Low-income Canadian Aboriginal and non-Aboriginal parent–child interactions

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Abstract

Background Limited research is available on the performance of North American Aboriginal[1] people on the Nursing Child Assessment Teaching Scales (NCATS) and available research examines parent–child interactions within Aboriginal samples drawn from the USA. Most published normative data on low-income people's performance on the NCATS are also limited to samples drawn from the USA. The purpose of this research study was to use the NCATS measure to: (1) begin to develop a knowledge base that describes the parent–child interactions observed in Canadian low-income samples; and (2) explore the relationship between parent–infant interactions and ethnicity (Aboriginal or Non-Aboriginal) within a low-income Canadian sample.

Methods Secondary analysis was completed on data collected as part of a larger study designed to examine the impact of low-income situations on pre-school children's health and development in Edmonton, Alberta, Canada. The NCATS measure of parent–child interaction was administered to all children (1–36 months old) and their parents in the low-income non-probability sample. The sample derived for secondary analysis consists of 12 Aboriginal parent–child pairs (11 mothers and 1 father) and 48 Non-Aboriginal parent–child pairs (47 mothers and 1 father).

Results The data analysis suggests that although low-income Aboriginal parents may be less verbal with their children in interactions, the overall interaction quality is not different from that of other low-income parents. However, both groups' parent–child interaction scores were less than the published 10th percentile cut-off score, indicating 'worrisome scores' and less than optimal interactions.

Conclusion While the findings that compare the Aboriginal and Non-Aboriginal samples are limited by the small sample size, the fact that these findings agree with those from heterogeneous Aboriginal samples drawn from the USA are encouraging. Finally, the findings provide needed information about parent–child interactions in Canadian low-income urban samples including data from Aboriginal parents and children.

Keywords
Canadian Aboriginal people, Canadian low-income people, nursing child assessment teaching scale, parent–child interaction

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[1]The definition of 'Aboriginal' is the same as in the Report of the Royal Commission on Aboriginal Peoples (1996) to refer to the indigenous inhabitants of Canada, including Inuit, Metis, and First Nations.

Introduction

A substantial body of research recognizes the contribution of sensitive, responsive parent–child interactions to children's healthy development (Shore 1997; McCain & Mustard 1999; Shonkoff & Phillips 2000; Willms 2002). Optimal parent–child interactions, characterized by sensitivity, responsiveness, and contingency have been repeatedly found to positively influence children's cognitive development and the absence of these elements in interactions is linked to developmental delays and challenges (Beckwith & Rodning 1996; Brooks-Gunn *et al.* 1999; Chase-Lansdale *et al.* 2002; Lamb *et al.* 2002). Interventionists regularly employ methods to enhance the quality of interactions that parents have with their children, especially in situations (e.g. low income) where families are perceived to be vulnerable (Portes *et al.* 1986a; Guralnick 1997; Aber *et al.* 2000). It is essential that the tools used to evaluate the outcomes of these interventions provide reliable, valid, and culturally appropriate assessments of parent–child interactions and provide normative data with which to make comparisons (Sanders 1994; Seideman *et al.* 1994; MacDonald-Clark & Harney-Boffman 1995). One of the most commonly employed measures of parent–child interaction is the Nursing Child Assessment Teaching Scale (NCATS, Sumner & Spietz 1994, e.g. Wallace *et al.* 1998; Letourneau 2001; Magill-Evans & Harrison 2001; Wacharasin & Barnard 2001; Koniak-Griffin *et al.* 2002). The NCATS is an observational measure of parents and children used worldwide to evaluate parents' sensitivity, responsiveness, warmth and verbalness in interactions. It also examines children's contributions to the interaction by examining specific behaviours and responses to their parents. It is used to both provide guidance to intervention and to examine the outcomes of intervention (e.g. Kang *et al.* 1995; Bryan 2000; Sadler *et al.* 2003). Its use in Canada with Aboriginal and low-income people has not been assessed.

Parent–child interactions and poverty

In Canada, Aboriginal children (including Inuit, Metis and First Nations) have a poverty rate of 52% compared with 18.5% for Non-Aboriginal children (Canadian Council on Social Development 2001, 2003). This disturbingly high rate of poverty reveals the vulnerability of Aboriginal children, as research repeatedly demonstrates the devastating influences of poverty on children's health and development (Huston 1991; Ross, Scott & Kelly 1996; Duncan & Brooks-Gunn 1997; National Forum on Health 1997; Wade *et al.* 1999). Children living in poverty suffer from twice as many physical, social, and emotional health disabilities as non-poor children (Ross *et al.* 1996). Poverty is frequently coincident with parental stress, anxiety and depression, all of which may negatively influence parenting interactions with children (Conger *et al.* 1984; McLoyd 1990; Jackson & Huang 1998; Coiro 2001). Studies suggest that parent–child interactions within low-income families are characterized by less parental responsiveness, emotional availability, verbal or non-verbal rewards, flexibility, and contingency (Portes *et al.* 1986a,b; McLoyd 1990; Halpern 1993; Schiffman *et al.* 2003). In particular, a contingent pattern of communication is key to optimal caregiver–child interaction as contingency positively reinforces responsiveness. For example, if the caregiver speaks, and the child turns to listen, this demonstrates the child's interest and thereby encourages further parental verbalization. Over the long term, these contingent interactions promote children's healthy development (Sumner & Spietz 1994). In contrast, the non-optimal parent–child interactions that are frequently observed in low-income families exacerbate impoverished children's risks of poor developmental outcomes over time (Belsky 1984; Halpern 1993; Brooks-Gunn *et al.* 1999). Previous research has also noted less optimal parent–child interactions more often in fathers' interactions vs. mothers', regardless of income (Bryan 2000; Raiha *et al.* 2002).

Parent–child interactions and ethnicity

Parent–child interactions have been found to differ between ethnic groups from India, Italy, Kenya, Sweden, and USA (predominantly middle-class Caucasions) and between Caucasian, Hispanic/Latino, African-American, and Aboriginal groups

in the USA. (MacDonald-Clark & Harney-Boffman 1994; Seideman *et al.* 1996; Sharma & Levine 1998; Wallace *et al.* 1998; Cardona *et al.* 2000; Badr 2001; Davis & Prater 2001). Observations of varying levels of talking, looking, holding, and physical contact behaviours have been attributed to socio-economic variables including maternal education, age, and literacy and described as 'normative but divergent pathways consistent with mental health [of children] in their respective cultural environments' (Sharma & Levine 1998, p. 45; Davis & Prater 2001). However, some of these differences may be attributed to deeply rooted and intergenerationally transmitted social traumas that impair culturally normative parenting practices (Yellow Horse Brave Heart 1999).

With respect to Aboriginal people, significant differences have been found between Caucasian and other ethnic groups on the NCATS. Seideman and colleagues (1994), in their study of 30 American Aboriginal mothers from a heterogeneous cross section of socio-economic levels, found that while Aboriginal mothers were less verbal (describing fewer perceptual qualities of task materials), they scored higher than Caucasians on the NCATS (indicating more optimal interactions). Aboriginal mothers provided more social-emotional and cognitive growth-fostering activities, and children provided clearer cues and were more responsive to their mothers. The authors conclude that these findings may relate to the unhurried parenting style of many Aboriginal parents. Seideman and colleagues (1996) reported results from a study of 63 urban Aboriginal mothers and their children on the NCATS. Their findings indicate that Aboriginal parents prefer a non-verbal teaching/learning style and to observe their children's behaviours rather than intervene. In another study of a predominantly low-income sample of Aboriginal families (Alaskan Inuit), significantly higher scores than the NCATS (1993) norms were found in the parent's sensitivity to cues and response to distress sub-scales (MacDonald-Clark & Harney-Boffman 1995). Parents were aware of, and responsive to, signals and cues given by the child, kept the child in a position where eye contact could be maintained, often looked and smiled at the child, and responded quickly to soothe distress. However, lower scores than the norm were found in the cognitive growth-fostering sub-scale on items evaluating verbalization, as parents offered less verbal praise and encouragement, and completed fewer teaching loops (i.e. teaching loops are observed when a parent determines that a child is alert and attentive before giving instruction, provides time for the child to perform the task, and then after performance, provides feedback). No research literature was found on the performance of Canadian Aboriginal people on the NCATS measure of parent–child interaction or that compared low-income Canadian samples of Aboriginal and Non-Aboriginal parents and children.

In summary, while extensive research indicates that NCATS scores differ significantly between Caucasian and other ethnic group and between groups with different socio-economic status (Barnard 1985; Broom 1998; Wacharasin & Barnard 2001; Schiffman *et al.* 2003), most published research is limited to the performance of parents and children from the USA. No research was found on the parent–child interactions of Canadian Aboriginal samples or Canadian low-income samples. As such, the purpose of this research study was to use the NCATS measure to: (1) begin to develop a knowledge base that describes the parent–child interactions observed in Canadian low-income samples; and (2) explore the relationship between parent–infant interactions and ethnicity (Aboriginal or Non-Aboriginal) within a low-income Canadian sample.

Conceptual model

The model used in this study is Barnard and Eyres's (1979) Child Health Assessment Model (Fig. 1).

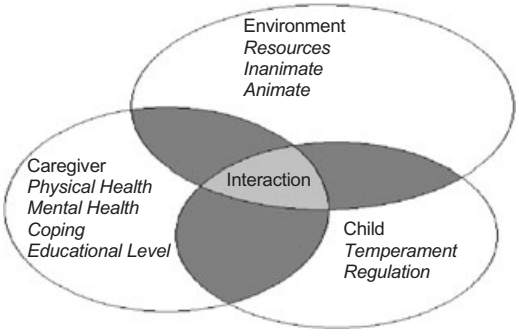

Figure 1. Child health assessment model.

Table 1. Demographics

	Aboriginal	Non-Aboriginal (predominantly Caucasian)
Child		
Age in months	Mean = 17 months Range = 5–35 months	Mean = 18 months Range = 1–35 months
Sex	7 boys 5 girls	20 boys 28 girls
Parent assessed		
Mother	11	47
Father	1	1
Marital status	Single = 50.0% ($n = 6$) Married/common law = 33.3% ($n = 4$) Separated/divorced = 16.6% ($n = 2$)	Single = 60.4% ($n = 29$) Married/common Law = 22.9% ($n = 11$) Separated/divorced = 16.7% ($n = 8$)
Age in years	Mean = 29.1 Range = 23–34	Mean = 27.8 Range = 18–47
Highest level of education	Less than high school = 66.7% ($n = 8$) High school = 8.3% ($n = 1$) Some post-sec = 16.7% ($n = 2$) Post-sec diploma = 8.3% ($n = 1$)	Less than high school = 41.7% ($n = 2$) High school = 12.5% ($n = 6$) Some post-sec = 27.1% ($n = 13$) Post-sec diploma = 18.8% ($n = 9$)
Annual income	Mean = $19 270 Range = $10 440–37 824	Mean = $17 571 Range = $6476–30 968

The model describes relationships between the concepts of the environment, parent, and child and the influence of these relationships on the quality of parent–child interaction. The three concepts are depicted as overlapping circles, and the characteristics inherent in each of the concepts result in the observed interaction quality. The specific relationships between the parental characteristic of ethnicity and the environmental characteristic of poverty, and the impact of these relationships on parent–child interaction, will be explored.

Design and methods

This study involved a secondary analysis of data collected in a larger study designed to examine the impact of the transition from welfare to work on pre-school children's health and development. The collection of the primary data involved cross-sectional observational data collection of parents and children, structured interviews, and semi-structured interviews with the parents in each of the 98 families in the sample. Data were collected regarding the pre-school children's health and developmental outcomes (cognitive, motor, behavioural, and social domains). As well, the NCATS measure of parent–child interaction was administered to all children 1–36 months of age.

Sample

The non-probability sample for the secondary analysis consisted of parents and children (1–36 months old) living in poverty (family income less than or equal to the Statistics Canada low-income cut-offs)[1]. The parents who participated in the larger project were recruited by community snowball sampling and had to (1) be able to speak and understand English, (2) be less than 65 years of age, and (3) obtain family income from the labour market or welfare-to-work programmes.

Table 1 describes the demographics of the urban sample. In short, low-income Aboriginal parents were comparable to other low-income parents, with no significant demographic differences observed. The families in the sample have a variety of family structures (e.g. two-parent, single-parent) and poverty experiences (e.g. long-term social assistance, long-term employment, beginning to transition from welfare to work). The sample derived for secondary analysis consists of 12

[1]The low income cut-offs (LICOs) take family size into account in the determination of whether or not families spend 20% more of their income on basic necessities than the average proportion spent by Canadians. Families whose expenditures on necessities exceed 54.7% of their income are living below the LICOs (Ross *et al.* 2000).

Aboriginal parent–child pairs (11 mothers and 1 father) and 48 Non-Aboriginal (predominantly Caucasian) parent–child pairs (47 mothers and 1 father) drawn from the low-income population in Edmonton, Alberta. Aboriginal parents were identified in the sample by responding 'yes' to the question 'Do you consider yourself Aboriginal/First Nations/Metis?'. Recognizing the limitations of this small sample of Aboriginal parents and children, the lack of published data on low-income Canadian Aboriginal parents' interactions with their children justifies exploring these sample data.

Measure

NCATS data collected during the primary study were analysed for this secondary analysis. The NCATS is an observational measure consisting of 73 behavioural items designed to assess the contributions and characteristics, unique to teaching interactions, of both parents and infants (Sumner & Spietz 1994; Leitch 1999; Harrison *et al.* 2001). Parents are asked to teach the child to perform an age-appropriate task, such as stack blocks or turn pages of a book. The scale allows for the examination of the *Total* (overall) interaction quality, and sub-scales examine the *Parent* and *Child* contributions, and the degree of *Contingent Responsiveness* in the teaching interaction. Total scale scores range from 0 to 73, Parent scores range from 0 to 50, Child scores range from 0 to 23, and Contingency scores range from 0 to 32, with larger scores indicating higher quality interactions. The NCATS consists of six sub-scales: (1) Sensitivity to Cues (range 0–11); (2) Response to Child's Distress (range 0–11); (3) Social-Emotional Growth Fostering (range 0–11); (4) Cognitive Growth Fostering (range 0–17); (5) Clarity of Cues (range 0–10); and (6) Responsiveness to Caregiver (range 0–13). It has been repeatedly demonstrated that the NCATS is predictive of later relationships and behaviour including IQ (Barnard 1995). The scale has been normed on a large sample of children from birth to 36 months of age (Sumner & Spietz 1994). Previous research in the USA has assessed the applicability of the NCATS among various ethnic groups, including Aboriginal, Hispanic/Latino, and African-American populations, suggesting that the NCATS has sufficient breadth to allow for cultural differences (MacDonald-Clark & Harney-Boffman 1994; Sumner & Spietz 1994; Gaffney *et al.* 2001) and may identify strengths and potential challenges in Aboriginal parenting situations (Seideman *et al.* 1996). For the secondary analysis, videotaped data were collected by trained research assistants in participants' homes. Research assistants were required to achieve 90% inter-rater reliability prior to coding NCATS data and maintained this level of reliability throughout the coding process.

Data analysis

For descriptive purposes, data from the secondary analysis were first compared with the data from the large NCATS database (Sumner & Spietz 1994) of observations of parent–child interactions during teaching situations. Second, the data from the secondary analysis were assessed for normality, and two-tailed independent *t*-tests with equal variances (alpha = 0.05) or non-parametric Mann–Whitney tests were performed, as appropriate. Comparisons were made for Total Parent, Child, and Subscale Scores to examine differences between the Aboriginal and Non-Aboriginal groups. Sub-scale item comparisons were made with chi-squared cross-tabulations to examine the items that contribute to significant differences observed in Subscale Scores. As this is an exploratory study and it was deemed important to consider data trends, corrections were not made to alpha to reduce the risk of Type II error associated with multiple statistical comparisons. In any case, power analysis and effect size calculations were conducted for any observed significant differences to reduce the chance of Type II error.

Findings

When comparisons were made for descriptive purposes among the Aboriginal and Non-Aboriginal groups and the Total Scores on the NCATS normed database (Sumner & Spietz 1994) for Caucasians (see Table 2), both groups scored lower than the norm and were at least one standard deviation from the NCATS database norm. In addition, both Aboriginal and Non-Aboriginal parent–child

Table 2. Group Statistics

	NCATS norms* M (SD)	Aboriginal M (SD)	Non-Aboriginal M (SD)	*P*†
Sensitivity to cues	9.72 (1.30)	7.67 (1.50)	8.06 (1.25)	0.348
Response to distress	10.3 (1.53)	8.67 (1.83)	8.48 (1.85)	0.754
Social-emotional growth fostering	9.56 (1.37)	7.75 (3.47)	6.96 (1.56)	0.455
Cognitive growth fostering	13.82 (2.64)	8.42 (2.54)	10.5 (2.81)	0.026
Parent total	43.4 (5.09)	32.5 (4.82)	34.0 (5.11)	0.375
Clarity of cues	8.20 (1.34)	8.92 (1.31)	9.10 (1.06)	0.603
Responsiveness to parent	7.95 (2.88)	8.25 (2.42)	9.02 (1.97)	0.252
Child total	16.2 (3.84)	17.2 (3.54)	18.1 (2.84)	0.324
Contingency caregiver	17.4 (2.90)	10.5 (2.65)	12.0 (3.14)	0.144
Contingency child	7.21 (2.68)	7.58 (2.11)	8.17 (1.96)	0.367
Total	59.56 (6.95)	49.7 (6.98)	52.1 (6.13)	0.240

*For Caucasians $n = 963$.
†For difference between study samples.

Table 3. Chi-square Crosstabulation

Item	Description	Chi-square value	*P*-value
39	Caregiver uses at least two different sentences or phrases to describe the task to the child	4.298	0.038
45	Caregiver smiles and/or nods at the child after child performs better or more successfully than the last attempt	3.774	0.052
48	Caregiver uses the teaching loop at least once	4.401	0.036

interaction scores were less than Sumner and Spietz's (1994) published 10th percentile cut-off score of 54, indicating 'worrisome scores' and less than optimal interactions.

In examining the data for the secondary analysis, the assumptions for independent *t*-tests were met for all of the Sub-scales, with the exception of the Social-Emotional Growth Fostering sub-scale and the Clarity of Cues Subscale. Non-parametric equivalent tests were performed for these non-normal sub-scales using the Mann–Whitney Test. The findings for the Mann–Whitney test showed non-significant differences between the Aboriginal and Non-Aboriginal groups. The sole significant difference, found by the independent *t*-test comparison, was between the Aboriginal and Non-Aboriginal groups on the Cognitive Growth Fostering Subscale (see Table 2). Power analysis revealed that this difference was supported by adequate data (only five cases per cell predicted 83% power), as the effect size was large (> 0.8). Previous research using the NCATS revealed similarly large effect sizes (Letourneau 2001). Cross-tabulation and chi-squared testing of items from the Cognitive Growth Fostering Subscale revealed three items that differentiated the Aboriginal from Non-Aboriginal parent–child interactions. Differences favoured the Non-Aboriginal parents and children (see Table 3).

Ethnicity may be less influential than income on parent–child interaction

These results support previous research that has shown that while Aboriginal parents may be less verbal with their children and use fewer instances of praise and encouragement in teaching, the overall quality of their interactions with their children may be no different from that of Non-Aboriginals. In contrast to previous findings where Aboriginal parents scored higher on the NCATS than the normed NCATS scores, in this study parent–child interaction scores did not differ between Aboriginal and Non-Aboriginal families and all of the scores in this impoverished urban sample were lower than the norms. This finding is supported by previous research recognizing that poverty is coincident with parental stress, anxiety, and depression,

all of which may negatively influence parenting interactions with children (Conger *et al.* 1984; McLoyd 1990; Jackson & Huang 1998; Coiro 2001). It is also possible that Yellow Horse Brave Heart's (1999) observations of intergenerationally transmitted social trauma that impacts parenting may be at play in both of these socio-economically under-privileged groups.

Low-income Aboriginal and Non-Aboriginal parents and children only differed with respect to the Cognitive Growth-Fostering Subscale which emphasizes parental verbalization in interactions and applying structure to teaching tasks by using teaching loops. Yates's (1987) early observation that Aboriginal parents do not interfere with the standard progression of children's developmental tasks as part of their cultural valuing of less direct intervention in children's lives, may still be relevant. MacDonald-Clark and Harney-Boffman's (1995) observation that Aboriginal parents prefer child-initiated learning rather than parent-structured teaching, may also help explain these findings. Previous research, which demonstrated that the communication patterns of Aboriginal people often include prolonged periods of silence and non-directive communication techniques, is also supported (Seideman *et al*. 1994; MacDonald & Harney-Boffman 1995; Dickerson & Neary 1999).

While such non-verbal communication techniques frequently differ from those evident in Non–Aboriginal interactions, these often sensitive and responsive communication patterns are thought to be part of the Aboriginal culture (Dickerson & Neary 1999). Recent literature advocates the use of honouring diversity in cultural approaches to parenting by helping families discover their own communication strengths and styles and to consider the socio-economic context (Mayo-Willis & Hornstein 2003; Van Horn & Segal 2003). Indeed, others have suggested that intervention ought to focus more on the social-political and economic climate than on changing how mothers naturally interact (e.g. talk) with their babies (Hart & Risley 1995; Yellow Horse Brave Heart 1999). Mayo-Willis and Hornstein (2003) suggest that interventionists ought to engage 'in a dialogue with a family that uses the child's behaviour in relation to the parent's beliefs about that behaviour in order to address parental concerns about child-rearing and development' (p. 37). Further, by noticing and commenting on communicative strengths of the parent and child, practitioners value and reinforce adaptive parenting behaviours (Van Horn & Segal 2003). Practitioners are challenged to value and support culturally adaptive, diverse child-rearing practices while applying evidence-based child development and parenting knowledge to work with vulnerable families (Van Horn & Segal 2003).

In conclusion, while the findings that compare the Aboriginal and Non-Aboriginal samples are limited by the small sample size and non-probability sampling of a low-income urban population in Edmonton, Canada, the fact that these findings largely agree with those from heterogeneous Aboriginal samples drawn from the USA are encouraging. The findings provide needed information about parent–child interactions in Canadian low-income samples including data from Aboriginal parents and children. Further, the findings help to elaborate the conceptual model described earlier by providing more information about parental and environmental characteristics that may influence the quality of interactions that parents have with their children. In any case, replication studies should be completed with other low-income Aboriginal populations to extend the preliminary findings presented in this paper.

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