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Validation of the modified Parenting Strategies for Eating and Physical Activity Scale-Diet (PEAS-Diet) in Latino children

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ABSTRACT

Research shows that Latino parenting practices influence children's dietary and weight outcomes. Most studies use parent-reported data, however data from children may provide additional insight into how parents influence their children's diet and weight outcomes. The Parenting Strategies for Eating and Activity Scale (PEAS) has been validated in Latino adults, but not in children. This study evaluated the factor structure and concurrent and predictive validity of a modified version of the PEAS (PEAS-Diet) among Latino children. Data were collected from 361 children ages 7–13 from Imperial County, California, enrolled in a randomized controlled trial to promote healthy eating. The PEAS-Diet included 25 candidate items targeting six parenting practices pertaining to children's eating behaviors: (a) monitoring; (b) disciplining; (c) control; (d) permissiveness; (e) reinforcing; and (f) limit-setting. Children were on average ten years old (±2), 50% boys, 93% self-identified as Latino, 81% were US-born, and 55% completed English versus Spanish-language interviews. Using varimax rotation on baseline data with the total sample, six items were removed due to factor loadings <.40 and/or cross-loading (>.32 on more than one component). Parallel analysis and interpretability suggested a 5-factor solution explaining 59.46% of the variance. The subscale "limit-setting" was removed from the scale. The final scale consisted of 19 items and 5 subscales. Internal consistency of the subscales ranged from $\alpha = .63$-.82. Confirmatory factor analyses provided additional evidence for the 5-factor scale using data collected 4 and 6 months post-baseline among the control group ($n = 164$, $n = 161$, respectively). Concurrent validity with dietary intake was established for monitoring, control, permissiveness, and reinforcing subscales in the expected directions. Predictive validity was not established. Results indicated that with the reported changes, the interview-administered PEAS-Diet is valid among Latino children aged 7–13 years.

1. Introduction

According to recent estimates, at least 30% of children and adolescents in the United States are overweight or obese, with the highest prevalence among Latino youth under 11 years of age (Ogden, Carroll, Kit, & Flegal, 2014). Caloric imbalance resulting from more energy consumed than expended is a common risk factor for overweight and obesity among youth (Daniels et al., 2005). Parenting practices regarding eating behaviors are associated with Latino children's dietary outcomes. For example, in a study involving Mexican-American mothers, pressuring their children to eat and mothers' attitudes toward modeling healthful food choices were associated with higher vegetable and lower fat intake in children (Matheson, Robinson, Varady, & Killen, 2006). Arredondo et al. (2006) found that monitoring, reinforcing, and disciplining parenting practices were positively associated with Latino children's healthy dietary intake (i.e. fruits, vegetables, low-fat dairy, low-sugar cereals, and wheat bread) and negatively

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associated with unhealthy dietary intake (i.e. regular soda, flavored drinks, fats, sweets, and sugar cereals). In the same study, children who consumed an unhealthy diet were more likely to have parents who reported more controlling parenting practices toward their child's diet.

It is important to note, however, that studies investigating parenting practices have typically relied on parent-report rather than child-report and few have focused on Latinos. Sleddens, Gerards, Thijs, Vries, and Kremers (2011) systematically reviewed the literature on the relationship between general parenting practices, children's weight status, and dietary and activity behaviors. Of the 37 articles reviewed, only 11 collected data on children's perception of parenting practices and none of these studies had a large enough Latino sample to examine this population effectively. In a systematic review of measurement instruments for parenting practices related to food by Vaughn, Tabak, Bryant, and Ward (2013), only five of the 15 instruments that were administered to children ages seven and over were validated with children. Of these five validation studies, two were conducted with a substantial, though too small proportion of Latinos to draw meaningful conclusions regarding the validity of these tools in Latino youth populations: Cullen et al. (Cullen et al., 2001) included 37% (n = 82) Mexican-American youth in Texas and De Bourdeaudhuij et al. (2005) included 24% (n = 78) youth from Spain.

Capturing parenting practices from a child's perspective would provide additional insight on the impact of parenting practices on children's health practices. It may be that a child's perspective of his/her parent's actions is a better predictor of dietary behaviors than a parent's perspective (Woodward et al., 1996). Moreover, parent-reported parenting practices may be more susceptible to social desirability than children's report of their parents' parenting practices (Sleddens et al., 2011). Previous studies suggest that measures assessing child-perceived parenting practices are psychometrically sound (2013). In an Australian sample of 1448 adolescents between 12 and 15 years, a factor analysis of perceived parental feeding practices resulted in five distinct practices (e.g., monitoring) with internal consistencies ranging from .66 to .87 (MacFarlane, Crawford, & Worsley, 2010). Among 326 European 10- and 11- year olds, perceived parental encouragement and parental demand of fruit and vegetable intake had adequate internal consistency, test-retest within one week, and predictive validity of fruit and vegetable consumption (De Bourdeaudhuij et al., 2005).

The Parenting Strategies for Eating and Activity Scale (PEAS) was developed to assess parent-report parenting practices associated with children's eating and physical activity among Latino parents (Larios, Ayala, Arredondo, Baquero, & Elder, 2009). A substantial number of studies have used the PEAS in its entirety or its subscales to assess parenting practices among Latinos (Arredondo, Morello, Holub, & Haughton, 2014; Isasi et al., 2014; Zoorob et al., 2013), African-Americans (Alia, Wilson, St George, Schneider, & Kitzman-Ulrich, 2013; Schneider, Wilson, Kitzman-Ulrich, George, & Alia, 2013; St George, Wilson, Schneider, & Alia, 2013), multi-racial/ethnic origins (Dulin Keita et al., 2014; Hennessy, Hughes, Goldberg, Hyatt, & Economos, 2010; Lawman & Wilson, 2014), Australians (Lloyd, Lubans, Plotnikoff, Collins, & Morgan, 2014), and Mexicans (Flores-Peña et al., 2014). Recently, the PEAS was modified to assess parent-reported parenting practices associated with children's eating behaviors only (Ayala et al., 2011). However, to date no study has explored these parenting practices from a child perspective. The aim of this study was to examine the factor structure and concurrent and predictive validity of the modified PEAS (PEAS-Diet) as reported by Latino children ages 7–13 years.

2. Methods

2.1. Study design

To examine the factor structure of the PEAS-Diet scale among Latino children, this study used cross-sectional baseline data (M1) from the *Entre Familia*: *Reflejos de Salud* study *(Within the Family: Reflections of Health)*, a four-month randomized controlled trial testing a home-based intervention designed to promote healthy eating among Latino families. The control group was a delayed treatment condition; thus families in this condition received an intervention after all evaluation activities were completed. The baseline sample consisted of 361 Latino mother-child dyads. To confirm the factor structure, a confirmatory factor analysis (CFA) was assessed using only the control group at immediate post-intervention (4-months post-baseline; M2 (n = 164)) and at 6-month follow-up (10 months post-baseline; M3 (n = 161)).

To examine the validity of the PEAS-Diet scale among Latino children, data from the control group were used to examine concurrent validity at M1 and predictive validity at M2 on children's dietary intake including fruits and vegetables, fast food, and sugar sweetened beverages. Predictive validity analyses were limited to M2 rather than extended to M3 because of the proximity of measurement between parenting practices at M1 and child's dietary intake variables at M2, four months later. The Institutional Review Board of San Diego State University approved the study activities.

2.2. Setting

This study was conducted in Imperial County located in Southern California, the south-eastern-most county in the state, bordering Arizona and Mexico. Imperial County is an agricultural region with 179,000 residents. The majority (82%) of residents self-identify as Latino and more than one third are foreign-born. The socio-economic status of Imperial County residents is lower than that of California residents as a whole with 65% of county residents having graduated from high school (versus 81% of state residents) and 23% of residents living below the poverty level (versus 16% of state residents) (U.S. Census Bureau: State and County QuickFacts, 2012).

2.3. Recruitment of participants

Three hundred and sixty one mother-child dyads were recruited by trained bilingual/bicultural research assistants. Dyads were recruited from community sites including health fairs, clinics, and schools, and through newspaper advertisements and mailed letters to parents of pediatric patients of *Clínicas de Salud del Pueblo*, Inc., a federally-qualified community health center located in Imperial and neighboring Riverside counties. Mothers were eligible to participate if they: (a) self-identified as Latina; (b) had a child between the ages of 7–13 years; (c) were able to speak and read Spanish; and (d) lived in the same household as their child for at least four days of the week. Children were eligible to participate if they met the age criteria and were not on a medically-prescribed diet. If more than one child was eligible to participate, the child with the closest birthday to the date of recruitment was selected.

2.4. Procedures

During a home visit, the research assistant separately interviewed the mother and child in turn, and then measured the height and weight of the mother and child. Mother interviews were conducted in Spanish. Interviews were conducted with children in their preferred language (English or Spanish). Measures were