCC	-.13	-.09	-.12	.03	-.02	.00	-.12	-.09	.01	-.10	.00	.01	.01	.01	-.00	.55

Note. Underlined: $p < .05$ ($r = .27$); **Bold**: $p < .01$ ($r = .35$)

Table F-4

Correlation of Rosebudy Personal Opinion Survey (RPOS) Items with Lifestyle Rating

RPOS Item	N	Lifestyle r	RPOS Item	N	Lifestyle r
1. RSMARFPF	52	.34	17. RSHAIR	52	**.36**
2. RSANCTRY	52	**.41**	18. RSDRESS	52	.17
3. RSNAMES	52	**.38**	19. RSMEDPER	52	-.35
4. RSBLDQUN	49	**.40**	20. RSLCR1	52	.22
5. RSIDENT	52	.13	21. RSLCR2	51	**.36**
6. RSTHOUGT	52	**.50**	22. RSLCR3	51	.27
7. RSFAMDIL	52	.26	23. RSLCR4	51	.27
8. RSOWNDIL	52	**.38**	24. RSFUTURE	52	-.20
9. RSMEDICN	52	**.47**	25. RSSCIENC	52	-.26
10. RSFUNRAL	52	.28	26. RSGRPEFF	52	.29
11. RSRELIG	52	**.66**	27. RSNATFOR	52	.17
12. RSDANCE	52	**.56**	28. RSCONTET	52	**.43**
13. RSMEMBER	52	**.67**	29. RSTRAD	52	.34
14. RSCELEB	52	**.48**	30. RSSOCDIS	52	-.04
15. RSCONVER	52	.21	31. RSED	44	-.29
16. RSORNAMT	52	.13	32. RSOCC	44	-.22

Note. Underlined: $p \leq .05$; **Bold**: $p \leq .01$.

Appendix G: Rosebudy Personal Opinion Survey (RPOS) Matrices

Table G-1

Oblimin Rotation of Eight Factors from Principal-Component Extration (Pattern Matrix)

Item	I	II	III	IV	V	VI	VII	VIII
RSTRAD	**.57**	**.48**	.02	-.10	.12	.03	.20	.24
RSBLDQUN	-.01	**.97**	-.02	.04	-.10	-.14	-.10	-.06
RSANCTRY	.19	**.80**	.01	.01	-.06	.27	.05	-.09
RSTHOUGT	-.22	**.68**	.16	-.20	.12	.04	-.13	.12
RSOWNDIL	-.32	**.49**	.26	.08	**.45**	.00	.09	.09
RSHAIR	-.19	**.46**	-.29	.22	.34	.20	-.07	.18
RSMEMBER	.24	**.44**	-.05	**-.40**	-.01	.03	-.15	.27
RSSCIENC	.02	.00	**.76**	.37	-.19	-.11	.02	-.10
RSFUNRAL	-.24	.11	**.63**	-.27	.06	-.06	.02	.39
RSLCR4	.13	.02	**.63**	-.12	.36	.18	-.13	-.24
RSFUTURE	.03	-.00	.05	**.86**	.07	.07	-.04	.13
RSRELIG	.26	.11	.19	**-.44**	.29	.22	-.29	-.04
RSMEDICN	.19	-.04	.07	**-.41**	.35	.10	-.16	.29
RSLCR2	-.13	-.01	-.15	-.14	**.80**	.18	.04	-.16
RSCONTET	.22	-.04	.24	.21	**.79**	-.16	.03	.16
RSDRESS	.03	.14	-.02	.32	.04	**.85**	-.04	-.05
RSMEDPER	.03	.04	.11	.35	-.00	**-.71**	-.11	-.19
RSIDENT	.06	-.11	.31	-.06	-.15	**.56**	-.27	.37
RSNAMES	**-.43**	.20	-.05	-.29	.15	**.44**	-.08	.15
RSMOCC	.17	-.06	-.05	-.07	.20	.02	**.90**	.05
RSDANCE	.04	.12	-.16	-.02	**.46**	-.23	**-.63**	.16
RSMARPRF	**.42**	-.03	-.05	.02	.06	.27	**-.61**	.02
RSCELEB	.09	-.05	.16	-.28	.07	.09	**-.43**	**.43**
RSCONVER	.02	-.01	-.10	.18	-.06	.07	-.01	**.94**

Table G-2

Oblimin Rotation of Eight Factors from Principal-Component Extraction (Structure Matrix)

Item	I	II	III	IV	V	VI	VII	VIII
RSTRAD	**.58**	**.56**	.08	-.20	.32	.24	-.02	**.40**
RSBLDQUN	-.04	**.90**	.01	-.00	.15	.07	-.16	.13
RSTHOUGT	-.19	**.80**	.22	-.34	**.42**	.29	-.30	.39
RSANCTRY	.19	**.75**	.03	-.08	.16	**.42**	-.09	.14
RSOWNDIL	-.29	**.64**	.31	-.05	**.59**	.15	-.05	.26
RSHAIR	-.17	**.62**	-.23	.05	**.46**	.36	-.18	.34
RSMEMBER	.28	**.56**	.03	**-.53**	.27	.31	-.35	**.51**
RSSCIENC	.03	-.10	**.72**	**.42**	-.21	-.24	.06	-.18
RSLCR4	.19	.16	**.67**	-.20	**.46**	.24	-.26	-.01
RSFUNRAL	-.17	.27	**.67**	-.37	.27	.08	-.19	**.49**
RSFUTURE	.04	-.00	.05	**.80**	-.02	-.04	.01	.01
RSRELIG	.33	.31	.29	**-.59**	**.50**	**.44**	**-.50**	.29
RSMEDICN	.27	.21	.17	**-.57**	**.52**	.34	**-.40**	**.51**
RSLCR2	-.10	.22	-.09	-.26	**.78**	.28	-.06	.03
RSCONTET	.26	.17	.34	.07	**.77**	-.04	-.10	.26
RSDRESS	.09	.31	-.02	.14	.16	**.82**	-.17	.12
RSMEDPER	-.03	-.19	.11	**.50**	-.19	**-.79**	.12	-.36
RSIDENT	.18	.12	.35	-.24	.07	**.65**	**-.50**	**.55**
RSNAMES	-.37	**.42**	-.02	**-.45**	.36	**.58**	-.26	.36
RSMOCC	.10	-.10	-.13	.02	.07	-.11	**.85**	-.13
RSMARPRF	**.50**	.12	.06	-.15	.20	**.44**	**-.71**	.28
RSDANCE	.11	.32	-.00	-.20	**.57**	.06	**-.70**	**.40**
RSCELEB	.19	.19	.27	**-.46**	.30	.33	**-.64**	**.64**
RSCONVER	.09	.19	-.03	.00	.10	.23	-.22	**.90**

Table G-3

Factor Correlation Matrix for Eight Factors after Oblimin Rotation

FACTORS	I	II	III	IV	V	VI	VII	VIII
I								
II	-.01							
III	.06	.04						
IV	-.03	-.09	-.03					
V	.03	.28	.20	-.17				
VI	.08	.23	-.01	-.18	.17			
VII	-.09	-.13	-.12	.15	-.15	-.20		
VIII	.07	.24	.07	-.19	.20	.22	.26	

Appendix H: CEFT and PEFT Standardization Data

Table H-1

Descriptive Statistics for the PEFT and CEFT by Age for the Standardized Samples

	PEFT			CEFT		
Age / Sex	N	M	SD	N	M	SD
3 /Male	26	10.58	4.93			
Female	30	10.73	3.74			
Total	56	10.66	4.29			
4 /Male	48	12.87	3.43			
Female	70	13.99	4.39			
Total	118	13.53	4.01			
5 /Male	39	14.21	4.00			
Female	34	16.22	3.90			
Total	73	15.14	3.95			
Total PEFT	247	13.36	4.05			
5-6 /Male				20	6.80	3.80
Female				20	7.40	4.20
Total				40	7.10	4.00
7-8 /Male				20	11.40	6.20
Female				20	9.80	4.80
Total				40	10.60	5.60
9-10/Male				20	16.60	5.40
Female				20	16.30	5.70
Total				40	18.00	5.10
Total CEFT				1200	11.90	3.97

Note. From The Preschool Embedded Figures Test (p. 3) by Susan W. Coates, 1972 Consulting Psychologists Press, Inc., Palo Alto CA 94306. Used with permission. All rights reserved.

From A Manual for the Embedded Figures Tests (p. 24) by Herman A. Witkin, Philip K. Oltman, Evelyn Raskin, & Stephen A. Karp, 1971 Consulting Psychologists Press, Inc., Palo Alto CA 94306. Used with permission. All rights reserved.

Appendix I: Family Questionnaire Data

Table I-1

Family Questionnaire Descriptive Statistics by Sex

	Female			Male		
Item	N	M	SD	N	M	SD
SEX	29			27		
AGE	29	70.45	20.05	27	82.56	18.68
FQBIRORD	24	2.42	1.47	21	2.86	1.59
FQCNLYCH	25	1.84	.37	21	1.85	.35
FQBROSIS	25	2.80	2.20	21	3.00	2.05
FQMOEMP	25	3.48	1.33	21	3.14	1.59
FQMWKNOW	25	1.20	.41	21	1.33	.48
FQMOCC	25	3.88	2.07	21	3.62	2.42
FQMED	25	13.16	1.68	21	12.81	2.46
FQFED	24	12.63	2.45	21	12.95	1.91
FQFOCC	24	3.54	1.82	21	3.19	1.89
FQEDREAL	25	5.23	1.25	21	5.24	1.34
FQMIDEAL	25	6.88	1.13	21	6.62	1.28
FQMMIN	25	3.92	1.12	21	4.10	1.34
FQMREAD	25	3.04	1.06	21	2.81	1.36
FQFREAD	25	1.60	1.63	21	2.14	1.49
FQOTREAD	25	2.12	1.54	21	2.14	1.39
FQHRSM	25	66.25	21.68	20	56.50	11.15
FQHRSFA	25	20.83	24.01	20	17.45	19.12
FQBKCHLD	25	48.36	46.96	21	43.76	59.07
FQTYCHLD	25	59.60	33.51	21	47.67	37.48
FQHRSTV	25	14.92	7.15	21	14.67	6.86
FQMOPRSC	25	12.16	6.44	21	11.29	8.30

Table I-2

Family Questionnaire Descriptive Statistics for Two Age Ranges

	71 Months and Under			72 Months and Over		
Item	N	M	SD	N	M	SD
SEX	25	1.32	.48	31	1.61	.50
AGE	25	56.64	8.80	31	92.13	10.15
F0BIRORD	23	2.91	1.59	22	2.32	1.43
F0ONLYCH	24	1.83	.38	22	1.86	.35
F0BROSIS	24	3.04	2.23	22	2.73	2.00
F0MOEMP	24	3.50	1.44	22	3.14	1.45
F0MWKNOW	24	1.20	.41	22	1.32	.48
F0MOCC	24	3.70	2.27	22	3.82	2.20
F0MED	24	13.04	1.70	22	12.95	2.24
F0FED	23	12.56	2.44	22	13.00	1.93
F0FOCC	23	3.60	1.75	22	3.14	1.93
F0EDREAL	24	5.20	1.35	22	5.36	1.22
F0MIDEAL	24	6.79	1.28	22	6.73	1.12
F0MMIN	24	3.87	1.07	22	4.14	1.36
F0MREAD	24	3.00	1.14	22	2.86	1.28
F0FREAD	24	1.83	1.71	22	1.86	1.46
F0OTREAD	24	2.50	1.47	22	1.73	1.35
F0HRSM	23	66.39	21.81	21	56.81	11.69
F0HRSFA	23	21.43	21.17	21	16.95	22.64
F0BKCHLD	24	51.20	49.23	22	40.56	56.05
F0TYCHLD	24	56.25	33.85	22	51.86	37.85
F0HRSTV	24	12.95	6.75	22	16.82	6.71
F0MOPRSC	24	10.79	6.17	22	12.82	8.32

Table I-3

Intercorrelation Among Family Questionnaire Items (N = 44-46)

	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	30	14	02	04	-11	15	-05	-08	07	-09	-03	-10	07	-09	17	00	-27	-07	-04	-16	-01	-06
2		-10	09	02	-12	24	05	05	21	-00	14	-00	27	-05	-01	-18	-33	-18	-04	-14	10	15
3			**46**	**81**	-12	15	-33	-09	03	22	-14	-13	-06	01	11	13	13	05	05	**-33**	-25	-06
4				**58**	24	25	-29	-23	-04	08	-09	-29	-25	-12	26	-04	07	22	-12	**-39**	-03	06
5					-06	24	-31	00	-00	30	-08	-23	01	-00	10	17	10	14	16	-32	-21	-14
6						**-55**	**59**	32	-13	-03	-09	-01	-15	-17	-28	02	-15	-00	-01	07	-11	23
7							**-63**	-24	24	23	02	-00	37	-00	37	08	08	-12	20	00	04	-36
8								**49**	-03	-13	23	01	-07	-13	**-49**	-07	-36	00	-12	-14	-13	30
9									18	20	22	05	05	29	-16	19	08	04	**42**	16	-17	-00
10										**74**	36	24	**44**	01	13	22	-01	-10	**54**	27	-18	-21
11											33	23	29	07	31	28	10	20	**56**	13	-33	-30
12												**39**	34	04	17	02	05	17	27	10	-09	-17

(table continues)

	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
13													**38**	08	29	08	08	30	27	28	02	-20
14														-01	13	21	-04	-13	**44**	26	-13	**-39**
15															19	32	16	-03	23	20	-07	14
16																04	**40**	**45**	26	12	06	-28
17																	11	17	29	27	-11	-26
18																		28	20	31	15	-34
19																			-00	-11	01	-21
20																				**53**	-24	-34
21																					17	-28
22																						05
23																						

Note. Pearson product-moment correlations, decimal points deleted. **1** = Sex; **2** = Age in months; **3** = Birth order; **4** = Only Child; **5** = Number of siblings; **6** = Since child born, has mother been employed outside home; **7** = Is mother employed outside home now; **8** = Mother's usual occupation; **9** = Mother's education; **10** = Father's education; **11** = Father's usual occupation; **12** = How much education mother thinks child will receive, realistically; **13** = Ideally how much education mother would like child to receive; **14** = Minimum amount of education mother thinks child should receive; **15** = How much mother reads; **16** = How much father reads; **17** = How much others read; **18** = Number of hours spend with mother; **19** = Number of hours spent with father in some activity; **20** = Number of books child has; **21** = Number of toys child has; **22** = Number of hours watching TV; **23** = Number of months attend preschool. **Bold** $p > .01$ (Two-tailed); Underlined $p > .05$ (Two-tailed).

Appendix J: Varimax Rotation of Family Questionnaire

Table J-1

Varimax Solution for the Family Questionnaire and Language Items

Item	I	II	III	IV	V	VI	VII
FQFED	**81**	02	09	00	11	-03	-08
FQFOCC	**74**	30	00	14	12	20	-12
FQMMIN	**69**	-15	21	17	-07	-08	-03
FQBKCHLD	**64**	03	-03	**41**	39	-03	-08
FQEDREAL	**62**	-28	-09	-12	-05	30	16
FQHRSTV	**-42**	-35	32	03	07	11	-14
FQBROSIS	08	**87**	08	09	08	-00	-05
FQBIRORD	05	**80**	07	02	02	-00	27
FQONLYCH	-14	**68**	31	-20	06	17	00
FQMOCC	05	-23	**-81**	-31	-12	-02	-10
FQMWKNOW	30	16	**75**	12	-01	-10	07
FQMOEMP	-11	02	**-74**	06	-09	-02	-36
FQMED	28	06	**-65**	13	**41**	-08	22
FQMOPRSC	-32	05	-21	**-74**	21	-14	-05
FQHRSM	-16	04	08	**64**	15	32	27
FQTYCHLD	18	**-46**	03	**59**	31	-05	-21
LMOTHER	-11	**46**	-06	**-49**	-25	31	24
FQMREAD	02	-13	00	-03	**83**	-00	16
LCHILD	00	39	17	11	**66**	22	-05
FQOTREAD	23	19	-09	32	39	02	-18
FQHRSFA	-05	19	-11	10	00	**88**	-01
FQFREAD	14	05	**46**	17	25	**62**	16
FQMIDEAL	**42**	-37	02	02	01	**53**	-06
LHOME	-01	13	17	17	-03	19	**82**
LFATHER	-13	31	12	-16	15	-18	**70**

VITA

MICHAEL A. CUMMINGS
Date of Birth: 10/17/51

EDUCATION

Utah State University (Logan, UT))

Dates: October 1989 to present

Degree: Ph.D. candidate

Major: Clinical Psychology (Combined Professional-Scientific Psychology Program; American Psychology Association Accredited)

Dissertation Title: Acculturation, Family Variables, and Cognition of American Indian Children Ages 3 to 9

Utah State University

Dates: June 1987 to August 1991

Degree: M.S. (1991)

Major: School Psychology

Thesis Title: The Relationship Between Raw Scores on the Kaufman Assessment Battery for Children and School Attendance for Sioux Children

Augustana College (Sioux Falls, SD)

Dates: September 1973 to June 1977

Degree: B.A. (1977)

Major: Psychology

PROFESSIONAL EXPERIENCE

Intermountain Centers for Human Development (7/94 to 4/96)

Taos Mental Health Services (6/96 to present)

PUBLICATINS AND PRESENTATIONS

Publications:

Cummings, M. A., & Merrell, K. W. (1993). K-ABC performance patterns of Sioux children: Mental processing styles, effects of school attendance, and relatinship of raw scores for ages 8-12. Journal of Psychoeducational Assessment, 11, 38-45.

Presentations:

Cummings, M. A. (1992). K-ABC performance patterns of Sioux children: Mental processing styles, effects of school attendance, and relationship of raw scores for ages 8-12. Paper presented at the meeting of Utah School Psychologists Association, Salt Lake City, UT.

Cummings, M. A. (1992, July). American Indian psychology. Paper presented at the meeting of the 5th Annual Convention of American Indian Psychologists and Graduate Students, Utah State University, Logan.

Porter, N., Vargas, L., Ometse Clayton, J., & Cummings, M. (1994). Clinical approaches with culturally diverse populations. Panel presentation at the Multidisciplinary and Multicultural Conference on Child Sexual Abuse, Albuquerque, NM.