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Examining variability in parent feeding practices within a low-income, racially/ethnically diverse, and immigrant population using ecological momentary assessment

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ABSTRACT

Background: Current measures of parent feeding practices are typically survey-based and assessed as static/unchanging characteristics, failing to account for fluctuations in these behaviors across time and context. The current study uses ecological momentary assessment to examine variability of, and predictors of, parent feeding practices within a low-income, racially/ethnically diverse, and immigrant sample.

Methods: Children ages 5–7 years old and their parents (n = 150 dyads) from six racial/ethnic groups (n = 25 from each; Black/African American, Hispanic, Hmong, Native American, Somali, White) were recruited for this mixed-methods study through primary care clinics.

Results: Among parents who used restriction (49%) and pressure-to-eat (69%) feeding practices, these feeding practices were utilized about every other day. Contextual factors at the meal associated with parent feeding practices included: number of people at the meal, who prepared the meal, types of food served at meals (e.g., pre-prepared, homemade, fast food), meal setting (e.g., kitchen table, front room), and meal emotional atmosphere ($p < 0.05$). Parents tended to restrict desserts, dairy, and vegetables and pressure children to eat fruits, vegetables, meat proteins, and refined grains ($p < 0.05$). There were some differences by race/ethnicity across findings ($p < 0.01$), with Hmong parents engaging in the highest levels of pressure-to-eat feeding practices.

Conclusions: Parent feeding practices varied across the week, indicating feeding practices are more likely to be context-specific, or state-like than trait-like. There were some meal characteristics more strongly associated with engaging in restriction and pressure-to-eat feeding practices. Given that parent feeding practices appear to be state-like, future interventions and health care providers who work with parents and children may want to address contextual factors associated with parent feeding practices to decrease restriction and pressure-to-eat parent feeding practices.

1. Introduction

Previous studies have shown that parent feeding practices such as food restriction and pressure-to-eat are associated with overweight (Birch & Davison, 2001; Birch & Fisher, 2000; Loth, MacLehose, Fulkerson, Crow, & Neumark-Sztainer, 2013a, 2013b), unhealthy diet quality (Birch & Davison, 2001; Birch & Fisher, 2000; Fisher, Mitchell, Smiciklas-Wright, & Birch, 2002), lower satiety responsiveness (Birch, Fisher, & Davison, 2003; Fisher & Birch, 1999), and unhealthy weight control behaviors (Loth, MacLehose, Fulkerson, Crow, & Neumark-Sztainer, 2014) in children and adolescents. Thus, parent feeding practices may be an important parental factor to target to reduce childhood obesity. However, there are many remaining questions about parent feeding practices that are important to address in order to know how to intervene on parent feeding practices effectively. Some questions include: (1) do parent feeding practices vary across the week (i.e., state-like), or are they stable (i.e., trait-like)?; (2) are there contextual factors during meals (e.g., meal atmosphere, who is present at the meal) that are associated with whether parents use one type of parent feeding practice or another?; (3) do parents restrict or pressure certain types of

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foods more or less? Addressing these questions will allow for developing interventions that can potentially alter parent feeding practices to thereby reduce childhood obesity.

Understanding whether parent feeding practices are constant or fluctuating is key for the development of interventions that can alter parent feeding practices. For example, if feeding practices vary across time and context, then targeting real-time predictors of parent feeding practices in interventions could potentially result in decreased restriction and pressure-to-eat feeding practices. To the best of our knowledge, prior research on parent feeding practices has relied primarily on survey assessments and has not examined whether parent feeding practices vary across different contexts. This is problematic because survey or self-report items assume parent feeding practices are static/unchanging characteristics, or trait-like.

Use of assessment tools that can capture fluctuations in behavior such as ecological momentary assessment (EMA) are necessary for understanding whether food-related parenting practices are constant (i.e., trait-like), or if they fluctuate across time and context (i.e., state-like) (De Young et al., 2014; Dunton et al., 2011, 2012; Heron & Smyth, 2010; Shiffman, Stone, & Hufford, 2008). EMA has several advantages. EMA allows for observing behaviors as they unfold, moment-by-moment, to capture dynamic changes in behavior that are relevant to the participant's real world environment. EMA also removes the need for retrospective recall. The current study assesses parent feeding practices via EMA, which measures within- and between-subject variation to determine whether parent feeding practices are state-like and influenced by momentary mechanisms such as meal characteristics that can be intervened on in real-time, or whether they are trait-like.

It is also important to identify contextual factors occurring during the meal that are associated with using certain feeding practices. For example, if meal characteristics such as the meal atmosphere (e.g., tense, chaotic, relaxed, enjoyable) or meal type (e.g., fast food, homemade) are associated with engaging in one type of parent feeding practice or another, then these meal characteristics can be targeted in interventions to reduce the likelihood of parents engaging in controlling parent feeding practices. Previous studies examining mealtime characteristics associated with parent feeding practices have mostly been qualitative and have found that parents identify meal characteristics such as the emotional atmosphere at the meal and distractions at the meal (e.g., screen time, TV) as contextual factors that influence why they use certain parent feeding practices (Berge, Trofholz, Schulte, Conger, & Neumark-Sztainer, 2016; Trofholz, Schulte, & Berge, 2017). Quantitative studies are a necessary next step to identifying whether these associations are statistically significant. In addition, identifying which foods parents are more likely to pressure or restrict at meals would be useful in determining how to intervene with parents around specific parent feeding practices.

Examining parent feeding practices in parents from low-income, racially/ethnically diverse, and immigrant/refugee (e.g., Hmong, Somali) populations is also needed to determine whether parents operate similarly or differently with regard to parent feeding practices in diverse families (Ogden et al., 2012, 2014, 2016). Prior research on parent feeding practices using survey research has shown that parents from low-income and minority households may be more likely to engage in restriction and pressure-to-eat feeding practices (Berge et al., 2017a; Loth et al., 2013a, 2013b). In the current study, EMA data will be used to allow for examining variability in parent feeding practices by race/ethnicity, in addition to immigrant/refugee status.

The current study will build on and expand prior research on parent feeding practices by utilizing EMA methods to examine parent feeding practices within a low income, racially/ethnically diverse, and immigrant population. Although parent feeding practices have sometimes been conceptualized differently by researchers in the field, the current study utilizes Vaughn's conceptualization of parent feeding practices, specifically coercive feeding practices (i.e., restriction, pressure-to-eat) (Black & Aboud, 2011; Vaughn et al., 2016, 2017). The main research questions addressed in the current study include: (1) What types of parent feeding practices do parents engage in across the week, do they vary, and do they differ by race/ethnicity?, (2) What meal characteristics or contextual factors are associated with parent restriction or pressure-to-eat feeding practices; and (3) What foods do parents restrict and pressure most? The main study hypothesis is that parent feeding practices will fluctuate across time and context (i.e., state-like) rather than remain stable (i.e., trait-like).

2. Methods

Data for the current study are from *Family Matters* (Berge et al., 2017b), a National Institutes of Health-funded study. *Family Matters* is a 5-year incremental (Phase I = 2014–2016.; Phase II = 2017–2019), mixed-methods (e.g., video-recorded tasks, EMA, interviews, online surveys) longitudinal study designed to identify novel risk and protective factors for childhood obesity in the home environments of racially/ethnically diverse and primarily low-income children. Phase I included an in-depth, mixed-methods, cross-sectional examination of the family home environment of diverse families (n = 150). Phase II will be a longitudinal epidemiological cohort study with diverse families (n = 1200).

Data in the current study are from Phase I of the *Family Matters* study. In Phase I, a mixed-methods analysis of the home environments of children ages 5–7 years old from racially/ethnically diverse households was conducted to identify individual, dyadic, and familial risk and protective factors for childhood obesity. The University of Minnesota's Institutional Review Board Human Subjects Committee approved all protocols used in both phases of the *Family Matters* study.

2.1. Recruitment and eligibility criteria

Eligible children (n = 150) and their families were recruited from the Minneapolis/St. Paul, MN area between 2015 and 2016 via a letter from their family physician. Children were eligible to participate in the study if they were between the ages of 5–7 years old, had a sibling between the ages of 2–12 years old living in the same home, lived with their parent/primary guardian more than 50% of the time, shared at least one meal/day with the parent/primary guardian, and were from one of six racial/ethnic categories (Black/African American, Hispanic/Latino, Hmong, Native American, Somali, and White). The sample was intentionally stratified by race/ethnicity and weight status (overweight/obese = BMI ≥85%ile; non-overweight = BMI > 5%ile and < 85%ile) of the study child to identify potential weight- and/or race/ethnic-specific home environment factors related to obesity risk.

2.2. Procedures and data collection

A 10-day in-home observation was conducted with each family, including an 8-day direct observational period bookended by two in-home visits. During home visit one (day 1): (1) families consented and assented to be in the study; (2) heights and weights were taken on all family members; (3) family members engaged in an interactive observational family task (i.e., a family board game with activities about family meal planning, meal preparation, and family physical activity) to measure family functioning and parenting practices that was developed specifically for this diverse study population based on prior validated direct observational measures (Melby and Conger, 2001); (4) a 24-hr. child dietary recall was conducted with the parent using Nutrition Data System for Research software and a multiple pass method (Center NC, 2010) (NDSR, three 24-h dietary recalls) (McPherson, Hoelscher, Alexander, Scanlon, & Serdula, 2000), (5) a home food inventory (HFI) (Fulkerson et al., 2008; Hearst, Fulkerson, Parke, & Martin, 2013) was carried out; and (6) families were trained in accelerometry and EMA data collection. During the eight-day direct observational period (days 2–8), the primary parent/guardian (i.e., person who cared for child the