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Using NCAST and the HOME with a Minority Population: The Alaska Eskimos

Nancy J. MacDonald-Clark
June L. Harney-Boffman

Purpose: To test applicability of the NCAST and HOME assessment tools in the Eskimo population.

Method: A cross-sectional descriptive study of Alaskan native families from two villages used the NCAST and HOME child assessment tools. Comparisons using t-test were made to normative data. ANCOVA was used to test effects of demographic differences.

Results: Several significant differences were found on subscales of the NCAFS, NCATS, and HOME, although the total scores of the NCAFS and the NCATS were not significantly different. Caregiver education and ethnicity were significant covariates.

Conclusions: NCAFS and NCATS appears to have sufficient breadth to allow for cultural differences. The HOME scale items measure some aspects of the environment that appear to be culture specific.

Today, tremendous demands are being made upon public health nurses to assess and intervene with increased numbers of high-risk infants and children. These demands come within an arena of diminished funding in an already overburdened health care system. Consequently, nurses are looking for economical and effective tools to assist them in meeting this challenge. Health care providers have found that NCAST (Nursing Child Assessment Satellite Training) tools and the HOME (Home Observation for the Measurement of the Environment) can accomplish this task (Farel, Freeman, Keenan, & Huber, 1991).

NANCY J. MacDONALD-CLARK, MSN, MPA, RN, is professor in the department of nursing at California State University, Stanislaus, in Turlock, CA.

JUNE L. HARNEY-BOFFMAN, EdD, RN, is professor in the department of nursing at California State University, Stanislaus, in Turlock, CA.

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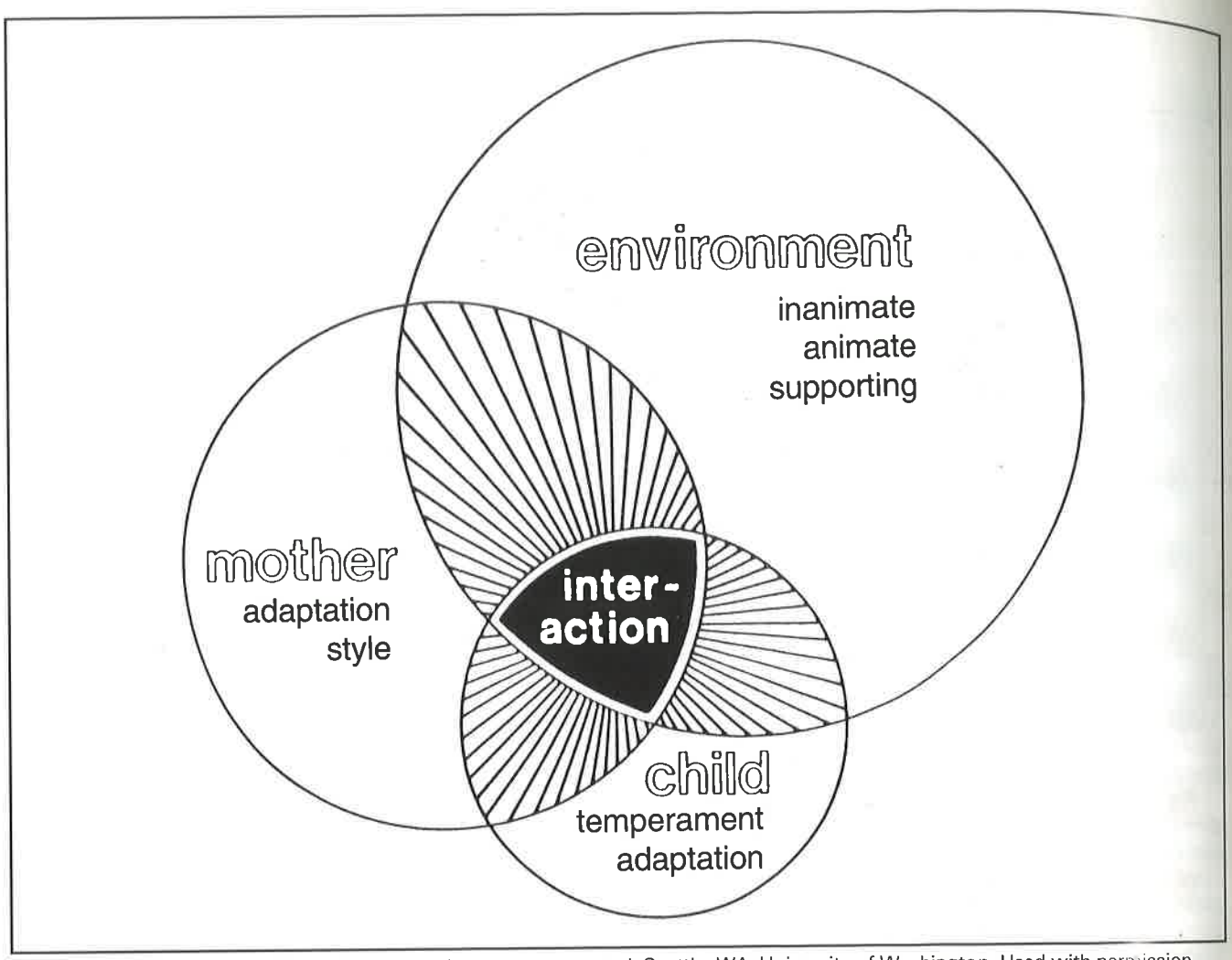
NCAST tools were designed by Dr. Kathryn Barnard (1978a, 1978b), of The University of Washington, for early case finding and intervention. These measurement tools look at parent-child interaction. The HOME tool was developed by Bettye Caldwell and Robert Bradley in order to measure the level of environmental stimulation available to children in the home setting. The results have been shown to be predictive of a child's later development (Barnard, 1986). They have been of value to nurses in evaluating families with children under the age of 3 to identify those in need of intervention before serious problems develop. These tools have been useful in identifying at-risk children.

These tools have been standardized using White, Black and Hispanic populations. Although Black and Hispanic groups comprise the largest minority populations in the United States, there are many other ethnic groups in this country. Since public health nurses work in a pluralistic society, there is a need to determine if NCAST and HOME tools are valid to use with other ethnic groups.

The population of Alaska is composed of diverse ethnic groups. The state has a total population of 550,043 including 44,401 Eskimos, 31,245 American Indians, and 10,052 Aleuts (U.S. Department of Commerce, 1991). These three groups are collectively known as the Alaska Natives. Alaska's indigenous people inhabited the area long before they

Figure 1. The Child Health Assessment Interaction Model



Note: From Barnard, K. (1986). NCAST learning resource manual. Seattle, WA: University of Washington. Used with permission.

were exposed to Western culture. Today large numbers still live in isolated villages scattered throughout the state where subsistence activities are vital to their survival (Langdon, 1989). Child abuse has been increasing in the state with the number of children at risk exceeding that of most other states. The Alaska Department of Health and Social Services, Division of Public Health, has established a policy to use NCAST and the HOME for assessment and intervention with families of young children (Department of Health & Social Services, State of Alaska, 1990).

Itinerant public health nurses, based out of regional health centers, fly from village to village to provide health care to the natives. These public health nurses have indepth knowledge of the various cultures of people to whom they provide health care. Many have expressed concern that the NCAST and HOME tools may not be culturally sensitive and appropriate to use with Alaska Natives since they have very different lifestyles than those in normative samples. The obvious hazard of using inappropriate instruments is that it could lead to an inaccurate assessment, inappropriate intervention, and possible misuse in the judicial system with child protection cases. The investigators were invited to conduct research to determine if the NCAST and HOME tools were appropriate to use with Alaska Natives. The researchers chose to work with the Eskimos as they represented the largest group of Alaska Natives.

Conceptual Framework

NCAST tools and this investigation were based on Kathryn Barnard's Child Health Assessment Interaction Model (see Figure 1). This model focuses on three factors: the caregiver, the child, and the environment. The smallest circle represents the child and his or her important characteristics. The next larger circle depicts the caregiver and his or her important characteristics. The largest circle represents the environment. The most significant portion of the model is represented by the dark area where the circles overlap. This is symbolic of the interaction and adaptation of the child, caregiver, and the environment. In this process, the parent and child each have characteristics or responsibilities that lead to adaptation. The parent needs to be sensitive to the child's cues, alleviate distress, and provide situations that foster growth (Barnard, 1986). The child must give clear cues to the caregiver and must

be able to respond to the caregiver. The environment must be conducive to caregiver-child interaction. If the flow of give and take is disturbed in the interaction process, then the adaptive process can break down and lead to interaction problems (Barnard, 1986). The NCAST tools were developed to assess the parent-child interaction based on this model. The HOME was used in conjunction with NCAST to further assess the child's environment.

Literature Review

NCAST tools include the NCAFS (Nursing Child Assessment Feeding Scale) and the NCATS (Nursing Child Assessment Teaching Scale) designed by Barnard. The HOME, designed by Caldwell and colleagues (1978) is also often included in the assessment.

The reliability and validity of these tools have been well documented in a number of studies on subsets of the normative samples. Interobserver reliability of 85% agreement on the NCAFS and NCATS and 90% on the HOME is required for certified use. Reliability checks are recommended every 3 months for clinical or research use (Barnard et al., 1989).

Internal consistency (Cronbach's alpha) showed considerable variability among the subscales, but strong alpha scores for internal consistency of the parent (.82 to .83), child (.73 to .84) and total scores (.79 to .86) were obtained (Barnard et al. 1989). Concurrent validity has also been reported. The NCAST tools were correlated with the HOME Inventory. The social-emotional and cognitive growth fostering subscales showed more consistent and stronger relations to the total HOME than other subscales, which was as expected since the HOME emphasizes assessing areas of cognitive and social-emotional support.

Bradley and Caldwell (1984) reported numerous studies of reliability and validity for the HOME scale. Internal consistency using the Kudar-Richardson formula 20 yields reliability coefficients ranging from .44 for variety of stimulation to .89 for organization of the environment and stability using test-retest reliability achieved moderate to high degree of stability (r = .27 to r = .77).

Validity of the HOME scale was measured by correlating HOME Inventory and social economic demographics of 91 families at 6, 12, and 24 months. Mother's education, father's presence, education and occupation, and the crowding ratio were correlated significantly with the subscale and total scores for most age groups (Bradley & Caldwell, 1984). All of the correlations were in the expected direction. Another study of 79 families correlated social economic status (SES), ordinal position, home crowding, and race (Black and White). Later birth order, more home crowding, and lower social status showed the highest degree of relationship with lower HOME subscales. The researchers noted from this study that no overall significant multivariate effect was noted for race when other factors were controlled statistically. The present researchers question this assumption since it is based on only the comparison of two races, both located in the same geographic area.

NCAFS, NCATS and the HOME tools have been shown to have predictive validity in relation to a child's later development. Barnard and colleagues (1989) reviewed 18 parent-child interaction studies conducted by other investigators from 1971 through 1984. These investigators found a positive relationship between high quality interaction in early years of life and later cognitive and language skills as well as more secure attachments to the caregiver (Ainsworth, Blehar, Waters, & Wall 1978; Beckwith, 1971a, 1971b, 1972; Beckwith, Cohen, Kopp, Parmelee, & Marcy, 1976; Coates, & Lewis 1984; Olson, Bates, & Bayles 1984; Yarrow, Rubenstein, & Pedersen, 1975). Studies of predictive validity for the HOME have been documented with studies positively correlating cognitive development, language performance, and IQ scores with total HOME scores (Bradley & Caldwell, 1984).

The NCAST tools identify populations at risk. The feeding scale has been shown to differentiate quality of interaction between preterm and full-term infants (Barnard, Bee, & Hammond 1984). The scale was also found to distinguish failure to thrive children with interaction difficulties from normally developing children (Lobo, Barnard, & Cooms, 1982). The NCAST tools appear to be very useful in determining needed interventions in a high-risk infant population (Farel et al., 1991). A study of known abused children, ages 6 months to 2 1/2 years, showed the total NCATS score to be lower than the control group, indicating a need for intervention (Barnard, 1986).

When NCAST tools were designed and standardized they were tested on Whites, Blacks, and Hispanics. Normative data exists on these groups. There is little information on the use of NCAST and HOME instruments on ethnic groups other than White, Black, or Hispanic. Seideman, Hasses, Primeaux, and Burns (1992) found that NCAST tools could probably be used to identify potentially adverse parenting situations in the American Indian population. However, the study recommended further analysis of the use of the HOME in this population.

Studies on Eskimo culture have shown many unique characteristics. The Yukon-Kuskokwim Eskimos have been considered the most traditional in Alaska and therefore still have an opportunity to maintain their culture (Yupiktak Bista, 1974). First contact with Europeans did not occur until 1818 (Yukon-Kuskokwim Health Corporation, 1984). Traditional Eskimos had a strong relationship among themselves and the resources of the land (Berger, 1985). Child rearing occurred in a very harsh geographic setting where survival depended on knowledge and skill learned from elders as well as the strong commitment to sharing (Harrison, 1981). Survival depended on all family members fulfilling their role.

The main goal of Eskimo learning was to become both a good family member and community member. Learning was directed primarily toward survival skills and cooperation among villagers, rather than cognitive development. It was assumed and expected that such learning would naturally occur. Eskimo children were adored and loved; "spoiling" them was not a concern. Discipline was rare, and if punishment was used it was mild. Usually a gentle hand on the shoulder stopped unwanted behavior. Collier (1973) noted the Eskimo parents were very permissive with their children, especially their sons. Historically, discipline for the boys was shared by men in the community. The home was a place to play and to love their children. The present researchers were concerned that many of these differences could affect parent-child assessment.

The specific focus of this research was the applicability of the NCAST and HOME tools in the Eskimo population because of major lifestyle differences between them and the normative samples. The research question was: Can the NCAST and HOME assessment tools be used to assess the Alaskan Eskimo child, parent, and environment?

Hypotheses

Six hypotheses were developed to test the components of the NCAST tools, they were:

H1 The Eskimo NCAFS mean sub-

scale and total scores will be significantly different from the normative sample mean scores.

H2 The Eskimo NCATS mean subscale and total scores will be significantly different from the normative sample mean scores.

H3 The Eskimo HOME mean subscale and total scores will be significantly different from the normative sample mean scores.

H4 The Eskimo mean NCAFS subscale and total scores will be significantly different from the mean NCAFS scores of the White, Black, and Hispanic ethnic groups in the normative sample.

H5 The Eskimo mean NCATS subscale and total scores will be significantly different from the mean NCAFS scores of the White, Black, and Hispanic ethnic groups in the normative sample.

H6 The Eskimo mean HOME subscale and total scores will be significantly different from the mean HOME scores of the White, Black, and Hispanic ethnic groups in the normative sample.

Table 1. Comparison of Sample Demographics in Percentages

Demographics Characteristics	Washington n = 180	Eskimo n = 68
Education		
8th grade	2	10
9th - 11th	19	6
12th	26	69
13 - 15 yrs	26	15
16 years +	27	0
Married	78	69
Mother observed	97	92
Child's age		
12 mos. or less	65	52
13 - 24 mos.	22	25
25 - 36 mos.	13	23

Methodology

A cross-sectional descriptive study of Alaska native families from two villages in the Yukon-Kuskokwim Delta was undertaken using the NCAST and HOME child assessment tools. The villages visited were selected by the Alaskan public health nurses who agreed to assist the researchers in this study. The two villages selected have less outside influence than many other villages that are larger. The villages had populations of 489 and 642, and both were located on the coast of the Bering Sea. The researchers also requested that the selected villages be English speaking to allow for direct communication with the researchers. Yupik was their primary language, but all participants spoke English well.

The NCAFS, NCATS, and the HOME were used to observe parent-child interaction and the quality of the home environment. The two researchers were certified by NCAST, University of Washington School of Nursing, as reliable examiners for the NCAST and HOME instruments. They performed all of the assessments themselves. Interrater reliability was maintained by the researchers, one of whom was also an NCAST and HOME instructor. One week prior to the study, reliability was tested by completing two NCAFS, NCATS, and HOMES together, achieving the required 85%, 85%, and 90% agreement respectively. Reliability was again tested by performing the first Eskimo observation together, and subsequently every tenth observation was done jointly. Interrater reliability always remained above the required percentages (NCAFS and NCATS 85%, HOME 90%).

Required NCAST interview and observation procedures were adhered to. The data were collected on NCAST and HOME forms during and directly after each encounter. Each scale was used only once in each family unit. Over 75% of the data were collected in participants' homes.

Permission to interview the families was obtained from village tribal councils. Individual families were asked if they would like to participate by the village community health aides, the public health nurse, a retired community health aide, or the researchers. Families were informed that participation was totally voluntary and that the results would be held confidentially.

Sample. A purposive sample was used. The selected families resided in the village environment, and had a child from birth to 36 months of age. Families having children with high-risk factors of prematurity, abuse, or failure to thrive were not included in the study because previous studies reported significant differences in scores of these types of families in comparison to the normative data (Barnard, 1986). Data from two encounters were excluded from analysis. One mother was known to be severely developmentally delayed, and the second mother was suspected to be schizophrenic. In both cases the researcher noted discrepancies between reported and observed information, and the public health nurse validated the concerns.

The majority of families with young children participated in the interviews. The sample included 30 NCAFS, 64 NCATS, and 68 HOME interviews and observations. The comparative sample included data from 60 White, 60 Black, and 60 Hispanic subjects who were randomly selected from the University of Washington NCAST normative sample data bank.

The demographic data of the Washington and Eskimo samples has been summarized. Child ages ranged from 1 month to 35 months with each month represented. A comparison of the samples is reported in Table 1, and most notable is the difference in education levels. The researchers observed that modern high schools are well-established in the villages and today most Eskimo men and women graduate from the 12th grade. Educational opportunities beyond high school are quite limited for a variety of reasons. Very few men or women continue with formal education at the university level.

Instruments

The instruments used were the NCAFS, the NCATS, and the HOME. The caregiver and the child received a yes or no answer for each specific

behavior observed by NCAST trained examiners. The NCAFS and NCATS are divided into four subscales that assess parent responses and two subscales that assess child responses. The parent subscales are (a) sensitivity to cues, (b) response to child's distress, (c) social emotional growth fostering, and (d) cognitive growth fostering. The child's subscales are (a) clarity of cues and (b) responsiveness to parent.

In the NCAFS, the child and mother are observed during a feeding, either by breast, bottle, or solid food. The NCAFS has 76 items to score, and is used with infants up to 1 year. In the NCATS, the caregiver-child interaction is observed while the caregiver teaches the child a new task. A major nucleus of this scale is the teaching loop, consisting of alerting, instructing, performing, and providing feedback. The NCATS has 73 items and is used with children up to 3 years of age. A score of less than 55 on the NCAFS and scores of less than 43-53 (depending on age) on the NCATS indicate a possible disturbance in the caregiver-child interaction. A low score indicates the health provider needs to perform further assessment to determine the nature and extent of intervention needs.

The HOME does not seek to assess an interaction but rather measures the child's home environment. It is a 45-item scale that contains 6 subscales. The subscales are: (a) emotional and verbal responsivity of mother, (b) avoidance of restriction and punishment, (c) organization of environment, (d) provision of appropriate play materials, (e) maternal involvement with child, and (f) opportunities for variety in daily stimulation.

Ideally, the HOME is completed during a visit where the observer interviews the mother and observes the child in the home. A score lower than 32 signals a possible problem in the home environment. The health care provider is advised to analyze the deficient subscales and further assess the family in order to determine where interventions are needed. The HOME scale used in this investigation evaluates children up to the age of 3 years.

Analysis

The data were analyzed with the same statistical tests used in the Washington NCAST normative studies for comparison purposes. The t-test was used to test hypotheses 1, 2 and 3, comparing the combined normative sample mean subscores and total scores with the Eskimo sample means for the three assessment scales. Separate variance rather than pooled variance was used in the t-test analysis due to the difference in sample size (n = 180 in the combined normative sample compared to the Eskimo sample of n = 30 for NCAF, n = 64 for NCATS and n = 68 for HOME). The Student-Newman-Keuls multiple comparison procedure was used to measure statistical significance of the mean scores of the four ethnic groups (White, Black, Hispanic, Eskimo) on the NCAFS, NCATS, and HOME. Statistical significance was established at $p < .05$.

The Eskimo sample included participants from two villages. A t-test was applied to evaluate whether sta-

Table 2. NCAST Normative Sample and Eskimo Group Data Analysis - NCAF

	Normative Sample n = 176 Mean	SD	Eskimo Sample n = 30 Mean	SD	T-Test Separate Variance p
Sensitivity to cues	13.31	2.05	14.16	1.55	0.012[a]
Response to distress	9.66	1.88	10.43	1.30	0.008[a]
Social-emotional growth fostering	11.28	2.21	10.80	1.90	0.218
Cognitive growth fostering	6.00	2.35	5.13	2.16	0.046[a]
Total parent score	40.26	6.61	40.46	5.23	0.851
Clarity of cues	12.42	2.25	12.86	1.87	0.268
Responsiveness to parent	7.11	2.17	6.70	1.70	0.239
Total child score	19.07	4.17	19.56	3.18	0.457
Total score	59.33	9.40	60.00	7.40	0.652

[a]statistically significant at $p < 0.05$

Table 3. NCAF Ethnic Group Means and Statistical Comparisons

Subscales	Ethnic Groups White n = 54	Black n = 60	Hispanic n = 60	Eskimo n = 60	Significant Diff. Newman-Keuls Range at $p < .05$
Sensitivity to cues	13.50	13.17	13.27	14.16	0
Response to distress	10.01	9.28	9.71	10.43	Esk. > Blk.
Social-emotional growth fostering	11.61	11.21	11.03	10.80	0
Cognitive growth fostering	6.54	5.59	5.96	5.13	Wht. > Esk.
Total parent score	41.60	39.27	40.00	40.46	0
Clarity of cues	12.84	12.10	12.13	12.86	0
Responsiveness to parent	7.65	6.85	6.88	6.70	0
Total child score	20.49	18.96	17.85	19.56	Wht. > His.
Total score	62.10	58.23	57.85	60.03	0

tistically significant differences existed between the villages, which would make it inappropriate to combine them together as one group. There were no significant differences in the total mean scores for the two villages. The only significant difference found was in the feeding subscale, response to distress. The larger village scored better (M = 11.08) than the smaller village (M = 10), yielding a difference of p<.05.

The total mean score for NCAFS of the Eskimo sample was not significantly different for either the combined normative sample nor from the individual ethnic group means. However, some differences were found in some of the subscale scores as shown in Tables 2 and 3. Likewise the total means from the NCATS Eskimo group and normative sample were not significantly different while some of thee subscale scores were found to be different (see Tables 4 and 5). The HOME scores yielded several significant differences for the Eskimo group compared to the normative and the ethnic groups as shown in Tables 6 and 7.

The researchers analyzed the data using ANCOVA to assess the significance of education since the demographic data revealed notable differences. The covariate of caregiver education was significant in the parent, child, and total mean NCAF scores, whereas the main effect of ethnicity was only significant for the child score. The caregiver education covariate was significant for the parent and combined total mean scores for the NCATS, but not for the child total mean score. Analysis of the HOME with ANCOVA for caregiver education and the main effect of ethnicity revealed statistical significance for both variables (see Table 8). This data suggests that education is also a factor. The HOME ANCOVA data support the hypothesis that ethnicity and caregiver education affect total scores. This study suggests that further study of the HOME is needed to determine which items lower scores based primarily on one's cultural perspective.

Table 4. NCAST Normative Sample and Eskimo Group Data Analysis - NCATS

	Normative Sample n = 180 Mean	SD	Eskimo Sample n = 64 Mean	SD	T-Test Separate Variance p
Sensitivity to cues	9.03	1.63	9.46	1.12	0.021[a]
Response to distress	9.88	1.88	10.54	1.19	0.001[a]
Social-emotional growth fostering	8.79	1.79	8.40	1.33	0.071
Cognitive growth fostering	11.91	3.44	11.89	2.90	0.963
Total parent score	39.59	6.94	40.30	4.86	0.373
Clarity of cues	7.82	1.53	7.79	1.25	0.886
Responsiveness to parent	7.13	2.99	6.01	2.64	0.006[a]
Total child score	14.76	4.32	13.81	3.31	0.073
Total score	54.36	9.01	54.12	6.38	0.820

[a]statistically significant at $p < 0.05$

Table 5. NCATS Ethnic Group Means and Statistical Comparisons

Subscales	Ethnic Groups White n = 60	Black n = 60	Hispanic n = 60	Eskimo n = 64	Significant Diff. Newman-Keuls Range at $p < .05$
Sensitivity to cues	9.30	8.80	8.96	9.46	0
Response to distress	10.07	9.69	9.88	10.54	Esk. > Blk.
Social-emotional growth fostering	9.11	8.63	8.63	8.40	0
Cognitive growth fostering	12.70	11.66	11.35	11.89	0
Total parent score	41.20	38.78	38.80	40.30	0
Clarity of cues	8.01	7.65	7.77	7.79	0
Responsiveness to parent	7.16	6.78	7.45	6.01	His. > Esk.
Total child score	15.18	14.44	14.66	13.81	0
Total score	56.38	53.22	53.47	54.12	0

Study Limitations

The purposive sample included over 88% of families with children under age 3 in the smaller village and 52% of the families in the larger village. Only one family that was asked to participate refused, and two were eliminated as noted above. The other families not included were not approached due to the study's time limitations. Although the strong participation strengthens the study's validity, as with any nonrandomly selected sample, one must be cautious about generalizing specific data results to other Alaska Natives. Additionally, the researchers recognize that each village in Alaska is unique and may represent different stages of acculturation. The researchers recommend replication of the study with other Alaska Natives as well as with other ethnic groups to support these conclusions.

Discussion

Nursing Child Assessment Feeding Scale. While the Eskimo data on the feeding scale were not statistically

Table 6. NCAST Normative Sample and Eskimo Group Data Analysis - Home

	Wash. Sample n = 180 Mean	SD	Eskimo Sample n = 68 Mean	SD	T-Test Separate Variance p
Emotional & Verbal Responsivity of Mother	9.53	1.71	8.85	1.49	0.002[a]
Avoidance of Restriction & Punishment	6.40	1.22	6.41	0.79	0.970
Organization of Environment	5.24	0.91	4.79	1.05	0.002[a]
Provision of Play Material	6.58	2.62	5.22	2.23	0.000[a]
Maternal Involvement	4.75	1.59	4.01	1.58	0.002
Opportunities for Variety	3.15	1.33	3.30	1.12	0.347
Total	35.60	6.87	32.60	5.49	0.000

[a]statistically significant at $p < 0.05$

Table 7. HOME Ethnic Group Means and Statistical Comparisons

Subscales	Ethnic Groups White n = 60	Black n = 60	Hispanic n = 60	Eskimo n = 68	Significant Diff. Newman-Keuls Range at $p < .05$
Emotional & Verbal Responsivity of Mother	10.04	9.50	9.06	8.85	W. > Esk.His.
Avoidance of Restriction & Punishment	6.80	6.19	6.20	6.41	W. > Blk.Esk.His.
Organization of Environment	5.40	5.16	5.18	4.79	W. > Esk. Blk. > Esk.
Provision of Play Material	7.89	6.29	5.56	5.22	W. > Blk.Esk.His. Blk. > Esk.
Maternal Involvement	5.50	4.58	4.16	4.10	W. > Blk.Esk.His.
Opportunities for Variety in daily stimulation	3.68	2.73	3.03	3.30	W. > Blk.His. Esk. > Blk.
Total	39.35	34.48	33.21	32.60	W. > Blk.Esk.His.

different from the normative sample in total score, there were some interesting differences in three of the parent subscales. The Eskimos scored significantly higher than the norm in the parent's sensitivity to cues and parent's response to distress. Conversely, they scored significantly lower in the cognitive growth fostering subscale.

Although quite nonverbal with their children, they were very aware and responsive to cues being given by the child during the feeding. The parent gave the impression of being a very loving, gentle caregiver. Children were almost always in a position where eye contact was made during a feeding. Mothers often looked and smiled at their infants. Caregivers were even sensitive to the subtle cues given by the child, indicating a break in the interaction was desired, and they modified their own behavior accordingly.

A similar pattern emerged in the response to distress subscale. Distress by the infant is a strong cue that something in the interaction needs to be changed and is evidenced by such infant behaviors as crying, whining, or fussing. The Eskimos did very well with this subscale. Only one-third of the infants actually went into distress. Parents quickly soothed the infant, changed positions, or paused in the feeding. They never made negative comments about the distressed infant, yelled or used rough handling. Two-thirds of the children did not go into distress. This was interpreted as a good indication that their needs were being met. Again, the caregivers were very attentive to their infants. In a comparison of ethnic groups, the Eskimos scored significantly higher than the Blacks on this subscale.

On the cognitive growth fostering subscale, the Eskimos rated significantly lower than the normative sample. Cognitive growth encouragement is accomplished by giving stimulation just above the child's current level of understanding. In order to do this, the parent must have a good understanding of what the child currently does and developmentally what comes next. The Eskimo's traditional teaching method has been based on child-initiated learning, rather than parent-structured teaching, and that may partially explain the low scores. Another possible reason for the lower scores was their nonverbal nature. Seven of the nine items in the subscale evaluate verbalization. Parents freely allowed the child to explore food, toys, or feeding materials, and they did not communicate using baby talk.

Scores from one parent subscale, social-emotional growth fostering, and two child subscales, clarity of cues and responsiveness to parent, were not significantly different from the normative sample. In the parent's social-emotional growth fostering subscale, the caregiver was affectionate and nonverbally social. The parent smiled, touched, made eye contact as well as changed facial expressions. Although they did not praise the children, they did not express any negative feelings, nor did they act annoyed, hit, or slap.

Table 8. Analysis of Covariance Between Education and Ethnicity for NCAF, NCAT, and HOME Scale Subtotal and Total Scores

		Parent			Child			Total		
		df	F	p	df	F	p	df	F	p
NCAF										
Covariate	Educ.	1	2.87	.000[a]	1	11.3	.001[a]	1	28	.000[a]
Main effect	Race	3	0.94	.420	3	2.80	.041[a]	3	1.23	.298
NCAT										
Covariate	Educ.	1	17.0	.000[a]	1	.792	.370	1	13.3	.000[a]
Main effect	Race	3	1.59	.192	3	1.01	.389	3	.547	.651
HOME										
Covariate	Educ.							1	103.3	.000[a]
Main effect	Race							3	3.54	.015[a]

[a]statistically significant at $p < 0.05$

Children gave clear cues indicating their wants to the parent, as did the normative sample. Interestingly, 16 out of the 30 children observed did not verbalize to the parent during the feeding; they primarily used nonverbal cues.

The last child subscale, responsiveness to parent, showed that the Eskimo children responded to the parent's behavior as did the normative sample. In the comparison of ethnic groups, the Hispanics scored significantly better than the Eskimos.

The investigators made some other observations of the Eskimo feeding episode. Very few caregivers used commercial baby foods. Native foods were premasticated (chewed by the mother) and fed to the infant. The children had no set feeding schedule but were fed whenever they were hungry. There were a few "walker feeds." Most children had a walker, and for some this also served as a feeding table. They would take some food then joyfully zoom around the room until they were ready for the next bite.

Generally the feeding time was seen as a meal, not as a time for interaction or learning. However, the total NCAFS scale mean was not significantly different from the normative sample mean.

Nursing Child Assessment Teaching Scale

The Eskimo total scores on the teaching scale results were not significantly different from the normative sample; however, three of the six subscales were different. The Eskimos scored significantly higher in the parent subscales sensitivity to cues and response to distress. They were significantly lower on child subscale responsiveness to parent.

The subscale sensitivity to cues showed the parents were very responsive to signals given by the children in a teaching situation. One theme in this subscale was reflective of the nonverbal nature of the Eskimos that kept emerging. Only 50% of the caregivers praised the child's success or partial success. When praise was given it consisted of a very quiet "yeah."

Caregivers were also very high scorers on the subscale response to distress, indicating they not only were sensitive to their children but they were successful at soothing children who gave distress cues. Only 11 out of 64 children (17%) actually gave potent distress signals that required change in behavior of the caregivers. None of the children observed were handled abruptly or roughly, yelled at, or spoken about in negative terms. Caregivers tended to be sympathetic and soothing if they observed distress.

The last significantly different NCATS subscale was the child's responsiveness to parent. Eskimo children had significantly lower scores than the normative sample in reacting to behavior that the parent exhibited. The investigators identified two factors that could explain this behavior. The child initiated learning, typical of their culture, focuses on the child leading any learning episode rather than the parent. Another factor was the novelty of the toys. Since they had few toys, the children were clearly fascinated by the items in the standardized teaching kit. This intense fascination eliminated responsiveness not only to the parent but to anything else in the immediate environment.

The other subscales in NCATS were not statistically significant but worthy of discussion. In the parent subscale social-emotional growth fostering, the parents were again affectionate but 75% did not praise the child's efforts and only 50% used praise and 48% used complete teaching loops. Often the parent simply put the task in front of the child and expected him to perform with few instructions and little if any encouragement.

The child's subscale clarity of cues was not significantly different from the norm. They were able to give off clear signals to the caregiver in the teaching interaction.

Home Observation for the Measurement of the Environment

The Eskimos scored significantly lower on four of the six subscales and on the total score of the HOME. The Eskimo family environment was very different from Western culture and did not conform to the items on the measurement tool. The Eskimos were generally quiet, friendly, and very polite. The mothers did not tend to kiss their child, but they did freely caress them. This item was, therefore, appropriately sensitive to the mothers' usual way of showing affection. They did not tend to initiate verbal interchange with the observer, interrupt the exchange to teach their child, or spontaneously praise their child. Therefore, the majority scored "no" on these items that contributed significantly to their low scores in responsivity to the mother.

In contrast, the Eskimos scored very well in avoidance of restriction and punishment because their culture supports a loving home environment (Harrison, 1981; Collier, 1973). Caregivers, with very few exceptions, used redirection and time-out as the primary means of discipline. The subscale score was high despite two items that were scored "no" 70% of the time: 10 books present and having a family pet. Most families did not have books. There were many sled dogs but they were generally quite mean, and children were rarely allowed near them. No cats were present in either village.

The subscale organization of environment was primarily lowered by the item focusing on whether the child had a special place for toys and treasures. The small houses and Eskimo tradition of sharing appeared to be in conflict with this item. Eskimos traditionally value sharing with one another, an important value supporting survival in a harsh environment (Harrison, 1981). Sharing is valued over having an accumulation of one's own goods. Other items in this subscale were scored positively because the Eskimo children are cared for by a

limited number of substitutes (usually extended family members), and they do take the children with them to the general store, outside, or to the health clinic.

The appropriate play materials subscale was also scored low for most homes. The children had few toys. Toys are very expensive cash items in the village. The small homes make it difficult to have numerous play toys, and the tendency to share what they do get leads to early loss and destruction. One father explained that the toys received from grandparents were given away because they (the parents) were getting hurt by stepping on them. The maternal involvement subscale was scored low primarily because they did not provide "toys" that challenged the child's development and did not tend to consciously encourage developmental advance. Their traditional child education practices were based on child-initiated learning. When a child showed interest in learning a task, the parents or villagers gave instructions (Harrison, 1981).

The subscale on stimulation was scored low primarily due to the mother not reading to the child and the child not owning books. Items focusing on stimulation by a variety of family contacts was scored positively. The fathers frequently participated in child care. In the homes where the mothers had cash jobs, the fathers took care of the children when they were not hunting or fishing. Likewise, the families ate together and were frequently visited by relatives.

Although the total score was significantly below the normative mean, many of the lower scores were due to lack of material play items and the quiet nature of the people rather than a stark environment. It was not natural for the interviewee to take charge by asking questions, communicating with the child separately, or praising the child. Perhaps one could argue that possession of books and toys is essential for cognitive growth, but storage and expense of these items does restrict this accumulation. Some children made great use of available items such as toy substitutes (video boxes for blocks, old outboard motor housings as sleds, boxes for make-believe games, etc.), which could be argued to be cognitively stimulating.

Recommendations for Practice

The Eskimo NCAFS and NCATS scales total scores were not significantly different from the normative scores derived from the Washington NCAST groups. The scales appear to have sufficient breadth to allow for cultural differences. Although further study of other ethnic groups is recommended, this study supports use of these tools for parent-child interaction assessment regardless of ethnicity.

In regards to application of these tools to the Alaska Eskimos specifically, public health nurses working with Eskimos should recognize the unusual strength of their sensitivity to the child and the gentle nature of discipline. Reinforcement of these strengths is important so they are not lost with continued exposure to Western culture via television and other modern technology. In regards to the in home teaching practices, the majority of the caregivers did not use the complete teaching loop and could use this information to increase their cognitive growth fostering skills.

The Eskimo HOME scale total score was significantly different from the grouped normative data. Likewise, the Eskimo, Black, and Hispanic ethnic group means were significantly lower than the White group means, using multiple comparison statistical analysis. This study supports the researchers' concerns regarding using this tool to assess the Eskimo home environment. The lifestyles and home environments of traditional Eskimo families are very different from those of families in the "lower 48." The HOME scale items measure some aspects of the environment that appear to be culturally specific.

Further study is needed to determine if the tool is valid with the Eskimo population or if the lower scores do indeed indicate the need for intervention. Additionally, further study is also needed to establish the validity of this tool with other ethnic groups, since Black, Hispanic, and Eskimo total mean scores in this study were all significantly lower than the White group total mean score.

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