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Understanding and measuring parent use of food to soothe infant and toddler distress: A longitudinal study from 6 to 18 months of age

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ABSTRACT

The present study examined the development of parent use of food to soothe infant distress by examining this feeding practice longitudinally when infants were 6, 12 and 18 months of age. Two measures of feeding to soothe were obtained: parent self-report and observations of food to soothe during each laboratory visit. Demographic and maternal predictors of food to soothe were examined as well as the outcome, infant weight gain. The findings showed that the two measures of food to soothe were unrelated but did reveal similar and unique relations with predictor variables such as parent feeding style and maternal self-efficacy. Only observations of the use of food to soothe were related to infant weight gain. The findings indicate that the two measures of food to soothe may be complementary and that observations of this feeding practice may capture certain relations that are not obtained through the use of self-report.

1. Introduction

Although the rates of childhood obesity appear to be plateauing (Ogden, Carroll, Kit, & Flegal, 2012) a recent study examining the incidence of obesity from 5 to 14 years of age demonstrated that overweight and obesity at kindergarten rather than later ages substantially increased the risk for later obesity in adolescence. Overweight 5-year-olds were four times more likely to become obese than normal weight 5-year-olds (Cunningham, Kramer, & Narayan, 2014). These data suggest that understanding the early pathways to overweight and obesity by the preschool ages is essential to the prevention of this health outcome, particularly since adolescent obesity is likely to result in adult obesity and its associated medical conditions (Freedman et al., 2005; Guo, Wu, Chumlea, & Roche, 2002).

One pathway toward early childhood obesity is through the method with which parents feed their young children. Parents control child eating; they determine what foods their children eat and when. And while infants and young children can self-regulate their intake of food (e.g., Birch, Johnson, Andresen, Peters, & Schulte, 1991), parent feeding practices can override this innate response such as when parents restrict certain foods, use food to soothe the young child's negative emotions or distress, or use food to reward or change behavior (Ventura & Birch, 2008). While restrictive parent feeding practices have been firmly established as contributing to child overweight, dietary intake, and eating in the absence of hunger (Birch, Davison, & Fisher, 2003; Fisher & Birch, 1999), less research has been conducted on using food to regulate children's emotions, particularly across infancy, a period of development that is dependent upon others to soothe distress (Jahromi, Stifter, & Putnam, 2004; Kopp, 1992). Variously labeled emotional feeding (Wardle, Sanderson, Gutherie, Rapoport, & Plomin, 2002), feeding to soothe, (Stifter, Anzman-Frasca, Birch, & Voegtline, 2011), feeding to calm (Baughcum et al., 2001; Evans et al., 2011), or feeding to regulate emotions (Musher-Eizenman & Holub, 2007), this practice has been shown recently to have negative consequences with relation to children's eating behavior and style. Studies have shown that parents who report using food to soothe (FTS)[1] have children who are more likely to develop emotional eating styles (Braden et al., 2014) and have poorer diets, e.g., lower fruit intake, energy dense snacking (Rodenburg, Kremers, Oenema, & van de Mheen, 2013; Sleddens et al., 2014). While the evidence is

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[1] From here on in the use of food to soothe, regulate, or calm a young child's distress will be referred to as *food to soothe*.

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mounting that FTS contributes to child eating and diet, the few studies that have examined FTS and child weight have produced mixed findings. Some studies found no association between FTS and child weight status (Baughcum et al., 2001; Carnell & Wardle, 2007; Rodenburg et al., 2013) while one showed a positive association (Stifter et al., 2011). Importantly, FTS has been found to be related to eating behaviors that have proven risks for obesity such as eating in the absence of hunger (Blisset, Haycraft, & Farrow, 2010).

Taken together, the evidence, though sparse, indicates that when parents use food to regulate their children's emotions, the risk for poor or unhealthy diet and eating styles is increased. There are several means by which this parental feeding practice may impact child eating outcomes. Since feeding in childhood is predominantly under the control of the parent, using food in circumstances unrelated to hunger and sustenance may lead to children's understanding that food has other 'reward-like' qualities. Likewise, using food to soothe infant or child distress may promote the association of food with emotional comfort, a characteristic of emotional eaters that is associated with obesity in older children and adults (Braet & Van Strien, 1997; Torres & Nowson, 2007). Consequently, children may learn to rely on such cues as the presence of food, or their own emotional distress, rather than relying on cues of hunger or satiety. This compromised ability to self-regulate their food intake may put them at risk for overweight. To date, the relationship between FTS and weight status remains unclear. The present study aims to increase our understanding of FTS by examining a number of factors related to this parent feeding practice as well as its effects on change in infant weight.

It is important to note that the majority of the studies examining FTS were cross-sectional and conducted on preschool and school-aged children. Since parent feeding practices are instituted much earlier in life and may change over the course of early childhood, longitudinal studies which examine parent use of FTS are needed. Similarly, most of the evidence has relied on parent report for both the parents' own feeding practices and their child's diet or eating style. It is well known that such reports may be biased, influenced by a number of factors including parent and child characteristics. In light of these limitations, a recent report from a working group on parental influences on childhood obesity strongly recommended longitudinal studies and the use of observational methods among other remedies to move the field forward (Baranowski et al., 2013; Hughes et al., 2013). Consistent with these recommendations, the current study examined FTS longitudinally across infancy and toddlerhood and utilized both a parent-report and an observational measure of FTS. This developmental period is a particularly important time to examine this feeding practice as parent-child interactions around feeding begin in the first days of life and are known to affect the child's future eating patterns and obesity risk (Farrow & Blisset, 2006; Savage, Fisher, & Birch, 2007). To our knowledge this is the first study to examine the use of food to soothe longitudinally as well as observationally.

A broader understanding of parent use of food to soothe is furthered by investigating the degree to which demographic and maternal factors contribute to this parent feeding practice. Past research has shown family income or SES to be related to FTS but with mixed results. Several studies have found low income mothers to use FTS (Baughcum et al., 2001; Saxon, Carnell, Van Jaarsveld, & Wardle, 2009) while one study found no relationship (Evans et al., 2011). This null finding is supported by studies using focus groups of both middle and low-income mothers which found both groups to endorse the use of food to soothe (Baughcum, Burklow, Deeks, Powers, & Whitaker, 1998; Sherry et al., 2004). Maternal weight has shown a positive relation with FTS as has maternal eating style with heavier mothers (Wardle et al., 2002) and those who report emotional eating (Snoek, Engels, Janssens, & Van Strien, 2007) to be more likely to use this feeding practice. Likewise, lower parenting self-efficacy has been linked to greater use of FTS in a cross-sectional sample in early childhood (Stifter et al., 2011). Finally, although not specific to FTS, early feeding decisions appear to be related to parenting feeding styles. Several studies have found breastfeeding to be negatively related to a controlling feeding style (e.g., pressuring, restrictive; Blissett & Farrow, 2007; Fisher, Birch, Smiciklas-Wright, & Piccano, 2000; Traveras et al., 2004) and positively related to a responsive feeding style (DiSantis, Hodges, & Fisher, 2013). Likewise, mothers who introduce solid food later reported a more responsive feeding style (DiSantis et al., 2013; Kronborg, Foverskov, & Væth, 2014) whereas mothers who reported more controlling feeding styles introduced solids to their infants earlier (Brown & Lee, 2013). We examined each of these factors in relation to self-report and observations of parent use of food to soothe in the present study.

In summary, the current study measured FTS two ways: through parent self-report and the observation of FTS in the laboratory. We examined these two measures longitudinally from 6 to 18 months of age to test its continuity and stability across early childhood. To increase our understanding of this parent feeding practice, we also examined demographic and maternal factors that may predict FTS. Finally, we investigated the relationship between FTS and weight change.

2. Methods

2.1. Participants

Infant-mother dyads ($N = 160$; 75 female infants) were recruited as part of a longitudinal study with data collection when the infants were within two weeks of 4, 6, 12, and 18 months of age. The dyads were recruited through birth announcements and a local community hospital in Central Pennsylvania. Criteria for inclusion in the study were mothers' full-term pregnancy, ability to read and speak English, and maternal age greater than 18 years. The families were primarily Caucasian ($n = 152$). Mothers averaged 29.66 years of age at the birth of their infant and had at least 2 years of education beyond high school. The majority of mothers were married ($n = 131$).

The present study includes data from laboratory visits when the infants were 6 ($n = 148$), 12 ($n = 136$), and 18 months ($n = 136$). Primary reasons for study attrition include family relocation and inability to contact families to schedule laboratory visits. There were no systematic differences between the participants who completed all three visits ($n = 135$) and those who dropped out of the study on the following variables: birth order, birthweight, infant weight at 6 months, maternal weight (BMI), and family income. Mothers who dropped out were slightly less educated ($p < .05$; $M = 13.85$ years) than those who remained in the study.

2.2. Procedures

This longitudinal study was designed to assess parent use of food to soothe infant distress. Families were initially seen at their homes when infants were 4 months of age. At 6 months, 12 months, and 18 months (infant age) mothers and infants participated in a number of tasks designed to elicit temperament which included arm restraint/toy removal to elicit anger reactivity, presentation of unusual masks to elicit wariness/fear, and a peek-a-boo game to elicit positive reactivity (Gagne, Van Hulle, Aksan, Essex, & Goldsmith, 2011; Stifter, Spinrad, & Braungart-Rieker, 1999). Parents completed a number of questionnaires at all ages including a measure of food to soothe, parent feeding behavior, and parent