Parent binge eating and restrictive feeding practices:

Indirect effects of parent responses to child negative emotion

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Abstract

Objective: Parents' emotion regulation difficulties are related to binge eating (BE), and to responses to children's negative emotion. However, less is known about how responses to children's negative emotion are related to eating and feeding in the parenting context. We examined the degree to which BE had both direct and indirect effects on parental restrictive feeding practices, through parents' reported responses to negative emotion.

Method: Parents of preschoolers ($n = 441$) completed validated questionnaires about their feeding strategies, responses to children's negative emotion, and their children's eating behaviors. Height and weight were measured in children, and self-reported by parents.

Unsupportive (Distress, Minimizing, and Punitive), and Supportive (Emotion-focused, Problem-focused, and Expressive Encouragement) responses to negative emotion were measured using the Coping with Children's Negative Emotions Scale.

Results: Parent's BE was correlated with Distress responses, Restriction for health, and Restriction for weight control. Controlling for confounders, BE was associated with Restriction for weight control, and Restriction for health. Model testing revealed that BE had significant direct ($R^2 [SE] = .073 [.031]$, $95\%CI [.013, .134]$) and indirect effects ($R^2 [SE] = .011 [.005]$, $95\% CI [.003, .023]$) on Restriction for weight control, through Distress responses, but only indirect effects on Restriction for health ($R^2 [SE] = .018 [.009]$, $95\%CI [.004, .039]$).

Conclusions: This study shows an association between emotion regulation and energy-intake regulation in the parenting context. Efforts to modify feeding practices may be more effective if parents' eating behaviors, *and* their emotional responsiveness to distress are taken into account.

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1. Introduction

High childhood obesity rates (Ogden, Carroll, Kit, & Flegal, 2012) and associated comorbidities have drawn national attention to parent feeding practices in early childhood. Restrictive feeding—the attempt to control children’s eating by limiting types or amounts of food—is correlated with overeating, eating in the absence of hunger, and higher child weight (see Faith, Scanlon, Birch, Francis, & Sherry, 2004 for a review). Although the literature about the *effects* of restrictive feeding on children is sizable, less is known about what puts parents at risk for using them.

Specific disordered eating behaviors—such as maternal dietary restraint (Birch & Fisher, 2000), body dissatisfaction, and concern about child weight (Gray, Janicke, Wistedt, & Dumont-Driscoll, 2010)—are associated with use of restrictive feeding practices. However, eating disorders (ED) are not consistently associated with restrictive feeding (Hoffman et al., 2014), because different EDs have different etiologies (Hilbert et al., 2014). Maternal binge eating (BE) and purging are associated with restrictive feeding (Blissett & Haycraft, 2008; Farrow & Blissett, 2009). Moreover, prospective data reveal that expectant mothers with anorexia are less likely—whereas those with bulimia and Binge Eating Disorder (BED) are more likely—than non-ED mothers to use restrictive feeding practices with their children (Reba-Harrelson et al., 2010). These findings suggest that binge-related ED symptoms put parents at risk for using restrictive feeding practices, but no research has explored how BE in the absence of purging is related to restrictive feeding.

Emotion regulation has been implicated as a maintenance factor for BE (Stice, 2002), and warrants examination. Parent’s emotion regulation practices affect the emotion socialization practices they use (Morris, Silk, Steinberg, Myers & Robinson, 2007). Emotion socialization is parenting behavior that contributes to learning about acceptable norms for expressing, regulating, and thinking about emotion (Denham, Bassett, & Wyatt, 2007). Emotion socialization can occur when parents’ respond to their children’s negative emotion (Denham, Bassett, & Wyatt, 2007). Parent responses to children’s negative emotion can be described as either supportive (e.g., encouraging emotion expression) or unsupportive

(e.g., punishing emotion expression; Fabes, Poulin, Eisenberg, & Madden-Derdich, 2002). Supportive responses to negative emotion are linked to greater emotion self-regulation in infancy, and compliance in toddlerhood (Volling, McElwain, Notaro, & Herrera, 2002). Unsupportive responses are linked to ineffective emotion regulation in children, as well as emotion-focused feeding, and pressuring children to eat (Shipman et al., 2007; Bost et al., 2014).

What does this mean for children of parents who binge? Parallels have been drawn between how children develop emotion and energy-intake regulation, with emphasis on how parents' socialization strategies shape behavior in both domains (Frankel et al., 2012). Binge eaters self-report difficulty changing negative moods, and using fewer emotion regulation strategies (Whiteside et al., 2007). Parents with self-regulation difficulties may not model effective regulation, which could affect child energy-intake (Patrick & Nicklas, 2005; Savage, Fisher, & Birch, 2007). However, integrated models examining individual (parent eating behavior) and relational (emotion socialization practices) correlates of restrictive feeding practices are needed. This study aims to contribute to this literature.

This study examined cross-sectional direct and indirect effects of parent BE on restrictive feeding, through parents' responses to children's negative emotion. We hypothesized that BE would be positively correlated with unsupportive responses to negative emotion and restrictive feeding, and negatively correlated with supportive responses. We also hypothesized that unsupportive responses to negative emotion, but not supportive responses, would be associated with restrictive feeding. Last, we examined the direct and indirect effects of BE on restrictive feeding practices, through responses to children's negative emotion.

2. Method

2.1. Data and Participants

Data for this study were from the first wave of the Synergistic Theory and Research on Obesity and Nutrition Group (STRONG) Kids Study, a prospective panel study of parents with preschool-aged children ($n = 497$), from which we drew an analytic sample of $n = 441$ parent-child pairs. The study and

sampling design have been described previously (Harrison & Liechty, 2012). Sample characteristics are reported in Table 1. The University of Illinois Institutional Review Board approved this study.

2.2. Measures

Demographic characteristics and all parent measures (e.g., weight) were self-reported (Table 1). Child height and weight were measured using a scale and stadiometer. Body mass index (BMI) percentile was calculated using child BMI-for-age charts, and clinical guidelines for adults (Kuczmarski et al., 2000; Pi Sunyer et al., 2000).

We constructed an index of BE episode frequency using the Eating Disorder Diagnostic Scale (EDDS; Stice, Fisher, & Martinez, 2004), which has good internal reliability (Cronbach's $\alpha = .89$) and criterion validity compared to a diagnostic interview ($\kappa = .74$; Stice, Telch, & Rizvi, 2000). A BE episode was defined as eating an unusually large amount of food, with loss of control, and no compensatory behaviors (e.g., purging) over the last three months. Among those reporting BE, the frequency ranged from 1-5 episodes per week. Individuals who met criteria for a BE episode, but who reported bingeing less than once a week ($n=7$), were given a score of 0.5. The mean score on the BE index was 0.23 ($SD = 0.84$) among the full sample, and 2.17 ($SD = 1.42$) among parents who reported BE episodes ($n=52$).

The Comprehensive Feeding Practices Questionnaire (CFPQ) is a 49-item questionnaire about parent feeding practices (Musher-Eizenman & Holub, 2007). We used two subscales: Restriction for weight control ($\alpha = .72$) and Restriction for health ($\alpha = .75$). Items ask how often parents use specific feeding practices; scores range from 1 (*never*) to 5 (*always*).

Parents' responses to children's negative emotion were assessed using the Coping with Children's Negative Emotion Scale (CCNES; Fabes, Eisenberg, & Bernzweig, 1990). Punitive ($\alpha = .79$), Distress ($\alpha = .64$), and Minimizing ($\alpha = .79$) response subscales represent unsupportive emotion responses, and Problem-focused ($\alpha = .87$), Emotion-focused ($\alpha = .81$), and Expressive encouragement ($\alpha = .91$) response subscales represent supportive responses (McElwain, Halberstadt, & Volling, 2007; Fabes et al., 1990).

Depression, anxiety and stress were measured by the the Depression, Anxiety and Stress Scale (DASS-21; Henry & Crawford, 2005), and included as controls. The DASS consists of 21 Likert-scale

items, and has good convergent and discriminant validity (Crawford & Henry, 2003). The three subscales have acceptable reliability (Depression, $\alpha = .84$; Anxiety, $\alpha = .72$; Stress, $\alpha = .83$).

2.3 Analyses

Data were not missing systematically ($X^2[2947] = 2945.57, p = 0.504$), and assumptions for indirect effects analysis were met (Aiken & West, 1991; Hayes, 2009). Descriptive statistics and correlations are reported in Table 2. Parent depression, anxiety, stress, race, income, marital status, educational attainment, child and parent gender and weight status were included as statistical controls. The PROCESS macro (bootstrapping $n = 10,000$) in SPSS was used to examine total, direct, and indirect effects of parent BE on restrictive feeding, through parent responses to children's negative emotion (Hayes, 2013).

3. Results

First, BE was correlated with parent Distress responses (DR) to children's negative emotion (Table 2), but not with other unsupportive parent responses. Second, Restriction for health and Restriction for weight control were associated with all unsupportive responses. Last, BE had direct and indirect effects on Restriction for weight control through DR, but only the indirect effect was significant for Restriction for health.

3.1. Bivariate analyses.

The BE and non-BE groups did not differ by parent or child gender, marital status, race/ethnicity, income, or education level, but Restriction for weight control was related to race/ethnicity. Child age, race, weight, depression, anxiety and stress were included as covariates for the model examining Restriction for weight control. Depression, anxiety, stress, and parent weight were covariates for the model examining Restriction for health. Study variables were associated only with the Distress response subscale (Table 2), so we tested direct and indirect effects of parent BE on Restriction for health and Restriction for weight control, through DR to children's negative emotion.

3.2. Analysis of direct and indirect effects.

In the first model ($n = 421$), parent BE indirectly predicted Restriction for weight control through DR to negative emotion ($R^2 [SE] = .011 [.005]$, 95% CI [.003, .023]). The direct effect of BE on Restriction for weight control was significant ($R^2 [SE] = .073 [.031]$, $t = 2.38$, $p = .017$, 95%CI [.013, .134]), and reduced from the total effect ($R^2 [SE] = .084 [.031]$, $t = 2.73$, $p = .006$, 95%CI [.024, .145]). These results suggest that BE has a direct effect on use of Restriction for weight control, beyond the effect accounted for through DR to children's negative emotions.

In the second model ($n = 441$), a significant indirect effect of parent BE on Restriction for health reasons was revealed ($R^2 [SE] = .018 [.009]$, 95%CI [.004, .039]), but the direct effect was not significant ($R^2 [SE] = .091 [.051]$, 95%CI [-.010, .191]). The total effect ($R^2 [SE] = .108 [.051]$, 95%CI [.008, .209]) was significant. This suggests that DR to children's negative emotions may be one mechanism through which parent BE affects Restrictive feeding practices.

4. Discussion

The objective of this study was to examine how parent BE was related to restrictive feeding practices, through parents' responses to children's negative emotion. We found that parent BE was associated with restrictive feeding, indirectly through parents' Distress response (DR) to children's negative emotion. Findings suggest that parents bring their emotions to the table, and highlight the need for transdisciplinary research on eating, feeding, and emotion in families.

4.1. Binge eating, Responsiveness, and Restriction

Consistent with other studies, we found that BE was related to restrictive feeding practices for children (Blissett & Haycraft, 2008), but the association was different for Restriction for health and Restriction for weight control (Musher-Eizenman, Holub, Hauser, & Young, 2007). Parents may have several motivations for feeding practices which may differentially impact family health. Binge eating was associated with more DR, but not with other unsupportive strategies, which suggests that parents with BE may struggle with appropriate emotion expression, or with moving past their own emotional discomfort to help their child manage distress. These difficulties may be exacerbated during feeding, due to the emotionally charged nature of food to someone with BE.

Responses to negative emotion may explain part of why BE (caloric excess) is associated with restrictive feeding (caloric restriction) in the parenting context. However, there are other possible explanations for this counter-intuitive relationship. Mothers' weight concerns are associated with weight concerns for their children (Markey, Markey, & Schulz, 2012), which predicts restrictive feeding (Musher-Eizenman et al., 2007). Thus, parent concern about child weight, restrictive feeding practices, and child weight gain may cycle counterproductively (Davison & Birch, 2001). Parents with BE may be at risk for engaging in this cycle because of already-established weight concerns (Grilo, White, Gueorguieva, Wilson, & Masheb, 2013). Alternatively, parents with BE may apply their own dieting behaviors to family meals. Binge eating predicts dieting (Mussell et al., 1995), restrictive feeding (Birch, Fisher, & Davison, 2003), and daughters' excessive energy intake (Fisher & Birch, 2000). Parents may unintentionally continue the cycle of risk by restricting *family* intake in an effort to create a healthful feeding environment (Stein et al., 2006).

4.2. Limitations

Some limitations bear noting. This study used cross-sectional data and self-report measures; observational measures and prospective designs are needed. Although we used criteria from the DSM-5 (American Psychological Association, 2013) to identify parents reporting BE, we did not compare parents with and without BED. In this community-based sample, only 2% (n=11) of parents met all clinical criteria for BED, which—while comparable to the 2.8% national prevalence of BED (Hudson, Hiripi, Pope, & Kessler, 2007)—was not a sufficient sample size for comparisons. However, sub-threshold criteria have been used previously to examine correlates of BE (Klump, Keel, Culbert, & Edler, 2008).

5. Conclusions

These data suggest that the pathway between parent BE and restrictive feeding may be attributable to parent's emotion regulation difficulties. These findings offer preliminary support for emerging models that take into account both emotion and energy-intake regulation. Theoretical integration of the emotion socialization and energy-intake regulation literatures may be crucial to understanding how feelings and food interact in the family system.

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Table 1. Full sample characteristics on demographic variables ($n = 497$).

Demographic variables	<i>n (%)</i>	
Child gender		
Female	254	51.2
Male	242	48.8
Child weight status (percentile)		
Underweight	10	2.5
Normal weight	303	74.4
Overweight	63	15.5
Obese	31	7.6
Marital status		
Single	116	23.7
Married	320	65.4
Separated/ Divorced/ Widowed	30	6.0
Co-habiting/civil union	23	4.6
Parent race/ethnicity		
Hispanic	28	5.7
NH White	353	71.0
NH African American	95	19.1
NH Asian	40	8.0
Bi-racial	18	3.6
Parent education		
College degree or beyond	268	54.2
Some college	159	32.1
High school or less	67	13.5
Parent gender		
Female	443	89.3
Male	51	10.3
Parent weight status		
Underweight	9	1.9
Normal weight	205	43.6
Overweight	127	27.0
Obese	129	27.4
Relationship to child		
Biological parent	463	94.3
Step-parent	1	0.2
Adoptive parent	12	2.4
Relative	11	2.2
Other	4	0.8
Household income per year ^c		
<\$24,999	140	28.2
\$25,000 to <\$39,999	63	13.0
\$40,000 to <\$69,999	78	16.1
\$70,000 to <\$99,999	84	17.3
<\$100,000	92	19.0

Note. NH=Non-Hispanic

Table 2. Summary statistics and correlations^a among model variables.

	Correlation Coefficients							
	1	2	3	4	5	6	7	8
1. Binge Eating								
2. CCNES-DR	.138 ***							
3. CCNES-PR	.056	.441 ***						
4. CCNES-MR	.036	.311 ***	.631 ***					
5. CCNES-PFR	.025	.245 ***	.122 **	-.009				
6. CCNES-EFR	.089	.258 ***	.129 **	-.049	.725 ***			
7. CCNES-EER	.014	.285 ***	.163 **	.070	.614 ***	.544 ***		
8. CFPQ-RH	.105 *	.147 **	.144 **	.077	.088	.085	.042	
9. CFPQ-RWC	.121 **	.166 ***	.197 ***	.229 ***	.096 *	.084	.034	.405 ***
10. DASS-Depression	.125 **	.117 **	.077	.091 *	.056	.017	.017	.093 *
11. DASS-Anxiety	.085	.186 ***	.082	.120 **	.082	.025	-.014	.078
12. DASS-Stress	.053	.191 ***	.072	.083	-.020	-.044	-.073	.088
13. Parent BMI	.182 ***	-.021	-.055	-.030	.048	.019	-.051	-.048
14. Parent age ^b	-.033	-.064	-.031	-.032	-.091	-.038	-.073	.021
15. Child age ^c	-.010	.047	.127 **	.066	.169 ***	.118 *	.098 *	.050
16. Child BMI percentile	-.066	-.143 **	-.102 *	-.007	-.073	-.089	-.075	.036
M	.235	.386	.286	.351	1.05	1.22	1.30	2.79
(SD)	.837	.123	.145	.139	.37	.299	.471	.900
Range	5.00	.660	.650	.710	2.45	1.53	2.35	4.00
	9	10	11	12	13	14	15	16
10. Depression	.115 *							
11. Anxiety	.114 *	.501 ***						
12. Stress	.025	.476 ***	.503 ***					
13. Parent BMI	-.013	.151 **	.148 **	.097 *				
14. Parent age ^b	.012	-.007	-.076	-.009	.014			
15. Child age ^c	.167 ***	.070	.097 *	.030	.073	-.001		
16. Child BMI percentile	.038	.031	.016	.016	.174 **	.000	-.099 *	
M	1.68	.285	.288	.348	27.26	32.45	39.02	60.41
(SD)	.547	.771	.785	.802	6.52	6.68	8.19	27.48
Range	3.25	4.00	4.00	4.00	38.22	46.82	41.00	99.9

Note. CCNES=Coping with Children's Negative Emotions Scale, DR= Distress Responses, PR=Punitive Responses, MR=Minimizing Responses, PFR= Problem-focused Responses, EFR=Emotion-focused Responses, EER=Expressive encouragement Responses, CFPQ=Comprehensive Feeding Practices Questionnaire, RH=Restriction for Health, RWC=Restriction for weight control, DASS=Depression, Anxiety, and Stress Scale, BMI= Body mass index

^a 2-tailed Pearson pairwise correlations in SPSS 22.0

^b Parent's age expressed in years

^c Child age expressed in months

*p<0.05, **p<0.01, ***p<0.0001

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