Appetite 54 (2010) 402–405

Contents lists available at ScienceDirect

Appetite

journal homepage: www.elsevier.com/locate/appet

Short communication

Confirmatory factor analysis of the Child Feeding Questionnaire among low-income African American families of preschool children

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ARTICLE INFO

Article history:
Received 9 November 2009
Accepted 22 December 2009

Keywords:
Child Feeding Questionnaire
Feeding practices
Restriction
African American
Low-income
Validation

ABSTRACT

This study examined the factor structure for three of the Child Feeding Questionnaire (CFQ) subscales, a widely used measure of parental feeding practices, among 296 low-income parents of African American preschool children. Confirmatory factor analysis showed an overall poor fit among CFQ subscales; Restriction, Pressure to Eat, and Concern about Child Weight, (χ^2, (df = 87 = 300.249, CFI = 1.00, NNFI = 1.07, RMSEA = .091). Additionally, Cronbach's Alpha coefficients for 2 of the three subscales were below acceptable recommendations (Restriction = 0.69; Pressure to Eat = 0.58). These results suggest further psychometric clarification is needed to understand commonly reported feeding practice constructs among low-income African American mothers of preschool aged children.

Introduction

For the past 3 decades, the prevalence of childhood overweight has significantly increased in the United States, with disproportionately more overweight children from minority populations (Hedley et al., 2004; Ogden, Flegal, Carroll, & Johnson, 2002). These differences in overweight prevalence by racial/ethnic group have also been identified from an early age (2–5 years) and have been shown to increase in magnitude as children become adolescents and young adults (Ogden et al., 2006). The observed trends in overweight prevalence imply that unique factors may contribute to the development of overweight among non-Hispanic white, African American, and other minority populations (Freedman, Khan, Serdula, Ogden, & Dietz, 2006). Understanding such factors related to childhood overweight therefore require the development of culturally valid instruments to further explore the discrepancy.

The role of parental feeding practices on children's development of self-regulation of energy intake is an important area to explore (Johnson & Birch, 1994; Savage, Fisher, & Birch, 2007), in which modifiable environmental factors can be identified as potential foci for overweight prevention and intervention programs. Questionnaires have most often been used to assess parenting strategies considered important in the development of childhood overweight (e.g., Excessive Control, Providing Rewards, and Pressure to Eat) (Birch et al., 2001; Wardle, Guthrie, Sanderson, & Rapoport, 2001). Faith and Kerns (2005) conducted a comprehensive literature review of the effects of parental feeding practices on childhood overweight and showed that parental feeding restriction, primarily using the revised Child Feeding Questionnaire (CFQ; Birch et al., 2001), was the only feeding domain to be associated with increased child energy intake and weight status.

Prior studies on parental feeding practices most often included participants who were well-educated, non-Hispanic white children from middle to high income families, limiting the generalizability of results (Birch, Fisher, & Davison, 2003; Blissett, Meyer, & Haycraft, 2006; Faith & Kerns, 2005). The original validation of the CFQ had included either 100% non-Hispanic White parents of girls ages 5–9 years and non-Hispanic White (85% of sample), African American (9%), and Hispanic (4%) families of children ages 7–11 years of age. Studies utilizing samples with minimal ethnic/cultural and economic diversity may help to explain why some investigations have failed to detect associations with parental feeding practices and child body mass index (BMI) (Robinson, Kiernan, Matheson, & Haydel, 2001; Saelens, Ernst, & Epstein, 2000), which notably included research with low-income, minority populations (Powers, Chamberlin, van Schaick, Sherman, & Whitaker, 2006). Moreover, interviews with low-income African American mothers of preschoolers (ages 2–5 years) showed that questionnaire items were

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doi:10.1016/j.appet.2009.12.013

sometimes interpreted differently than intended by researchers, including the following feeding practice items: using food to calm children, pushing the child to eat more, and difficulty in child feeding (Jain, Sherman, Chamberlin, & Whitaker, 2004). An important step in understanding these differences among parental feeding practices includes the development of culturally validated instruments in order to identify both important feeding strategies and those factors which may be culturally imbedded, which differ across ethnic groups (Baughcum et al., 2001; Faith & Kerns, 2005).

Recently, researchers have begun to explore the psychometric properties of previously validated instruments using more diverse populations. For instance, Anderson, Hughes, Fisher, and Nicklas (2005) examined the cross-cultural equivalence of parental feeding beliefs and practices with 101 African American and 130 Hispanic preschool children. A confirmatory factor analysis (CFA) of the CFQ demonstrated support for the factor structure although some cross-cultural conceptual problems were identified and problematic items were removed during subsequent model adjustments. In addition, a test of factorial invariance across ethnic groups showed adequate invariance of the factor structure. That is, members of different ethnic groups associated survey items with similar constructs. Interestingly, the feeding domain to receive the most empirical support in prior studies, restriction, required five of the eight items to be removed as a result of non-significant factor loadings. The authors acknowledged that psychometric testing using larger samples will help provide additional support of these findings across ethnic groups.

Further establishing the psychometric properties of child feeding questionnaires remains key in further understanding cultural differences in the development of childhood overweight.

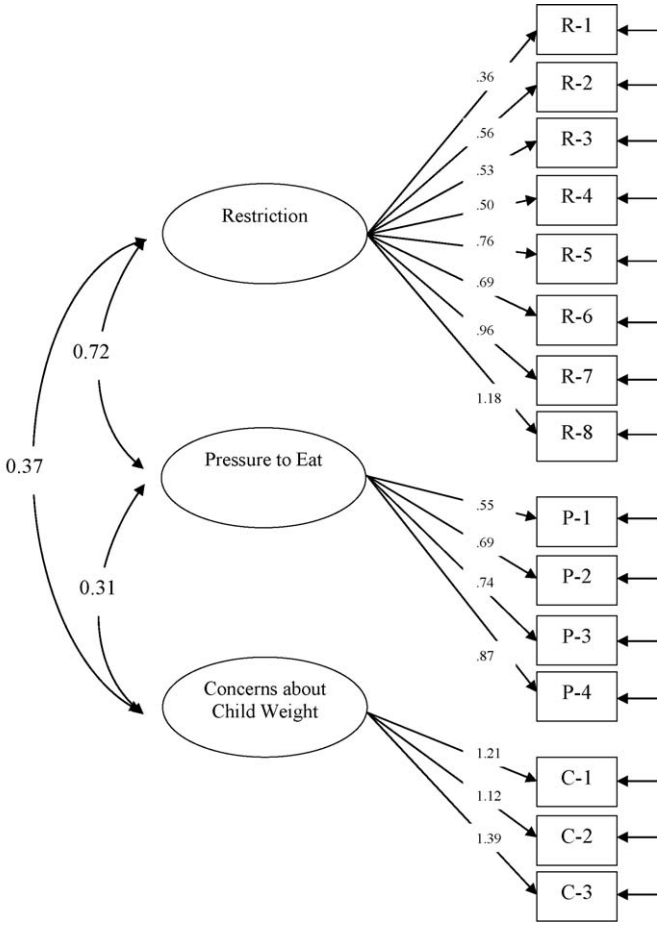

Fig. 1. Measurement model of CFQ subscales within low-income African American mothers. *Note*: χ^2, (df = 87) = 300.249, $p < .001$, CFI = 1.00, NNFI = 1.07, RMSEA = .091.

The present study tested a portion of the CFQ factor structure, using the most commonly reported and significant scales from the CFQ with a large sample of low-income African American mothers of preschool children (Birch et al., 2003; Blissett et al., 2006; Faith & Kerns, 2005; Powers et al., 2006). Given the relatively limited psychometric validation of the CFQ with large minority samples, the purpose of the present study was to partially replicate the Anderson et al. (2005) study, with a large sample of low-income African American mothers of preschool aged children. Based on previous administrations of the CFQ involving minority populations, it was hypothesized that we would replicate the overall factor structure of the CFQ subscales with our larger sample.

Method

Participants

Participants in the study were 296 African American mothers of preschool children, 24–59 months of age, who were enrolled in the Cincinnati, Hamilton County, Ohio Special Supplemental Nutrition Program for Women, Infants, and Children (WIC). WIC is a federal grant program which provides supplemental nutritious foods, nutrition education and counseling, and screening/referrals to other health, welfare, and social services to low-income, nutritionally at risk women and children up to age 5. Nutritionally at risk includes medically based (e.g., anemia) or dietary based (e.g., a poor diet). WIC eligibility income levels require applicants to earn no more than 185% of the Federal poverty level, equivalent to $34,040 per year for a family of 4 at the time of this study (USDA website, accessed May 15, 2008).

Procedures

Sampling procedures have been previously reported elsewhere (Powers et al., 2006) and are briefly described here. Seven WIC clinics in Hamilton County, OH were chosen from a total of 17 clinics due to a majority of African American clients enrolled at these 7 locations. We note for the purposes of the present study that "mother" primarily includes the biological mother but may also include other primary female caregivers who brought the child to the WIC clinic, including grandmothers and other legal guardians.

At the time of registration for a clinic visit, mothers who identified as being African American were consecutively asked to participate in the study. Children with chronic medical conditions related to feeding or appetite (e.g., cerebral palsy) were excluded from the study, though none of the mothers approached for the study reported their children as having these conditions.

Initially, 307 eligible subjects were contacted for the study, in which 7 (2%) of these mothers decided not to participate, 1 mother was ultimately ineligible due to being less than 18 years of age, and 3 other participants had missing anthropometric data, resulting in a final sample of 296 participants.

Measures

Child Feeding Questionnaire-revised (Birch et al., 2001)

The Child Feeding Questionnaire is a 31-item self-report questionnaire measuring parental beliefs, attitudes, and practices in relation to child feeding. In the current study, 3 of the 7 scales were administered to parents, including Restriction, Pressure to Eat, and Concern for Child Weight (Table 1). These scales were chosen due to the most consistent empirical support relating these constructs to maternal or child weight, as well as the most often administered subscales (Faith & Kerns, 2005; Taveras et al., 2004). In addition, using only a portion of the CFQ maximized