



Research report

Dimensions of vegetable parenting practices among preschoolers[☆]

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ABSTRACT

The objective of this study was to determine the factor structure of 31 effective and ineffective vegetable parenting practices used by parents of preschool children based on three theoretically proposed factors: responsiveness, control and structure. The methods employed included both corrected item-total correlations and confirmatory factor analysis. Acceptable fit was obtained only when effective and ineffective parenting practices were analyzed separately. Among effective items the model included one second order factor (effectiveness) and the three proposed first order factors. The same structure was revealed among ineffective items, but required correlated paths be specified among items. A theoretically specified three factor structure was obtained among 31 vegetable parenting practice items, but likely to be effective and ineffective items had to be analyzed separately. Research is needed on how these parenting practices factors predict child vegetable intake.

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Introduction

Vegetables have been identified as important foods, the high consumption of which helps enhance bone mass (Wosje et al., 2010) and prevent the development of several chronic illnesses, including heart disease (Mikkilä et al., 2007), diabetes, several cancers (Boeing et al., 2012), and obesity among adults (Ledoux, Hingle, & Baranowski, 2011). Preferences for foods are learned early in life, possibly the preschool years (Anzman-Frasca, Savage, Marini, Fisher, & Birch, 2012). Vegetable consumption appears to track through childhood and into the adult years (Mikkilä, Räsänen, Raitakari, Pietinen, & Viikari, 2005); and parents appear to have an important role influencing their child's vegetable preferences and intake (Anzman, Rollins, & Birch, 2010).

Parenting practices are the specific behaviors that parents employ to influence their child's behavior (Hughes, O'Connor, & Power, 2008). Specific food parenting practices, such as pressure to eat, have been associated with child dietary intake (Fisher, Mitchell, Smiciklas-Wright, & Birch, 2002; Wardle, Carnell, &

Cooke, 2005). Vegetable parenting practices are those behaviors employed to influence children's vegetable intake. A broad variety of parent behaviors have been identified as likely contributing to a preschool child's vegetable intake (i.e. effective vegetable parenting practices), and others either not influencing or adversely influencing preschool child vegetable intake (i.e. ineffective vegetable parenting practices) (O'Connor, Hughes, et al., 2010; O'Connor, Watson, et al., 2010). For example, restricting a child's access to a palatable food increased the child's preference for and later consumption of that food (Fisher & Birch, 1999). A systematic review identified authoritative parenting, parent modeling of intake, increased home availability, covert restriction, and encouraging children to try vegetables were associated with child vegetable intake (Blissett, 2011).

The general parenting literature has associated parenting behaviors with child outcomes such as socioemotional development, academic performance, and attachment (Baumrind, 1989). Some developmental psychologists have hypothesized that parenting may differ across some domains, such as nutrition (Baumrind, 1989). It has been hypothesized that parenting practices related to nutrition vary along three dimensions: responsiveness, control and structure (Hughes et al., 2008). Responsiveness is the parents' support of their child's autonomy by being mindful, supportive, and accepting of their child's perspective, encouraging them to take initiative, and allowing them to solve problems on their own (Grolnick & Pomerantz, 2009) (e.g. "I tell my child that vegetables taste good"). Control is the extent to which parents exert influence over their child using either coercive practices like pressure, intrusiveness, or dominance, or using reinforcement, supervision, and

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behavioral control practices that are intended to provide guidance to their child (Grolnick & Pomerantz, 2009) (e.g. “I make my child feel guilty when they don’t eat their vegetables”). Structure is the social and physical environmental organization and provision of clear rules and expectations to influence their child’s competence and intake (Grolnick & Pomerantz, 2009) (e.g. “I make vegetables easy to eat, such as cleaning, peeling, or cutting them”) (Hughes et al., 2008). Much of the existing literature has emphasized responsiveness and control (Clark, Goyder, Bissell, Blank, & Peters, 2007; Faith, Scanlon, Birch, Francis, & Sherry, 2004). Preschool parent-generated categories of vegetable parenting practices did not conform to the responsiveness, control and structure dimensions (O’Connor, Hughes, et al., 2010), but professional judgments of effectiveness did (O’Connor, Watson, et al., 2010). Effective parenting practices are expected to enable the child to enjoy and consume vegetables beyond the immediate situation (e.g. “I praise my child when I see them eat vegetables”), while ineffective parenting practices may obtain immediate child compliance with eating more vegetables, but will not likely result in longer term enjoyment and consumption (e.g. “I make my child feel guilty when they don’t eat their vegetables”) (O’Connor, Watson, et al., 2010). Thus, the dimensional structure of preschool vegetable parenting practices is not clear, and it is unlikely that each parenting practice a parent may choose is used completely independently of other parenting practices (Wiggins, Potter, & Wildsmith, 2001).

Knowing the dimensional structure of parental use of preschool vegetable parenting practices should enable scientists and practitioners to better understand the co-occurrence of food-related parenting practices, and enable the formulation of dependent variables to test predictiveness of models to understand why parents may use these procedures (Hingle et al., 2012). Validated predictive models would enhance the design of interventions to promote use of effective parenting practices and decrease use of ineffective parenting practices.

This study assesses the dimensional structure of parenting practices related to a child’s vegetable intake.

Methods

Design

A cross-sectional study was designed using a web-based survey mechanism (Survey Monkey, 2012) to collect data to assess the psychometrics of the preschool vegetable parenting practices items and scales. Participants were directed to log into the questionnaire. Given the low risk nature of the study, selecting the “participate” button in the survey was taken as evidence of consent. The Institutional Review Board of the Baylor College of Medicine reviewed and approved the research protocol.

Recruitment and sample

The inclusionary criteria were being a parent of a preschooler (3–5 years old), being able to read and write in English, and having the child spend most of their time with that caregiver. Access to the internet survey implied access to both a computer and an internet connection. Recruitment procedures included (1) posting flyers at known study recruitment locations around the Texas Medical Center campus (about 100,000 diverse employees); (2) emails to (a) the list serve of the Houston Hispanic Health Coalition, (b) parents listed in the Children’s Nutrition Research Center (CNRC) research volunteer database with preschool aged children, and (c) past participants in related studies who had consented to be recontacted; and (3) posting volunteer announcements on the Baylor College of Medicine (COM) and CNRC websites. As compensation,

participants were offered a raffle for a \$20 gift certificate upon completion of the survey.

Items

The items were initially generated by lower income parents using a Nominal Group method (Hughes & Shewchuk, 2012; O’Connor, Hughes, et al., 2010). Several items from an existing food parenting scale (Hughes, Power, Fisher, Mueller, & Nicklas, 2005) were added. The items were distributed by the authors across the three hypothesized dimensions (responsiveness, structure, and control) of food parenting (Hughes et al., 2008), and divided into likely to be effective and ineffective categories based on professional judgment (O’Connor, Watson, et al., 2010). Based on cognitive interviews ($n=15$, five each with parents of African American, Hispanic, and White 3–5 yo), some items were reworded to enhance clarity for fidelity to a dimension. There were 31 items in the final instrument, with a three category response scale (Always = 1, Sometimes = 2, Never = 3). The 31 items were initially organized with almost equal number by category: Effective Responsiveness (items 01–05), Effective Structure (items 06–10), Effective Non-directive Control (items 11, 12, 14, 15), Ineffective Responsiveness (items 16–21), Ineffective Structure (items 22–25, 30), and Ineffective Control (items 13, 26–29, 31) (Table 2).

Statistical methods

The vegetable parenting practices scale was assessed using classical test theory (CTT) procedures (Nunnally, 1978), including item difficulty (mean) and item discrimination (the corrected item-total correlation, CITC). Cronbach’s alpha assessed the internal consistency reliability. The criterion for acceptable internal consistency reliability was defined as greater than .70 (Nunnally, 1978). A low CITC (<0.20) (Nunnally, 1978) means an item is poorly correlated with the rest of the scale; a low Cronbach’s alpha (<0.70) suggests low internal consistency, possibly indicating multiple latent constructs or a need for additional items. Items with CITC lower than 0.20 were deleted from the analyses. CTT analyses were conducted using Statistical Analysis Systems (SAS Institute Inc., 2011). The effective and ineffective second-order models were analyzed separately. Confirmatory factor analysis (CFA) was used to examine the performance of these two hypothesized second-order factor models.

CFA was conducted using Mplus (Muthén & Muthén, 1998–2011). Because of the ordinal nature of the responses, weighted least square parameter estimation was used to estimate the model. Hu and Bentler’s (1999) two-index strategy presentation (Hu & Bentler, 1999) was used to assess the data-model fit. The various combinations of the two indices were summarized in Table 3. Given the complexity of the CFA, it is not unusual that the results showed poor fit of the proposed model. If the data did not fit the hypothesized second-order factor model well, post hoc analyses were conducted including respecifying and re-estimating the model. Post hoc modifications suggested by modification fit indices which made theoretical sense were included in the model if initial assessment did not meet the fit criteria. The paths correlating within-factor error terms were added to the model first, since they were more meaningful than across latent variable correlations.

Results

There were 416 initial attempts to log onto the web site that initiated the questionnaire. Of these, 92 were incomplete and 17 were

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