

# Body dissatisfaction and disordered eating within the mother-daughter dyad: An actor-partner interdependence approach



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## ABSTRACT

Research on body image and eating within the mother-daughter dyad tends to emphasize the influence that mothers may have on daughters, with little focus on the concomitant influence that daughters may have on mothers. Utilizing the Actor-Partner Interdependence Model (APIM) within a sample of mothers and their daughters within three age ranges (middle school, high school, and college,  $N = 356$  dyads), we examined relations between mother and daughter body dissatisfaction and restrictive eating and bulimic symptoms. Results indicated that mother and daughter body dissatisfaction significantly predicted their own eating pathology (actor effects). Although no significant partner main effects occurred, a notable actor-partner interaction was obtained; mothers' body dissatisfaction significantly predicted higher levels of their own restrained eating only when their daughters were ages 16 and older. In addition, a moderated actor effect was found for bulimic symptoms, such that the relation between a daughter's body dissatisfaction and her own bulimic symptoms became progressively stronger as her age increased. Overall, the findings provide replication of actor effects, with partial support for mutuality of mother and daughter influence.

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## 1. Introduction

Body dissatisfaction is pervasive among girls and women and occurs throughout the lifespan from childhood through late adulthood (Bearman et al., 2006; Becker et al., 2019; Clark & Tiggemann, 2006; Davison et al., 2000), with notable increases during adolescence (Bucchianeri et al., 2013). Far from innocuous, body dissatisfaction is associated with negative affect, lowered self-esteem, and reduced quality of life (Becker et al., 2019; Medeiros de Moraes et al., 2017; Paxton et al., 2006; Duarte Ferreira et al., 2015; Rodgers et al., 2010). Body dissatisfaction also predicts disordered eating, including harsh dietary restriction and bulimic behavior, particularly among adolescents and young adults (Downey & Chang, 2007; Stice & Shaw, 2002).

Although body dissatisfaction and eating problems are multiply determined, body- and eating-related norms and interactions within social contexts including the family are theorized as key contributors (Thompson et al., 1999). Within the family, the mother-daughter

relationship is of particular salience given the pervasiveness of body dissatisfaction and disordered eating among girls and women. Furthermore, while peer influences become salient across adolescent development, mothers serve as primary models of body regard for their daughters. Specifically, there is robust evidence that mothers influence body image and eating among daughters both directly (e.g., through body- and eating-focused criticism) and indirectly (e.g., by talking about and visibly modeling body and weight concerns). Such forms of maternal influence have been associated with daughters' body dissatisfaction, dieting, and disordered eating (Armstrong & Janicke, 2012; Arroyo et al., 2017; Ata et al., 2007; Balantekin, et al., 2014; Cooley et al., 2008; Dunkley et al., 2001; Hillard et al., 2016; Neumark-Sztainer et al., 2011; Smolak et al., 1999), indicating the power mothers may hold in shaping body image and eating concerns of daughters. However, the literature remains limited by a lack of consideration of daughters' concomitant influences on mothers. Studies of body image and eating among mothers and daughters often are not explicitly dyadic in focus, and instead examine unidirectional mother-to-daughter influences. Although it is reasonable to assume that mothers, by virtue of the parenting role, would exert relatively greater body-related influence on daughters than vice versa (Ogle & Damhorst, 2003), explanations of mother-daughter correspondence in regard to body and eating variables are likely incomplete without assessment of potential mutual influences, and may in fact overemphasize contributions of

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maternal behavior and attitudes. In the present study, we add to an emergent literature by examining body dissatisfaction and disordered eating within the mother-daughter dyad. Using the Actor-Partner Independence Model (APIM) approach, we examine the degree to which each members' body dissatisfaction is related to her own as well as her dyadic partner's restrictive eating and bulimic behaviors.

Although dyadic analyses are as yet uncommon in the body image literature, broader interpersonal frameworks suggest how dyadic influences may be conceptualized. Drawing upon social learning theory (e.g., Bandura, 1986), Ogle and Damhorst (2003) described how mothers and daughters, via their individual behaviors and interactions, may influence each other concerning the body and eating. For instance, a mother's comments and actions surrounding her body dissatisfaction can cue a daughter to talk and act similarly, and repetitions of this dynamic may give rise to shared meanings about the body, and a kind of "echo chamber" of mutually sustaining viewpoints may arise. Daughters can also instigate actions and beliefs. For example, a daughter might start a new exercise routine to become "beach ready" and her actions might cue her mother to exercise to shape her own body; over time, exercise to shape the body is reinforced, and beliefs about body modifiability may become ingrained. In addition to social learning theory, models of socialization and development go beyond unidirectional parent effects to incorporate ways in which parents and children mutually influence each other (Ogle & Damhorst, 2003; see also Belsky, 1984; Cox & Paley, 1997; Davies & Coe, 2019; Patterson, 1982). Thus, while empirical examinations of dyadic mother-daughter influences remain sparse, varied conceptual approaches support examining mother and daughter mutual influences on body image and eating.

In addition, there are notable physiological and social transitions for both midlife mothers and adolescent daughters, and the intersection of these transitions might foster body- and weight-focused interactions. Midlife women encounter weight gain and changes in the distribution of fat and muscle as part of normal aging, changes which move them further away from both thin and young beauty ideals (Becker et al., 2013; Carrard et al., 2018). Furthermore, midlife women have exhibited weight concerns even when their weight is within a normal range. Carrard et al. (2018) found that midlife body changes were associated with a desire to lose weight and restrictive dieting even among women with normal BMI; in turn, women with normal BMI who wanted to be thinner had lower psychological health than did those who had normal BMI and less desire to lose weight. Although normative, midlife struggles with body dissatisfaction and eating may be impairing, as they are associated with negative affect, lowered self-esteem, and reduced quality of life (Becker et al., 2019; Duarte Ferreira et al., 2015; Medeiros de Moraes et al., 2017; Paxton et al., 2006; Rodgers et al., 2010).

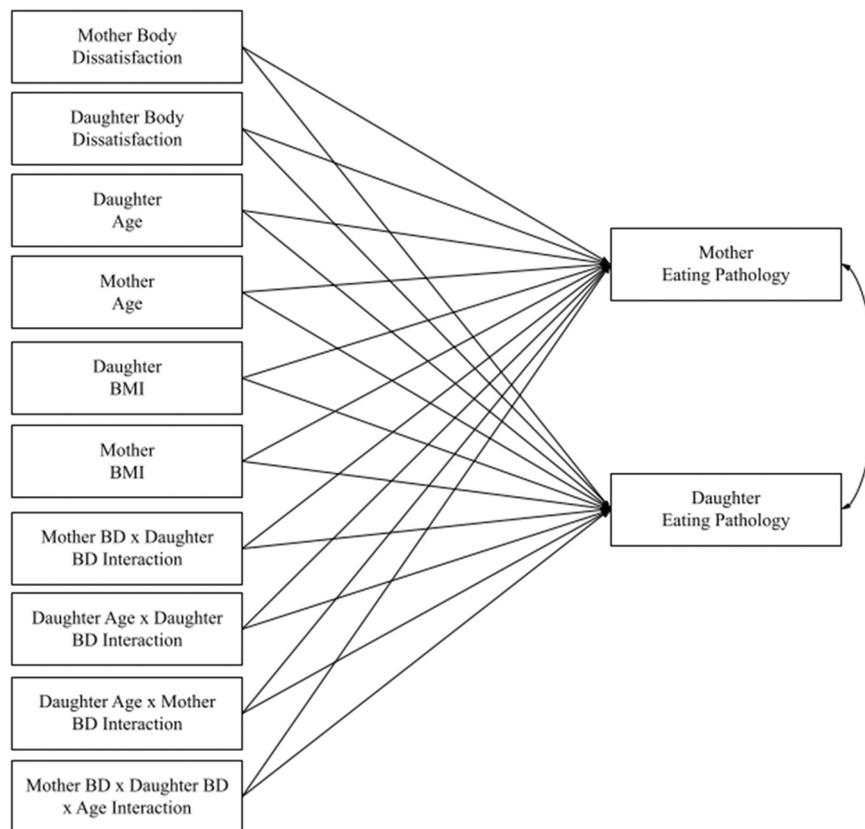
Adolescence also includes normative physiological and social changes which provoke body concern. Young adolescent girls experience breast development, menarche and broader hips, changes which result in greater adiposity (Tanner, 1971). The normal maturational fat increase is perceived negatively by many adolescent girls as it moves them away from the societal thin ideal (Calzo et al., 2012; Wertheim & Paxton, 2011), and these negative reactions may persist beyond the apex of pubertal changes. Indeed, Abraham et al. (2009) found that body dissatisfaction and dieting increased for two years following menarche. As girls traverse adolescence they face increasing social pressures for thinness from media and peers and these pressures are linked to increases in body dissatisfaction (Blodgett Salafia & Gondoli, 2011; Gondoli et al., 2011; Stice & Whitenton, 2002). Additionally, the transition to college has been associated with weight gain accompanying changes in eating and exercise habits (Anderson et al., 2003), and has also been identified as a risk factor for the development of eating pathology (Delinsky & Wilson, 2008; Laboe et al., in press). Thus, midlife women,

adolescent girls, and young adult women experience transitions which make the body salient and which heighten risks for body dissatisfaction and disordered eating. To the extent that mothers and daughters co-construct meaning around the body and eating (Ogle & Damhorst, 2004), the juxtaposition of their particularly body-salient developmental eras may set the stage for dyadic influence (Brun et al., 2021).

The APIM framework provides a quantitative technique to examine dyadic influences, as it accounts for nonindependence in the data and assumes relationality in predictors and outcomes between members of a dyad (Kenny et al., 2006). One research program published a series of APIM analyses utilizing a sample of 100 mother-daughter dyads consisting of mothers with a mean age of 44.03 years ( $SD_{age} = 7.23$ ) and their daughters ranging in age from 11–18 years ( $M_{age} = 14.35$ ,  $SD_{age} = 2.29$ ; Chow & Tan, 2018; see also Domoff et al., 2021; Hart et al., 2021). Chow and Tan (2018) found that mother and daughter reports of greater dyadic fat talk each predicted their own higher eating pathology (i.e., actor effects). Additionally, an interaction was obtained, such that the effect of a daughter's perceptions of dyadic fat talk had a stronger effect on her own eating pathology when her mother also reported high dyadic fat talk (i.e., a moderated actor effect). Mother and daughter age and BMI were included in the models, and daughters' BMI positively predicted their eating pathology (i.e., an actor effect). Using the same sample, Hart et al. (2021) found that mothers' and daughters' greater fear of fat each predicted their own higher dietary restraint (i.e., actor effects), while mothers' greater fear of fat predicted higher dietary restraint among daughters, and daughters' greater dislike of fat predicted higher dietary restraint among mothers (i.e., mutual partner effects). Age and BMI of both dyad members were included in the analyses; results indicated that daughter age and BMI positively predicted her restraint (i.e., actor effects). Hart et al. (2021) also reported a moderated actor effect, such that the relation between daughter fear of fat and dietary restraint was stronger when mothers also had high fear of fat. Conducting further analyses using this sample, Domoff et al. (2021) created a composite negative body talk variable by averaging mothers' and daughters' separate reports of negative body talk within the dyad. Analyses revealed that greater negative body talk and greater mother and daughter body surveillance predicted higher body shame for both mothers and daughters (i.e., actor effects). Domoff et al. (2021) also reported an interaction indicating that the positive relation between a daughter's body surveillance and body shame intensified when negative body talk within the dyad increased (i.e., a moderated actor effect).

One additional study conducted by Arroyo and Andersen (2016) focused on 199 dyads consisting of mothers (age range 36–60 years,  $M_{age} = 50.15$ ,  $SD_{age} = 4.51$ ), and their university-enrolled daughters (age range 18–25 years,  $M_{age} = 19.42$ ,  $SD_{age} = 1.18$ ). Of most interest to the present study, mother and daughter perceptions of greater fat talk each predicted their own higher bulimic behavior (i.e., actor effects), while mothers' perception of greater fat talk predicted higher bulimic behavior among daughters (i.e., a partner effect). Age and BMI of mothers and daughters were included and were not predictive except for a small positive relation between daughter BMI and her bulimic behaviors (i.e., an actor effect). Arroyo and Andersen (2016) did not report examination of actor-partner interactions.

To summarize, analyses based on two samples of midlife mothers and their adolescent daughters revealed consistent actor effects, few partner main effects, and some notable moderated effects (Chow & Tan, 2018; Domoff et al., 2021; Hart et al., 2021). Perhaps not surprising given the hierarchical nature of mother-adolescent relations and the importance of context, the moderated actor effects seemed to reflect intensification of daughters' effects on themselves when mothers contributed to negative interactions around the body and weight. Although the available studies introduce an important perspective and novel findings, they collectively rely on only two



**Fig. 1.** Graphical representation of the Actor-Partner Interdependence Model of Dyadic Eating Pathology.

Note: All predictor variables were allowed to covary. However, this is not depicted for presentation purposes. The model was estimated twice with two different eating pathology outcomes, restrained eating and bulimic symptoms.

samples, and further research is needed. In the present study, we add to the emergent research by conducting dyadic analyses in a sample of mothers and their daughters, focusing on the well-established connection between body dissatisfaction and disordered eating.

### 1.1. The current study

Using the APIM approach, we examined connections between mother and daughter body dissatisfaction and disordered eating (see Fig. 1). Given that body dissatisfaction has been consistently identified as a predictor of eating pathology (e.g., Arroyo & Andersen, 2016; Chow & Tan, 2018; Downey & Chang, 2007; Hart et al., 2021; Lewis & Cachelin, 2001; Stice & Shaw, 2002), we hypothesized that greater body dissatisfaction among mothers and daughters would predict higher levels of their own disordered eating (i.e., actor effects). Based on prior literature indicating increases in body image disturbance and eating problems across adolescence (e.g., Bucchianeri et al., 2013) as well as daughter age effects reported in the literature (Hart et al., 2021), we further hypothesized that daughter age would constitute an actor effect, with older daughter age associated with greater disordered eating. Following previous efforts (Arroyo & Andersen, 2016; Chow & Tan, 2018; Domoff et al., 2021; Hart et al., 2021) we included mother age in the analyses, but did not make any specific hypotheses as maternal age has not emerged as a significant predictor of eating outcomes. Although maternal age across the midlife era may not be a relevant predictor however, we reasoned that it is important to control for this variable when considering the concomitant effects of daughter age.

Consistent with previous research (Arroyo & Andersen, 2016; Chow & Tan, 2018; Hart et al., 2021), we included mother and

daughter BMI as covariates in all analyses. Given previous findings (e.g., Arroyo & Andersen, 2016; Chow & Tan, 2018; Hart et al., 2021), we hypothesized that daughters' BMI would be positively predictive of their disordered eating (i.e., actor effects). Given that prior APIM analyses indicated null findings for maternal BMI (e.g., Arroyo & Andersen, 2016; Chow & Tan, 2018; Hart et al., 2021), we made no specific hypotheses about maternal BMI.

In addition to mother and daughter body dissatisfaction predicting their own eating pathology, it is plausible that such dissatisfaction contributes to each other's eating pathology; therefore, we also examined partner body dissatisfaction on mother and daughter eating outcomes. As described above, a few partner effects mostly indicating mothers' influence on daughters' eating behavior have been reported. However, these findings have occurred infrequently, even within the same sample. Furthermore, previously reported partner effects reflected perceptions of fat talk and anti-fat attitudes, rather than partner body dissatisfaction (Arroyo & Andersen, 2016; Hart et al., 2021). Fat talk in particular might be considered a relatively salient indirect influence, while one's body dissatisfaction might be a subtle indirect influence. However, as noted, body dissatisfaction has been repeatedly identified as a robust predictor of individual eating outcomes. Given this background, we were unable to make specific hypotheses concerning body dissatisfaction partner effects in our sample and thus considered these analyses exploratory.

Beyond actor and partner main effects, we also tested several specific interactions. First, we examined whether any body dissatisfaction actor or partner effects interacted with daughter age to predict disordered eating among daughters or mothers. Given that no previous studies tested interactions with age, we made no specific hypotheses, and considered these analyses exploratory.

However, a number of age-related patterns were possible. For instance, daughter body dissatisfaction may have a greater impact on mothers as daughters approach adulthood, whereas mothers may have greater influence on younger daughters.

We also explored potential two- and three-way interactions between actor and partner effects. For instance, it is possible that a mother's body dissatisfaction partner effect would be more or less impactful depending upon a daughter's level of body dissatisfaction. Additionally, a three-way interaction is possible and might take several forms. For example, an interaction between daughter body dissatisfaction (actor effect) and mother body dissatisfaction (partner effect) might only be significant when daughters are younger, as older girls might be less affected by their mother's body-related issues. Again, because prior research has indicated limited actor by partner interactions (Chow & Tan, 2018; Hart et al., 2021), these analyses were exploratory and we made no hypotheses concerning these interactions.

## 2. Method

### 2.1. Participants

The sample consisted of 356 mother-daughter dyads. Mothers were between the ages of 29 and 64 ( $M_{\text{age}} = 45.92$ ,  $SD_{\text{age}} = 6.03$ ), and daughters were between the ages of 11 and 22 ( $M_{\text{age}} = 16.14$ ,  $SD_{\text{age}} = 2.92$ ). Among daughters, middle school students were in 7th and 8th grades ( $N = 115$ ;  $M_{\text{age}} = 12.77$ ,  $SD_{\text{age}} = 0.78$ ), high school students were in 10th and 11th grades ( $N = 115$ ;  $M_{\text{age}} = 15.94$ ,  $SD_{\text{age}} = 0.79$ ), and college students represented first- through senior-year levels ( $N = 126$ ,  $M_{\text{age}} = 19.39$ ,  $SD_{\text{age}} = 1.37$ ). The sample included individuals identifying as European American (84.09% of mothers, 77.05% of daughters), African American (4.26% of mothers, 3.68% of daughters), Asian American (2.27% of mothers, 2.83% of daughters), Hispanic/Latina (2.84% of mothers, 2.55% of daughters), and Native American (0.85% of mothers, 0.85% of daughters), with others identifying as Multiethnic (5.11% of mothers, 11.61% of daughters) or Other (0.57% of mothers, 1.41% of daughters). According to BMI-for-age cutoff-points established by the Centers for Disease Control and Prevention (Centers for Disease Control and Prevention, 2022), daughter BMIs were, on average, in the normal range ( $M_{\text{BMI}} = 22.24$ ,  $SD_{\text{BMI}} = 4.46$ ) and mother BMIs were, on average, in the overweight range ( $M_{\text{BMI}} = 27.45$ ,  $SD_{\text{BMI}} = 6.90$ ). Most mothers were well-educated and middle class, with 77.52% attending at least two years of college, and 54.55% with an annual household income of at least \$80,000. Most mothers were currently married (81.02%). Furthermore, the majority of daughters (95.2%) lived with their mothers full-time. A minority of daughters lived with their mother half time (2.2%), less than half time (0.8%), or declined to answer (1.7%). The sample was representative of the school districts and university student populations from which it was drawn.

### 2.2. Procedure

As part of a larger study focused on mother and daughter eating- and weight-related attitudes and behaviors, participants were recruited from secondary schools and a private university located in a medium-sized city in the Midwestern United States. Flyers briefly describing the project were mailed to home addresses provided by schools to recruit middle school and high school girls and their mothers, while college women were recruited through enrollment in psychology courses. Body- and eating-related behaviors were not mentioned as study foci in the recruitment materials. Following initial contact, college women and mothers of middle- and high-school girls were instructed to contact the research office if they

would like to participate. Subsequently, college women provided an email address for their mothers, who were provided the study contact information. After recruitment, 391 mother-daughter dyads enrolled in the study, and 356 (91.05%) completed the surveys. The treatment of participants was approved by the university's Human Subjects - Institutional Review Board and was in accordance with the ethical standards of the American Psychological Association.

Using the Qualtrics secure survey software program, online questionnaires were configured and distributed. Each Qualtrics survey packet included informed consent or assent forms, parental permission forms (for mothers of minors), and self-report measures that took about one hour to complete. Middle and high school girls and all mothers completed the survey after receiving a link through the mother's email; participants were encouraged in the email to respect each other's privacy and confidentiality. Privacy and confidentiality messages were repeated within the Qualtrics surveys, and participants were also instructed in the email and in the Qualtrics surveys themselves to contact study staff if they had any questions, concerns, or technical difficulties. College women completed their surveys in an on-campus psychology laboratory. Following survey completion, daughters reported to private in-school or on-campus appointments for height and weight measurements used for the calculation of BMI; maternal BMI was calculated from self-reported height and weight. For compensation, each participant received either \$10.00 or course credit.

### 2.3. Measures

All participants completed self-report measures of eating- and weight-related attitudes and behaviors, in addition to demographic questions.

#### 2.3.1. Body dissatisfaction

Body dissatisfaction was assessed using the Body Dissatisfaction subscale of the Eating Disorders Inventory (EDI-BD; Garner et al., 1983). This 9-item subscale gauges how often a respondent feels dissatisfied with their overall body and specific body parts. Using a 6-point scale from 0 (*never*) to 5 (*always*), respondents indicate how often they endorse specific body statements, such as "I think that my legs are too large." Higher scores indicate greater levels of body dissatisfaction. Internal consistency (Cronbach's alpha) in the present sample was .92 for mothers and .91 for daughters. Additionally, McDonald's omega was .92 for mothers and .91 for daughters.

#### 2.3.2. Restrained eating

Restrained eating was assessed using the Dutch Restrained Eating Scale (van Strien et al., 1986). This 10-item scale was designed to gauge intention to diet and restrict calories for weight control purposes. Using a 5-point Likert-type scale ranging from 1 (*never*) to 5 (*always*), respondents indicate how often their eating patterns were influenced by dieting cognitions and behaviors in the past week. Sample items include "Did you take into account your weight in deciding what to eat?" and "How often did you deliberately eat less in order to not become heavier?", with higher scores indicating greater levels of restriction. Cronbach's alpha was .92 for mothers and .95 for daughters. Additionally, McDonald's omega was .92 and .95 for mothers and daughters, respectively.

#### 2.3.3. Bulimic symptoms

Bulimic symptoms were assessed using the Bulimia subscale of the Eating Disorders Inventory (EDI-B; Garner et al., 1983). This 7-item subscale measures behaviors reflecting bingeing and self-induced purging. Using a 6-point Likert scale ranging from 0 (*never*) to 5 (*always*), respondents indicate frequency of specific behaviors.

**Table 1**  
Descriptive statistics and intercorrelations of study variables.

Variable	1	2	3	4	5	6	7	8	9	10
1. Mother BD	—	.15**	.18*	.07	.61**	.06	-.15**	-.11*	.59**	.05
2. Daughter BD		—	.09	.65**	.16**	.58**	.23**	.16**	.18**	.47**
3. Mother Restrained Eating			—	.05	.17**	-.01	-.02	0.02	-.01	-.05
4. Daughter Restrained Eating				—	.04	.44**	.29**	.24**	.03	.28**
5. Mother Bulimic Symptoms					—	.12*	-.11*	-.07	.41**	.07
6. Daughter Bulimic Symptoms						—	.20**	.17**	.05	.38**
7. Daughter Age							—	.51**	-.19**	.25***
8. Mother Age								—	-.15**	.04
9. Mother BMI									—	.32**
10. Daughter BMI										—
Mean	26.59	20.03	25.7	21.54	6.15	7.15	16.14	45.92	27.45	22.24
SD	11.18	11.43	8.55	10.16	5.15	6.38	2.92	6.03	6.9	4.46

\* $p < .05$ . \*\* $p < .01$ . Notes.  $N = 356$  dyads; BD = Body Dissatisfaction.

Sample items include “I have gone on eating binges where I felt that I could not stop” and “I have thought of trying to vomit in order to lose weight.” Higher scores on this subscale indicate higher levels of bulimic symptomatology. Within the present sample, Cronbach's alpha was .84 for mothers and .85 for daughters. Additionally, McDonald's omega was .85 for both mothers and daughters.

#### 2.4. Data analytic strategy

Descriptive and correlational analyses were conducted in SPSS 26, and the APIM analyses were conducted using the R package “lavaan” (Rosseel, 2012). The APIM approach accounts for non-independence and assumes relationality in predictors and outcomes between members of a dyad (Kenny et al., 2006). For the present analyses, the mother-daughter dyad was distinguishable through role, and thus our APIM analyses provided separate effects for mothers and daughters. Actor effects were defined as the effects that each individual had on her own outcomes, while partner effects were defined as the effects that each individual had on the outcomes of the other. The predictor variables were standardized to have a mean of 0 and a standard deviation of 1, and interaction terms were created by multiplying these standardized predictor variables. Two different methods were utilized to probe significant interactions, the Johnson-Neyman technique and the “pick-a-point” simple slopes method. The Johnson-Neyman technique indicates all the values of the moderator for which the effect of X on Y becomes and ceases to be significant, rather than utilizing arbitrary points (e.g., at the mean; Carden et al., 2017). However, given that simple slopes plots can easily illustrate interactions, we opted to examine both approaches and provide the simple slopes plots if appropriate for the data, plotting slopes at one SD below the mean, at the mean, and one SD above the mean.

Data screening indicated that data from three dyads were partially missing. Because this was a very small proportion of missingness, full-information maximum likelihood (FIML) was used to estimate missing data, allowing us to use all 356 dyads in the APIM analyses. Screening also indicated that the eating-related outcomes had non-normal distributions. Given this nonnormality, we utilized robust standard errors (also called sandwich or Satorra-Bentler standard errors) in the APIM analyses, as robust standard errors have been found to be moderately robust to nonnormality in continuously distributed data (West et al., 1995). In addition, because elevated BMI has been associated with poor body image and maladaptive eating among young (Stice & Shaw, 2002) and midlife women (Slevec & Tiggemann, 2011), as well as predictive of daughter eating disturbances in previous APIM analyses (e.g., Chow & Tan, 2018), we included mother and daughter BMI in the analyses. Finally, because we had specific hypotheses and research questions for daughter age, we included mother age to control for potential age confounds.

### 3. Results

#### 3.1. Descriptive statistics

Table 1 presents descriptive statistics and variable correlations. The variables were generally normally distributed. However, restrained eating among daughters as well as bulimia among both mothers and daughters were all positively skewed. As previously stated, robust standard errors were utilized in order to account for nonnormality. Correlations were generally small to moderate, with positive relations observed between body dissatisfaction and restrained eating and bulimic symptoms among both mothers and daughters, and a positive relation between mother and daughter body dissatisfaction. Mother and daughter reports of eating pathology (i.e., restricted eating and bulimic symptoms) tended to be unrelated, with the exception of a small association between mother and daughter bulimic symptoms.

#### 3.2. APIM analyses

Our first hypotheses stated that mothers' and daughters' own body dissatisfaction would be associated with their own eating pathology outcomes (i.e., actor effects). As shown in Tables 2 and 3, respectively, all actor effects of body dissatisfaction on eating pathology were significant. Mother and daughter body dissatisfaction were positively associated with each of their eating pathology outcomes; that is, participants who reported higher levels of body dissatisfaction also reported higher levels of restrained eating and bulimic symptoms. Specifically, mother body dissatisfaction showed a small relationship to her own restrained eating ( $\beta = .23$ ,  $p = .001$ ) and a moderate to large relationship with her own bulimic symptoms ( $\beta = .57$ ,  $p < .001$ ). Similarly, daughter body dissatisfaction significantly showed a moderate to large association with both her own restrained eating ( $\beta = .64$ ,  $p < .001$ ) and bulimic symptoms ( $\beta = .51$ ,  $p < .001$ ). Thus, our first hypothesis was supported.

Our second hypothesis stated that increased daughter age would significantly predict higher rates of eating pathology among daughters (i.e., actor effects). As shown in Tables 2 and 3, respectively, greater daughter age significantly predicted a small increase in restrained eating ( $\beta = 0.10$ ,  $p = .047$ ). Specifically, for every one-SD increase in daughter age, there was a predicted 0.10 SD increase in daughter restrained eating. However, daughter age did not significantly predict bulimic symptoms. Thus, our second hypothesis was partially supported. As we hypothesized, there was a significant actor effect for daughter BMI, such that as BMI increased, daughter bulimic symptoms increased ( $\beta = 0.19$ ,  $p = .01$ ). Additionally, we explored whether mother and daughter body dissatisfaction would be associated with one another's eating pathology outcomes (i.e., partner effects). Results indicated no significant effects involving partner body dissatisfaction predicting restrained eating or bulimic

**Table 2**  
Results of APIM for mother and daughter restrained eating.

APIM Parameters	Estimate	SE	Z-Value
<b>Actor Effects</b>			
Mother BD → Mother Restrained Eating	0.23**	0.07	3.22
Daughter BD → Daughter Restrained Eating	0.64***	0.05	13.58
Mother Age → Mother Restrained Eating	0.04	0.06	0.62
Daughter Age → Daughter Restrained Eating	0.10*	0.05	1.99
Mother BMI → Mother Restrained Eating	-0.15*	0.07	-2.15
Daughter BMI → Daughter Restrained Eating	-0.03	0.06	-0.47
<b>Partner Effects</b>			
Mother BD → Daughter Restrained Eating	0.03	0.05	0.49
Daughter BD → Mother Restrained Eating	0.11	0.06	1.64
Mother Age → Daughter Restrained Eating	0.08	0.05	1.74
Daughter Age → Mother Restrained Eating	-0.05	0.06	-0.83
Mother BMI → Daughter Restrained Eating	-0.05	0.06	-0.95
Daughter BMI → Mother Restrained Eating	-0.03	0.06	-0.52
<b>Two-Way Interactions</b>			
Mother BD x Daughter Age → Mother Restrained Eating	0.14**	0.06	2.38
Mother BD x Daughter Age → Daughter Restrained Eating	-0.03	0.04	-0.64
Daughter BD x Daughter Age → Mother Restrained Eating	-0.02	0.06	-0.32
Daughter BD x Daughter Age → Daughter Restrained Eating	0.04	0.05	0.89
Mother BD x Daughter BD → Mother Restrained Eating	-0.09	0.06	-1.61
Mother BD x Daughter BD → Daughter Restrained Eating	-0.02	0.04	-0.54
<b>Three-Way Interactions</b>			
Mother BD x Daughter BD x Daughter Age → Mother Restrained Eating	0.03	0.06	0.52
Mother BD x Daughter BD x Daughter Age → Daughter Restrained Eating	0.003	0.04	0.08
<b>R<sup>2</sup></b>			
Mother Restrained Eating	0.08		
Daughter Restrained Eating	0.46		

\**p* < .05. \*\*\**p* < .001. Notes. *N* = 356 dyads; BD = Body Dissatisfaction.

symptoms for either mothers or daughters (e.g., all *ps* > .05; see Tables 2 and 3).

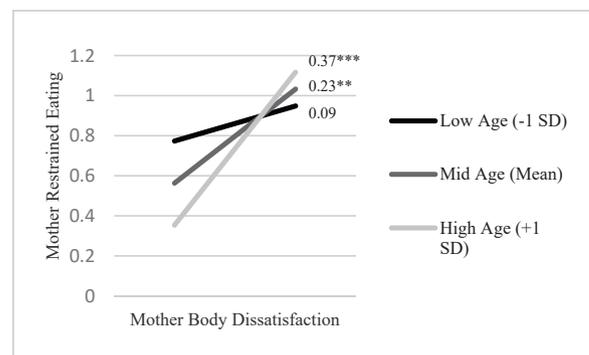
Following examination of actor and partner main effects, potential interactions among actor and partner effects were explored. A significant two-way interaction between mother body dissatisfaction (an actor effect) and daughter age (a partner effect) was obtained for mother restrained eating. Probing with the Johnson-Neyman technique indicated that, when daughter age was slightly below the mean for age and higher, mother body dissatisfaction significantly predicted higher levels of her own restrained eating. More specifically, mother body dissatisfaction predicted higher levels of her own restrained eating when her daughter was 16.05 years old or older. For clarity of visual depiction, simple slopes are plotted in Fig. 2.

Results also indicated a significant two-way interaction between daughter age and daughter body dissatisfaction in the prediction of her own bulimic symptoms (i.e., a moderated actor effect). The Johnson-Neyman technique indicated that when daughter age was 2.14 standard deviations or more below the mean, the slope of daughter body dissatisfaction became not significant. It is important to note, however, that this threshold was outside the range of observable data for daughter age in this study and would therefore be considered extrapolation. We also conducted simple slopes analyses considering daughter age one standard deviation below the mean, at the mean, and one standard deviation above the mean (See Fig. 3). Although all three slopes are significant, results indicated that the relation between a daughter's body dissatisfaction and her own bulimic symptoms (the actor effect) became progressively stronger as daughter age increased. No other two- or three-way interactions were significant for mother or daughter outcomes.

**Table 3**  
Results of APIM for mother and daughter bulimic symptoms.

APIM Parameters	Estimate	SE	Z-Value
<b>Actor Effects</b>			
Mother BD → Mother Bulimic Symptoms	0.57***	0.06	9.59
Daughter BD → Daughter Bulimic Symptoms	0.51***	0.050	9.62
Mother Age → Mother Bulimic Symptoms	0.003	0.05	0.06
Daughter Age → Daughter Bulimic Symptoms	-0.02	0.06	-0.39
Mother BMI → Mother Bulimic Symptoms	0.05	0.07	0.66
Daughter BMI → Daughter Bulimic Symptoms	0.19*	0.07	2.58
<b>Partner Effects</b>			
Mother BD → Daughter Bulimic Symptoms	0.05	0.06	0.95
Daughter BD → Mother Bulimic Symptoms	0.09	0.05	1.86
Mother Age → Daughter Bulimic Symptoms	0.09	0.05	1.69
Daughter Age → Mother Bulimic Symptoms	-0.04	0.05	-0.80
Mother BMI → Daughter Bulimic Symptoms	-0.12*	0.06	-1.98
Daughter BMI → Mother Bulimic Symptoms	-0.01	0.07	-0.10
<b>Two-Way Interactions</b>			
Mother BD x Daughter Age → Mother Bulimic Symptoms	-0.07	0.04	-1.91
Mother BD x Daughter Age → Daughter Bulimic Symptoms	-0.03	0.04	-0.84
Daughter BD x Daughter Age → Mother Bulimic Symptoms	0.04	0.04	1.18
Daughter BD x Daughter Age → Daughter Bulimic Symptoms	0.11*	0.05	2.42
Mother BD x Daughter BD → Mother Bulimic Symptoms	0.06	0.05	1.20
Mother BD x Daughter BD → Daughter Bulimic Symptoms	0.04	0.04	1.08
<b>Three-Way Interactions</b>			
Mother BD x Daughter BD x Daughter Age → Mother Bulimic Symptoms	0.004	0.04	0.11
Mother BD x Daughter BD x Daughter Age → Daughter Bulimic Symptoms	-0.01	0.04	-0.12
<b>R<sup>2</sup></b>			
Mother Bulimic Symptoms	0.38		
Daughter Bulimic Symptoms	0.38		

\**p* < .05. \*\**p* < .01. \*\*\**p* < .001. Notes. *N* = 356 dyads; BD = Body Dissatisfaction.



\*\*\**p* < .001. \*\**p* < .01.

**Fig. 2.** Simple Slopes Analysis of the Daughter Age x Mother Body Dissatisfaction Two-Way Interaction on Mother Restrained Eating.\*\*\**p* < .001. \*\**p* < .01.

Overall, results indicated that our models explained 8% of the variance in mother restrained eating, 46% of the variance in daughter restrained eating, and 38% of the variance in both mother and daughter bulimic symptoms (See Tables 2 and 3).

#### 4. Discussion

The APIM approach used in the present study allowed a focus on self and partner contributions to restrictive eating and bulimic symptoms within the mother-daughter dyad. Our findings primarily indicated actor effects, some of which were moderated by other actor or partner effects. Below, we summarize and discuss results for our hypothesized effects as well as exploratory findings of interest.



**Fig. 3.** Simple Slopes Analysis of the Daughter Age x Daughter Body Dissatisfaction Two-Way Interaction on Daughter Bulimic Symptoms.  $**p < .001$ .

Turning first to restrained eating, daughters' restriction was predicted by their own greater body dissatisfaction as well their greater age. These actor effects were expected given previous findings concerning the relevance of body dissatisfaction to problematic eating (Stice & Shaw, 2002), increases in dietary restriction during adolescence (Neumark-Sztainer et al., 2011), and previous APIM analyses showing actor effects for both body dissatisfaction and age among adolescent daughters (Hart et al., 2021). Importantly, the impact of body dissatisfaction and age on unhealthy dietary restriction among daughters was supported while also considering potential contributions of the mother-daughter context (i.e., mothers' actor and partner effects).

Findings for maternal restrained eating were somewhat more nuanced than those for daughters. As expected (Slevec & Tiggemann, 2011), mothers' restrained eating was predicted by their own greater body dissatisfaction, however, this main effect was qualified by a two-way, actor by partner interaction. The interaction indicated that, as daughter age increased, the relation between mother body dissatisfaction and her own restrained eating became increasingly positive. Perhaps older daughters increasingly model restrictive eating for mothers as a legitimate response to body dissatisfaction. Whereas mothers of younger adolescent daughters may attempt to counteract daughter body dissatisfaction and dieting, dieting is more socially acceptable and more common among adults, and so a mother of a high-school or college-age daughter may be more inclined to follow their daughter's lead. Qualitative interview data reported by Ogle and Damhorst (2003) illustrated some examples of high-school daughters (age 15 - 18) encouraging their mothers' dieting and exercise and partnering with them in pursuit of appearance goals, providing some support for our interpretation. Again, our finding and interpretation are necessarily speculative, so further research should attempt to replicate these patterns as well as investigate potential explanations.

Turning to our second outcome measure, as hypothesized, daughters' higher body dissatisfaction and BMI predicted their greater bulimic symptoms. However, the body dissatisfaction actor effect was qualified by a two-way interaction indicating that as daughters' age increased, the relation between their body dissatisfaction and their bulimic symptoms became increasingly positive (i.e., a moderated actor effect). This pattern of findings is consistent with the broader literature indicating associations between body dissatisfaction and bulimic behaviors among older adolescents and young adults (Stice & Shaw, 2002; Wiederman & Pryor, 2000). The interaction is also consistent with previous literature indicating that normative transitions of emerging adulthood including school and work transitions, greater independence, and romantic partnering (Zarrett & Eccles, 2006) often bring additional body shape and weight-related challenges which might exacerbate

already-present relations between body dissatisfaction and bulimic symptoms (Anderson et al., 2003; Cooley & Toray, 2001; Delinsky & Wilson, 2008). As hypothesized, mothers' bulimic symptoms were predicted by their greater body dissatisfaction, a finding consistent with the broader literature (Slevec & Tiggemann, 2011).

An overarching finding of the present study is that, among mothers and daughters, eating outcomes were largely predicted by one's own body dissatisfaction, and not by that of one's partner. The absence of partner effects in the present study is consistent with most of the prior APIM findings. In one exception to this trend, Hart et al. (2021) reported that mothers' and daughters' anti-fat attitudes affected each other's restrained eating, and in a second exception, Arroyo and Andersen (2016) reported that mothers' perceptions of fat talk predicted higher bulimic behavior among daughters. Perhaps partner effects are unlikely to account for significant variation in outcomes unless they capture relatively salient partner behavior such as expression of anti-fat attitudes. Anti-fat attitudes expressed and discussed within a dyad might be likely to shape further attitudes and interactions, and these processes may appear in analyses as partner effects. In contrast, more subtle attitudes such as thoughts and feelings about one's own body could be relatively hidden or not as frequently expressed and so may not be captured as partner effects. Future research might systematically assess different levels or strengths of presumed influence, from relatively subtle indirect influences (e.g., body dissatisfaction), to salient indirect influences (e.g., antifat speech), to notable and obvious direct influences (e.g., encouragement to lose weight), to explore whether some influences are more easily captured as partner effects than others. Understanding of actor and partner effects in the mother-daughter dyad would also be more informed if research included some measures of potential positive effects such as positive communication about the body and resistance-focused discussions about pressures girls and women encounter (Arroyo et al., 2020; Brun et al., 2021; Maor & Cwikel, 2016). Additionally, future research could examine the relative strength of actor and partner effects in additional stages of development. It is possible, for example, that mother partner effects may be more visible when girls are younger than our youngest participants, before peers and media influences likely become more potent sources of socialization.

It is important to note the limitations of the present study. First, we utilized cross-sectional data, and thus we do not know how actor or partner effects might account for change in outcomes over time. Second, the sample was generally homogenous with regards to race and ethnicity and, while there was diversity in regard to SES, the sample skewed toward middle-class families. Although the sample was representative of the geographic area from which it was drawn, the findings may not be generalizable to those who hold identities other than female, White, and middle-class. Finally, the data were collected through self-report surveys. Although this technique allows for rapid data collection, it is limited in its ability to assess the extent to which participants engage in specific, observable behaviors, and lacks the richness that interview data can provide. Measuring all variables as self-reported individual behavior might also contribute to method variance that contributes to robust actor effects. Thus, research could be strengthened in the future with longitudinal designs, more diverse samples, and measures of body dissatisfaction and eating pathology beyond self-report.

Despite these limitations, our study makes a number of important contributions and suggests directions for future research and intervention. We obtained a relatively large sample of mothers and their daughters, answering the call to more consciously examine the mother-daughter relationship (Brun et al., 2021). Furthermore, we included assessment of midlife women. Although research on midlife women's body image and eating is becoming more common (Carbonneau et al., 2020; Carrard et al., 2018; Slevec & Tiggemann, 2011), more research is needed, and our study thus contributes in

this way alone. Importantly, we add to an emergent body of literature focused on self and partner influences within the mother-daughter dyad. Given that there is now some convergence across studies that partner effects estimated via the APIM approach tend to be small and inconsistent, it is possible that maternal effects on daughters assessed via non-dyadic analyses could somehow overestimate the strength of maternal influence. Mothers are assumed to be influential and indeed, associations between maternal influences and daughter outcomes are often reported and are clearly sensible given the maternal role. However, these associations are commonly established without controlling for the other actor and partner effects possibly occurring in the dyad. The APIM approach as used within the present study and in previous work (Arroyo & Andersen, 2016; Chow & Tan, 2018; Domoff et al., 2021; Hart et al., 2021) might allow researchers to tease apart such effects, and is an important approach to incorporate within the broader literature.

Furthermore, our findings that mother and daughter body dissatisfaction are positively correlated and that each person's dissatisfaction contributes robustly to their own disordered eating are consistent with past literature, lending credence to the idea that mother-daughter body image interventions may be particularly useful. Although dyadic and mother and daughter interventions conducted in parallel are still rare, some have found preliminary success (e.g., Corning et al., 2010; Diedrichs et al., 2016; Trost, 2006). Thus, additional interventions focused on the mother-daughter dyad are needed to further develop this line of research. Finally, it is important to conduct basic and applied research focused on body dissatisfaction and eating pathology among other family members beyond the mother-daughter dyad, including sisters, brothers, and fathers. For instance, Hart et al. (2015) surveyed the literature on family-based body image interventions and concluded that, while the link between family influences and body image is strong, there are still few interventions targeting familial relationships. Notably, the few studies that do exist have largely been underpowered, specifically with small parent sample sizes, further speaking to the need for additional high-quality research in this area (Hart et al., 2015).

Overall, this study added to the literature on body image and eating pathology within the mother-daughter dyad, addressing the potential mutual effects of body dissatisfaction in this context. Historically, studies of body image and eating among mothers and daughters have not been dyadic in focus, and have instead examined unidirectional mother-to-daughter influences. However, mothers and daughters, via their individual behaviors and interactions, may influence each other concerning the body and eating (Ogle & Damhorst, 2003). There are notable physiological and social transitions for both midlife mothers and adolescent daughters, and the intersection of these transitions might foster body- and weight-focused interactions. To the extent that mothers and daughters co-construct meaning around the body and eating (Ogle & Damhorst, 2004), the juxtaposition of their midlife and adolescent eras may be an especially important time to examine potential mutual influences (Brun et al., 2021).

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## Declarations of interest

none

## ORCID iD authorship contribution statement

**Agatha Laboe:** Conceptualization, Methodology, Formal analysis, Writing – original draft, Writing – review & editing. **Jessica Hocking:** Methodology, Software, Formal Analysis, Writing – original draft, Writing – review & editing. **Dawn Gondoli:** Supervision, Conceptualization, Project administration, Funding acquisition, Writing – original draft, Writing – review & editing.

## Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

## References

- Centers for Disease Control and Prevention, February 3) Recommended BMI-for-age Cutoffs. CDC. <https://www.cdc.gov/nccdphp/dnpao/growthcharts/training/bmiage/page4.html>.
- Abraham, S., Boyd, C., Lal, M., Luscombe, G., & Taylor, A. (2009). Time since menarche, weight gain and body image awareness among adolescent girls: Onset of eating disorders? *Journal of Psychosomatic Obstetrics & Gynecology*, *30*, 89–94. <https://doi.org/10.1080/01674820902950553>
- Anderson, D. A., Shapiro, J. R., & Lundgren, J. D. (2003). The freshman year of college as a critical period for weight gain: An initial evaluation. *Eating Behaviors*, *4*, 363–367. [https://doi.org/10.1016/S1471-0153\(03\)00030-8](https://doi.org/10.1016/S1471-0153(03)00030-8)
- Armstrong, B., & Janicke, D. M. (2012). Differentiating the effects of maternal and peer encouragement to diet on child weight control attitudes and behaviors. *Appetite*, *59*(3), 723–729. <https://doi.org/10.1016/j.appet.2012.06.022>
- Arroyo, A., & Andersen, K. K. (2016). Appearance-related communication and body image outcomes: Fat talk and old talk among mothers and daughters. *Journal of Family Communication*, *16*(2), 95–110. <https://doi.org/10.1080/15267431.2016.1144604>
- Arroyo, A., Segrin, C., & Andersen, K. K. (2017). Intergenerational transmission of disordered eating: Direct and indirect maternal communication among grandmothers, mothers, and daughters. *Body Image*, *20*, 107–115. <https://doi.org/10.1016/j.bodyim.2017.01.001>
- Arroyo, A., Stillion Southard, B. A., Cohen, H., & Caban, S. (2020). Maternal communication strategies that promote body image in daughters. *Communication Research*, *47*(3), 402–427. <https://doi.org/10.1177/0093650218781737>
- Ata, R. B., Ludden, A. B., & Lally, M. M. (2007). The effects of gender and family, friend, and media influences on eating behaviors and body image during adolescence. *Journal of Youth and Adolescence*, *36*(8), 1024–1037. <https://doi.org/10.1007/s10964-006-9159-x>
- Balantekin, K. N., Savage, J. S., Marini, M. E., & Birch, L. L. (2014). Parental encouragement of dieting promotes daughters' early dieting. *Appetite*, *80*, 190–196. <https://doi.org/10.1016/j.appet.2014.05.016>
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Prentice-Hall, Inc.
- Bearman, S. K., Presnell, K., Martinez, E., & Stice, E. (2006). The skinny on body dissatisfaction: A longitudinal study of adolescent girls and boys. *Journal of Youth and Adolescence*, *35*(2), 217–229. <https://doi.org/10.1007/s10964-005-9010-9>
- Becker, C. B., Diedrichs, P. C., Jankowski, G., & Werchan, C. (2013). I'm not just fat, I'm old: has the study of body image overlooked "old talk"? *Journal of Eating Disorders*, *1*(6), 2050–2974. <https://doi.org/10.1186/2050-2974-1-6>
- Becker, C. B., Verzijl, C. L., Kilpela, L. S., Wilfred, S. A., & Stewart, T. (2019). Body image in adult women: Associations with health behaviors, quality of life, and functional impairment. *Journal of Health Psychology*, *24*(11), 1536–1547. <https://doi.org/10.1177/1359105317710815>
- Belsky, J. (1984). The determinants of parenting: A process model. *Child Development*, *55*(1), 83–96. <https://doi.org/10.1111/j.1467-8624.1984.tb00275.x>
- Blodgett Salafia, E. H., & Gondoli, D. M. (2011). A 4-year longitudinal investigation of the processes by which parents and peers influence the development of early adolescent girls' bulimic symptoms. *The Journal of Early Adolescence*, *31*(3), 390–414. <https://doi.org/10.1177/0272431610366248>
- Brun, I., Russell-Mayhew, S., & Mudry, T. (2021). Last word: Ending the intergenerational transmission of body dissatisfaction and disordered eating: A call to investigate the mother-daughter relationship. *Eating Disorders*, *29*(6), 591–598. <https://doi.org/10.1080/10640266.2020.1712635>
- Bucchianeri, M. M., Arikian, A. J., Hannan, P. J., Eisenberg, M. E., & Neumark-Sztainer, D. (2013). Body dissatisfaction from adolescence to young adulthood: Findings from a 10-year longitudinal study. *Body Image*, *10*(1), 1–7. <https://doi.org/10.1016/j.bodyim.2012.09.001>
- Calzo, J. P., Sonnevile, K. R., Haines, J., Blood, E. A., Field, A. E., & Austin, S. B. (2012). The development of associations among body mass index, body dissatisfaction, and weight and shape concern in adolescent boys and girls. *The Journal of Adolescent Health*, *51*(5), 517–523. <https://doi.org/10.1016/j.jadohealth.2012.02.02>
- Carbonneau, N., Goodman, L. C., Roberts, L. T., Begin, C., Lussier, Y., & Musher-Eitzman, D. R. (2020). A look at the intergenerational associations between self-

- compassion, body esteem, and emotional eating within dyads of mothers and their adult daughters. *Body Image*, 33, 106–114. <https://doi.org/10.1016/j.bodyim.2020.02.007>
- Carden, S. W., Holtzman, N. S., & Strube, M. J. (2017). CAHOST: An excel workbook for facilitating the Johnson-Neyman technique for two-way interactions in multiple regression. 1293–1293 *Frontiers in Psychology*, 8. <https://doi.org/10.3389/fpsyg.2017.01293>
- Carrard, I., Kruseman, M., & Marques-Vidal, P. (2018). Desire to lose weight, dietary intake and psychological correlates among middle-aged and older women. The CoLaus study. *Preventive Medicine*, 113, 41–50. <https://doi.org/10.1016/j.ypmed.2018.05.011>
- Chow, C. M., & Tan, C. C. (2018). The role of fat talk in eating pathology and depressive symptoms among mother-daughter dyads. *Body Image*, 24, 36–43. <https://doi.org/10.1016/j.bodyim.2017.11.003>
- Clark, L., & Tiggemann, M. (2006). Appearance culture in nine- to 12-year-old girls: Media and peer influences on body dissatisfaction. *Social Development*, 15(4), 628–643. <https://doi.org/10.1111/j.1467-9507.2006.00361.x>
- Cooley, E., & Toray, T. (2001). Body image and personality predictors of eating disorder symptoms during the college years. *International Journal of Eating Disorders*, 30(1), 28–36. <https://doi.org/10.1002/eat.1051>
- Cooley, E., Toray, T., Wang, M. C., & Valdez, N. N. (2008). Maternal effects on daughters' eating pathology and body image. *Eating Behaviors*, 9(1), 52–61. <https://doi.org/10.1016/j.eatbeh.2007.03.001>
- Corning, A. F., Gondoli, D. M., Bucchianeri, M. M., & Salafia, E. H. B. (2010). Preventing the development of body issues in adolescent girls through intervention with their mothers. *Body Image*, 7(4), 289–295. <https://doi.org/10.1016/j.bodyim.2010.08.001>
- Cox, M. J., & Paley, B. (1997). Families as systems. *Annual Review of Psychology*, 48(1), 243–267. <https://doi.org/10.1146/annurev.psych.48.1.243>
- Davies, P.T., & Coe, J.L. (2019). Family relationship dynamics: A developmental perspective. In B. H. Fiese, M. Celano, K. Deater-Deckard, E. N. Jouriles, & M. A. Whisman (Eds.), *APA handbook of contemporary family psychology: Foundations, methods, and contemporary issues across the lifespan* (pp. 165–185). American Psychological Association. <https://doi.org/10.1037/0000099-010>
- Davison, K. K., Markey, C. N., & Birch, L. L. (2000). Etiology of body dissatisfaction and weight concerns among 5-year-old girls. *Appetite*, 35(2), 143–151. <https://doi.org/10.1006/appe.2000.0349>
- Delinsky, S. S., & Wilson, G. T. (2008). Weight gain, dietary restraint, and disordered eating in the freshman year of college. *Eating Behaviors*, 9, 82–90. <https://doi.org/10.1016/j.eatbeh.2007.06.001>
- Diedrichs, P. C., Atkinson, M. J., Garbett, K. M., Williamson, H., Halliwell, E., Rumsey, N., Leckie, G., Sibley, C. G., & Barlow, F. K. (2016). Randomized controlled trial of an online mother-daughter body image and well-being intervention. *Health Psychology*, 35(9), 996–1006. <https://doi.org/10.1037/hea0000361>
- Domoff, S. E., Tan, C. C., & Chow, C. M. (2021). Mother-daughter negative body talk as a moderator between body surveillance and body shame in adolescent girls. *Eating and Weight Disorders*, 26(3), 941–948. <https://doi.org/10.1007/s40519-020-00925-4>
- Downey, C. A., & Chang, E. C. (2007). Perfectionism and symptoms of eating disturbances in female college students: Considering the role of negative affect and body dissatisfaction. *Eating Behaviors*, 8(4), 497–503. <https://doi.org/10.1016/j.eatbeh.2007.02.002>
- Duarte, Ferreira, C., Trindade, I. A., & Pinto-Gouveia, J. (2015). Body image and college women's quality of life: The importance of being self-compassionate. *Journal of Health Psychology*, 20(6), 754–764. <https://doi.org/10.1177/1359105315573438>
- Dunkley, T. L., Wertheim, E. H., & Paxton, S. J. (2001). Examination of a model of multiple sociocultural influences on adolescent girls' body dissatisfaction and dietary restraint. *Adolescence*, 36(142), 265–279.
- Garner, D. M., Olmstead, M. P., & Polivy, J. (1983). Development and validation of a multidimensional eating disorder inventory for anorexia nervosa and bulimia. *International Journal of Eating Disorders*, 2(2), 15–34. [https://doi.org/10.1002/1098-108X\(198321\)2:2<15::AID-EAT2260020203>3.0.CO;2-6](https://doi.org/10.1002/1098-108X(198321)2:2<15::AID-EAT2260020203>3.0.CO;2-6)
- Gondoli, D. M., Corning, A. F., Salafia, E. H. B., Bucchianeri, M. M., & Fitzsimmons, E. E. (2011). Heterosocial involvement, peer pressure for thinness, and body dissatisfaction among young adolescent girls. *Body Image*, 8(2), 143–148. <https://doi.org/10.1016/j.bodyim.2010.12.005>
- Hart, E., Tan, C. C., & Chow, C. M. (2021). Anti-fat attitudes and dietary restraint within mother-daughter dyads: an Actor-Partner Interdependence Model (APIM) analysis. *Eating and Weight Disorders*, 26(5), 1417–1426. <https://doi.org/10.1007/s40519-020-00949-w>
- Hart, L. M., Cornell, C., Damiano, S. R., & Paxton, S. J. (2015). Parents and prevention: A systematic review of interventions involving parents that aim to prevent body dissatisfaction or eating disorders. *The International Journal of Eating Disorders*, 48(2), 157–169. <https://doi.org/10.1002/eat.22284>
- Hillard, E. E., Gondoli, D. M., Corning, A. F., & Morrissey, R. A. (2016). In it together: Mother talk of weight concerns moderates negative outcomes of encouragement to lose weight on daughter body dissatisfaction and disordered eating. *Body Image*, 16, 21–27. <https://doi.org/10.1016/j.bodyim.2015.09.004>
- Kenny, D.A., Kashy, Deborah A., & Cook, William L. (2006). *Dyadic data analysis*. Guilford Press.
- Laboe, A.A., Shah, J., & Fitzsimmons-Craft, E.E. (in press). The transition to college as a risk factor for eating disorders. In P. Robinson, T. Wade, B. Herpertz-Dahlmann, F. Fernandez-Aranda, J. Treasure, & S. Wonderlich (Eds.), *Manual of eating disorders*. Springer.
- Lewis, D. M., &achelin, F. M. (2001). Body image, body dissatisfaction, and eating attitudes in middle and elderly women. *Eating disorders*, 9(1), 29–39. <https://doi.org/10.1080/106402601300187713>
- Maor, M., & Cwikel, J. (2016). Mothers' strategies to strengthen their daughters' body image. *Feminism & Psychology*, 26(1), 11–29. <https://doi.org/10.1177/0959535315592899>
- Medeiros de Moraes, M. S., do Nascimento, R. A., Apolinario Vieira, M. C., Moreira, M. A., Aires da Camara, S. M., Cavalcanti Maciel, A. C., Almeida, M., & das, G. (2017). Does body image perception relate to quality of life in middle-aged women. e0184031–e0184031 *PLoS One*, 12(9). <https://doi.org/10.1371/journal.pone.0184031>
- Neumark-Sztainer, D., Wall, M., Larson, N. I., Eisenberg, M. E., & Loth, K. (2011). Dieting and disordered eating behaviors from adolescence to young adulthood: findings from a 10-year longitudinal study. *Journal of the American Dietetic Association*, 111(7), 1004–1011. <https://doi.org/10.1016/j.jada.2011.04.012>
- Ogle, J. P., & Damhorst, M. L. (2003). Mothers and daughters: Interpersonal approaches to body and dieting. *Journal of Family Issues*, 24(4), 448–487. <https://doi.org/10.1177/0192513X02250826>
- Ogle, J. P., & Damhorst, M. L. (2004). Constructing and deconstructing the body malleable through mother-daughter interactions. *Sociological Inquiry*, 74(2), 180–209. <https://doi.org/10.1111/j.1475-682X.2004.00086.x>
- Patterson, G. R. (1982). *Coercive family process*. Castalia.
- Paxton, S. J., Neumark-Sztainer, D., Hannan, P. J., & Eisenberg, M. E. (2006). Body dissatisfaction prospectively predicts depressive mood and low self-esteem in adolescent girls and boys. *Journal of Clinical Child & Adolescent Psychology*, 35(4), 539–549. [https://doi.org/10.1207/s15374424jccp3504\\_5](https://doi.org/10.1207/s15374424jccp3504_5)
- Rodgers, R. F., Salès, P., & Chabrol, H. (2010). Psychological functioning, media pressure and body dissatisfaction among college women. *European review of applied psychology*, 60(2), 89–95. <https://doi.org/10.1016/j.erap.2009.10.001>
- Rosseel, Y. (2012). lavaan: An R package for structural equation modeling. *Journal of Statistical Software*, 48(2), 1–36.
- Slevec, J. H., & Tiggemann, M. (2011). Predictors of body dissatisfaction and disordered eating in middle-aged women. *Clinical Psychology Review*, 31(4), 515–524. <https://doi.org/10.1016/j.cpr.2010.12.002>
- Smolak, L., Levine, P., & Schermer, F. (1999). Parental input and weight concerns among elementary school children. *International Journal of Eating Disorders*, 25, 263–271. doi: 10.1002/(SICI)1098-108X(199904)25:3<263::AID-EAT>3.0.CO;2-V.
- Stice, E., & Shaw, H. E. (2002). Role of body dissatisfaction in the onset and maintenance of eating pathology: A synthesis of research findings. *Journal of Psychosomatic Research*, 53(5), 985–993. [https://doi.org/10.1016/S0022-3999\(02\)00488-9](https://doi.org/10.1016/S0022-3999(02)00488-9)
- Stice, E., & Whitenton, K. (2002). Risk factors for body dissatisfaction in adolescent girls. *Developmental Psychology*, 38(5), 669–678. <https://doi.org/10.1037/0012-1649.38.5.669>
- Tanner, J. M. (1971). Sequence, tempo, and individual variation in the growth and development of boys and girls aged twelve to sixteen. *Daedalus*, 100(4), 907–930.
- Thompson, J. K., Heinberg, L. J., Altabe, M., & Tantleff-Dunn, S. (1999). *Exacting beauty: Theory, assessment, and treatment of body image disturbance*. American Psychological Association, <https://doi.org/10.1037/10312-000>
- Trost, A.S. (2006). The healthy image partnership (HIP) parent program: The role of parental involvement in eating disorder prevention (Order No. AAI3268358) [Doctoral Dissertation, University of Texas at Austin]. ProQuest Dissertations and Theses Global.
- Van Strien, T., Frijters, J.E. R., Van Staveren, W.A., Defares, P.B., & Deurenberg, P. (1986). The predictive validity of the Dutch Restrained Eating Scale. *International Journal of Eating Disorders*, 5(4), 747–755. [https://doi.org/10.1002/1098-108X\(198605\)5:4<747::AID-EAT2260050413>3.0.CO;2-6](https://doi.org/10.1002/1098-108X(198605)5:4<747::AID-EAT2260050413>3.0.CO;2-6)
- Wertheim, E.H., & Paxton, S.J. (2011). Body image development in adolescent girls. In T. F. Cash, L. Smolak, T. F. Cash & L. Smolak (Eds.), *Body image: A handbook of science, practice, and prevention* (pp. 76–84). Guilford Press.
- West, S.G., Finch, J.F., & Curran, P.J. (1995). Structural equation models with nonnormal variables: Problems and remedies. In *Structural equation modeling: Concepts, issues, and applications* (pp. 56–75). Sage Publications, Inc.
- Wiederman, M. W., & Pryor, T. L. (2000). Body dissatisfaction, bulimia, and depression among women: The mediating role of drive for thinness. *The International Journal of Eating Disorders*, 27(1), 90–95.
- Zarrett, N., & Eccles, J. (2006). The passage to adulthood: Challenges of late adolescence. *New Directions for Youth Development*, 2006(111), 13–28. <https://doi.org/10.1002/jyd.179>