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# Retrospective reports of parental feeding practices and emotional eating in adulthood: The role of food preoccupation

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ABSTRACT

The current study examined the role of food preoccupation as a potential mediator of the associations between parental feeding behaviors during childhood (i.e., restriction for weight, restriction for health, emotion regulation) and emotional eating in adulthood. Participants ($N = 97$, $M_{age} = 20.3$ years) recalled their parents' feeding behaviors during early and middle childhood and reported on current experiences of food preoccupation and emotional eating. Findings revealed that recalled parental feeding behaviors (restriction for weight, restriction for health, emotion regulation) and food preoccupation were positively associated with later emotional eating (correlations ranged from 0.21 to 0.55). In addition, recalled restriction for weight and emotion regulation feeding were positively associated with food preoccupation, $r = 0.23$ and 0.38, respectively. Further, food preoccupation mediated the association between emotion regulation feeding and later emotional eating ($CI_{95\%} = 0.10$ to 0.44). These findings indicate that parental feeding practices in childhood are related to food preoccupation, and that food preoccupation mediates the association between emotion regulation feeding in childhood and emotional eating in adulthood.



Decisions to eat are not always based on internal cues of hunger or satiety (Salvy, Jarrin, Paluch, Irfan, & Pliner, 2007; Schachter, 1968). Rather, individuals often eat in response to their emotional states (Telch & Agras, 1996; Van Strien, Frijters, Bergers, & Defares, 1986). Emotional eating is associated with higher caloric intake and weight status (Geliebter & Aversa, 2003; Lowe & Fisher, 1983; Macht, 2008). In addition, individuals who engage in emotional eating are at higher risk for disordered eating, such as binge eating and bulimia (Allen, Byrne, La Puma, McLean, & Davis, 2008; Stice, Presnell, & Spangler, 2002; Waller & Osman, 1998; Wardle, 1987). Recent work has shown that early experiences of parental feeding behaviors are associated with adults' emotional eating (Galloway, Farrow, & Martz, 2010), yet little is known about the mechanisms underlying these relationships. Two theoretical models (i.e., the dietary restraint model and the affective state model) can be used to understand the development of emotional eating. Utilizing these two models, the current study examined associations between retrospective reports of parental feeding behaviors and emotional eating in adulthood, as well as the potential mediating role of food preoccupation in explaining these relationships.

## 1. Parental feeding practices and child outcomes

Research suggests that eating behaviors developed in childhood can persist into adulthood (Ashcroft, Semmler, Carnell, Van Jaarsveld, & Wardle, 2008; Kotler, Cohen, Davies, Pine, & Walsh, 2001). Therefore, examining experiences with food in early childhood is crucial for understanding maladaptive eating behaviors in adulthood. Parents play a primary role in children's socialization and eating experiences are no exception (Savage, Fisher, & Birch, 2007). Thus, a wide array of studies have shed light on the role of parental feeding behaviors in relation to children's eating behaviors (Birch et al., 2001; Faith, Scanlon, Birch, Francis, & Sherry, 2004; Musher-Eizenman & Holub, 2007; Wardle, Sanderson, Guthrie, Rapoport, & Plomin, 2002). This research highlights the importance of parents' use of food *restriction* and feeding as a form of *emotion regulation* in the development of eating behaviors in childhood.

### 1.1. Restriction

Parental feeding practices intended to discourage children's food consumption are associated with children's eating and weight

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outcomes (Birch et al., 2001; Musher-Eizenman & Holub, 2007). For example, both longitudinal and experimental studies have shown that parental restriction of a child's access to food for weight reasons can lead to weight gain and obesity-promoting eating behaviors (e.g., emotional eating) in childhood (Costanzo & Woody, 1985; Faith et al., 2004; Fisher & Birch, 1999b; Francis & Birch, 2005; Rodgers et al., 2013; Ventura & Birch, 2008; Webber, Cooke, Hill, & Wardle, 2010). Parents' restrictive feeding behaviors are also related to more emotional eating among children (Kröller, Jahnke, & Warschburger, 2013; Rodgers et al., 2013). Furthermore, adults who engage in emotional eating recall more experiences of food restriction by their parents during childhood (Batsell, Brown, Ansfield, & Paschall, 2002; Galloway et al., 2010; Lev-Ari & Zohar, 2013; Wadhera, Phillips, Wilkie, & Boggess, 2015). Taken together, this research indicates that parental restriction of foods for weight reasons is associated with negative eating and weight outcomes in childhood and later in life. However, some work suggests that parents' motivations underlying restrictive behaviors may play a role in determining child outcomes. For instance, some research indicates that restriction of foods for health reasons is not related to negative eating or weight outcomes (Musher-Eizenman & Holub, 2007; Tan & Holub, 2012). Less is known about whether differences in parents' motivation underlying restriction matter in predicting emotional eating in adulthood, as research has yet to examine how restriction for weight and health relate to later emotional eating. Further, research has yet to examine potential mechanisms that could explain links between experiences of restrictive feeding practices in childhood and emotional eating later in adulthood.

### 1.2. Emotion regulation

In addition to restrictive feeding practices, another feeding practice some parents engage in is using food to soothe children's emotionality (Musher-Eizenman & Holub, 2007). Experimental and correlational findings demonstrate an association between emotion regulation feeding and emotional eating among children (Blissett, Haycraft, & Farrow, 2010; Braden et al., 2014; Farrow, Haycraft, & Blissett, 2015; Tan & Holub, 2015; Topham et al., 2011). However, research has yet to examine the associations between early experiences of emotion regulation feeding during childhood and emotional eating in adulthood. Further, research has yet to examine mechanisms that might be useful in explaining links between parents' emotion regulation feeding practices and emotional eating behaviors in adulthood.

## 2. The mediating role of food preoccupation

Intense desire or longing for foods, known as *food preoccupation*, is associated with obesity-promoting eating behaviors (e.g., emotional eating) and higher weight status in adulthood (Burton, Smit, & Lightowler, 2007; Greeno, Wing, & Shiffman, 2000; Jarosz, Dobal, Wilson, & Schram, 2007; Weingarten & Elston, 1990). Two theoretical models have been used to explain individuals' food preoccupation—the *dietary restraint model* and the *affective state model*. According to the dietary restraint model, individuals experience food preoccupation when they engage in dieting behaviors or have limited access to restricted foods. Studies on dietary restriction in childhood and adulthood provide evidence for this theory (Birch, Fisher, & Davison., 2003; Carper, Fisher, & Birch., 2000; Fisher & Birch, 1999a; Hooper, Sandoz, Ashton, Clarke, & McHugh, 2012). For instance, when asked to suppress their urges toward foods, adults report more desires for foods and consume more foods than adults who are allowed to yield to their urges (Hooper et al., 2012). This research indicates that restriction encourages food preoccupation by treating foods as "forbidden fruit". Based on this theory, it is plausible that parental restriction of foods during childhood may relate to food preoccupation in adulthood, as desires for foods due to parental restriction may persist into adulthood. Individuals who have a tendency to long for foods may also be more likely to eat foods as a means of soothing their emotionality. The constant experience of longing for foods may be too cognitively overwhelming to ignore when faced with additional cognitive demands, such as emotional arousal. Thus, when individuals who are preoccupied with foods experience emotional stress, they may be more likely to use foods to cope with their emotionality. Indeed, research shows that individuals who are preoccupied with foods tend to engage in emotional eating (e.g., Tapper, Pothos & Lawrence, 2010). Based on this theory and findings related to emotional eating, it seems likely that food restriction experienced during childhood would relate to food preoccupation during adulthood, which may then relate to more emotional eating in adulthood. However, this possibility has yet to be examined.

In contrast to the dietary restraint model, the affective state model posits that negative mood and affect play a role in triggering food preoccupation (Hill, Weaver, & Blundell, 1991). Specifically, the model suggests that individuals experience desires for foods, and eat more foods, in response to emotionality as a replacement for more adaptive coping strategies (Whiteside, Chen, Neighbors, Hunter, & Lo, 2007). In support of this theory, experimental research has found that individuals asked to engage in adaptive coping strategies in response to negative emotional arousal (i.e., cognitive reappraisal) report less food preoccupation (Giuliani, Calcott, & Berkman, 2013) and less emotional eating than individuals asked to utilize a maladaptive coping technique (i.e., suppression) in the presence of food (Evers, Stok, & de Ridder, 2010). These findings suggest that individuals who do not engage in adaptive coping strategies may overeat in response to emotional arousal. Indeed, research suggests that individuals with less adaptive coping engage in more emotional eating (Spoor, Bekker, Van Strien, & van Heck, 2007). It is possible that individuals who experience parental feeding as a form of emotion regulation may learn to attend to external food cues early in childhood. This early experience may lead to increased food preoccupation in adulthood, particularly when individuals experience stress or intense emotional arousal. Further, intense desires for foods may lead to more engagement in emotional eating in adulthood as an attempt to alleviate stress or emotionality (e.g., Dubé, LeBel, & Lu, 2005). Both the restraint and affective state models have been shown to be useful in explaining the development of food preoccupation and may provide insights into the importance of food preoccupation in explaining the links between parental feeding practices and emotional eating in adulthood (Hill et al., 1991; Hooper et al., 2012). Therefore, this study will be the first to examine the validity of these two models in explaining links between these constructs.

## 3. The current study

This study examined whether the associations between perceived parental feeding behaviors and emotional eating are mediated by food preoccupation. Based on the restraint model, we hypothesized that individuals who experienced restriction during childhood would experience greater food preoccupation, which, in turn, would relate to more emotional eating in adulthood. Based on the affective state model, we hypothesized that individuals who experienced emotion regulation feeding during childhood would experience greater food preoccupation, which, in turn, would relate to more emotional eating in adulthood. In other words, we expected that food preoccupation would mediate the associations between each of the three parental feeding behaviors and later

emotional eating.

## 4. Method

### 4.1. Participants and procedure

A total of 97 participants (60% female) attending a public university in the Midwest region of the U.S. were recruited with an online system through the university. A majority of participants were Caucasian (83%; 5.2% African American, 5.2% Asian, 1% Hispanic, 6.2% Other). The mean age of participants was 20.3 years ($SD = 1.75$). Participants reported on their own height and weight, which were converted to body mass index (BMI; kg/m$^2$). The mean BMI of participants was 24.4 ($SD = 4.2$). Upon arrival, participants provided informed consent and completed an online survey on lab computers. The survey consisted of measures of recalled parental feeding behaviors during childhood, as well as current experiences of food preoccupation and emotional eating. Participants received research credits for Psychology courses for taking part in the study. The study was approved by the university's Institutional Review Board.

### 4.2. Measures

#### 4.2.1. Food preoccupation

Food preoccupation was assessed with the *thoughts or preoccupation with food* subscale of the Trait Food Cravings Questionnaire (Cepeda-Benito, Gleaves, Williams, & Erath, 2001), which has been shown to be reliable and valid (Vander Wal, Johnston, & Dhurandhar, 2007). This subscale consists of 7 items measuring levels of food preoccupation (e.g., "I feel like I have food on my mind all the time"). Participants rated their agreement with each item on a Likert scale from 1 (*Disagree*) to 5 (*Agree*). Items were averaged to form an overall measure of food preoccupation, with higher scores reflecting higher levels of food preoccupation. For this study, the reliability of the scale was satisfactory ($\alpha = 0.90$).

#### 4.2.2. Emotional eating

The *emotional eating* subscale of the Dutch Eating Behaviors Questionnaire was used to assess participants' current emotional eating behaviors (13 items; Van Strien et al., 1986). This measure has been shown to be reliable and valid (Tan & Holub, 2015; Wardle, 1987). An example item is, "Do you have a desire to eat when you are emotionally upset?" Participants responded to items on a five-point Likert scale ranging from 1 (*Never*) to 5 (*Very often*). Items were averaged to form an overall emotional eating score, with higher scores reflecting more emotional eating. For this study, the reliability of the scale was satisfactory ($\alpha = 0.84$).

#### 4.2.3. Parental feeding practices

A modified Comprehensive Feeding Practices Questionnaire was used to measure retrospective perceptions of parental feeding behaviors (Musher-Eizenman & Holub, 2007). Before completing the questionnaire, participants were instructed to reflect on their recollections of their parents' feeding practices when they were between 5 and 10 years old. Participants then responded to items on the restrictive and emotion regulation feeding practices that their parents engaged in during their childhood. The questionnaire consists of three subscales, including *restriction for weight* (8 items), *restriction for health* (4 items), and *emotion regulation* (3 items). An example item on restriction for weight is, "My parent restricted the food I ate that might have made me fat." An example item on restriction for health is, "My parent believed if s/he did not guide or regulate my eating, I would eat too many junk foods." An example item on emotion regulation is, "Did your parent give you something to eat or drink if you were upset even if s/he thought you were not hungry?" For the restriction for weight and health subscales, participants responded on a five-point Likert scale ranging from 1 (*Disagree*) to 5 (*Agree*). For the emotion regulation subscale, participants responded on a five-point Likert scale ranging from 1 (*Never*) to 5 (*Always*). Items in each subscale were averaged to form composite scores for each of the three feeding practices, with higher scores reflecting more perceived parental use of the feeding practices. For this study, the restriction for weight, restriction for health, and emotion regulation subscales had satisfactory reliability, with Cronbach's $\alpha = 0.88$, 0.86, and 0.80, respectively.

### 4.3. Data analytic plan

Descriptive statistics were generated for demographic and key study variables. To account for possible covariates, correlation analyses (for age and BMI) and an independent samples *t*-test (for gender) were conducted. Demographic variables that were associated with key study variables would be included as covariates in the primary analyses. Correlation analyses were also conducted to examine whether perceived parental feeding behaviors were associated with emotional eating and food preoccupation at the bivariate level. A path analysis was then conducted using AMOS 17.0 to examine whether food preoccupation mediated the links between perceived parental feeding behaviors (restriction for weight, restriction for health, and emotion regulation feeding) and emotional eating (Arbuckle, 2006). This path analysis allowed the examination of the associations among variables of interest while taking into account other associations in the model. The $\chi^2$ test, Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), and Root Mean Square Error of Approximation (RMSEA) were used to assess how well the model described the data. The $\chi^2$ test indicates how well the model "fits" the data, with nonsignificant $\chi^2$ values indicating a small discrepancy between structure of the observed data and the hypothesized model. For the CFI and TLI indexes, a value greater than 0.90 indicates a good model fit. For the RMSEA, a value less than 0.05 indicates a good model fit.

## 5. Results

### 5.1. Preliminary analyses

Table 1 displays the means, standard deviations, and correlations among demographic and key study variables. With regard to demographic variables, findings revealed that participant age was negatively associated with perceived restriction for health. Participant BMI was positively associated with perceived restriction for weight and restriction for health. Independent samples *t*-tests revealed that females reported more emotional eating than males. With regard to bivariate relationships between key study variables, restriction for weight, restriction for health, emotion regulation feeding, and food preoccupation were positively associated with emotional eating in adulthood (Table 1). In addition, restriction for weight and emotion regulation feeding were positively associated with food preoccupation. Given that participant characteristics (i.e., gender, age, BMI) were associated with key study variables, these variables were controlled for in the path analysis.

### 5.2. Primary analyses

A path analysis was used to examine whether food preoccupation mediated the associations between perceived parental feeding practices and emotional eating. The model included all three parental feeding practices in order to control for each feeding practice simultaneously (Fig. 1). The model also controlled for

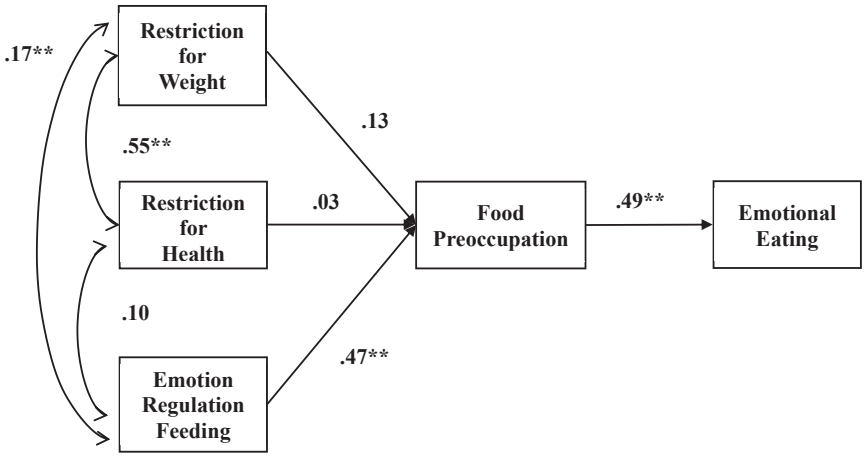


**Fig. 1.** The Mediating Role of Food Preoccupation in Relation to Parental Feeding Practices in Childhood and Emotional Eating in Adulthood. Gender, age, and BMI were controlled for in the model. $^{**}p < 0.01$.

participant characteristics (i.e., gender, age, BMI). The model was an excellent fit to the data, $\chi^2(3) = 1.5$, $p > 0.05$; CFI = 1.00; TLI = 1.00; RMSEA = 0.00. It was found that 16% of the variance in food preoccupation and 45% of the variance in emotional eating were accounted for by the model. Indirect effects of parental feeding practices on emotional eating through food preoccupation were examined using bootstrapped ($N = 5000$) confidence intervals of the coefficients. Findings revealed that the association between emotion regulation feeding and emotional eating was mediated by food preoccupation ($CI_{95\%}$ = 0.10 to 0.44). However, when controlling for other variables in the model, parental restriction for weight and health were not related to food preoccupation. Consequently, food preoccupation did not mediate the relationships between restriction for weight and emotional eating ($CI_{95\%} = -0.09$ to 0.24) or restriction for health and emotional eating ($CI_{95\%} = -0.10$ to 0.12).

## 6. Discussion

This study is the first to examine the mediating role of food preoccupation in explaining the associations between early parental feeding practices and emotional eating in adulthood. Findings from the study shed light on the mechanisms underlying the relationships between early feeding experiences and emotional eating later in life. Further, this study examined the utility of two theoretical models in examining maladaptive parental feeding behaviors in childhood and the long-term outcomes of these behaviors. Overall, these findings highlight the importance of parents' early feeding behaviors in relation to adult eating outcomes. Thus, interventions focused on improving parental feeding practices during childhood in order to promote long-term healthy eating and weight may be an optimal form for instigating change. Indeed, research suggests that interventions focused on instigating change at the level of the parent have been shown to produce positive weight and eating outcomes in childhood and later in life (e.g., Epstein et al., 2001; Essery, DiMarco, Rich, & Nichols, 2008; Golan & Crow, 2004).

### 6.1. Parental feeding practices and child outcomes

Some existing research has demonstrated that dietary restraint and desire for foods are only weakly correlated, indicating that dietary restriction does not necessarily lead to food preoccupation (Hill et al., 1991). Bivariate analyses revealed that adults' recollections of parental food restriction as a means of controlling their weight during childhood were related to more food preoccupation, which was related to more emotional eating in adulthood. However, the association between parental restriction for health during childhood and food preoccupation was not found to be significant. These results indicate that parents' intentions for restriction (i.e., for weight or health) may impact their children's preoccupation with food later in life.

It is possible that parental restriction for health focuses on different strategies for controlling children's food consumption than restriction for weight. For instance, parents engaging in restriction for health may use more covert forms of restriction, such

**Table 1**
Means, standard deviations, and correlations among demographic and key study variables.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| 1. BMI | | | | | | | |
| 2. Age | 0.04 | | | | | | |
| 3. Restriction for Weight | 0.40** | −0.16 | | | | | |
| 4. Restriction for Health | 0.28** | −0.20* | 0.65** | | | | |
| 5. Emotion Regulation | 0.03 | 0.02 | 0.31** | 0.15 | | | |
| 6. Food preoccupation | 0.07 | 0.05 | 0.23* | 0.15 | 0.38** | | |
| 7. Emotional Eating | 0.18 | −0.15 | 0.31* | 0.20* | 0.26** | 0.55** | |
| Males *M* (*SD*) | 24.74 (3.50) | 20.40 (1.71) | 1.93 (0.64) | 2.71 (0.99) | 1.90 (0.80) | 1.90 (0.91) | 1.73 (0.68) |
| Females *M* (*SD*) | 24.16 (4.60) | 20.30 (1.80) | 2.05 (0.94) | 2.83 (1.07) | 1.92 (0.57) | 2.01 (0.97) | 2.34 (0.92) |
| *t* values | 0.67 | 0.29 | −0.72 | −0.54 | −0.16 | −0.57 | −3.55** |

$^{*}p < 0.05$, $^{**}p < 0.01$.

as not exposing their children to unhealthy foods, whereas parents engaging in restriction for weight may engage in more overt restriction, such as directly limiting the amount of food eaten in one sitting. These different strategies may relate to later food preoccupation and eating behaviors differently. Although limited research has examined the role of overt and covert forms of restriction, one study does provide preliminary evidence that they differentially relate to eating behaviors (Ogden, Reynolds, & Smith, 2006). Further, parents using restriction for health may offer their children nutritious alternatives to unhealthy foods. When a healthy alternative is offered, children may be less likely to become preoccupied with unhealthy foods because they are no longer hungry and the desire for the unhealthy food is curbed by the child's focus on the healthy option. In contrast, children who experience restriction for weight may be denied high-calorie foods with no possibility of a healthy alternative despite feelings of hunger, which may lead to preoccupation with these denied foods. It is important to note that, although previous research indicates that restriction for weight and restriction for health are two distinct factors (Musher-Eizenman & Holub, 2007), the two were significantly correlated in this study ($r(95) = 0.65$, $p < 0.001$). Thus, although findings from this study indicate that restriction for weight was related to food preoccupation when restriction for health was not, these findings should be interpreted in light of the relationship between these two constructs.

### 6.2. The mediating role of food preoccupation

This study is the first to examine potential mechanisms underlying the associations between early childhood experiences of parental feeding practices and emotional eating later in adulthood. Based on the dietary restraint and affective state models, we examined how the relationship between parental feeding behaviors and emotional eating later in life might be explained by food preoccupation experienced in adulthood. Although previous research denotes the utility of the dietary restraint model in examining concurrent relationships between food restriction and food preoccupation, findings from this study do not provide support for this model in examining these relationships over long periods of time. Specifically, the dietary restraint model suggests that food restriction leads to preoccupation with foods. However, contrary to our expectations, findings from the model revealed that parental restriction in childhood was not related to food preoccupation in adulthood, and therefore, food preoccupation did not mediate the associations between childhood restriction and emotional eating in adulthood. Although parental restriction of foods for weight control during childhood was associated with emotional eating in adulthood at the bivariate level, when this association was considered in the context of other factors in the path model, it was no longer significant. Future research should consider potential mediators other than food preoccupation for explaining the tentative relationships between restrictive feeding practices and later emotional eating. For instance, individuals who experience restriction for weight during childhood may have trouble attending to their internal cues of hunger as adults, leading to eating behaviors based on external cues, such as emotionality.

In contrast to the dietary restraint model, findings from the current study provide support for the affective state model in examining long-term associations between parental feeding practices and adult outcomes. The affective state model posits that maladaptive coping during times of stress or emotionality lead to preoccupation with food, and therefore more emotional eating, as a replacement for more adaptive coping strategies. In support of this theory, the current study found that the association between recalled experiences of emotion regulation feeding in childhood and emotional eating in adulthood is explained by food preoccupation. Individuals whose parents used foods to regulate their emotional state during childhood are more likely to experience food preoccupation in adulthood, which is related to more emotional eating in turn. It is likely that these individuals learn to regulate their emotions with foods during childhood, rather than utilizing more effective coping strategies (e.g., problem-focused coping; Spoor et al., 2007). This maladaptive strategy may be carried into adulthood, leading to a greater desire for foods that have been known to successfully regulate emotions in the past. This desire for foods, especially during times of stress, likely leads to more emotional eating in an attempt to restore positive affect. Future research should consider the role of life stressors (e.g., job stress, romantic stress) in moderating the relationship between food preoccupation and emotional eating. Additionally, future interventions should consider teaching parents positive alternatives for regulating children's emotions. For instance, parents may benefit from guidance on how to promote emotional expression and problem-focused coping for stressors in their children's lives, as well as how to foster strong attachment relationships with their children in order to influence children's emotion regulation (Cassidy, 1994).

### 6.3. Limitations

This study employed a retrospective design in which adult participants reported on their experiences during childhood and their behaviors in adulthood, which limits the interpretability of the study's findings. Individuals' recollections of their parents' feeding behaviors may be a predictor of, or a reaction to, their own current eating behaviors. Therefore, it is not possible to determine the objectiveness of participants' recollections of their childhood experiences with the current study. However, previous research has demonstrated the concordance between parents' and children's recollections of parental feeding behaviors during childhood (e.g., Galloway et al., 2010). Despite this limitation, these results provide insight into the associations between early feeding experiences and emotional eating in adulthood. Findings from this study indicate a need for more research on the role of early childhood feeding experiences in determining external eating behaviors in adulthood, such as emotional eating, loss of control over eating, and binge eating. Future research should consider exploring the directionality of these relationships with multi-informant (e.g., parent-reports and self-reports) or longitudinal designs.

## 7. Conclusion

Early experiences with foods appear to play a role in adults' preoccupation with foods, and therefore, emotional eating. Specifically, parents' use of food as an emotion regulation tool in childhood appears to be related to more food preoccupation in adulthood, which is, in turn, related to more emotional eating. These findings provide support for the affective state model of eating and indicate that healthy eating habits are best developed at a young age through children's socialization with foods via their parents. It is our hope that providing guidance and support for parents in feeding their children may promote healthier outcomes for their children throughout adulthood.

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