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Cross-cultural equivalence of feeding beliefs and practices: The psychometric properties of the child feeding questionnaire among Blacks and Hispanics

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Abstract

Background. Psychometrically sound measures are considered a necessary condition for valid research. This study used structural equation modeling to examine the cross-cultural equivalence of a widely used measure of parental beliefs and practices regarding child feeding, the Child Feeding Questionnaire [Birch L.L., Fisher J.O., Grimm-Thomas K., Markey C.N., Sawyer R., Johnson S.L. Confirmatory factor analysis of the child feeding questionnaire: a measure of parental attitudes, beliefs and practices about child feeding and obesity proneness. Appetite 2001;36:201–10].

Methods. Low-income parents of 101 Black and 130 Hispanic pre-school children (126 girls, 105 boys) completed a reduced version of the CFQ.

Results. Confirmatory factor analyses using LISREL 8.51 supported the hypothesized factor structure but revealed cross-cultural conceptual problems on the perceived child weight factor and problematic items on the restriction factor that were addressed in a modified model. Invariance analyses demonstrated invariance of factor structure, loadings, and covariances in the modified model across ethnic groups. MANCOVA, that controlled for parent BMI and marital status, revealed ethnic differences on the child feeding responsibility, child weight concern, and perceived weight of child factors that were moderated by parent education and child BMI.

Conclusions. Results supported the use of a modified version of the CFQ among Blacks and Hispanics and revealed no ethnic differences on factor scores, except on interactions with parent education and overweight status of child.

Keywords: Invariance; Measurement; Confirmatory factor analysis; Child feeding; Eating behavior; Ethnic differences

Introduction

The prevalence and health burdens of childhood obesity are greater among ethnic minorities, and the origins of these ethnic differences are not well understood. Recent increases in the observed prevalence of childhood overweight and obesity point to the role of the social and physical environment as causal agents in promoting positive energy balance [1]. The development of culturally appropriate survey instruments to identify factors that may be related to childhood overweight is essential to more fully understand the ethnic differences in overweight that have been observed.

For most young children, the family is the first and most fundamental socio-environmental context in which eating patterns are established. Parents influence children's eating by selecting foods for the family diet, modeling eating behavior, and by providing direct instruction on when, where, what, and how much to eat [2,3]. Recent studies have begun to explore the relationship between parental beliefs and behaviors related to child feeding and child weight. The research, however, has focused almost exclusively on middle-class European–American populations [4]. Little is known about parental beliefs and feeding practices within specific ethnic minority cultures. It is also unclear

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how social class indicators may interact with ethnicity to influence parental beliefs and practices that may impact children. Although ethnic differences on some relevant parental beliefs have been reported, such as perception of an overweight child as not overweight [5], the modifying effects of social class variables, such as parental education and income, are not often pursued.

The current study examined the cross-cultural equivalence of the Child Feeding Questionnaire (CFQ [6]), one of few existing measures assessing child feeding and perhaps the most widely used. The purpose of the study was to extend Birch et al.'s initial work on authoritarian-type child feeding perceptions, concerns, and practices by evaluating the factor structure of the CFQ among samples of Hispanic and African-American parents and the invariance of the questionnaire across these ethnic groups. Research on eating behaviors has been limited by a lack of attention to the psychometric properties of measurement instruments, especially across ethnic groups. Factorial invariance assumes that a set of items is measuring the same constructs in all groups, and it is typically evaluated using confirmatory factor analysis within the framework of structural equation modeling [7]. Sets of parameters are tested in an orderly sequence of steps and in an increasingly restrictive manner to assess levels of invariance, primarily three levels that are most relevant to cross-group measurement: (1) whether the number of factors is the same across groups, (2) whether the factor loadings are equivalent across groups, and (3) whether the structural relationships between factors (i.e., factor variances/covariances) are equivalent across groups [7]. Testing for the equality of the measurement errors can be included, however, differences in measurement error are usually expected between groups and this inequality is not considered a serious issue. Without evidence of factorial invariance for at least the first two levels, the number of factors and size of factor loadings, there is no assurance that respondents in various groups similarly interpret the items of a particular measurement instrument and that differences in mean scores represent true group differences (i.e., comparing mean scores between ethnic groups may be completely invalid) [7,8].

The present study tested the factorial validity of the Child Feeding Questionnaire by testing a tentative measurement model based on the model developed by Birch et al. and testing subsequent modifications in two ethnic minority groups. The factorial invariance of the final measurement model was tested across groups and four hypotheses were considered: (1) that the number of underlying factors would be the same in both groups, (2) that the pattern and value of the factor loadings would be equivalent, (3) that the measurement errors or unique variances would be equivalent, and (4) that the structural relations among the factors (i.e., factor variances/covariances) would be equivalent. Next, where invariance across the subgroups was established, we compared means across groups to determine whether there were significant differences between Hispanics and Blacks in child feeding beliefs and practices and examined whether ethnic differences were moderated by demographic and social class indicators.

Methods

Participants

Participants were part of a study to investigate eating practices of low income, Black and Hispanic preschool children attending Head Start programs in greater metropolitan Houston, Texas. At eight centers, 231 primary caregivers (130 Hispanic, 101 Black) completed questionnaires. The primary caregiver was defined as the person caring for the preschooler most of the time when the child was not in school. Of these caregivers, 98% were female (85% mothers, 13% grandmothers) and 2% were male. There were 231 children in the study (55% female, 45% male), ranging from 3 to 5 years in age (M = 4.15, SD = 0.71). Participant characteristics by ethnic group are shown in Table 1.

Measures

Child feeding

The Child Feeding Questionnaire (CFQ [6]) is a 31-item self-report questionnaire that measures three aspects of parental control in child feeding and four aspects of parental perceptions and concerns about child obesity using a 5-point Likert scale. The parental control subscales include restriction (8 items), pressure to eat (4 items), and monitoring of

Table 1
Characteristics of participants by ethnic group

	African-American (n = 101)	Hispanic (n = 130)
Parent gender-female	97.0%	99.2%
Child gender-female	57.4%	52.3%
Age, mean in years (SD)		
Parent	32.6 (9.5)	30.3 (8.3)
Child	4.0 (0.7)	4.3 (0.7)
Education of parent		
High school diploma or less	50.0%	78.4%
Some college or more	50.0%	21.6%
Marital status, parent married	52.5%	76.9%
Household income, less than $2500/month	92.1%	96.9%
Parent BMI		
Underweight (BMI < 18.5)	0.99%	0.77%
Normal (18.5 ≤ BMI < 25)	17.8%	23.1%
Overweight (25 ≤ BMI < 30)	28.7%	40.8%
Obese (BMI ≥ 30)	52.5%	35.4%
Child BMI[a]		
Underweight or at risk (<15th percentile)	3.0%	0.8%
Normal (≥15th to <85th percentile)	64.4%	61.5%
Overweight or at risk (≥85th percentile)	32.7%	37.7%

[a] From age- and gender-specific cut points of the CDC growth charts.