

PREVENTION OF CHILDHOOD OBESITY:
THE PREDICTORS OF OBESITY-RELATED PARENTAL FEEDING PRACTICES

By

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Abstract

This paper aims to understand the factors predicting parental feeding practices linked to childhood obesity by reviewing existing literature. I will review evidence about how specific parenting styles, overall health literacy and nutrition literacy, may be related to the likelihood of engaging in obesity-related parental feeding practices. The depiction of parent-guided versus child-guided feeding practices will be uncovered, elaborating on the difference and effects of both styles. Specifically, parent-focused variables in health and nutrition literacy that are uncontrollable by children but have adverse effects have shown increased rates of childhood obesity. This paper aims to acquire a deeper understanding of the factors related to parental feeding practices that are associated with increased rates of childhood obesity. In turn, findings will provide recommendations about how to tailor interventions for parents who may be more likely to be engaging in poor feeding practices for their children. Previous literature concludes that authoritarian parenting has a positive correlation with predictors of parental feeding practices and early-onset childhood obesity. Correspondingly, the additional parent-focused variables, such as parental health literacy and nutrition literacy have positive correlations with early-onset childhood obesity. Thus, there is an association between childhood obesity, parental feeding practices, and lower levels of health and nutrition literacy.

Keywords: parental feeding practices, childhood obesity, children

Predictors of Obesity-Related Feeding Practices

Early childhood obesity is multifactorial, meaning that there are multiple contributing factors that can lead to childhood obesity. As understood, genetics are a contributing factor to a child's weight and health status (Littleton et al., 2020). However, researchers have focused their attention on the more externally controllable factors like parental feeding practices or styles of parenting. Obesity is defined as a body mass index (BMI) at or above the 95th percentile of the Centers for Disease Control and Prevention (CDC) sex-specific BMI-for-age growth charts. According to the CDC, the prevalence of childhood obesity was 19.3% and affected over 14 million American children and adolescents. Recorded obesity rates tallied as high as 13.4% among children ages two to five years old. These obesity rates continued to increase with age. Approximately one out of every five (20.3%) adolescents ages six to 11 experience obesity. Obesity prevalence in 2017-2018 was additionally associated with ethnicity. The rate of childhood obesity reported roughly 25.6% among Hispanic children, 24.2% among Black children, 16.1% among White children, and 8.7% among Asian children (*Childhood Obesity Facts: Prevalence of Childhood Obesity in the United States, 2022*).

Previous research indicates that parental styles like authoritarian parenting- ones that display complete control from the parent, have implications for early childhood obesity. For instance, past studies have shown that parental pressure to eat and restriction of what children eat showed associations with elevated child weight status (Boots, 2015; Yuvaz, 2018). The correlation between parent feeding practices involving both restriction and pressure to eat is shown consistently throughout previous literature. Why parents implement these practices is unclear, but interventions are imperative for change. After analysis, multiple articles have associated parent-guided feeding practices with obesity (Lopez, 2018; Russell, 2018; Yuvaz,

2018). Significant variables examined include: authoritarian parenting style, as strict enforcement of parental rules with little promotion of child autonomy (Lopez et al., 2018); restriction, which represents parental constraint of a child's access to or intake of certain foods (Boots et al., 2015); and pressure to eat, which involves behaviors that force children to eat certain foods and finish all of the food on their plate (Yuvaz et al., 2018). There have been negative associations between authoritative parenting style, pressuring, and monitoring (Yavuz & Seluk, 2017; Russell et al., 2018). Other literature suggests additional factors, such as health and nutrition literacy, are significant contributors to early childhood obesity. These effects can be SES-based, such as health literacy and education related to nutrition (Speirs et al., 2012).

The current review of previous literature will cover the factors predicting parental guided feeding practices and additional parent-focused variables directly linked to childhood obesity. It will specifically review evidence about how parental feeding practices, parenting styles, overall health literacy, and a general understanding of nutrition may be related to the likelihood of engaging in obesity-related parental feeding practices. This paper intends to develop further understanding of the potential contributors related to parental feeding practices that are associated with increased rates of childhood obesity. Further, interventions will provide parents with proper methodology on refraining from engagement with poor feeding practices for their children.

In support of the research topic, a further discussion will cover multiple parent-guided feeding practices: controlling feeding practices, restriction, pressure, and authoritarian parenting. Additional analysis on child-guided feeding practices, such as authoritative parenting will provide insight towards intervention. Additional parent-focused variables, such as parent health and nutrition literacy, and early health concerns for young children will be discussed in further

detail in relation to childhood obesity. The different depictions of how these variables affect children's overall nutrition through detailed discussion will provide important information on how to prevent childhood obesity.

Childhood Obesity and Controlling Feeding Practices

Childhood obesity is an ongoing issue that continues to strike globally, especially in the United States. Childhood obesity has negative health effects for adolescents, putting them at risk for chronic health complications. According to the CDC, in the United States alone, upwards of 20% of children and adolescents are obese. Childhood obesity is defined in a few different ways, all having the same general concept and prevalence of the issue at hand. The World Health Organization (WHO) defines obesity as BMI more than three standard deviations above the WHO growth standard median. The *WHO Growth Charts* are standards that determine how a child's growth should progress if they are within optimal living conditions. Similarly, The CDC considers a child obese when their BMI falls within the 95th percentile. Previous research implies that parental feeding style is a predictor of early-onset obesity.

Feeding and parenting are inevitably linked to one another. Parents have the option to implement certain styles of feeding for their children from birth. Parental feeding practices are food or eating-specific behaviors or strategies that parents use to influence what, when, and how much their children eat. Some types of feeding are more parent-guided than others. For example, controlling feeding practices are parent-guided tactics for introducing food and nutritional habits to their children by controlling what they eat daily (Russel et al., 2018). Previous research mentioned, "The complex bidirectional interactions between parent feeding practices and child eating behavior shape the early feeding environment, which interacts with genetic predispositions to lay the foundation for life-long eating habits and health outcomes" (Daniels,

2019). In research collected by Russell and colleagues (2018), with correspondence to healthy feeding and growth was analyzed based on which parental feeding practices were used.

Researchers used a subset of metrics, such as restriction (8 items), pressure to eat (4 items), and monitoring (3 items), from the Comprehensive Feeding Questionnaire. All of the collected data were evaluated on 5-point Likert scale ranging from 1 (disagree/never) to 5 (agree/always).

Results implied associations between parent-guided feeding practices and increased rates of childhood obesity, lack of nutritional understanding, and overall poorer diet and eating habits.

After review of this study, parents' influence on what, when, and how much their children eat plays an essential role in the development of the eating behaviors and subsequent weight status of children (Russell et al., 2018). Restriction, pressure to eat, and monitoring are the three most widely studied parental guided child-feeding practices linked to a child's eating styles and weight status (Yavuz et al., 2018). In general, parents who implement healthy, child-led feeding practices like modeling or providing a healthy food environment, teach children self-regulation and encourage an overall healthy diet. More controlling feeding styles, pressure to eat, and restriction, have been directly associated with poorer appetite regulation, weight status, food preferences, and food intake in young children (Russell et al., 2018). Pressure to eat includes behaviors that force children to eat certain foods and finish all of the food presented to them. For example, commonly used phrases like, "If you do not finish your vegetables, you cannot have dessert," fall into the category of a pressure to eat, parent-led feeding practices. Previous research indicates that children pressured to eat healthy foods during their youth are reluctant to consume fruits and vegetables later in life. These children gravitate more towards unhealthy snack options and were significantly less likely to try new foods or food groups (Yuvaz et al., 2018). Pressure to eat may lead to many complications with a child's relationship with food,

ability to self-regulate or monitor hunger, and decisions based on daily diet. Parent-guided feeding practices are indicative of developing obese or overweight (OB/OW) problems in preschool years (Yuvaz et al., 2018).

Restriction

‘Restriction’ represents parental constraint of a child's access to or intake of certain foods. Restrictive strategies include encouraging their children to eat more of some foods and less of others, and keeping a detailed track of what their child eats (Boots et al., 2015).

Restricting a child's variety in the food groups or type of food they consume to monitor their intake correlates to decreases in a child's self-control over their eating behavior. According to Melis Yuvaz and colleagues (2018), parental restrictions on eating were significantly associated with children in the OB/OW group. Correspondingly, evidence suggests that restrictive feeding practices predict greater consumption of unhealthy snacks (e.g., chips or candy) and lower consumption of healthy snacks (e.g., fruit). Children seem to consume more unhealthy snacks, such as artificially flavored chips or sweets rather than fruit when parents use more restrictive feeding practices (Boots et al., 2015). Due to the lack of control that parent-guided feeding practices teach, children become ‘rebellious’ towards commonly healthy eating tactics and habits, like consuming fruits and vegetables daily (Boots et al., 2015). While the concept behind restricting a child from eating certain foods and prioritizing healthy foods seems good in practice, this style of parenting revolving around food has more adverse effects and could lead to increases in childhood obesity.

Authoritarian and Authoritative Feeding Practices

Lopez and colleagues (2018) define the authoritarian parenting style as strict enforcement of parental rules with little promotion of child autonomy. Authoritarianism, displayed in

parenting is the enforcement of strict obedience at the direct cost of independence. This is another example of a parent-guided feeding practice, placing children within a rigorous environment focused on their eating. Lopez and colleagues investigated the relationship between authoritarian vs authoritative parenting styles and child eating outcomes. Parents completed a parenting style questionnaire and a recall task listing all of the foods that their children had eaten in the previous 24 hours. Researchers assessed children's eating outcomes by measuring BMI, diet quality, healthy eating habits (e.g., fruit and vegetable intake, added sugar intake), and proper daily food consumption (e.g., caloric intake). Results indicated that children of authoritarian versus authoritative parents- those who lead with structure but allow children to express individual needs, had higher BMIs, lower quality diets, and more improper food consumption. These findings imply that more parent-guided feeding is associated with worse eating outcomes for children. Young boys raised by authoritarian mothers were less likely to consume adequate amounts of fruits and vegetables at two years of age compared to children in households oriented around authoritative parenting. Fitly, authoritarian parents implement demands for their children to consume specific food or food groups without explanation. Authoritarian feeding does not allow the child to understand the benefits or nutrients within the food they consume. Failure to explain why a child needs to eat specific food groups or nutrients does not provide a child with explicit understanding of household food rules and can lead to poorer diet quality (van der Horst & Sleddens, 2017; Lopez et al., 2018).

Melis Yuvaz and colleagues (2018) hypothesized that mothers who demonstrated more authoritarian feeding qualities would be more likely to have OB/OW children. Additionally, authoritative mothers, who demonstrate open communication and flexibility, would be more likely to have normal weight (NW) children. After the assessment of child's BMI and obesity

status, the mothers of these children took part in three questionnaires: Child Feeding Questionnaire (Birch et al., 2001), Parenting Styles and Dimensions Questionnaire (Robinson, Mandleco, Olsen, & Hart, 1995), and Child Behavior Questionnaire (Putnam & Rothbart, 2006). Findings showed that two parent-guided feeding styles had significant impacts on a child's weight status. Those two feeding styles were authoritarian parenting and pressure to eat. The odds of being OB/OW elevated by over four times for children whose mothers demonstrated a higher authoritarian parenting style. Mothers of OB/OW children reported significantly higher levels of authoritarian parenting than mothers of NW children (Yuvaz et al., 2018). Parents' authoritarian feeding practices directly correlated with the most significant risk factor for OB/OW problems faced by adolescents and mothers who self-reported demonstrating higher levels of authoritarian parenting were more likely to have OB/OW children. Relevantly, those who had higher BMIs themselves were also more likely to have OB/OW children. Results of this study imply that parent-guided child feeding practices are essential in developing OB/OW problems in preschool years; yet, authoritarian parenting, a style that resembled a dictatorship, also appeared as another critical risk factor over and above specific child-feeding behaviors (Yuvaz et al., 2018).

For parents, there are many effective ways to implement household nutritional practices that can positively impact their child's weight status. These can be as simple as promoting a healthy lifestyle centered around food choices or having proper servings of each macronutrient at every meal. Another way parents can positively affect their child in regards to nutrition and weight is by shifting their parenting towards authoritative and away from authoritarian exercise. Authoritative parenting is defined as a parenting practice that controls their child's behaviors and displays high warmth and responsiveness (Yuvaz et al., 2018). Higuera (2019) explains that

authoritative parents are “flexible and welcome open communication, but discipline is not put on the backburner.” The authoritative parenting style is characterized as a structure with harmony between guidance by the parent that incorporates the child's desires (Lopez et al., 2018).

Authoritative parents set clear and explicit guidelines and equally explicit expectations. Children in authoritative households listen to house rules and behave concerning their parents' rules.

These rules, implemented by authoritative parents, are not extraordinarily unreasonable or strict but reign effectively for the household (Higuera, 2019). Previous research has found negative correlations between authoritative parenting and percentages of obese or overweight status.

Shifting the parenting style towards a more child-guided tactic for food allows a child to develop a more in-depth understanding of nutrition and, subsequently, healthier nutritional habits.

In a study constructed to assess anxieties in young adolescents and determine the influence of parenting on the development of further psychological issues, the results suggested that the combination of high expectations and high responsiveness, referred to as authoritative parenting, provides a better environment for a child to grow, learn and develop (Maccoby & Martin, 1983). Following a more authoritative parenting style allows children to determine when they want to eat versus being pressured to eat as it incorporates a child's individual desires (Lopez et al., 2018). Lopez and colleagues (2018) determined authoritative parenting in practice was positively associated with mealtime structural practices and parent modeling of healthy foods. Understanding the importance of mealtime structure is imperative, especially during the critical developmental years for children. The increased responsiveness demonstrated in authoritative parenting and child-guided feeding practices is linked to healthier weight and dietary outcomes in children. Authoritative parenting encourages child led feeding practices. In turn, have shown associations to increased fruit and vegetable consumption. Among adolescents,

those who reported having authoritative parents are significantly more willing to eat fruit than those who reported that their parents had one of the other parent-guided feeding styles previously discussed (Lopez et al., 2018). These findings are consistent with past research on child development showing that authoritative parenting styles are the ‘best’ approach to parenting. Research has repeatedly demonstrated that young children raised by authoritative parents tend to report high levels of happiness, feel more capable, and become more successful (Cherry, 2022). Considering that authoritative parenting is most often promoted as the ideal parenting style, this may ultimately help determine which parenting practices are the most effective for parents regarding food to prevent early-onset childhood obesity (Lopez et al., 2018). Having a healthy balance between regulation and freedom for a child to develop their nutritional habits allows them to understand the importance of nutrition; this can be an effective way to prevent a child from spiraling into the OB/OW statistical groups.

Food-related parenting practices are goal-oriented behavioral strategies that parents employ during meal or snack time (Lopez et al., 2018). The balance between guidance by the parent and incorporating the child's desires promotes sound, healthier choices regarding food and nutrition. Having this balance enhances a child's ability to regulate their food intake, develop positively impactful decisions in their diet, and form structure around their meals and mealtimes. Alteration in parenting perspective, allowing the child to have reasonable control, can indicate whether or not a child becomes OB/OW.

Impact of Health Literacy and Nutrition Literacy on Children

Health literacy and nutrition literacy are two vital components to consider regarding health care provisions for young children. The prevalence begins by establishing healthy eating behaviors for children (Costarelli et al., 2021). According to the CDC, health literacy is the

degree to which an individual can find, understand, and utilize their knowledge of nutrition to form health-related decisions for themselves and others. From this definition, we can infer that the lack of parental health literacy can negatively affect a child's direct care. Additionally, nutrition or food literacy is referred to as the ability to go beyond a general understanding of food or how it is cultivated or processed but understand its impact on one's health and act upon this nutritional information (*What is Health Literacy*, 2022). Children emulate parents' actions regarding making important decisions concerning diet (Scaglioni et al., 2018) and establishing a healthy home environment (Lindsay et al., 2018).

In a cross-sectional study designed to discover further the role of nutrition literacy (NL) and health literacy (HL) levels of Greek parents on parental feeding practices. Parental NL and HL indicate a child's overall health and diet quality. Researchers utilized The European Health Literacy Questionnaire to gather the HL levels from eight European countries, with Greece included. Results determined that higher parental levels of HL and NL are positively associated with healthy parental feeding practices in Greece (Costarelli et al., 2021). Findings imply that increased levels of Parental HL are associated with healthier monitoring, guidance, and customary practices for children. Additionally, parent feeding practices utilized by parents with increased HL have implied significant increases in child control regarding their diet. Parental increased levels of HL translates to shared knowledge for their children and allows children to develop a greater understanding of nutrition, the food they are consuming, and the direct health impacts surrounding their diet.

Improvements in health and nutrition literacy can be achieved in several different ways. Parents can lead discussions around healthy eating habits and decision-making regarding food or become role models for their children regarding overall nutrition (Costarelli et al., 2021).

Overall, health and nutrition literacy are pivotal for good health and well-being for both children and adults alike. According to The National Assessment of Adult Literacy (NAAL), it is reported that 36% of adults have basic or below basic HL skills. Health literacy skills were assessed using the Newest Vital Signs and a six-point questionnaire regarding an common ice cream nutrition label. The presented questions that determined HL skills included: “If you eat the entire container, how many calories will you eat?” “If you were told to eat 60 grams of carbohydrates as a snack, how much ice cream could you have?” and “Pretend you are allergic to the following: peanuts, latex gloves, and bee stings. Is it safe for you to eat this ice cream?” (Speirs et al., 2012). As defined, HL involves finding, understanding, and utilizing their knowledge of nutrition to form health-related decisions. Obtaining the corresponding nutritional information challenges adults' ability to read and understand text, locate information, and apply basic numerical and arithmetic skills to develop health-related decisions. These reduced levels of HL are more prevalent in lower-income individuals and households. Individuals with lower levels of HL may struggle to fulfill nutrition-related tasks such as structured dieting, reading and understanding nutrition labels, and even decision making while grocery shopping (Speirs et al., 2012).

Children learn how to perform everyday tasks from their parents or guardians. The inability of parents to perform these tasks directly relates to their children's inability to perform these tasks. This inability has great potential to further create a negative model that children follow and the environment in which they live. From birth, children's diet and nutrition regimen are solely dependent on the actions and knowledge of the parent. With reduced levels of health and nutrition literacy, children are more likely to develop negative eating habits and nutritionally unsubstantial diet practices. Children become hindered, never fully understanding food and nutrition concerning their overall health. Katherine Spiers and colleagues (2012) determined that

out of 154 adults, only 37% of the sample had adequate HL, a proportion similar to that found in other low-income samples. These findings are also similar to the 36% average reported by the NAAL for basic to below-basic HL skills. However, despite these findings, increased HL did not fully correlate with healthy eating habits for parents and their children. The notion of elaborating on the significance of increased levels of HL in parents further exemplifies that HL is not the sole determining factor of healthy eating practices implemented in the household. Rather, results gathered from a cross-sectional design demonstrated that children of parents with higher levels of HL consume more healthful diets and further suggests that levels of HL and the parenting feeding practice utilized must align (Lopez et al., 2018; Speirs et al., 2012).

Corresponding research has provided data regarding the use of bottle feeding versus breastfeeding. Breastfeeding is a much healthier and natural option for infants to consume during their earliest years. However, the convenience of bottle feeding with store-bought formulas is a commonly used feeding practice. Regarding health and nutrition literacy, the inability to determine which formula to use begins the downward spiral of negative nutrition habits. Consistent with previous research, bottle formula feeding is used at higher rates by parents with lower HL. Previous research has indicated that the introduction of sweet drinks (such as store-bought formulas) and the early introduction of solids have been strongly connected with the development of early-onset childhood obesity (Yin et al., 2014). Findings from Yin and researchers alike have shown positive correlations between lower levels of HL and increased rates of childhood obesity.

Parenting Interventions and Future Research

Based on the reviewed research, there are a few different ways in which parents can reduce the likelihood of early-onset childhood obesity. Researchers are actively trying to

determine the proper parenting feeding practice that is best suited for a given household and how that feeding practice correlates to nutrition and diet. If possible, parents should implement a more child-guided feeding practice in the home, primarily when centered around nutrition. Utilizing an authoritative parenting style, rather than an authoritarian parenting style, creates an atmosphere for the child to delegate based on individual needs and desires. Promoting a healthy lifestyle revolving around food choices, by teaching their children more about effectively eating a balanced diet, importance of nutrient dense foods, and proper serving size are effective ways to parent regarding nutritional practice. Concerning obesity, previous research has found significant positive correlations between authoritative parenting and lower percentages of obese or overweight status. Shifting the parenting style towards a more child-guided tactic for food, an authoritative parenting style, allows a child to develop a more in-depth understanding of nutrition and, subsequently, healthier nutritional habits. In a study conducted by Ana Isabel Gomes and colleagues (2021), web-based parenting interventions were developed to promote healthy eating patterns for children and further enhance parents' engagement and facilitate behavior change. In this study, parental feeding practices were examined as predictors of children's BMI and self-reported behavior change techniques (BCT) were analyzed in relation to child BMI after the BCT were implemented. Meta-analysis of eleven studies, describing eight programs consisted of authoritarian styles such as restriction, pressure and monitoring; authoritative styles such as meal and snack routines, food preparation and encouraging healthy eating; other variables such as food to control emotions, food accessibility/availability. Results from this study determined that pressure and restriction, two authoritarian feeding practices, showed clear associations with childhood obesity and unhealthy eating behaviors. Additionally, authoritative feeding practices promote children's self-regulation, influence more healthy eating habits and create a positive

environment for children regarding food (Gomes et al., 2021) Interventions for parent-guided feeding practices will not entirely stop childhood obesity but can help decrease its prevalence worldwide. The results from previous research imply that parents who partake in more authoritative practice provide a sounder and more positive environment for their child surrounding food. Correspondingly, parents who implement authoritarian practices have a negative impact on their child's weight status, relationship with food and overall eating habits. It can be inferred that if parents use authoritative parenting methods, like child-guided feeding practices, their child's development within food and nutrition will flourish. Allowing the child to have reasonable control of food and nutritional habits, can indicate whether or not a child becomes obese. Additionally, parents can strive to improve their overall HL and NL. Through self-educating or consulting health practitioners, parents can develop a more in depth understanding of food, nutrition, and the potential health risks to implement change in the home. Practitioners, such as primary care pediatricians or dietitians, working with parents should consider that they may struggle to understand and utilize nutrition labels and provide instructions on how to use the nutrition facts label and make recommendations about the number of calories and macronutrients (fat, protein, and carbohydrates) themselves and their children should consume each day. These recommendations can help parents further understand how to nourish their children properly. Specifically, catered strategies focused to increase parental HL and NL levels can lead to more effective parent feeding practices. Developing these strategies and policies and then implementing them in the household can facilitate a more substantial effort to improve a children's understanding of nutrition, improve diet, and improve their relationships with food. Improvements made in these regards can directly combat childhood obesity and, in turn, lower the percentage of young adolescents who struggle with being overweight or obese.

Future research should continue to explore interventions for parents to combat and reduce childhood obesity. Additional studies conducted on how child-guided feeding practices centered around nutrition are beneficial for both parent and child can continue to develop theories to reduce childhood obesity worldwide. The implementation of authoritative parenting that provides a flexible and structured home food environment, where children can be heavily involved in development of their healthy eating behaviors, is associated with decreases in childhood obesity. Researchers should continue to investigate child autonomy in relation to feeding practices as an outcome for intervention. Further studies regarding the importance of nutrition and health literacy are essential to developing further interventions for parents and how to implement knowledge-based feeding practices in the household. Extensive research done in the future leads to ongoing results and ways to hopefully end early childhood obesity.

Discussion

Childhood obesity is a chronic disease with multiple contributing factors that all carry significance. There is a direct association between child feeding and parenting styles that lead to early on-set childhood obesity. During the most important times of a child's life, parents choose how they want to implement their feeding practices for the child. From what children can and cannot eat, to when they eat, these decisions have lasting impacts on appetite regulation, weight status, food preferences, and food intake. This theoretical research review sought to investigate the relationships between factors predicting parental feeding practices that have been linked to childhood obesity. The main objective was to acquire a heightened understanding of the factors related to parental feeding practices that are associated with increased rates of childhood obesity so that further recommendations and interventions can be given to parents. Specifically, evidence about how specific parenting styles, overall health literacy, and understanding of nutrition may

be related to the likelihood of engaging in obesity-related parental feeding practices. The depiction between parent-guided versus child-guided feeding practices was covered, elaborating on the differences in both styles and their effects on children regarding nutrition, health, weight status, and obesity. Additionally, parent-focused variables, as in health and nutrition literacy, were discussed with correspondence to early-onset childhood obesity. The findings from all facets of previous studies show that parent-guided feeding styles and level of parental health and nutrition literacy have significant correlations to early-onset childhood obesity. These findings provide tailored interventions, through BCT and self-education practices regarding HL and NL, for parents who may be more likely to be engaging in poor feeding practices for their children.

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