



R E S E A R C H

A Summary of
Research and Publications
on Early Childhood for
American Indian and
Alaska Native Children



U.S. Department of Health and Human Services
Administration for Children and Families
Office of Planning, Research and Evaluation
Child Outcomes Research and Evaluation
Administration on Children, Youth and Families
Head Start Bureau



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A Summary of Research and Publications on Early Childhood for American Indian and Alaska Native Children

INTRODUCTION

Throughout its 35-year history, Head Start has been the nation's cornerstone of services for low-income children and their families. Its basic principles have been models for countless other programs designed to improve the circumstances and opportunities that vulnerable populations face. Today, Head Start and Early Head Start programs provide comprehensive child development services for children between birth and age 5, pregnant women, and their families. Head Start is child focused and has the overall goal of helping children from low-income families become ready to attend and succeed at school. Administered by the Head Start Bureau in the Administration on Children, Youth and Families (ACYF),¹ funds are provided through grants to local public agencies, private organizations, Indian tribes, and school systems. These organizations, in turn, operate Head Start programs. They provide services in the areas of education and early childhood development; medical, dental, and mental health; nutrition; and parent involvement. An underlying premise of Head Start services is that they should be appropriate for the child's and family's developmental, ethnic, cultural, and linguistic heritage and experience.

Children are eligible to enroll in Head Start if their families meet certain income guidelines. In fiscal year 2000, Head Start served over 850,000 children in over 18,000 centers at a cost per child of approximately \$6,000. In addition to direct program services, the Head Start Bureau sponsors training and technical assistance activities; supports research, demonstration, and evaluation projects; and monitors programs for compliance and quality. In fiscal year 2000, total Head Start program costs came to about \$5.3 billion (U.S. Department of Education, 2001).

Head Start for American Indian and Alaska Native Children

To serve American Indian and Alaska Native children, the Head Start Bureau created Region XI, which currently provides funding directly to 153 tribal grantees in 27 states. These grantees serve over 25,000 American Indian and Alaska Native children.² The Region XI grantees are often unique in that they tend to be located in rural, remote locations, and programs in these areas are often affected by challenges associated with their geographic location, such as limited transportation, limited resources (e.g., the pool of qualified teachers may be small), and relatively small numbers of children to enroll in preschool.

¹ ACYF is an agency of the Administration for Children and Families (ACF) in the U.S. Department of Health and Human Services (DHHS).

² An additional number of American Indian and Alaska Native children receive services from Head Start programs outside Region XI.



Research on Head Start

A substantial research enterprise has been attached to Head Start and other early childhood programs, providing information of significant value. Perhaps the most important finding, based on a comprehensive review of 36 studies, is that early childhood care and education “can produce large effects on IQ during the early childhood years and sizable persistent effects on achievement, grade retention, special education, high school graduation, and socialization . . . These effects are large enough and persistent enough to make a meaningful difference in the lives of children from low-income families: for many children, preschool programs can mean the difference between failing and passing, regular or special education, staying out of trouble or becoming involved in crime and delinquency, dropping out or graduating from high school” (Barnett, 1995, p. 43).³

Research-based information has been used by Head Start to enhance services and structures to better serve children and families in terms of their abilities, needs, and development. For example, the Family and Child Experiences Study (FACES) is a national longitudinal study that describes the characteristics, experiences, and outcomes for children and families in Head Start. Information is being collected for a nationally representative sample of 40 Head Start programs and 3,200 children and parents at their entry into the program, for one or two years of the children’s participation in the program, and at the end of the kindergarten year. The study is providing important information linking quality and outcomes for children in Head Start. Findings show that Head Start helps children’s development and school readiness skills, most Head Start parents are involved with the program and are very satisfied with services their children receive, higher levels of teacher education are associated with higher levels of classroom quality, and higher quality Head Start classrooms are linked with greater educational progress for children (Zill et al., 2001).

The Early Head Start Research and Evaluation Project measured a broad range of outcomes, collecting extensive information about programs and individual families’ experiences with them and conducting analyses to link program intervention with child and family outcomes. The study included 3,000 families living in 17 diverse communities. The research design had a dynamic and iterative evaluation process for continuous program improvement and an impact evaluation to identify outcomes for infants and toddlers in Early Head Start. Findings from the evaluation show that children in Early Head Start, as compared to their peers not in the program, have greater cognitive development scores, score higher on measures of language development, and demonstrate more positive social-emotional development (Love et al., 2002).

The congressionally mandated longitudinal study of the impact of Head Start is currently being designed. The study will involve 5,000 to 6,000 three- and four-year-old children from a stratified national sample of grantees/delegate agencies. This effort will study school readiness outcomes and collect information to understand under which conditions Head Start works best and for which children.

³ Research has also noted a fade-out effect, whereby the gains demonstrated by Head Start children do not persist consistently over time. The literature is replete with discussions on the phenomenon, ranging from possible explanations to questions about flaws in the research. See, for example, Barnett, 1995.



American Indian and Alaska Native (AI-AN) children have not always been the direct beneficiaries of knowledge that has been gained through research. Very little evidence has been systematically gathered from Head Start programs that serve these children. To date, understanding the differences across and within AI-AN populations has remained largely outside the body of knowledge derived from systematic, large-scale research on early childhood development. To the extent that studies have been conducted, they often are ethnographic or case studies, which, although rich with detail and understanding, may be limited in their generalizability and are not necessarily the best method for producing knowledge that can be turned into strategies to better serve American Indian and Alaska Native children.

There is a strong consensus that American Indian and Alaska Native children bring unique aspects of their culture and background into Head Start. Based on studies and practitioners' observations, it is likely that many American Indian and Alaska Native children have learning approaches, develop language skills, exhibit behavioral characteristics, and are affected by health matters in ways that are different from those of other racial and ethnic groups. Moreover, American Indian and Alaska Native children differ from each other across tribal and ancestral affiliations and across the cultural norms that affect their families and the types of environments in which they live.⁴ Any research efforts must take into account the unique cultural characteristics of the children and families served as well as the goals and directions of the local communities in which they live.

To provide appropriate, relevant Head Start services, programs must accommodate the unique characteristics of AI-AN children. Understanding and building on these unique characteristics may be especially timely, given the emphasis currently placed on measuring outcomes that is affecting all Head Start programs (and all educational programs, too).

THE AMERICAN INDIAN-ALASKA NATIVE HEAD START RESEARCH AND OUTCOMES ASSESSMENT

The Head Start Bureau is assisting local programs in improving their assessment of child outcomes and program assessment efforts by providing guidance, resource materials, and training and technical assistance. The National Head Start Child Development Institute held in December 2000 included presentations and materials on screening and ongoing assessment of children and strategies to link assessment and program intervention. The Head Start Bureau has developed and disseminated publications on innovative and exemplary practices in screening and assessment and on ways local programs can use assessment information to improve program quality and effectiveness.

New legislative provisions also require that program monitoring procedures include a review and assessment of program effectiveness using results-based performance measures. To ensure compliance with the new regulation, the Head Start Bureau developed a new outcome-based

⁴ One particular challenge in describing and assessing early childhood education for American Indian and Alaska Native populations is to recognize their uniqueness while avoiding any overgeneralization about their distinctiveness; if this challenge is not met, the analyst risks stereotyping, with attendant adverse consequences.

program assessment monitoring system (PRISM) and began using it in October 2000. Federal staff and review teams work in partnership with local program staff to conduct PRISM reviews in a holistic, systems-based approach. In addition, the Administration for Children and Families (ACF) is conducting several national evaluation studies, as noted above, to track and analyze connections between program quality and outcomes.

American Indian-Alaska Native Head Start programs need to be included in the Head Start Bureau's efforts to improve accountability by strengthening screening and assessment of child outcomes and program monitoring. Such activities, however, must be conducted in a manner that takes into account the unique cultural values of tribes implementing Head Start programs. Although tribal Head Start programs have the same requirements for assessing program outcomes as other Head Start programs, little is known about current practices in assessing children's progress at the program level among tribal Head Start programs. For example, are the instruments, measures, and procedures being used to assess child outcomes in tribal Head Start programs culturally appropriate?

Current national research and evaluation activities of Head Start described above typically exclude tribal programs from the population eligible for inclusion in the samples, in part because of methodological issues raised by the inclusion of tribal programs, and in part because legislative mandates have specifically excluded tribal programs from certain national Head Start research and evaluation activities (Sec. 649, Head Start Authorization Act, October 27, 1998). At the same time, legislative provisions require the study of Head Start programs for American Indian and Alaska Native children. To meet this requirement, it is necessary to study American Indian-Alaska Native Head Start programs in a separate effort from other national research and evaluation studies of Head Start programs. Cultural issues must be addressed in the development of methodologies, sampling procedures, and data collection instruments for use in conducting research among tribal Head Start programs. Differences among American Indian and Alaska Native groups must be acknowledged and respected in developing the methodology and conducting the research.

Most importantly, tribal communities must have a significant voice in how the research is designed and conducted. To support the development and implementation of research within and by tribal communities, ACF needs to collect information on the research needs and priorities of tribal Head Start programs. Little is known about the kinds of research studies currently being conducted by tribal Head Start programs, experiences of tribal programs in research partnerships with colleges and universities, and ways that ACF might support these partnerships.

In 2001, the Administration for Children and Families, U.S. Department of Health and Human Services, began a two-year initiative to review existing information and explore research needs for American Indian-Alaska Native Head Start programs.⁵ The goal of the project is to develop research responsive to the needs of American Indian and Alaska Native Head Start programs—research that (1) takes into account the unique cultural environments and values of these

⁵ Although a majority of United States residents who identify themselves as American Indian or Alaska Native reside in urban areas (Forquera, 2001), the vast majority of AI-AN Head Start programs are located in more rural, reservation-based settings. Because the emphasis of this project is on Head Start programs, this synthesis focuses on early childhood education for American Indians and Alaska Natives outside of urban areas.



populations and (2) provides information that programs can use to improve services provided to children and families.

To begin addressing the gaps in research, the ACF initiative will synthesize research findings; collect information through listening sessions with tribal leaders, elders, parents, and staff from American Indian and Alaska Native Head Start programs; and consult with experts in early childhood education for American Indians and Alaska Natives. The project will address the following questions:

- What are the research priorities and needs of American Indian and Alaska Native programs?
- What issues should be considered in conducting research in American Indian and Alaska Native Head Start programs?
- How can ACF support partnerships between researchers and American Indian-Alaska Native Head Start programs?
- To what extent are culturally appropriate instruments, measures, and procedures available to assess child outcomes?
- What technical assistance would be helpful for program staff in terms of conducting developmental screenings and assessing child outcomes?

Findings from the work will produce directions for developing scientifically valid information that can be used to address matters of consequence for American Indian-Alaska Native Head Start programs, particularly with regard to identifying effective procedures and practices for enhancing child development and promoting school readiness.

THE SYNTHESIS

This synthesis was prepared as background for the project. Given the project's emphasis on outcomes for children and Head Start's commitment to helping young children become ready to attend school, it focuses on educational and health services and topical areas related to those services. Relevant studies, articles, reports, theses and dissertations, unpublished documents, and other materials were obtained, and then information from these publications was combined. The task involved more than a standard literature review because documents needed for the project were found as both published and unpublished literature.

To identify documents for this project, a wide net was cast that went beyond standard methods. In addition to securing materials through reviews of federally sponsored research, professional journals, and academic reports, the methods included the following:

- contacting authors of important works to determine if they are conducting similar studies or know of others who are;

- querying representatives of professional associations that are affiliated with AI-AN populations or Head Start programs;
- getting in touch with the network of professionals interested in the subject;
- while attending conferences and other meetings, asking participants for recommendations; and
- consulting with researchers conducting Head Start-sponsored studies.

This synthesis presents a summary of the information contained in the materials identified. It is organized around major topics that reflect the emphases of both this project and extant knowledge. Below, information is presented about culturally appropriate curricula and practices, language acquisition, teacher training, parent involvement, assessment tools and practices, health and physical well-being, and mental health. We emphasize that information on these topics is presented only as authors' reports of their findings; we do not draw any conclusions or make any inferences of our own. The synthesis concludes with a discussion of research methods.

The synthesis centers on the research literature while providing lessons from the non-research publications as well. Information on each topic discussed below is organized into two segments: the first segment summarizes issues and observations from position papers, opinions, experiences, and syntheses; the second segment presents, in the style of an annotated bibliography, information from research studies.

To determine what constitutes research for inclusion in this synthesis, decision rules were established:

1. The material had to be based on data, either quantitative or qualitative data.
2. Some information had to be provided about the population studied, sample size, and research methods used.
3. In most cases, studies had to be completed within the past 25 years. This time frame was established to accommodate both environmental changes (e.g., the spread of electronic media) and advances in research methods and educational practices (e.g., the adoption of developmentally appropriate approaches for early childhood education). Exceptions were made for seminal pieces that are still relevant.
4. Materials that qualified under the three rules above were included if they had some bearing on the education or health of young American Indian and Alaska Native children.



CULTURALLY APPROPRIATE CURRICULA AND PRACTICES

Issues and Observations

Head Start endorses the use of culturally appropriate curricula and practices to help provide contextual links for children's schoolwork. Many observers and educators have noted the importance of providing culturally appropriate curricula for American Indian and Alaska Native children:

- Including Native language and culture in the curriculum is a way to provide social, historical, and emotional links that aid in children's achievement in school. Developing culturally appropriate curricula should involve a team approach, including students in teacher training programs, local teachers and educational administrators, elders, community members, and university-based staff (Allen, 1997; Ball and Pence, 1999; Jordan, 1995; Rinehart et al., 2002; Watahomigie and McCarty, 1994).
- Schools have an important role in restoring Native languages (Holm and Holm, 1995; Peacock and Day, 1999), although some members of some tribal communities have expressed opposition to teaching components of the culture (especially religious and ceremonial functions) in the schools (Batchelder and Markel, 1997).
- Many authors note that AI-AN children bring their cultural backgrounds into school, and they also note that the way much American education is typically provided may not be fully compatible with the learning styles of AI-AN children. "Native students learn in styles unique to their cultural upbringing . . . [and their] learning styles . . . are directly impacted by language, culture, spirituality, communication styles, and more" (Tunley-Daymude and Begay-Campbell, 2000). Some curriculum developers have postulated that underachievement, absenteeism, high dropout rates, and lack of parental involvement are linked to inconsistencies between cultural values of AI-AN children and traditional school curricula (Joe, 1994; Stokes, 1997).
- Teaching styles and classroom instructional practices need to reflect the learning styles of AI-AN children, who are likely to demonstrate more engagement in classroom instruction and activities when the teaching style and instructional practices fit their cultural backgrounds (Deyhle and Swisher, 1997; Estrin and Nelson-Barber, 1995; Swisher and Deyhle, 1987; Tharp, 1994; Tharp and Yamauchi, 1994). A preference for an "observational" or visual learning approach has been described among several AI-AN populations, including the Eskimo, Kwakwiltl, Navajo, Oglala Sioux, Pueblo, Yaqui, and Yup'ik (Deyhle and Swisher, 1997; Harris, 1985; Nelson and Lalemi, 1991; Preston, 1991; Suina and Smolkin, 1994; Swisher and Deyhle, 1987; Tempest, 1998; Wax et al., 1989). Cooperative learning and experienced-based learning activities have been seen as appropriate for AI-AN children, as have the incorporation of other traditions, such as storytelling and culturally relevant materials (Preston, 1991).
- Caution should be used in generalizing findings about characteristics to groups of children because that could result in stereotypes, discrimination, or erroneous explanations about school failure (Swisher, 1991).



| Research Findings: Culturally Appropriate Curricula and Practices | | |
|---|---|--|
| Author | Sample, Measures, and Methods | Major Findings Reported by Author |
| Clay, 1998 | An ethnographic study was conducted of six Head Start children from the Ute Mountain Ute Reservation who later enrolled in the Cortez schools. The study used the California Social Competence Scale to measure interaction with peers and teachers and the children's verbal and physical communication patterns. The research also included six months of formal classroom observations; semi-structured interviews about children's friendships, behaviors, and transition activities, conducted with teachers and parents at two points in time (when students were in kindergarten and in 1 st grade); time-samplings; and document review. | Ute children show different patterns of social interactions between Head Start and kindergarten. In Head Start, children interacted with peers and used verbal and physical communication. In kindergarten, they interacted much more with teachers. As measured on the California Social Competence Scale, the children had less social competence in kindergarten than in Head Start. Of the six children, by the end of kindergarten, four had been referred to special education services. The author concludes that upon entering kindergarten, children experience different ways of thinking, speaking, listening, and interacting. More research is needed on understanding ways AI children can sustain their culture and achieve their academic potential. |
| Culp and McCarthy, 1997 | 24 adolescent mothers (13 are Chickasaw, 3 have close tribal affiliations) from the rural southwestern United States were studied using the HOME (Home Observation for Measurement of the Environment) and the Orthogonal Model of Cultural Assessment. | On two scales of the HOME—the Emotional and Verbal Responsivity Score and the Provision of Play Materials Score—the scores of AI mothers showed significant correlations with cultural identity. Among adolescent mothers who closely identified with their Native culture, homes had low levels of initiating verbal interactions, responsivity, and spontaneous conversation with children; they also had low levels of manufactured (purchased) learning materials. |
| Greenbaum, 1985 | Teachers and students were videotaped during 11 class sessions of four 5 th and 6 th grade classes—two Mississippi Choctaw reservation classes and two public school classes with mostly white middle-class students. Videotaped student-teacher interactions were coded for duration and character of utterances (individual vs. choral) and nonverbal behaviors (interrupting others and listener gaze). | Compared to other classes, students in Choctaw classes spoke as individuals less often (but replied more in choral responses), used shorter phrases, more frequently interrupted the teacher, and looked more at their peers. Teachers in Choctaw classes used shorter phrases, posed more questions, and had longer pauses. The author found the differences consistent with the theory of sociolinguistic interference, meaning that cultural factors may cause differences observed between the groups of students. The author says that additional research should investigate whether students and teachers find the differences problematic (e.g., do teachers perceive students as passive and inattentive, do students see teachers as too commanding?). |
| Luellen, 1991 | Ethnographic observations regarding use of time and space in preschool, parent surveys, ITBS scores of AI-AN K-2 students, and interviews with K-2 teachers about children's achievement were used to study one preschool program serving 45 3- to 5-year old AI-AN children, representing more than 50 tribes. | AI-AN kindergarten children were quiet, withdrawn, and had academic difficulties, but 1 st and 2 nd grade students were more verbal and more involved in class activities. Although all types of children may experience difficulties in transitioning from home/preschool to school, the problem seems to be more challenging for those who need to make a cultural transition as well. The author suggests that AI-AN parents need to be involved in their children's education to help develop the children's cultural identity and to represent the developmental needs of their children. |

Research Findings: Culturally Appropriate Curricula and Practices

| Author | Sample, Measures, and Methods | Major Findings Reported by Author |
|-------------------------|---|--|
| Philips, 1983 | An ethnographic study and participant observation were conducted of one 1 st grade class and one 6 th grade class on the Warm Springs reservation, and one 1 st grade class and one 6 th grade class in the nearby town (off the reservation) of Madras. Most observations of children-teacher and child-to-child interactions were made from Fall 1969 to Spring 1971, during which time the author lived on the reservation. | The study found a strong group orientation among the Warm Springs children. Compared to non-Indian students, the Warm Springs students showed listening behavior that was attributed to their cultural backgrounds. The Warm Springs children responded less often to teacher-posed questions, communicated more with each other, and provided fewer "back channels" of communication to signal that they were listening. They were more verbal and more engaged when they initiated discussion with teachers or worked in small group projects with their peers. To improve outcomes for children, the author recommends that schools should have more Native teachers and teaching methods could be changed to better fit the learning styles exhibited. Similar studies in other locations should test the findings and recommendations from this site. |
| Suina and Smolkin, 1994 | Interviews were conducted with three male and three female Caucasian teachers of 3 rd grade Pueblo students, and their classroom practices were observed over a 2-month period. Teachers described their efforts to make literacy instruction culturally appropriate. Observations of teacher-initiated events collected information on continuities and discontinuities between culture and school. | Teachers reported creating culturally appropriate approaches by weaving into their curriculum experiences from their students' surrounding environment and culture, including cultures other than the one they are teaching in, showing respect for the Native culture, providing opportunities to work collaboratively, and incorporating Native language. Teachers need to be ethnosensitive, meaning that they must understand the culture of the community and apply that knowledge in their pedagogical styles. Culturally appropriate curricula should incorporate culturally appropriate practices of the tribe (but not discard those of the dominant culture). |
| Swisher, 1994 | During workshops held in 1990, 154 teachers and administrators of schools with AI students completed the American Indian Learning Style survey, constructed by the author. The survey consisted of 11 items on a five-point scale, self-identified ranking of knowledge about learning styles, strategies for applying knowledge about learning styles, and open-ended questions. About one-third of the respondents identified themselves as American Indian, and most were teachers in public and BIA-funded schools. | Both American Indian and non-Indian teachers and administrators share views about the influence of culture on learning styles, believe that values affect the ways AI students demonstrate knowledge, and agree that the cooperation and importance of the family affect students' learning. Respondents differed in their opinions about the specific values that affect AI students' approaches to learning or demonstration of learning: AI teachers identified discipline, group harmony, holistic approach to health, and spirituality; non-Indian teachers identified an indifference to the work ethic and indifference to ownership. The author states that teacher education and in-service programs should balance theory and the teaching practice of learning styles and culture. Future research should take into account diversity within groups (e.g., tribal affiliation, extent of traditionalism and acculturation). |

Research Findings: Culturally Appropriate Curricula and Practices

| Author | Sample, Measures, and Methods | Major Findings Reported by Author |
|----------------------------|--|--|
| Vekari, 1999 | Data collected in Fall 1993 and Spring 1994 yielded a sample of 151 Navajo children (78 females and 73 males) 4-7 years old, all of whom had completed Head Start. Two scales were used from the Measurement and Planning System (MAPS) Developmental Observational Assessment—the Social Development Scale and the Math and Literacy Scale. | This study asked about the relationship between social competence and cognitive development: does one affect the other, and are there any reciprocal effects? By using a nonrecursive linear structural equation model, the author concluded that cognitive development affects social development. The author concludes that the finding about the relationship between cognitive and social development emphasizes the importance of the former to help achieve social competence. |
| Wax, Wax, and Dumont, 1989 | An ethnographic and participant/observation study of elementary schools on Pine Ridge Indian Reservation (Oglala Sioux) was conducted, plus classroom observations, interviews with teachers and parents, and surveys of youth. The study focused on the nature of education and community life. | The authors conclude that isolation is a critical factor for the educational system and achievements of Pine Ridge youth. The school curriculum is not well matched to employment possibilities. There is cultural discontinuity between home and school: children find their home environments comfortable and supportive, whereas some educators feel that the children should be eager to distance themselves from their home environments, which these educators perceive as inferior. Discontinuities between school, families, and students leave opportunities for peers to have strong influences over each other. Living in the society and having Native members (including those who speak the Native language) on the research team were essential for this study. |

LANGUAGE AND LITERACY ACQUISITION

Issues and Observations

Children typically master language by the time they enter elementary school at age five or six, so those who experience delays in developing English language skills are at a distinct disadvantage in both their ability to learn and to perform according to mainstream expectations.

- Commentators on AI-AN education point to a lack of information about the effect of diverse cultural and linguistic environments on language development (Robinson-Zanartu, 1996; Swisher and Deyhle, 1987).
- Many call for system-wide reform that would lessen the tendency to characterize culturally based language differences as deficits and build on the strengths that Native children bring to their education, but there is a notable absence of specific proposals for how this might be accomplished, largely because the research base on language development necessary to inform such proposals remains in the very preliminary stages (Talley, 1994).
- The strong oral tradition among some tribes provides the opportunity to ground literacy development in children's family and community relationships (Zepeda, 1995).
- The research base on language acquisition among AI-AN children is heavily concentrated in the area of assessment. Research specifically addressing the actual language development status of these children is virtually absent, mainly because educational researchers have only recently begun to join the field (Harris, 1985; Long, 1998).

| Research Findings: Language and Literacy Acquisition | | |
|--|---|--|
| Author | Sample, Measures, and Methods | Major Findings Reported by Author |
| Batchelder, 2000 | 48 tribal members, representing 20 Navajo communities, responded to written questionnaires and in-person interviews regarding their beliefs about Native language instruction, including the qualifications of teachers, role of schools, and level of student mastery. Respondents include parents, community members, teachers, and teacher assistants. | Although there is strong support for including Navajo culture and language in schools, study participants differ in their opinions as to the content and extent of instruction. Some elders, traditional members, and young people living in towns believe that the teaching of Navajo religion and ceremonies does not belong in schools; others believe that traditional stories, history, and the clan system could be taught in schools. Some believe that Navajo elders who are members of the community should be instructors, whereas others would prefer a certified teacher. The degree to which students should know Navajo varied by the respondent's community: members in isolated areas prefer fluency, members in mid-size communities prefer competency, and members in off-reservation or large communities prefer that students learn the basics of the Navajo language. |
| Fayden, 1997 | 24 kindergarten students (67 percent AI, 25 percent Hispanic, 8 percent Anglo) in a rural New Mexico school were tested before and after being exposed to "shared reading," using Clay's Reading Strategies measures and scores on the Sand Test (which measures basic knowledge of print materials). | Over a 10-week period, students were exposed daily to about one-half hour of "shared reading," which is a whole language technique that focuses on acquiring certain reading skills. Ancillary activities related to the book were conducted for 45 minutes each day. For instruction, a teacher used a different "big book" each week; the big book allows all students to see the print and share in the reading process. Analysis shows significant improvement in reading skills on both sets of measures. The author notes that future research should compare the use of big books and "shared reading" against other methods for teaching reading skills. |
| Guilmet, 1979 | Four Navajo and four Caucasian children (balanced by gender and verbal behavior and ranging in age from about 3-5 years old) were videotaped in a Los Angeles preschool, then typical portions of the videotapes were extracted and viewed by 23 Navajo and 20 Caucasian mothers. Mothers rated the children's behavior using ten Semantic Differential Scales. | Out of 80 possible differences in ratings between Navajo and Caucasian mothers, seven showed significant differences. The Navajo mothers were more disapproving of intense speech and physical activity; Caucasian mothers were more tolerant of intense speech and physical activity. Navajo mothers viewed intense speech and active behavior as disrespectful and undisciplined, whereas the Caucasian mothers saw the same kind of behavior as exciting and beneficial for the child. The author notes that despite the strong findings from the study, several questions remain unanswered, such as whether fathers would form the same conclusions, whether more traditional AI parents perceive behavior differently from less traditional AI parents, and reasons for the measured differences in opinions. |

Research Findings: Language and Literacy Acquisition

| Author | Sample, Measures, and Methods | Major Findings Reported by Author |
|---|---|--|
| Guilmet, 1983 | To ascertain the appropriateness of using standardized achievement tests with AI children, the Circus Receptive Vocabulary Test and Circus Quantitative Concept Test were administered to 17 Navajo and 7 white children enrolled in Tribal American Consulting Corporation preschool and daycare programs in the Los Angeles area. Their scores were compared with scores of (1) 66 children enrolled in the same programs and (2) national results. The author developed a questionnaire to assess the frequency of spoken Navajo in the home and used Price's acculturation indices to measure the extent to which families were acculturated. | Although all children tested scored below the national average, Navajo children scored lower on both the Receptive Vocabulary Test and the Quantitative Concept Test than their white or AI peers. The white children achieved the highest scores on the tests. Children experiencing the most difficulty taking the tests were young and from households that were among the least acculturated. The author observes that some children were unfamiliar with testing situations and concludes that using a test without consideration of cultural backgrounds produces misleading assessments. |
| Long and Christensen, 1998 | The Pediatric Development Instrument was administered to mothers of 48 children enrolled in Cherokee Nation Head Start and 37 Caucasian children from non-Head Start preschools and day care centers. | AI-AN children's scores were lower than scores of Caucasian children, but differences between the two groups progressively decreased from younger to older children. The findings suggest there are differences in development skills between the two groups, particularly in that AI-AN children's linguistic skill development lags behind that of Caucasian children. Enrollment in Head Start may help explain improvement in language skills. The authors caution against generalizing findings to other tribes, due to variations in background, lifestyle, and English-language influence. More research is needed on language development skills to determine developmental profiles. |
| McKeever, Hunt, Wells, and Yazzie, 1989 | The Dichotic Consonant-Vowel Test was administered to 20 Anglo children in English, 20 Navajo children in English, and 20 Navajo children in Navajo. All children were in the 5 th grade. | Previous research has suggested that some AI languages may reflect a mode of thought that draws on the right hemisphere of the brain (although results vary for groups of children as compared to groups of adults), often because studies found an absence of "right ear advantage" among Native children. This study found that the method of assessment might be the contributing factor in previous research. Both Anglo children and Navajo children showed strong right ear advantages when the test was administered in their dominant language; Navajo children tested in English showed nonsignificant right ear advantages. The authors conclude that the language and context of testing may determine assessment outcomes. |

| Research Findings: Language and Literacy Acquisition | | |
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| Author | Sample, Measures, and Methods | Major Findings Reported by Author |
| Prince, Grace, Linebarger, Atkinson, and Huffman, 2002 | To determine the effectiveness of PBS's "Between the Lions" for acquiring early literacy skills, a study was conducted of preschool and K-1 children living in rural Mississippi (n = 150 experimental and 128 control subjects) and children from the Mississippi Band of Choctaw Indians (n = 145 treatment and 151 control subjects). Each week for the 8 months of the program, children in the experimental group watched at least two episodes, read a book related to the show, and had a hands-on activity; children in the control group received no special services related to "Between the Lions." Children were assessed using the Test of Early Reading Ability, the Peabody Picture Vocabulary Test, and the Dynamic Indicators of Basic Early Literacy Skills. | Choctaw children who participated in the experimental group scored significantly higher on the TERA-3 reading composite measure, meaning that they did better than their Choctaw counterparts in the control group. On a subset of the TERA-3, Choctaw children who received the "Between the Lions" intervention did better than their peers in understanding aspects of English print. No significant differences emerged on the PPVT scores or on the oral reading fluency subset of the DIBELS. The authors conclude that the absence of more measurable effects may be due to children's very low scores before the experiment (meaning relatively low levels of literacy) or because of differences in reading instruction. Although the results are not dramatic, they do show positive results from using the curriculum. |
| Reyhner, 1990 | Navajo children in a bilingual education program at Rock Point Community School were assessed using standardized tests, including the California Achievement Test, the Comprehensive Test of Basic Skills (CTBS), and criterion referenced tests. | Rock Point instituted a bilingual curriculum in 1967. Kindergarten students learn to read in Navajo; English reading instruction begins in second grade. In kindergarten, two-thirds of instruction is in Navajo, 2 nd graders are instructed half in Navajo and half in English, and students in upper grades are taught about 15-30 percent in Navajo. CTBS results from 1987-88 found that Rock Point students do as well or better than other students served through the Chinle Agency, in almost all grade levels in reading, language arts, and math, and CRT scores show improvement in Navajo language skills. Student attendance rates are high (above 94 percent), and parents are actively involved with the school. |

Research Findings: Language and Literacy Acquisition

| Author | Sample, Measures, and Methods | Major Findings Reported by Author |
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| Watahomigie and Yamamoto, 1987 | Developers of the Hualapai Bilingual/Bicultural Education Program (HBBEP) summarized their experiences. For students in grades 2-8 at Peach Springs School, they examined CTBS scores from 1975 to 1978, plus scores on the California Achievement Test from 1982 to 1984 (n = 86, n = 91, and n = 116, respectively). | The purpose of the HBBEP, begun in 1975, was to document the Hualapai language and culture, which had very few written materials in Hualapai at that time. After the language was transcribed, HBBEP produced bilingual/bicultural materials that were used in the local public school. The authors discuss the lengthy and sensitive process involved to have a non-Native linguist accepted into the tribal culture. The HBBEP has several notable accomplishments, including increased parent and community involvement in school activities, developing certified Hualapai teachers, producing published materials, and improving student performance. As evidence of the last, CTBS scores increased from 1975 (when the program began) to 1978 in six of seven grades (e.g., in 1975, 2 nd graders had a grade equivalent score of 1.7, compared to the national average of 2.9; by 1978, the scores were 2.1 and 2.9, respectively). The authors report significant gains on the reading and language subtests of the California Achievement Test (up 3.1 and 1.6 points in reading, and up 10.1 and 6.8 points in language, for 1983 and 1984, respectively) from baseline measures in 1981, after a slight loss in 1982 (down 0.7 points in reading and 0.2 points in language). |
| Wolfe, Schwartz, and Petersen, 1996 | To assess the impact of the Hualapai bilingual education program on language ability, the Peabody Picture Vocabulary Test-Revised (PPVT-R) and the Cognitive Abilities Test were administered to 206 Hualapai children in Arizona, ages 5-15. | Lower scores for receptive language were observed for Hualapai children compared to national norms, but scores were similar compared to other AI groups. The Hualapai children also scored lower on verbal reasoning abilities, compared to national norms. The authors suggest that test performance may reflect a lesser assimilation of the English language into the Hualapai culture and may not accurately reflect language abilities. They recommend that more research is needed to determine the effects of the Hualapai bilingual education program on language skills. |

TEACHER TRAINING AND PROFESSIONAL DEVELOPMENT

Issues and Observations

The quality of service that teachers and educators provide greatly influences the quality of education for children. Observers and Indian educators agree that training for teachers is critical to improving education for American Indian and Alaska Native children of all ages (Swisher, 1994; U.S. Department of Education, 1991):

- Given the importance attached to preserving and maintaining Native languages, many educators are turning to Native language speakers for classroom assistance or instruction. Although they may have rich cultural backgrounds, not all are trained as teachers (Peacock and Day, 1999).
- American Indian teachers and staff, often members of the local community, represent a strong presence in AI-AN Head Start programs (Anziano and Terminello, 1993; Tigges and Zastrow, 1981).
- Many Head Start staff began as volunteers in the program (Anziano and Terminello, 1993).
- Programs that build and enhance the Native culture and language depend on a stable, consistent group of local educators (Begay et al., 1995).



Research Findings: Teacher Training and Professional Development

| Author | Sample, Measures, and Methods | Major Findings Reported by Author |
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| Anziano and Terminello, 1993 | The accomplishments of 22 Navajo teachers enrolled in a training program to earn the Child Development Associate credential were observed. Accomplishments were measured by teacher performance in the course, teacher learning (as demonstrated by writing skills), and other results (such as obtaining the CDA credential and job promotions). After the training program, participants answered questions about their feelings regarding the course, their satisfaction levels, and the degree of their self-confidence. | Of the 22 teachers, 13 were reading English at or below the 7 th grade level when the project was initiated (none spoke English as the first language). To earn the CDA, candidates had to produce a written portfolio, and the program had them draw upon their oral traditions in the form of storytelling. Within seven months, 16 teachers had completed the CDA. The authors conclude that higher levels of literacy and greater awareness of teaching methods have led to more developmentally appropriate teaching practices. Teachers report feeling more confident after earning their CDA certificate. |
| Corenblum, Annis, and Tanaka, 1997 | In a Canadian prairie community, 91 Native and 203 white children in K-2 were shown drawings and asked questions to determine their knowledge and evaluation of Native, white, and black children. A subset of children (71 Native and 172 whites) was assessed regarding their levels of operational thinking (Goldschmid and Bentler's Conservation Assessment Kit) and sense of self-competency (Harter and Pike's Measure). Their teachers (all white) completed Harter and Pike's teacher evaluation form and rated each student's academic ability, acceptance among peers, and physical development. | Teachers rated white children as more academically and socially competent than Native children. Teacher evaluations predicted own-group attitudes for white children (i.e., the more positively teachers rated white children, the more positively white children held attitudes toward white children). Contrary to expectations, teacher evaluations did not predict own-group attitudes for Native children. The authors hypothesize that a teacher may recognize individual differences among students better when they concern children from the teacher's own racial group, and thus avoid categorizing or stereotyping children who belong to the teacher's racial group. They suggest the need for research about whether a teacher from a minority group would evaluate children from that group favorably. |
| Lipka, Mohatt, and the Ciulistet Group, 1998 | An ethnographic study—using observations, videotapes, and field notes—was conducted over a 15-year period among the Yup'ik education community (teachers, administrators, students, and board members), largely in Bristol Bay, AK. Observations covered a wide range of activities, including teacher-student interactions inside and outside of classrooms, teachers' classroom practices, interactions among Yup'ik teachers, school board meetings, and community gatherings. | Participating in postsecondary education for Native teachers is challenging for both teachers and students who live in remote areas. Even after receiving teaching certificates, Native teachers were not hired as teachers, but often had to serve as teacher aides. What was initially formed as a support group for Yup'ik teachers eventually turned into a leadership group. Yup'ik teachers were able to integrate their culture into classroom instructions, and this teaching style produces much more engagement among Yup'ik children. The authors conclude that the historical separation (and sometimes problem) between school and community must be overcome, and bridging this divide takes time and tenacity devoted to collaborative efforts. |

| Research Findings: Teacher Training and Professional Development | | |
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| Author | Sample, Measures, and Methods | Major Findings Reported by Author |
| Schultz and Bravi, 1986 | 167 teachers, representing all federally funded Native classrooms in one Canadian province, completed the Assessment of Classroom Learning Environment (ACLE) instrument to assess the extent to which their classrooms incorporate practices that allow for individualized education. | The ACLE is composed of 16 subscales that use a 5-point rating, where 5 is a classroom with a very high level to accommodate exceptional students. The teachers' median score for 7 of the 16 subscales was 2 (space and facilities, teaching-learning setting, control of environment, instructional methods, rate of learning and behavior, recognizing and appreciating cultural differences, and parent-teacher interaction). The median score for teachers on three of the subscales—classroom management, teaming arrangements, and child study process—was 4. The authors conclude that teachers would benefit from learning skills necessary to provide learning environments suitable for their students. |
| Sears and Medearis, 1993 | Student test scores on the ABC Screening Inventory were reviewed for children exposed and those not exposed to a culturally-based math project. Interviews with public school and Head Start teachers of the Oklahoma Seminole program collected information on teacher satisfaction with training, perceptions of skills gained, and parents' level of participation. | ABC scores were examined for children entering kindergarten in 1992 (after they had experienced the culturally-based math project) and compared against the scores of children entering kindergarten in 1991 (who had not experienced the culturally-based math project). Test scores were higher for the 1992 cohort than the 1991 cohort. Teachers reported they were very satisfied with the training and had gained important concepts and skills for math instruction. Contrary to expectations, teachers reported family members (including men) came to meetings and participated enthusiastically. |
| Werner, 1997 | The Teacher Beliefs scale was administered to Head Start staff through a mail survey of 108 AI-AN education coordinators and 268 non-AI-AN education coordinators. Case studies examined instructional approaches for teaching tribal culture among three AI-AN Head Start programs. | Education coordinators in AI-AN programs report lower developmentally appropriate beliefs than in non-AI-AN programs; those with fewer years of experience in AI-AN programs tend to report higher developmentally appropriate beliefs. Case studies showed similar instructional approaches for incorporating tribal culture, including the use of elders, nature, language, stories and storytelling, and celebrations. The author recommends that future research include a classroom observation instrument, more in-depth qualitative study on the transmission of culture in both AI-AN and other Head Start programs, optimal methods of teaching second languages in preschool, studies of parental expectations regarding developmentally appropriate and culturally appropriate practices, and examination of differences between Native and non-Native education coordinators in AI-AN programs. |

PARENT INVOLVEMENT

Issues and Observations

Parent involvement has been a fundamental principle of Head Start since its inception. Parents may engage in a variety of activities, including child development and education, health and nutrition, mental health education, community advocacy, program oversight, and transition practices; they are encouraged to be present in the classrooms (including as paid paraprofessional staff) and to participate in special school events; and some become involved in decision-making opportunities to shape program content by participating in Parent Committees and serving on the Policy Council.

- Current challenges for AI-AN parents include a continued feeling of alienation from the education system, sometimes because families perceive that their culture and values are not respected or understood. Many AI-AN adults feel alienated from and distrustful of the educational system, particularly public schools, because of the incompatibility between their culture and that of the school, racism, and history (Deyhle, 1991; Robinson-Zanartu and Majel-Dixon, 1993).
- Barriers to AI-AN parent involvement may include staff and parental attitudes, mobility, lack of choice among schools for children to attend, family dynamics, and a lack of understanding among educators regarding tribal culture (Butterfield and Pepper, 1991).
- Very few parent education programs have been developed specifically for an AI population, and no studies have been conducted on their efficacy (Gorman and Balter, 1997).

| Research Findings: Parent Involvement | | |
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| Author | Sample, Measures, and Methods | Major Findings Reported by Author |
| Bachtold, 1982 | 20 children from the Hoopa reservation and 20 Anglo children from a nearby town, matched by age and gender, were videotaped in their preschools in 5-minute segments on 12 occasions. Researchers created written narratives of the videotapes and coded them for 12 social behaviors identified by Whiting and Whiting (1975). Analysis was based on the Whiting proportion scores for behavior. Parents (12 Hoopa and 19 Anglo) were interviewed using a 50-item inventory from the Childrearing Practices Questionnaire. | Children in both groups showed nurturant-responsible behaviors. On a different behavioral dimension, Hoopa children scored more at the sociable-intimate end of a scale, whereas Anglo children scored more at the authoritarian end of the scale. Parents in both groups tended to share many attitudes toward childrearing. Both preferred reasoning with their children, rather than inflicting physical punishment, but Anglo parents were more opposed to physical punishment; both wanted children to develop a sense of independence, but Hoopa parents preferred more than Anglo parents that children learn to know that others are around to help them when needed; and Hoopa parents felt it is very important that children do as they are told. The author concludes that Hoopa childrearing practices may be inconsistent with characteristics for excelling in the current structure of education. Hoopa parents face the challenge of helping to develop their children's cultural identity while preparing them with skills they will need in a non-Hoopa environment. |
| Coburn, 1992 | A survey was mailed to 399 administrators of schools with significant AI-AN populations and 2,000 AI-AN parents. The questionnaire asked administrators about successful parent involvement techniques and asked parents about types of involvement. Responses were obtained from 60 administrators and 245 parents. | In the area of direct involvement with parents, administrators report a preference for informal gatherings. Very similar findings were reported for both active and inactive parents, although active parents volunteer more in the schools, visit schools more often, and are more likely to participate in planning sessions. Parental involvement seems to be higher than is commonly assumed. Both parents and school administrators are familiar with typical parent involvement activities, but have suggestions for enhancing AI-AN parent involvement. |
| Deyhle, 1991 | An ethnographic study was conducted over 5 years on the Navajo reservation. The study focused on Navajo concepts of childrearing and parent involvement, parenting styles, and reactions to school culture. The author used participant observation (including in classrooms, during extracurricular school activities, and at community and school board meetings) and lived on the reservation. | There are distances between the school culture and the Navajo culture that manifest themselves in ways thought to be detrimental to children and parents. Schools want to assimilate students; Navajo parents want children to complete school, get jobs, and remain affiliated with their cultural heritage. Navajo parents are committed to better education and better economic opportunities for their children, but institutional strategies of the educational system are perceived to limit meaningful involvement for parents. Parents are caught in a very hard place: in trying to be good parents, they must meet both Caucasian middle-class expectations and Navajo cultural expectations. |

Research Findings: Parent Involvement

| Author | Sample, Measures, and Methods | Major Findings Reported by Author |
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| Leveque, 1994 | A case study was conducted of AI-AN students in the Barstow Unified School District (total population during one school year is about 120 students). Data sources include participant observation, ethnographic interviews, a norm-referenced test (the Curriculum Alignment System: Comprehensive Assessment System) and document reviews. | AI-AN elementary and middle school students scored near or above the district averages on a norm-referenced achievement test. The high school dropout rate over a 2-year period was 10 percent, which is perhaps lower than the district-wide average. The positive outcomes are explained by the involvement of parents—who were acculturated and assimilated into the culture—in designing supplemental AI-AN educational programs (not because of student participation in the programs themselves), which is linked to greater communication and familiarity with schools. The author questions whether academic success—in this case due to parental acculturation and assimilation—depends upon AI-AN populations living the life of the dominant culture. Replication of the study in other settings, including reservations, is recommended. |
| Mayfield, 1985 | To determine the effects of a home-based infant program among five Native groups in British Columbia, the Denver Developmental Screening Test (DDST) was administered to about 190 children, beginning before the program began and again at 6-month intervals. 25 parents were surveyed on their opinions about the program. | DDST results suggest that 85 percent of the children were developing within normal ranges, and none younger than 19 months were delayed. Among the 5 percent with delayed development, 80 percent were over the age of 42 months. The authors conclude that several features were key for successfully planning and implementing the program: the indigenous community initiated the program, the community's culture is incorporated, local Native personnel were trained and employed, and parents actively participated in services with their children. |
| Ndura, 1994 | Administrators, teachers, parents (n = 145), and students of five racial/ethnic groups in Flagstaff, AZ were surveyed by mail and through in-person interviews regarding their perceptions of and experiences with parent involvement in schools. | Although the sample size of AI parents is small (n = 10), most AI parents agree with Caucasian, Hispanic, African American, and Asian parents that parent involvement produces educational advantages for their children. AI and Hispanic parents believe that teachers interact differently with parents from different cultures. Although most parents believe school-home communications are effective, AI parents do not. All respondents, from all racial/ethnic groups, expect more communication from each other. The author recommends that future studies should focus on reasons for communication gaps between home and school, include observational studies on the effects of parents in the classroom, and involve larger-scale studies with a sampling plan that would produce more generalizable results. |

| Research Findings: Parent Involvement | | |
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| Author | Sample, Measures, and Methods | Major Findings Reported by Author |
| Sears and Medearis, 1992 | Post-test scores of a control group were compared with post-test scores of a cohort who received a math intervention in Seminole Nation Head Start (n = 8) and a non-AI school (n = 12). Data collection tools include the ABC Screening Inventory (measures verbal, math, and social learning skills), a Parent Child Interaction Questionnaire (self-report regarding family activities), and interviews with teachers and parents. | Project staff prepared take-home packets of materials with instructions and tools for family math activities, and teachers and parents were trained on ways to use the materials. Test scores of children entering kindergarten showed no differences between those who were exposed to the math activities and those who were not. Of the few parent questionnaires returned, respondents indicated satisfaction with the program and said it had helped their children. The authors report that the project demonstrated that culturally related factors can be integrated with math instruction. They mention the absence of random assignment, no pre-test data, inability to control what happens during home activities, and small samples as limits to the research. |
| Sontag and Schacht, 1994 | A survey consisting of closed-ended questions was administered in person to parents in a southwestern state whose children (ages 4 and younger) had developmental problems. Of 536 families in the final sample, 5 percent were American Indian. The survey asked about parents' information needs, sources of information, and participation in early intervention planning and services. | Statistically significant differences were found among American Indian, Hispanic, and white parents. All parents expressed a need for more information about available services. American Indian parents reported, more than parents in the other two groups, that they received no explanation as to why a particular service could not be provided. American Indian and Hispanic parents, compared to white parents, said they had a greater need to receive information on ways to get services, were more likely to get information from hospitals (as opposed to sources such as therapists and other agencies), and were less likely to provide information and support to other parents. The authors conclude that families from various ethnic and cultural backgrounds may have different kinds of information needs and that service providers should review practices to ensure responsiveness to those needs. |
| Strom and Hill, 1979 | 70 Hopi and 70 Navajo reservation-based parents of preschool children were administered the 50-item Parent as a Teacher Inventory, which measures parental expectations around childrearing. | Differences between Hopi and Navajo parents were observed. Navajo parents were more willing to encourage creative behavior among their children than Hopi parents, and Hopi parents indicated a greater need to control their children. Some variance is due to the child's gender (e.g., parents of sons indicated a greater need to control children and to contain creative behavior), the parent's gender (e.g., mothers were more likely to encourage creative behavior and indicated less need for control), and the parent's level of education, with more "desirable" responses as the level of education increased. The authors note that this kind of study may provide information useful for tribal policymakers and program planners. |

Research Findings: Parent Involvement

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| Author Wynn, 1995 | Sample, Measures, and Methods A 16-item questionnaire was administered to parents, in one of three languages, by a community interviewer regarding involvement with cultural practices and their child's math achievement. Interviews were conducted with 112 parents of 132 AI students in grades 3-5, living on the Pascua Yaqui reservation. The children's math scores on the ITBS were obtained from records and reports parents maintained in their homes. | Major Findings Reported by Author Parents who spoke the Native language in the home and attended culturally-related community and social events had children who were more likely to achieve at or above the 4 th stanine (i.e., are considered to have mastered normal skill levels for the skill being measured) on the math portion of the ITBS. The author concludes that the level of parent participation in the Native culture has a significant and positive effect on student math achievement test scores. Additional research might examine different definitions of culture and academic success and be conducted in other tribal settings. |
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ASSESSMENT TOOLS AND PRACTICES

Issues and Observations

Making sure that children are prepared for school has been emphasized as a priority by parents, educators, policymakers, and presidents. Whether children are ready to learn when they reach school can be determined only when the concept is properly defined and assessed (Schweinhart, 1993). Several materials observe that there may be a mismatch between the learning styles of AI-AN children and tests intended to determine their knowledge:

- American Indian and Alaska Native people share with other minority groups the concern that IQ scores and results from achievement tests have not recognized potential bias against speakers of other languages and people who are not members of a Caucasian, middle-class culture (Deyhle and Swisher, 1997).
- Observers note that standardized assessment methods may be inadequate as indicators of American Indian and Alaska Native children's abilities because the tools do not match the culture, language patterns, learning styles, and strengths of AI-AN children (Banks and Neisworth, 1995; Bordeaux, 1995; Estrin and Nelson-Barber, 1995; Harris, 1985). Others caution, however, not to use test bias to reject standardized assessments (Shields, 1997).
- Relatedly, there are concerns that some assessors may attribute low scores or measures to an AI-AN child's culture or use of "Indian English," when the child has a genuine lack or disability that should be addressed (Harris, 1985; Saxton, 2001).
- Among many AI-AN populations, the extent of acquired knowledge is often demonstrated in actual practice, rather than measured through assessments and test scores (Estrin and Nelson-Barber, 1995; Kawagley and Barnhardt, 1998).
- Although creating locally developed norms for standardized assessments may produce a better fit to measure the abilities of certain populations, some caution against this practice because it may lower expectations for those populations (Harris, 1985).



Research Findings: Assessment Tools and Practices

| Author | Sample, Measures, and Methods | Major Findings |
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| Banks, 1997 | Twenty AI-AN parents/caregivers and 11 professionals who assess AI-AN children completed a mail questionnaire on their perceptions of assessment practices. | Assessors reported using norm-referenced instruments, criterion-referenced instruments, and curriculum-based assessment, but upon closer examination almost all of the instruments actually used are standardized, norm-referenced tools. Parents reported lower levels of involvement in the assessment process (as observers or in interviews) than the assessors reported about them. All respondents agreed that most testing took place in schools, but about half of the assessors said they did additional testing in the home, compared to 10 percent of the parents. The author notes that findings cannot be generalized because of the small sample size. Only limited research has been conducted on assessment practices among AI-AN children; more studies are necessary to investigate reported differences. |
| Brachlow, Jordan, and Tervo, 2001 | The Denver II Developmental Screening Test (a standardized tool) and the Child Development Review (an open-ended parent report tool) were administered to 38 children from the Cheyenne River Reservation (two-thirds were AI) and 35 children from an urban area (only one was AI). | Overall, children who were administered the Denver II had higher rates of failure, higher rates of borderline scores, and lower passing scores than those administered the CDR. Among reservation-based children, more passed the CDR than the Denver II; there were no significant differences in passing rates for urban children. The authors caution that testers should not over-interpret Denver II outcomes among populations in culturally unique settings and recommend not relying on a single test. |
| Browne, 1984 | To examine scoring patterns and cognitive processing strengths of AI children, the Wechsler Intelligence Scale for Children-Revised (WISC-R) was administered to 197 American Indian children, ages 6-16. The sample was drawn from children attending the St. Joseph's boarding school in South Dakota. Results were compared to those of a standardization population. | WISC-R scoring patterns of AI children were different from the predominantly non-Native standardization sample. The AI children had strengths in performance tasks of subtests that have been associated with "right brain" functioning. The authors suggest that the cognitive strengths may show a preference for right-hemisphere information processing in AI children. |
| Crowe, McClain, and Provost, 1999 | The Peabody Developmental Motor Scales is a standardized assessment often used to determine whether children need early intervention. No AI children are included in the normative sample. The PDMS was administered to 44 Pueblo children age 24- 35 months, and a family member completed a 20-item questionnaire on demographic characteristics and child development. | Results show significant differences between the Pueblo children's scores and the normative sample scores. Pueblo boys and girls in two age groups (24-29 months and 30-35 months) scored lower on fine motor scales, and Pueblo girls in the younger age group scored lower on gross motor skills. The authors recommend that therapists and others administering and interpreting the PDMS should be cautious when using it with AI children who have not been included in the normative sample. |

| Research Findings: Assessment Tools and Practices | | |
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| Author | Sample, Measures, and Methods | Major Findings |
| Kazimour and Reschly, 1981 | The Adaptive Behavior Inventory for Children (ABIC) is an assessment instrument used to determine in part whether to classify a child as mildly retarded. It is one measure within the System of Multicultural Pluralistic Assessment (SOMPA) for children age 5-11. To investigate the overrepresentation of minorities in programs for students with mild retardation, the ABIC was administered to a random sample of 146 white, 120 black, 112 Hispanic, and 105 Papago children in grades 1, 3, and 5, enrolled in Pima County, Arizona schools. Means were compared to results from a normative sample for SOMPA from California. To study the concurrent validity of the ABIC, correlations were assessed among ABIC scores, the Metropolitan Achievement Test, the Teacher Rating Scale, the WISC-R IQ scales, and SOMPA sociocultural measures. | Papago children had significantly lower mean scores on the ABIC than the rest of the sample. Although there were few differences between Hispanic subgroups in Arizona and California, there were differences for white, black, and Papago children, suggesting that issues exist for using ABIC norms for classification and placement. There was little evidence of concurrent validity of the ABIC with the other instruments examined. |
| Long, 1998 | The Preschool Language Scale-3 was administered to 60 children enrolled in Cherokee Nation Head Start, Tahlequah, OK, and to 20 other AI-AN and 20 non-AI-AN children to test the validity of the measure for use among Cherokee children. | Results suggest the PLS-3 is a valid measure of language skills among 3- and 4-year old Cherokee children but is questionable for use with 5-year-olds. Although all tested children fell within one standard deviation of the total test scores, Cherokee Nation children ages 4 and 5 had better language comprehension than language production, and 5-year-old children scored lower than 3- to 4-year old children. The test scores may be reflecting cultural factors. Children from AI-AN populations that value silence and listening may not score well on tests that require verbal expression. |
| Mishra and Lord, 1982 | To examine the reliability and predictive validity of the Wechsler Intelligence Scale for Children-Revised (WISC-R) for culturally diverse children, the test was administered to 40 4 th and 5 th grade Navajo children attending school on a Navajo reservation. The arithmetic, spelling, and reading sections of the Wide Range Achievement Test (WRAT) were then administered. | Results indicate the WISC-R has low reliability and predictive validity for Navajo children. The highest validity was obtained for the performance scale. The authors conclude that the WISC-R may not be an appropriate test to use with Navajo children. |

Research Findings: Assessment Tools and Practices

| Author | Sample, Measures, and Methods | Major Findings |
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| Mitchell, 1985 | To compare the potential cultural bias of two different assessments, the Kaufman Achievement Battery for Children (K-ABC) and the WISC-R were administered to 29 preschool-age Cherokee and 30 non-Native children from eastern Oklahoma, and to 15 Kiowa and 12 non-Native children from southwestern Oklahoma. | Overall scores of the AI children on the WISC-R and K-ABC were not significantly different from those of non-Native children. Additionally, there was no difference in scores on either test between Cherokee and Kiowa children. However, scores of AI children on the WISC-R subtests of the WISC-R Verbal Scale (Vocabulary and Comprehension) were significantly lower than those of non-Native children. The author notes that children from bilingual homes or from a cultural minority may experience difficulty on these subtests. Because there were no performance differences on the K-ABC subtests, the author concludes that the K-ABC may have fewer issues of cultural bias than the WISC-R. |
| Morgan and Whorton, 1991 | To compare differences in assessment instruments for children from culturally diverse backgrounds, the WISC-R and the Diagnostic Achievement Battery for Children were administered to 12 AI and 13 white children between the ages of 6-15. | Differences in scores between AI and white children on both the WISC-R and the Diagnostic Achievement Battery for Children were not statistically significant. |
| Oosterheld and Haber, 1997 | Four focus groups were held with a total of 33 Dakotan/Lakotan parents, in urban, rural, and reservation locations. Participants reviewed the Conners Parent Rating Scale (CPRS) and Child Behavior Checklist (CBCL), which are often used to screen for attention-deficit/hyperactivity disorder. | Overall, all parents said that the CPRS and CBCL were not insensitive to their Native culture. They identified three types of problems with the assessment tools: (1) some questions could not be answered because they contained words or idioms that were not understood (e.g., rather than “sassy,” as used in the CPRS, a better word would be “disrespectful”); (2) a question implied a cultural value of the dominant society that did not account for Native traditions (e.g., a phrase reflecting a child’s lack of independence would not acknowledge that it is culturally acceptable for children to cling to adults in Dakotan/Lakotan families); and (3) responses would be misunderstood by those who did not understand the culture (e.g., the CBCL asks about hearing sounds or voices that aren’t there, but some Natives embrace the presence of spirits). |
| Plank, 2001 | Eight AI children who had been diagnosed as intellectually disabled (mentally retarded) using the WISC-III and WAIS-R were re-evaluated using a cross-battery approach to establish intelligence scores, or by using the Visual Processing component from the Woodcock-Johnson Revised Test of Cognitive Ability or the Universal Nonverbal Intelligence Test. | When AI children who had previously been diagnosed as mentally retarded (on the basis of intelligence scores ranging from 58-69) were reassessed using the cross-battery approach, intelligence scores of 90-105 were produced, meaning that none was mentally retarded or had impaired intelligence. The author states that psychologists working with AI children should use multiple measures and methods to avoid poor decisions and inaccurate diagnoses. |

| Research Findings: Assessment Tools and Practices | | |
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| Author | Sample, Measures, and Methods | Major Findings |
| Powless and Elliott, 1993 | Parents and teachers used the Social Skills Rating System (SSRS) for a sample of 50 AI Head Start children from the Oneida Indian Reservation and 50 white Head Start children from Madison, WI programs. The SSRS is a standardized, norm-referenced tool. The teacher version of the SSRS has 52 items that reflect three prosocial domains (cooperation, assertion, and self-control) and one domain for problem behavior (interfering behaviors); teachers also rate how each behavior is related to classroom success. The parent version of the SSRS has 70 items that measure prosocial and problem behaviors at home and asks parents to designate the importance of each behavior. | According to ratings of both teachers and parents, white children demonstrated the measured social skills more frequently than AI children. This was particularly the case for a subscale measuring assertive behavior. AI and white teachers did not designate the same specific social behaviors as important, but AI teachers and parents did share a common sense of important social skills. The authors note that the SSRS may not measure social skills children exhibit that are unnoticed. For example, some AI children may show assertive skills nonverbally rather than verbally. The authors also posit that similarities between AI teachers and parents may be due to common cultural experiences. |
| Reschly and Reschly, 1979 | Scores on the WISC-R for 212 white, 289 black, 184 Hispanic, and 202 Papago children in grades 1, 3, 5, 7, and 9 from Pima County, Arizona were analyzed to compare children's performance and the test's predictive value for school achievement and attention. | Findings confirmed a strong relationship between WISC-R scores and school achievement for all groups, with the exception of the Papago children. The authors suggest that the Papago children may have experienced bias in test administration techniques. |
| Ross-Reynolds and Reschly, 1983 | Six subtests (Information, Similarities, Arithmetic, Vocabulary, Comprehension, and Picture Completion) of the WISC-R were examined for item bias. Scores on the WISC-R were examined for 252 white, 237 black, 223 Hispanic, and 238 Papago children from Pima County, Arizona. | The analyses found no evidence of item bias for black or Hispanic children. Ambiguous results were found for the Papago children. Depending on the analyses and criteria used, bias ranged from none or negligible to substantial for Papago children. |

Research Findings: Assessment Tools and Practices

| Author | Sample, Measures, and Methods | Major Findings |
|--|---|--|
| Spiegel, 1986 | To investigate the psychometric properties of the Peabody Picture Vocabulary Test-Revised (PPVT-R), the test was administered to 343 Sioux children enrolled in Head Start on four reservations (Crow Creek, Lower Brule, Santee, and Standing Rock). Scores on the PPVT-R were compared with scores on two subtests—Communications and Concepts—of the Developmental Indicators for the Assessment of Learning (DIAL). | Mean scores of the Sioux Head Start children were significantly (often greatly) lower than mean scores of children in the PPVT-R standardization sample (the standard deviation of the Sioux children was smaller, suggesting a homogeneous group different from the national standardization sample). The effects of age and gender for Sioux children's PPVT-R test scores were consistent with effects of age and gender for the standardization sample. Item-response analysis suggests consistency, namely that more able children succeeded in answering more difficult items correctly. Moderate correlations between PPVT-R scores and the DIAL Communications and Concepts subtests were achieved, and a discriminant analysis predicted accurately whether 78 percent of the Sioux children would pass or fail the DIAL. The author concludes that the PPVT-R has many of the same psychometric properties when used with the Sioux children as with the standardization sample, but the Sioux children's mean scores were about one standard deviation below that of the standardization sample and suggests that local norms should be examined when a local population is unique. |
| Thomas, 1987 | Grades were reviewed on report cards of 44 Caucasian and 38 AI kindergarten children in a rural midwestern town. | In several categories of grades—expression, work habits, physical development, reading and number readiness, art appreciation and music participation, and overall—there were no statistically significant differences in the grades teachers gave Caucasian and AI children. Teachers gave lower grades to AI children for their general characteristics and social development. The author thinks the grade differences could reflect cultural differences. Further research could examine whether clothing, speech, and manners, along with family demographics, affect grades given in kindergarten. |
| Ukrainetz, Harpell, Walsh, and Coyle, 2000 | 23 Arapahoe/Shoshone kindergarten students were assessed using dynamic assessment techniques. | Dynamic assessment (which looks at responses to learning situations, rather than traditional assessment methods) is a process that is being tested to accurately diagnose language impairments in minority populations. The results measured from the dynamic assessment were consistent with teachers' identification of children as weaker or stronger language learners. The study shows the potential of dynamic assessment as a more valid method for accurately measuring cultural differences vs. disorders in minority children. |

HEALTH AND PHYSICAL WELL-BEING

Issues and Observations

American Indian and Alaska Native children face a number of health issues, often at rates disproportionate to the rest of the United States population. Studies have shown that AI-AN children have higher rates of speech disorders, lower respiratory tract infections, fetal alcohol syndrome, diabetes mellitus, and obesity. Early intervention programs and other medical services are sometimes underutilized by AI-AN families, possibly due to such factors as lack of access and equity (Sontag and Schacht, 1993). Observations regarding the health and physical well-being of AI-AN children include the following:

- Many health disparities may be attributable to socioeconomic and environmental factors. For example, poverty, rather than race or genotype, is the major factor associated with fetal alcohol syndrome (FAS) (Abel, 1995). Populations characterized by lower socioeconomic status, including American Indians and African Americans, may have incidence rates as much as ten times higher than middle-to-upper socioeconomic status populations. Among Alaska Natives, the rate of FAS is estimated to be even higher (Egeland et al., 1998). Other risk factors—including smoking, poor nutrition, poor health, increased stress, and use of other drugs—may exacerbate the effects of heavy alcohol consumption, resulting in increased FAS (Abel, 2000; Abel, 1998; Abel, 1995; Abel et al., 2002; Cassano et al., 1990; Hingson et al., 1982; Kennedy, 1984; Kuzma and Sokol, 1982; Olsen et al., 1991; Polednak, 1991; Westphal, 2000).
- AI-AN children have higher rates of hospitalization for respiratory illnesses such as wheezing illnesses (Liu et al., 2000), *Haemophilus influenzae* (Millar et al., 2000), hepatitis A (Welty et al., 1996), and middle respiratory tract infections such as bronchiolitis (Lowther et al., 2000). Use of vaccines, when available, and disease prevention programs have led to a reduction in diseases (Millar et al., 2000; Lowther et al., 2000).
- AI-AN children may be prone to a greater incidence of speech disorders than the general population. In some children, speech disorders may result from recurrent *otitis media* with effusion (middle ear infections) and as such may be preventable. Research has found a link between OME and speech disorders in a sample of AI children in Head Start (McShane and Mitchell, 1979; Shriberg et al., 2000); children may also experience learning problems linked to middle ear infections, particularly with word recognition and spelling (Scaldwell and Frame, 1985).
- AI-AN children have higher rates of obesity than other populations (Zephier et al., 1999), contributing to the development of diseases such as diabetes mellitus. Various studies assessing diet choices (Koehler et al., 2000) and developing interventions for young children, such as the Pathways obesity prevention program (Davis et al., 1999), seek to provide further understanding and reduction of obesity and obesity-related diseases.



Research Findings: Health and Physical Well-Being

| Author | Sample, Methods, and Measures | Major Findings Reported by Author |
|--|---|---|
| Abel, 1995 | A meta-analysis identified 29 quantitative studies on the incidence of FAS in the United States, Australia, and Western Europe. Sample sizes varied from 278 to 14,923 across the studies and totaled 97,576. The studies were of varying duration and were conducted from the mid-1970s to the early 1990s. Researchers examined the incidence of FAS worldwide, by country, by socioeconomic status, cultural group, and among heavy drinkers. | Poverty, rather than race or genotype, is the major factor associated with Fetal Alcohol Syndrome. Populations characterized by lower socioeconomic status, including African Americans and American Indians, may have incidence rates as much as ten times higher than middle/upper socioeconomic status populations. Socioeconomic risk factors associated with poverty—including smoking, poor nutrition, poor health, increased stress, and use of other drugs—probably exacerbate the effects of heavy alcohol consumption, resulting in FAS. The author notes that the absence of prospective studies of FAS among AI populations means that it is not possible to estimate with precision the incidence of FAS among American Indians. |
| Egeland, Perham-Hester, Gessner, Ingle, Berner, and Middaugh, 1998 | Medical charts of 37,346 Native and 139,419 non-Natives were obtained from 16 sources in Alaska and reviewed to identify potential cases of FAS. A diagnosis of FAS was based on the presence of all the following in the medical history: FAS suspected or diagnosed by a physician, prenatal alcohol exposure or maternal alcohol abuse, characteristic facial features, growth deficiency, and central nervous system impairment. | Researchers estimated that five to seven Alaska Native children per 1,000 live births require follow-up evaluation for suspected FAS. |
| Liu, Stout, Sullivan, Solet, Shay, and Grossman, 2000 | A retrospective analysis was conducted of asthma and bronchiolitis hospitalizations in Washington from 1987 through 1996. Out of a total of 23,500 AI-AN children aged 0 to 17 years who had IHS patient registration data files, 383 were identified with asthma. Patients were included in the sample if asthma or bronchiolitis was the first listed diagnosis. AI-AN children were identified by linking state hospitalization data with IHS enrollment data. | AI-AN children have significantly higher rates of hospitalization for wheezing illnesses during the first year of life than children of other age groups and races. The disparity has increased significantly over time. Similar rates of hospitalizations were observed for AI-AN children over one year old and for all children over one year old. |

| Research Findings: Health and Physical Well-Being | | |
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| Author | Sample, Methods, and Measures | Major Findings Reported by Author |
| Shriberg, Flipsen, and Thielke, 2000 | The authors used retrospective analysis of case histories of children with early recurrent otitis media with effusion (OME) and analyzed speech samples to assess the risk for speech disorders with and without hearing loss. The study was conducted with 50 preschool-age AI children. Two subsamples were drawn: one had 28 AI children with histories of OME and no complicating factors (e.g., no referral for special education services) and another had 22 randomly selected AI children enrolled in Head Start. Speech samples were analyzed using a 10-item measure (nine items measured children's articulation and the 10 th reflected children's status on the speech disorder classification system). Data were compared to 35 non-Indian children attending a Midwestern pediatric health clinic. | Some children in both the Indian and non-Indian samples had histories of OME. The study found that children with histories of OME had significantly less articulate speech than children who had not had OME. The authors found that the American Indian children were at increased risk of speech disorders, compared to non-Indian children. If recurrent middle ear disease can be prevented or reduced, the authors say the data suggest that speech disorders could be prevented. |
| Stout, Sullivan, Liu, and Grossman, 1999 | To ascertain prevalence rates of asthma, the authors conducted an analysis of data for children ages 1 to 17 from the 1987 Survey of American Indians and Alaska Natives (n = 2,288) and the 1987 National Medical Expenditure Survey (n = 7,529). Data were collected through telephone and in-person interviews using the Health Status Questionnaire. | About 7 percent of AI children have asthma or wheezing, according to their parents' reports. This compares to a rate of 8.4 percent among all children in the United States. The small AI sample size means that prevalence rates cannot be adjusted for income and place of residence (metropolitan vs. non-metropolitan). Although rates between the AI children and all U.S. children are not statistically different, the authors note that the study has several limitations (e.g., the AI sample lives in primarily rural areas and pooled estimates may obscure regional differences). |

Research Findings: Health and Physical Well-Being

| Author | Sample, Methods, and Measures | Major Findings Reported by Author |
|---|---|---|
| Stout, White, Redding, Morray, Martinez, and Gergen, 2001 | The sample for this study included all 6 th -9 th grade students in a town in Washington and two rural Alaska coastal village schools (n = 629). All three schools served predominantly AI or AN children. The students viewed a video illustrating signs and symptoms of asthma, then completed a written questionnaire (developed and validated by the International Study of Asthma and Allergy in Children group) about health care utilization and experiences with any asthma symptoms. | Children in the metropolitan sample were significantly more likely to report having asthma and having been diagnosed as having asthma, but there was no difference between the groups in the percentages of respondents who reported having visited a medical provider or emergency department for wheezing or breathing difficulties. No differences were found in the overall prevalence of asthma symptoms between the metropolitan and rural samples. |
| Tarrant and Gregory, 2001 | Using an instrument developed for this study, researchers interviewed 28 mothers of young children in two First Nations communities in the Sioux Lookout Zone in Canada, to determine perceptions about childhood immunizations and factors that encourage their use. Interviews were audio taped and transcribed, then content analysis was conducted to determine patterns and themes. | The authors found that immunization uptake in young children within the sample was influenced by four main factors: (1) knowledge barriers (e.g., lack of knowledge about how vaccines work or what diseases they protect against); (2) the influence of others (e.g., community beliefs); (3) vaccine barriers (e.g., negative side effects); and (4) missed opportunities (e.g., a child cannot be vaccinated when ill). The authors conclude that within this sample of First Nations mothers, multiple strategies and messages to address cultural and knowledge barriers are needed to improve immunization uptake and health in young children. |
| Westphal, 2000 | This study drew a random sample from the 1988 National Maternal Health and Infant Health Survey. Women who delivered a live-born infant in 1988 and lived off-reservation in areas of selected urban AI clinics in 21 states were eligible. Mail questionnaires were completed by 763 women (a response rate of 61 percent). Survey questions asked about alcohol use and demographic characteristics. | Almost half of the study sample reported alcohol use in the 12 months prior to their delivery, but 90 percent of those reduced alcohol use after learning they were pregnant. The median level of drinking for those who drank during pregnancy was one drink per month. Women with higher education levels and higher incomes were significantly more likely to consume some amount of alcohol after learning they were pregnant. Women who smoked were more than three times as likely to report drinking than non-smokers. Virtually all of the women (97 percent) received some prenatal care during pregnancy. |

MENTAL HEALTH

Issues and Observations

American Indian and Alaska Native children's mental health is an area in need of additional study and has been described as the largest unmet health need for Indian people today (Neligh, 1990). Researchers have noted that AI-AN children may experience high rates of various disturbances, including developmental delays, learning disorders, mental retardation, affective disorders, attention deficit disorders, anxiety, phobic disorders, conduct disorders, other "personality" disorders, and substance abuse problems (Manson et al., 1997; Neligh, 1990). Other studies, however, have noted that previous perceptions of higher rates of mental illness or disorders among AI-AN children are not supported by the data or may be due to misdiagnoses attributable to problems with a given assessment tool.

- The mental health needs of American Indian communities need to be studied from both an individual developmental and an epidemiological point of view (Berlin, 1983).
- Early intervention with preschool children may be effective for dealing with developmental disturbances (Berlin, 1983; Clay, 1998; Paul, 1991), but caution should be used in interpreting test scores that may not accurately reflect children's abilities (Brachlow et al., 2001; Crowe et al., 1999; Plank, 2001).
- AI-AN children may experience higher rates of depression, abuse, and neglect, and abused or neglected children are more prone to behavioral problems, psychiatric symptoms, and risk-taking behaviors (Piasecki et al., 1989; Manson et al., 1997).
- Symptoms of attention deficit disorder and hyperactivity, which are problems affecting some children, their families, and their schooling, are not culture bound (Beiser et al., 2000).
- All mothers of children in Head Start may face challenges such as chronic health problems, homelessness, and very low income. These challenges, in turn, have been found to be risk factors for depression across all racial and ethnic populations. Programs aimed at decreasing poverty, improving maternal support, and providing medical care may help improve conditions for mothers at risk for depression (Lanzi et al., 1999).



Research Findings: Mental Health

| Author | Sample, Methods, and Measures | Major Findings Reported by Author |
|------------------------------------|--|---|
| Beiser, Dion, and Gotowiec, 2000 | A study of 1,555 Native and 489 non-Native children in 2 nd or 4 th grade, 1,118 parents, and 49 teachers at four locations in the United States and Canada was conducted to assess children's behavior patterns. Community members collected data from parents in their homes, and child data were collected at school. Instruments used were the Teacher Interview Form, the Child's Assessment by a Parent, and the Student's Observation of Self. Each instrument contained items from the Child Behavior Checklist, the Connors Parent and Teacher Rating Scales, and the Diagnostic Interview Schedule for Children. | Symptoms of attention deficit and hyperactivity are not culture bound. Direct comparisons of symptom levels indicated more similarity than difference in the extent to which these behavior patterns affect Native and non-Native children in early school years. |
| Bruneau, 1984 | The Preschool Behavior Questionnaire, an instrument used by teachers to assess children for possible emotional disturbance, was administered to a group of Head Start teachers. A total of 58 AI and white preschoolers enrolled in Head Start were selected to take the Primary Self-Concept Inventory, which measures self-concept related to school success. | There were no differences in the scores of AI and white children on self-concept and behavior, but AI preschoolers reported being happier than the white preschoolers. The data support a relationship between emotional adjustment and self-concept. The authors suggest that preschoolers with emotional disturbances may view themselves negatively as learners. School programs may positively impact children's self-concepts by providing opportunities for academic success. |
| Chester, Mahalish, and Davis, 1999 | Bilingual staff interviewed 156 adults, 28 adolescents, and 51 parents of children age 12 and under to determine mental health needs of off-reservation American Indians in Northern Arizona. 75 percent of the sample were Navajo and 25 percent were from other tribes. The interview protocol included the Child Behavior Checklist, the Youth Self-Report, the Personal Problems Checklist for Adults, and an Acculturation Questionnaire. | Parents report more competence in school performance for their children age 12 and under, as compared to adolescents' reports of their own performance; adolescents self-reported a higher prevalence of internalizing problems than parents reported for children age 12 and under. Children experienced fewer nightmares (40 percent) than adolescents (58 percent). The authors suggest that there is a progression of problems and coping mechanisms for AI children; if these problems are addressed at key points in development, crises may be reduced and coping enhanced for adolescents and adults. The authors conclude that a bilingual, bicultural outreach component is necessary for off-reservation mental health programs. |

| Research Findings: Mental Health | | |
|--|---|--|
| Author | Sample, Methods, and Measures | Major Findings Reported by Author |
| Dion, Gotowiec, and Beiser, 1998 | Depression and conduct disorder were assessed in 1,251 Native and 457 non-Native children in 2 nd and 4 th grade at four sites in North America. Children completed a 109-item Student's Observation of Self checklist, teachers completed a 132-item Teacher Information Form, and parents completed a 189-item Children's Assessment by Parents checklist. All measures were adapted from the Child Behavior Checklist and the Diagnostic Interview Schedule for Children. | Non-Native children and their parents report higher levels of depression for the children than Native children and their parents. As for conduct disorder, the children's self-ratings and the parents' ratings did not differ between Native and non-Native groups. Teachers, however, rated Native children higher on both depression and conduct disorder. Native teachers, compared to non-Native teachers, rated Native children as having lower levels of depression and conduct disorder. The authors conclude that non-Native teachers may interpret the behavior of Native children more negatively than they would the same types of behavior among children from their own culture. They also conclude that bias, rather than actual psychopathology, may have caused greater rates of referral for mental health services among Native children. |
| Piasecki, Manson, Biernoff, Hiat, Taylor, and Bechtold, 1989 | 55 health/mental health providers for all 26 reservations in the Albuquerque IHS area and 7 reservations in the Phoenix IHS area identified children in need of mental health treatment or known to have been abused or neglected. Providers then responded to a written questionnaire reporting children's demographic characteristics, medical history, the presence/absence of behaviors associated with the DSM-III classification disorders, drug use, treatment needs, and services received. Completed questionnaires were received for a total of 1,155 children, representing 50 tribes. | In the sample, 67 percent of the children were described as neglected or abused. A greater percentage of boys were neglected than girls, but girls suffered more abuse or a combination of abuse and neglect. The researchers found that the percentage of abused children increased with age; neglected children tended to be younger. The authors noted several limitations to this study: (1) the sample represents a treatment population rather than the general AI community, which may skew results; and (2) the knowledge and experience of health care providers differed greatly (some providers had more knowledge of psychological symptoms, disorders, and children's history than others). |
| Tikalsky and Wallace, 1988 | A comparative study of 92 3 rd grade Navajo children and 92 3 rd grade Anglo children was conducted using the Louisville Fear Survey for Children. | The Navajo children in the sample showed higher levels of fear. However, traditional views of fear may not be appropriate for understanding the fears of Navajo children. Bias in psychological approaches to the study of fear may affect a clinician's determination of when fear responses are abnormal. Among Navajo children, high fear frequencies may not indicate any pathology. |
| Wright, Mercer, Mullin, Thurston, and Harned, 1994 | This was a comparative study of 60 American Indian children ages 4-11 referred for psychological services and 60 matched (based on gender and age) non-Indian controls. Data for 121 physical and 13 social variables (including prenatal and neonatal history, developmental progress, medical history, medications, immunizations, childhood illnesses, and parental alcohol use) were drawn from children's case files. | AI children referred to psychological services differed significantly from their non-Indian counterparts. They have a greater incidence of risk factors that may affect intellectual, emotional, behavioral, and learning status. These factors include otitis media, communicable diseases, jaundice, heart problems, vision disorders, and maternal prenatal alcohol and substance abuse. |

CONDUCTING RESEARCH

Currently, there is literature on research among American Indian and Alaska Native children, fostered largely by Native researchers, that argues cogently for four changes in the lenses through which questions are formed, services are devised, and research is conducted (Deyhle and Swisher, 1997; Moreno, 1991; Running Wolf et al., 2002; Strang and von Glatz, n.d.):

1. Research should emphasize understanding the strengths these children bring to their educational experiences and life paths, rather than examining information and knowledge to determine “what’s wrong” with AI-AN children and youths. In short, this suggests changing the paradigm from a deficit model to an assets model.
2. Research should focus on examining the institutions and practices that serve these children, rather than examining data and drawing conclusions that something in the AI-AN experience leads to academic underperformance and school failure. Supporters of this perspective suggest that if institutions and practices more closely built on the learning styles and life experiences of AI-AN children, those children would achieve far greater success.
3. Research should carefully consider whether measures and expectations are accurate for the population under study, especially since they are often compared against measures and expectations derived from other groups (e.g., middle-class majority culture).
4. Research should empower American Indian and Alaska Native communities through efforts such as community advisory groups to guide the work and capacity-building among local populations to conduct their own studies.

Below, we present information about conducting research among AI-AN populations and then conclude with comments on the content and quality of the existing knowledge base.

The Practice of Conducting Research Among American Indian and Alaska Native Populations

Contemporary research among American Indian and Alaska Native populations is affected by the experience of those communities (“Our Voices, Our Vision,” cited in Swisher, 1996):

Just as the exploitation of American Indian land and resources is of value to corporate America, research and publishing is valuable to non-Indian scholars. As a result of racism, greed, and distorted perceptions of Native realities, Indian culture as an economic commodity has been exploited by the dominant society with considerable damage to Indian people. Tribal people need to safeguard the borders of their cultural domains against research and publishing incursions.

Existing publications are replete with discussions about ways to conduct research in “Indian Country.” A number of recent materials carry very clear messages that to be considered valid and reliable, research must be conducted by those who fully comprehend the historical experiences of AI-AN populations, recognize that tribes are sovereign nations, respect the culture, and actively

demonstrate respect for tribal members (e.g., Swisher, 1996). Other materials, particularly those discussing health-related research point out additional factors to consider: the need for researchers to obtain permission from the tribe to conduct the work, the role of local Institutional Review Boards or similar entities, the importance of engaging tribal and community input, compensation for tribes and participants, confidentiality of tribes and individuals, and responsiveness to questions of interest to the tribal community (Norton and Manson, 1996).

As part of the report from the Indian Nations at Risk Task Force, strategies for appropriately evaluating early childhood education were listed as follows (Paul, 1991, p. 12):

- Study participants should use their language of choice.
- People affected by early childhood education should have their perceptions incorporated into studies.
- High priority should be attached to cultural values, and evaluation procedures should respect them.
- Research should incorporate cultural relevance.
- Evaluation procedures should be developed by, or in consultation with, people involved in the education process.
- The evaluation design should be created within the processes being studied.
- Results should not be published as negative reflections on the groups being studied.
- Shared, culturally driven values should be used for community education.
- Evaluations should establish guidelines for the next wave of research.

A recent report from a Federal Interagency Task Force responsible for Executive Order 13096, American Indian and Alaska Native Education, contains a research agenda, along with a set of guidelines for conducting research among AI-AN populations. The assumptions for conducting studies include the following: research should include a focus on success, researchers must respect tribal sovereignty, and research needs to be sensitive to tribal differences (Strang and von Glatz, n.d.).

One study on an evaluation of a Head Start program, although conducted more than 20 years ago, contains the steps that the researchers followed to determine whether Head Start met the needs of children, whether the Head Start program was successful, the problems teachers had, and if the tribe should administer Head Start itself (Tigges and Zastrow, 1981). To conduct the project, the evaluators discussed it with tribal officials, reviewed literature, and developed the research design. The research design included (1) identifying issues to be studied that were the priority of tribal officials; (2) determining the methods that would be used (e.g., time frame for interviews, use of verbal rather than written questionnaires, confidentiality, and avoiding comparisons of Head Start classrooms); (3) clarifying the effect that the allowed methods would have on the evaluation; and



(4) establishing procedures for gathering information. The evaluators concluded that the project responded to the information needs of the tribe and was conducted within the rules established by those requesting the study. They note that their approach (Tigges and Zastrow, 1981, p.12):

. . . was successful because evaluators frequently do find themselves in [a] social context different than the one in which they were trained to be evaluators, and occasionally, very different from the social context in which the concepts of social science research were developed. However, this difference is rarely accounted for in the evaluation they are asked to do. That is, evaluators are asked to do acceptable social science evaluations of programs whose participants are from a culture with basic assumptions different than those of Western science.

Some Native researchers and commentators have expressed very strong opinions about the way research should be conducted. They note, for example, that much of the qualitative work conducted is “presented from an outsider’s perspective” (Swisher, 1996):

If non-Indian educators have been involved in Indian education because they believe in Indian people and want them to be empowered, they must now demonstrate that belief by stepping aside. They must begin to question their motives beyond wanting to do something to improve education for Indian people. In writing about Indian education, they must now defer to Indian authors, or at least co-author in a secondary position . . . Much of what has been written is historically accurate and not harmful or offensive; it is sensitively, and in some cases beautifully, done. What is missing is the passion from within and the authority to ask new and different questions based on histories and experiences as indigenous people.

Even members of the American Indian-Alaska Native community have experienced challenges in conducting research among indigenous populations. For example, (Brayboy and Deyhle, 2000):

Bryan McKinley Brayboy (Lumbee Cheraw): I have worked hard to develop a balance between being a good researcher and a “good Indian” simultaneously. Many traditional methods of conducting research directly conflicted with my sense of being an Indian. [In one research location] where I knew many people and had relationships with the participants, the transition from being a friend and colleague to researcher was difficult. Conversations became more structured; I asked more questions, often had a notebook in my hand, and I watched the students through a different lens than before.

Donna Deyhle: Although [my] ethnic heritage is part Choctaw, [I] was raised in a European-American cultural environment and therefore speak from a hybrid identity . . . Although I could never become a complete “insider”—no matter how much I have been taught, I will never become Navajo—I have used my position . . . to become a “broker of sorts.” This has brought the “insider” voices and experiences of Navajo youth and their families to the “outside” as evidence in legal battles for social justice.

Content and Quality of the Existing Knowledge Base

Despite the many references cited in this synthesis, the field of early childhood education for American Indians and Alaska Natives is woefully understudied. Calls for more systematic and substantial research have been issued regularly.

In 1998, President Clinton signed Executive Order 13096, American Indian and Alaska Native Education, which set forth six goals: improving reading and math skills, increasing high school graduation and postsecondary attendance, reducing the influence of factors such as poverty and substance abuse that impede educational performance, creating safe and drug-free schools, improving science education, and expanding the use of educational technology. The Executive Order established an Interagency Task Force on American Indian and Alaska Native Education to oversee the plans and implementation of the order. The Task Force directed the U.S. Department of Education to develop a research agenda, and a Research Agenda Working Group fulfilled the assignment. General conclusions from the Working Group include the following: (1) detailed national data are needed, (2) definitions should be resolved by tribes, (3) research on AI-AN students should involve those with demonstrated knowledge of their cultures, (4) the quality of research should be of high priority, (5) generalizable findings are needed, and (6) a clearinghouse in Native education should be established. For early childhood education, the Working Group identified two priority research topics: (1) the status of infants and preschool-aged AI-AN children on school readiness domains and (2) the programs and services available for infants and preschool-aged AI-AN children.

Still, these calls for additional research have not yet resulted in a substantial research base. Obtaining materials for this document required digging deeply into sources outside the usual social science knowledge base, particularly into materials other than refereed journal articles, published books, and other types of commonly accepted social science resources. The debate about what constitutes scientifically valid research in the social and behavioral sciences is a long one and will not be addressed here, except to note that there may be competing expectations for what exactly constitutes valid research regarding AI-AN children. For some, the fact that findings make good common sense and resonate with experience may be sufficient; for others, systematic data collection and careful hypothesis testing may be necessary before they consider the findings valid.

In its current state, the literature on services for young AI-AN children relies heavily on qualitative methods, including personal histories, case studies, descriptive analyses, and ethnographic approaches. There are, however, a number of studies that use systematic measures and tools, suggesting that some researchers and AI-AN communities have found it suitable to use other forms of social science or education research practices, such as evaluations and standardized assessments. Among the research studies identified for this synthesis, a variety of data collection methods were used (see Appendix A). Two patterns are particularly notable in these methods: (1) to the extent that standardized tools or scales are used, they tend to be in the areas of language and literacy acquisition and assessment tools and practices; and (2) the majority of health-related studies do not entail original data collection but instead rely on existing records.



It is reasonable to ask why the research methods used in much of the literature on young AI-AN children tend to be those judged as less scientifically valid. Put another way, the question asks: Why are commonly accepted social science or education research practices frequently absent from the information base on young AI-AN children?

Based on materials obtained and reviewed for this synthesis, the following list summarizes the research methods and measures used in studies of young AI-AN children:

- Sample sizes tend to be small. Most studies on learning styles, culturally appropriate curricula and practices, language acquisition, and assessment tools have relatively few study participants, ranging from as few as six to as many as a few dozen.
- An exception to small sample sizes is found in health-related material regarding American Indian and Alaska Native populations. In the health field, several studies have used large extant databases or retrospective record reviews.
- Most research studies identified for this synthesis use convenience or purposive samples. Very few have any sort of control or comparison group.
- Studies that focus on reservation-based American Indian populations tend to be tribe specific; that is, most do not involve comparative studies across different tribal populations. Studies that are more general for the AI-AN population tend to draw on urban Indians and do not generally segment findings according to tribal affiliation.
- Several studies have used standardized assessment instruments among AI-AN children, but the wide range of tools used (see Appendix B) suggests that there is not a consensus among researchers regarding the most reliable and valid instruments.
- Some studies have examined the use of standardized assessment instruments among AI-AN children and have produced mixed findings regarding their appropriateness for the population. Several, for example, have looked at the WISC-R, which is a scale that measures intelligence. One study concluded that the WISC-R has low reliability and predictive validity for Navajo children, another found a range of bias from none to substantial for Papago children, a third showed significantly lower scores for Cherokee and Kiowa children on some subtests, and a fourth determined no significant differences between American Indian and Caucasian children.
- AI-AN children tend to score “worse” than national norms on standardized measures. The current state of knowledge does not consistently and definitively explain why this is so. As a result, caution needs to be used in both (1) inferring lower levels of ability among AI-AN children and (2) adopting particular tools to use with this population.

The work conducted to date provides a wealth of rich detail essential to describe the conditions within which AI-AN Head Start programs operate, and they have provided good suggestions that programs may want to try in their efforts to better serve students. Some of the statements in these studies, however, may be too ambitious, perhaps driven by a commitment to enhance the knowledge base and do better for American Indian and Alaska Native people.

To be valid, research does not have to meet a rigid list of certain criteria, such as sample size, experimental design features, or quantitative measures. But it is likely that efforts to improve services for AI-AN children would be better served if the studies that have been (and are being) conducted are reviewed critically and subjected to the question: If the practice recommended in this study were followed, is there evidence to suggest that the investment in the practice would help young American Indian and Alaska Native children achieve better outcomes? Some findings are plausible; others may require more robust research before they are adopted.



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APPENDIX A: SUMMARY OF DATA COLLECTION METHODS USED IN RESEARCH STUDIES

| Author and Date | Data Collection Methods | | | | | | | | | | | | | | | | |
|---|-------------------------------|----------|---------|---|-------------------------|---------------------|--------------|-------|------------|-------------------------|-------|--------------|-----------|---------|----------|-----------|------------------------|
| | Standardized Tools or Scales* | | | Researcher-Developed Written Questionnaires | | | | | Interviews | | | Observations | | | | | Document/Record Review |
| | Children | Teachers | Parents | Parents | Teachers/Administrators | Other Professionals | Other Adults | Youth | Parents | Teachers/Administrators | Youth | Children | Classroom | Parents | Teachers | Community | |
| Culturally Appropriate Curricula and Practices | | | | | | | | | | | | | | | | | |
| Clay, 1998 | x | | | | | | | | x | x | | x | | | | | x |
| Culp and McCarthick, 1997 | | | x | | | | | | | | | | | | | | |
| Greenbaum, 1985 | | | | | | | | | | | | x | | | x | | |
| Luellen, 1991 | x | | | x | | | | | | x | | | x | | | | |
| Philips, 1993 | | | | | | | | | | | | | x | | | | x |
| Suina and Smolkin, 1994 | | | | | | | | | | x | | | | | x | | |
| Swisher, 1994 | | | | | X | | | | | | | | | | | | |
| Vekiari, 1999 | x | | | | | | | | | | | | | | | | |
| Wax, Wax, and Dumont, 1989 | | | | | | | x | x | x | x | | | x | | | | x |
| Language and Literacy Acquisition | | | | | | | | | | | | | | | | | |
| Batchelder, 2000 | | | | x | X | | x | | | x | x | x | | | | | |
| Fayden, 1997 | x | | | | | | | | | | | | | | | | |
| Guilmet, 1979 | | | x | | | | | | | | | x | | | | | |
| Guilmet, 1983 | x | | | x | | | | | | | | | | | | | |
| Long and Christensen, 1998 | | | x | | | | | | | | | | | | | | |

| Author and Date | Data Collection Methods | | | | | | | | | | | | | | | | |
|--|-------------------------------|----------|---------|---|--------------------------|---------------------|--------------|-------|------------|--------------------------|-------|--------------|-----------|---------|----------|-----------|------------------------|
| | Standardized Tools or Scales* | | | Researcher-Developed Written Questionnaires | | | | | Interviews | | | Observations | | | | | Document/Record Review |
| | Children | Teachers | Parents | Parents | Teachers/ Administrators | Other Professionals | Other Adults | Youth | Parents | Teachers/ Administrators | Youth | Children | Classroom | Parents | Teachers | Community | |
| McKeever, Hunt, Wells, and Yazzie, 1989 | x | | | | | | | | | | | | | | | | |
| Prince, Grace, Linebarger, Atkinson, and Huffman, 2002 | x | | | | | | | | | | | | | | | | |
| Reyhner, 1990 | x | | | | | | | | | | | | | | | | |
| Watahomigie and Yamamoto, 1987 | x | | | | | | | | | | | | | | | | |
| Wolfe, Schwartz, and Petersen, 1996 | x | | | | | | | | | | | | | | | | |
| Teacher Training and Professional Development | | | | | | | | | | | | | | | | | |
| Anziano and Terminello, 1993 | | x | | | x | | | | | x | | | | | | | x |
| Corenblum, Annis, and Tanaka, 1997 | x | x | | | | | | | | | x | | | | | | |
| Lipka, Mohatt, and the Ciulistet Group, 1998 | | | | | | | | | | | | x | x | | x | x | |
| Schultz and Bravi, 1986 | | x | | | | | | | | | | | | | | | |
| Sears and Medearis, 1993 | x | | | | | | | | | x | | | | | | | |
| Werner, 1997 | | | | | x | | | | | | | | | | | | |



| Author and Date | Data Collection Methods | | | | | | | | | | | | | | | | |
|---------------------------------------|-------------------------------|----------|---------|---|--------------------------|---------------------|--------------|-------|------------|--------------------------|-------|--------------|-----------|---------|----------|-----------|------------------------|
| | Standardized Tools or Scales* | | | Researcher-Developed Written Questionnaires | | | | | Interviews | | | Observations | | | | | Document/Record Review |
| | Children | Teachers | Parents | Parents | Teachers/ Administrators | Other Professionals | Other Adults | Youth | Parents | Teachers/ Administrators | Youth | Children | Classroom | Parents | Teachers | Community | |
| Parent Involvement | | | | | | | | | | | | | | | | | |
| Bachtold, 1982 | | | | | | | | | x | | | x | | | | | |
| Coburn, 1992 | | | | x | x | | | | | | | | | | | | |
| Deyhle, 1991 | | | | | | | | | | | | x | x | | x | | |
| Leveque, 1994 | x | | | | | | | | x | x | x | x | | x | x | x | |
| Mayfield, 1985 | x | | | x | | | | | | | | | | | | | |
| Ndura, 1994 | | | | x | x | | | x | x | x | x | | | | | | |
| Sears and Medearis, 1992 | x | | | x | | | | | x | x | | | | | | | |
| Sontag and Schacht, 1994 | | | | x | | | | | | | | | | | | | |
| Strom and Hill, 1979 | | | x | | | | | | x | | | | | | | | |
| Wynn, 1995 | | | | x | | | | | | | | | | | | x | |
| Assessment Tools and Practices | | | | | | | | | | | | | | | | | |
| Banks, 1997 | | | | x | | x | | | | | | | | | | | |
| Brachlow, Jordan, and Tervo, 2001 | x | | | | | | | | | | | | | | | | |
| Browne, 1984 | x | | | | | | | | | | | | | | | | |
| Crowe, McClain, and Provost, 1999 | x | | | x | | | | | | | | | | | | | |
| Kazimour and Reschly, 1981 | x | | | | | | | | | | | | | | | | |
| Long, 1998 | x | | | | | | | | | | | | | | | | |

| Author and Date | Data Collection Methods | | | | | | | | | | | | | | | | |
|--|-------------------------------|----------|---------|---|--------------------------|---------------------|--------------|-------|------------|--------------------------|-------|--------------|-----------|---------|----------|-----------|------------------------|
| | Standardized Tools or Scales* | | | Researcher-Developed Written Questionnaires | | | | | Interviews | | | Observations | | | | | Document/Record Review |
| | Children | Teachers | Parents | Parents | Teachers/ Administrators | Other Professionals | Other Adults | Youth | Parents | Teachers/ Administrators | Youth | Children | Classroom | Parents | Teachers | Community | |
| Mishra and Lord, 1982 | x | | | | | | | | | | | | | | | | |
| Mitchell, 1985 | x | | | | | | | | | | | | | | | | |
| Morgan and Whorton, 1991 | x | | | | | | | | | | | | | | | | |
| Oesterheld and Haber, 1997 | | | | | | | | | x | | | | | | | | |
| Plank, 2001 | x | | | | | | | | | | | | | | | | |
| Powless and Elliott, 1993 | | x | x | | | | | | | | | | | | | | |
| Reschly and Reschly, 1979 | x | x | | | | | | | | | | | | | | | |
| Ross-Reynolds and Reschly, 1983 | x | | | | | | | | | | | | | | | | |
| Spiegel, 1986 | x | | | | | | | | | | | | | | | | |
| Thomas, 1987 | | | | | | | | | | | | | | | | | x |
| Health and Physical Well-Being | | | | | | | | | | | | | | | | | |
| Abel, 1995 | | | | | | | | | | | | | | | | | x |
| Egeland, Perham-Hester, Gessner, Ingle, Berner, and Middaugh, 1998 | | | | | | | | | | | | | | | | | x |
| Liu, Stout, Sullivan, Solet, Shay, and Grossman, 2000 | | | | | | | | | | | | | | | | | x |



| Author and Date | Data Collection Methods | | | | | | | | | | | | | | | | |
|--|-------------------------------|----------|---------|---|--------------------------|---------------------|--------------|-------|------------|--------------------------|-------|--------------|-----------|---------|----------|------------------------|-----------|
| | Standardized Tools or Scales* | | | Researcher-Developed Written Questionnaires | | | | | Interviews | | | Observations | | | | Document/Record Review | |
| | Children | Teachers | Parents | Parents | Teachers/ Administrators | Other Professionals | Other Adults | Youth | Parents | Teachers/ Administrators | Youth | Children | Classroom | Parents | Teachers | | Community |
| Shriberg, Flipsen, and Thielke, 2000 | x | | | | | | | | | | x | | | | | | x |
| Stout, Sullivan, Liu, and Grossman, 1999 | | | | | | | | | | | | | | | | | x |
| Stout, White, Redding, Morray, Martinez and Gergen, 2001 | | | | | | | | x | | | | | | | | | |
| Tarrant and Gregory, 2001 | | | | | | | | | x | | | | | | | | |
| Westphal, 2000 | | | | x | | | | | | | | | | | | | |
| Mental Health | | | | | | | | | | | | | | | | | |
| Bruneau, 1984 | x | x | | | | | | | | | | | | | | | |
| Chester, Mahalish, and Davis, 1999 | x | | | x | | | x | x | | | | | | | | | |
| Piasecki, Manson, Biernoff, Hiat, Taylor, and Bechtold, 1989 | | | | | | x | | | | | | | | | | | |
| Tikalsky and Wallace, 1988 | | | | x | | | | | | | | | | | | | |
| Wright, Mercer, Mullin, Thurston, and Harned, 1994 | | | | | | | | | | | | | | | | | x |

* A list of the standardized tools or scales used in these studies are presented in Appendix B.

APPENDIX B: SUMMARY OF SCALES AND TOOLS USED IN RESEARCH STUDIES

| Scale or Tool | Studies Used In | Culturally Appropriate Curricula and Practices | Language and Literacy Acquisition | Teacher Training and Professional Development | Parent Involvement | Assessment Tools and Practices | Health and Physical Well - Being | Mental Health |
|--|--|--|-----------------------------------|---|--------------------|--------------------------------|----------------------------------|---------------|
| ABC Screening Inventory | Sears and Medearis, 1992; Sears and Medearis, 1993 | | | x | x | | | |
| Adaptive Behavior Inventory for Children | Kazimour and Reschly, 1981 | | | | | x | | |
| Assessment of Classroom Learning Environment | Schultz and Bravi, 1986 | | | x | | | | |
| California Achievement Test | Reyhner, 1990; Watahomigie and Yamamoto, 1987 | | x | | | | | |
| California Social Competence Scale | Clay, 1998 | x | | | | | | |
| Child Behavior Checklist | Beiser, Dion, and Gotowiec, 2000; Chester, Mahalish, and Davis, 1999; Dion, Gotowiec, and Beiser, 1998; Oesterheld and Haber, 1997 | | | | | x | | x |
| Child's Assessment by a Parent Checklist* | Beiser, Dion, and Gotowiec, 2000; Dion, Gotowiec, and Beiser, 1998 | | | | | | | x |
| Childrearing Practices Questionnaire | Bachtold, 1982 | | | | x | | | |
| Circus Quantitative Concept Test | Guilmet, 1983 | | x | | | | | |
| Circus Receptive Vocabulary Test | Guilmet, 1983 | | x | | | | | |
| Clay's Reading Strategies | Fayden, 1997 | | x | | | | | |
| Cognitive Abilities Test | Wolfe, Schwartz, and Petersen, 1996 | | x | | | | | |
| Comprehensive Test of Basic Skills | Reyhner, 1990; Watahomigie and Yamamoto, 1987 | | x | | | | | |
| Conners Parent Rating Scale | Beiser, Dion, and Gotowiec, 2000; Oesterheld and Haber, 1997 | | | | | x | | x |
| Curriculum Alignment System: Comprehensive Assessment System | Leveque, 1994 | | | | x | | | |
| Denver Developmental Screening Test | Brachlow, Jordan, and Tervo, 2001; Mayfield, 1985 | | | | x | x | | |
| Developmental Indicators for the Assessment of Learning | Spiegel, 1986 | | | | | x | | |



| Scale or Tool | Studies Used In | Culturally Appropriate Curricula and Practices | Language and Literacy Acquisition | Teacher Training and Professional Development | Parent Involvement | Assessment Tools and Practices | Health and Physical Well - Being | Mental Health |
|---|---|--|-----------------------------------|---|--------------------|--------------------------------|----------------------------------|---------------|
| Diagnostic Achievement Battery for Children | Morgan and Whorton, 1991 | | | | | x | | |
| Diagnostic Interview Schedule for Children | Beiser, Dion, and Gotowiec, 2000; Dion, Gotowiec, and Beiser, 1998 | | | | | | | x |
| Dichotic Consonant-Vowel Test | McKeever, Hunt, Wells, and Yazzie, 1989 | | x | | | | | |
| Dynamic Indicators of Basic Early Literacy Skills | Prince, Grace, Linebarger, Atkinson, and Huffman, 2002 | | x | | | | | |
| Goldschmid and Bentler's Conservation Assessment Kit | Corenblum, Annis, and Tanaka, 1997 | | | x | | | | |
| Harter and Pike's Measure of Perceived Competence and Social Acceptance | Corenblum, Annis, and Tanaka, 1997 | | | x | | | | |
| Home Observation for Measurement of the Environment | Culp and McCarthick, 1997 | x | | | | | | |
| Iowa Test of Basic Skills | Luellen, 1991; Wynn, 1995 | x | | | x | | | |
| Kaufman Achievement Battery for Children | Mitchell, 1985 | | | | | x | | |
| Measurement and Planning System Developmental Observational Assessment | Vekiari, 1999 | x | | | | | | |
| Metropolitan Achievement Test | Kazimour and Reschly, 1981 | | | | | x | | |
| Orthogonal Model of Cultural Assessment | Culp and McCarthick, 1997 | x | | | | | | |
| Parent as a Teacher Inventory | Strom and Hill, 1979 | | | | x | | | |
| Peabody Developmental Motor Scales | Crowe, McClain, and Provost, 1999 | | | | | x | | |
| Peabody Picture Vocabulary Test – Revised | Prince, Grace, Linebarger, Atkinson, and Huffman, 2002; Shriberg, Flipsen, Thielke, Kwiatkowski, Katcher, Nellis, and Black, 2000; Spiegel, 1986; Wolfe, Schwartz, and Petersen, 1996 | | x | | | x | x | |
| Pediatric Development Instrument | Long and Christensen, 1998 | | x | | | | | |
| Photo Articulation Test | Shriberg, Flipsen, Thielke, Kwiatkowski, Katcher, Nellis, and Black, 2000 | | | | | | x | |
| Preschool Behavior Questionnaire | Bruneau, 1984 | | | | | | | x |
| Preschool Language Scale-3 | Long, 1998 | | | | | x | | |

| Scale or Tool | Studies Used In | Culturally Appropriate Curricula and Practices | Language and Literacy Acquisition | Teacher Training and Professional Development | Parent Involvement | Assessment Tools and Practices | Health and Physical Well - Being | Mental Health |
|--|--|--|-----------------------------------|---|--------------------|--------------------------------|----------------------------------|---------------|
| | | | | | | | | |
| Primary Self-Concept Inventory | Bruneau, 1984 | | | | | | | x |
| Sand Test | Fayden, 1997 | | x | | | | | |
| Semantic Differential Scales | Guilmet, 1979 | | x | | | | | |
| Social Skills Rating System | Powless and Elliott, 1993 | | | | | x | | |
| Student's Observation of Self* | Beiser, Dion, and Gotowiec, 2000; Dion, Gotowiec, and Beiser, 1998 | | | | | | | x |
| System of Multicultural Pluralistic Assessment | Kazimour and Reschly, 1981 | | | | | x | | |
| Teacher Information Form* | Dion, Gotowiec, and Beiser, 1998 | | | | | | | |
| Teacher Interview Form* | Beiser, Dion, and Gotowiec, 2000 | | | | | | | x |
| Test of Adult Basic Education | Anziano and Terminello, 1993 | | | x | | | | |
| Test of Auditory Comprehension | Shriberg, Flipsen, Thielke, Kwiatkowski, Katcher, Nellis, and Black, 2000 | | | | | | x | |
| Test of Early Reading Ability-3 | Prince, Grace, Linebarger, Atkinson, and Huffman, 2002 | | x | | | | | |
| Universal Nonverbal Intelligence Test | Plank, 2001 | | | | | x | | |
| Wechsler Adult Intelligence Scale – Revised | Plank, 2001 | | | | | x | | |
| Wechsler Intelligence Scale for Children – Revised | Browne, 1984; Kazimour and Reschly, 1981; Mishra and Lord, 1982; Mitchell, 1985; Morgan and Whorton, 1991; Plank, 2001; Reschly and Reschly, 1979; Ross-Reynolds and Reschly, 1983 | | | | | x | | |
| Wide Range Achievement Test | Mishra and Lord, 1982 | | | | | x | | |
| Woodcock-Johnson Revised Test of Cognitive Ability | Plank, 2001 | | | | | x | | |
| Youth Self-Report | Chester, Mahalish, and Davis, 1999 | | | | | | | x |

* Researcher-developed instrument adapted from assessment tools cited in this summary.