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Early Adversity, Personal Resources, Body Dissatisfaction, and Disordered Eating

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ABSTRACT
Objective: Early adverse experiences have been associated with disordered eating, but the mechanisms underlying that association are not well understood. The purpose of this study is to test a structural equation model in which early adversity is associated with disordered eating via intrapersonal resources, interpersonal resources, and body dissatisfaction.

Method: Female university students ($n = 748$) completed a series of questionnaires online, including measures of early adverse experiences, intrapersonal resources (self-esteem and personal growth initiative), interpersonal resources (gratitude and social support), body dissatisfaction, and disordered eating and exercising to lose weight.

Results: Structural equation modeling indicated that early adverse experiences were negatively associated with interpersonal and intrapersonal resources. Intrapersonal resources were negatively associated with body dissatisfaction, whereas interpersonal resources were positively associated with body dissatisfaction (although negative bivariate correlations in this latter case suggest possible suppression effects). Finally, body dissatisfaction was associated with a range of disordered eating behaviors and exercise.

Discussion: Early adverse experiences are important to consider in models of disordered eating. The results of this study highlight potential points of early prevention efforts, such as improving personal resources for those who experience early adversity, to help reduce the risk of body dissatisfaction and disordered eating in young women. © 2014 Wiley Periodicals, Inc.

Keywords: body dissatisfaction; disordered eating; early adversity; interpersonal resources; intrapersonal resources

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Introduction

Early adverse experiences have been identified as an important risk factor for disordered eating later in life, but there is much that is unknown about the nature of this association. Most of the studies in this domain have examined how childhood sexual abuse (CSA) is related to eating disorder pathology; the literature, however, has provided mixed results regarding the importance of CSA. For example, a

meta-analysis by Rind et al.[1] found that the correlation between CSA and eating disorders was only 0.06. Furthermore, those authors showed that family environment has a stronger association with eating disorders than does CSA, and that controlling for family environment tends to eliminate the significant relation between CSA and eating disorders. Thus, examining a broader range of adverse experiences, especially in relation to one's family environment, in the context of disordered eating might provide better insight into the development of those conditions.

Early family adversity can be broadly characterized by childhood experiences of violence, neglect, non-nurturance, quarreling, exposure to substance abuse, unpredictability, or general chaos, such as not having a quiet place to study or having to share a room with multiple siblings.[2,3] Early family adversity is associated with a range of negative health outcomes, including heart disease,[4] alcohol abuse,[5] and obesity.[6] Given that these diverse forms of early adversity are more

common than major traumas (such as CSA), and therefore have relevance for a greater range and number of individuals, it is important to determine how early adverse experiences impact disordered eating behavior.

There is some existing evidence that forms of adversity beyond CSA are related to disordered eating. For example, Kinzl, Traweger, Guenther, and Biebl[7] found that having an adverse family background (including fighting between parents, lack of warm parent-child interactions, and parental neglect) was associated with higher scores on a measure of eating disorder pathology. Other research also suggests that emotional abuse is associated with eating disorder pathology,[8] and that emotional abuse might have a more important role than either physical abuse or sexual abuse in the development of eating pathology.[9] Finally, Smyth, Heron, Wonderlich, Crosby, and Thompson[10] found that past trauma and adverse events (e.g., separation of parents, violence) prospectively predicted the development of restricted eating and binge/purge behaviors over the first semester of college. Thus, there is now accumulating evidence that a broad range of early adverse experiences (beyond CSA) can increase the risk of disordered eating. Despite this growing evidence, however, the mechanisms involved in such risk are not well understood.

One of the core determinants of disordered eating is body dissatisfaction. Body dissatisfaction is highly prevalent, particularly among young women, and is associated with a range of negative outcomes, including depression and stress.[11] Of particular importance is the fact that body dissatisfaction plays a role in both the development and maintenance of eating disorders.[12] Given the role of body dissatisfaction in the development and maintenance of disordered eating, it is important to determine whether early adversity is associated with these body-related concerns. Although it has been suggested that family environment can negatively impact body image,[13] studies that have examined the association between early abuse and body dissatisfaction have produced mixed results.[14,15] The one study that examined adverse experiences more broadly defined did find an association between early adversity and body dissatisfaction and drive for thinness.[7] What has not yet been explored in the early adversity literature, however, is whether body dissatisfaction is a possible mechanism connecting early adversity to disordered eating behavior.

Beyond examining the potential role of body dissatisfaction in the development of disordered eating, there are a range of intrapersonal and interpersonal factors that may explain the onset of body dissatisfaction and disordered eating, and these factors might also be affected by early adversity. For example, greater intrapersonal resources (i.e., resources within the individual, such as self-esteem) are associated with lower body dissatisfaction and disordered eating.[16–18] These types of intrapersonal resources can be negatively affected by early adversity. For example, early adversity has been found to impair several affective domains related to self-esteem[19] as well as personal growth initiative.[20] Personal growth initiative is important to examine because it reflects the extent to which an individual believes in, and is actively engaged in, changing and developing as a person[20]; thus, personal growth initiative appears to be vital to self-improvement. It is noteworthy that families of patients with eating disorders (i.e., bulimia or anorexia nervosa) were found to be less supportive of personal growth.[21] Taken together, these studies suggest that intrapersonal resources such as self-esteem and personal growth initiative might underlie the association between early adversity and body dissatisfaction and eating pathology.

Interpersonal resources (i.e., resources obtained from others) such as social support may also be related to the development of body dissatisfaction. For example, research suggests that greater social support is associated with lower levels of body dissatisfaction.[22] As with intrapersonal resources, these interpersonal resources can also be disrupted by early adverse experiences. For example, early family adversity is associated with less social support,[23] as well as with mistrust in others, hyper-vigilance, and feelings of entitlement.[24,25] Other work suggests that gratitude might also be an important factor to consider in this context. Gratitude involves one's feeling of well-being, and the extent to which one attributes those feelings to others.[26] People who are grateful tend to be more prosocial in terms of the capacity to be empathic, feel that life is interconnected, and believe that people have a commitment and responsibility to others.[26] As such, gratitude is positioned as a trait that measures how one feels connected to, thankful for, and valuing of others. Gratitude has been shown to foster social support, and is also related to lower levels of stress and depression.[27] Thus, examining social support and gratitude may also help to explain the relationships of early adversity to body dissatisfaction and disordered eating.

This Study

Early adverse experiences are associated with disordered eating, but the mechanisms underlying that association are not well understood. The purpose of this study is to test a structural equation model examining some of these potential mechanisms. We hypothesized that early adversity would predict intrapersonal resources (self-esteem and personal growth initiative) and interpersonal resources (social support and gratitude), that these personal resources would predict body dissatisfaction, and that body dissatisfaction would predict disordered eating. We further tested whether there were indirect effects of early adversity on body dissatisfaction via intrapersonal resources and interpersonal resources, and of early adversity on disordered eating via personal resources and body dissatisfaction. We focused on a broader range of early adverse experiences than has been examined in most past research (which has generally focused on CSA), and we also included a broader range of eating-disorder variables than is typically examined (including binging, purging to control weight, exercising to control weight, and restricted eating). Our sample consisted of female university students because body dissatisfaction is highly prevalent in this population.[28] Negative body image is strongly correlated with disturbed eating[29] and, although a minority of university-aged women report clinical eating disorders, 61% report disordered eating patterns more generally.[30] The results of this study may provide insights that can be used in early prevention efforts aimed at reducing the prevalence of body dissatisfaction and disordered eating.

Method

Participants

Participants were 748 undergraduate women from a private university in the Northeastern United States. Their mean age was 19.75 (SD = 1.27). Height and weight information were not collected. Participants identified primarily as White/Caucasian (526; 70.3%), followed by Asian (127; 17.0%), Hispanic (50; 6.7%), and Black/African-American (45; 6.0%). An additional 47 participants had initially completed the study but were aged 24 and over; to ensure that we had a typical young undergraduate sample, we excluded these older participants from the analyses. (Note that including these older participants does not change the observed pattern of results depicted in the figure below.)

Materials and Procedure

As part of a larger survey on college students' lives, health, and well-being, participants completed the following measures:

Early Family Adversity. Early family adversity was measured using an 11-item version of the Risky Families Questionnaire (RFQ),[3] which measures the extent to which the participant grew up in a household characterized by family stress and dysfunction, including conflict and aggression and containing relationships that are cold, unsupportive, and neglectful (e.g., "How often would you say there was quarreling, arguing, or shouting between a parent and you?"). Each item was rated on a five-point scale (1 = Not at All; 5 = Very Often), with higher mean scores indicating more family adversity. Scores on the RFQ agree with reconstructions of family environments obtained from interview, and are correlated with stress-related dysregulation.[2,3] Reliability has been demonstrated in prior work,[2] and was good in the present sample (Cronbach's α = 0.89).

Intrapersonal Resources. Participants completed two measures of intrapersonal resources: self-esteem was assessed with the 10-item Rosenberg Self-Esteem Scale (SES)[31] (e.g., "On the whole, I am satisfied with myself."). Each item was rated on a four-point scale (1 = Strongly Disagree; 4 = Strongly Agree), with higher mean scores indicating greater self-esteem. The SES has good reliability, and has also shown relationships with measures of self-worth and confidence.[32] Reliability was excellent in the present sample (Cronbach's α = 0.92). The nine-item Personal Growth Initiative Scale (PGIS)[33] was used as a measure of goal and achievement orientation (e.g., "I have a specific action plan to help me reach my goals."). Each item was rated on a six-point scale (1 = Strongly Disagree; 6 = Strongly Agree), with higher mean scores indicating greater striving for personal growth. The PGIS has been shown to be related to greater assertiveness, internal locus of control, and instrumentality.[33] As in prior work,[33] reliability was excellent in the present sample (Cronbach's α = 0.94).

Interpersonal Resources. Participants also completed two measures of interpersonal resources: the six-item Gratitude Questionnaire (GQ-6)[26] measures the extent to which an individual is grateful for various aspects of life (e.g., "I am grateful to a wide variety of people in my life."). Items were rated on a seven-point scale (1 = Strongly Disagree; 7 = Strongly Agree), with higher mean scores indicating greater gratitude. The GQ has been shown to be related to more prosocial behavior and positive affect, and less envy and materialistic attitudes.[26] Reliability for this measure has been demonstrated in prior work,[26] and reliability was good in the present sample (Cronbach's α = 0.89). The 23-item Social Support Appraisal Scale (SS-A)[34] measures perceptions of overall social support, including friends and family (e.g., "My family cares for me very much."). Each item was rated on a four-point scale (1 = Strongly Agree; 4 = Strongly Disagree), and items were recoded so that

higher mean scores indicated more social support. The SS-A has been shown to be related to other measures of social support and to greater support network resources.[34] Consistent with prior work,[34] reliability was excellent in the present sample (Cronbach's $\alpha = 0.94$).

Body Dissatisfaction. Participants completed three assessments of body dissatisfaction. First, they completed the 34-item Body Shape Questionnaire (BSQ)[35] (e.g., "Have you been particularly self-conscious about your shape when in the company of other people?"). Each item was rated on a six-point scale (1 = Never; 6 = Always), with higher mean scores indicating more body dissatisfaction. The BSQ has been shown to be related to overall body dissatisfaction, and patients with eating disorders (e.g., bulimia nervosa) tend to score higher on the BSQ than do non-clinical individuals. As observed in prior work,[35] reliability was excellent in this sample (Cronbach's $\alpha = 0.98$). Second, they completed the eight-item Shape Concern subscale of the Eating Disorder Examination Questionnaire (EDE-Q Shape Concern),[36] which provides a measure of one's dissatisfaction with one's body shape (e.g., "How dissatisfied have you felt about your shape?"). One of these eight items ("Has thinking about shape or weight made it more difficult to concentrate on things you are doing?") is proposed to load on either the Shape Concern or Weight Concern subscale; to have distinct subscales, we included it only with the Shape Concern subscale. Third, they completed the four-item Weight Concern subscale of the Eating Disorder Examination Questionnaire (EDE-Q Weight Concern),[36] which provides a measure of one's dissatisfaction with one's body weight (e.g., "How much has your weight influenced how you think or judge yourself as a person?"). Items on both the EDE-Q Shape Concern and Weight Concern subscales were rated on a seven-point scale (0 = Not at All; 6 = Markedly), with higher mean scores indicating more body shape and weight dissatisfaction. The EDE-Q has been shown to be a valid instrument to predict anorexia nervosa, bulimia nervosa, and binge eating disorder.[36] Earlier work has found the overall scale, and both subscales, to be reliable,[36] and reliability was good in the present sample (Cronbach's $\alpha = 0.93$ for Shape Concern and 0.86 for Weight Concern).

Disordered Eating. Participants responded to four sets of items related to disordered eating and exercise derived from the EDE-Q.[36]

Binge. Participants indicated how often they binged in the past four weeks ("How many times when you have overeaten in the past 4 weeks did you have a sense of having lost control over your eating?"). Participants then entered the number of times they binged with the number of reported events ranging from 0 to 30.

Purge. Participants responded to three items that assessed how often they engaged in purging behaviors to control their weight in the past 4 weeks ("How many times have you [made yourself sick (vomit); taken laxatives; taken diuretics (water tablets)] to control your weight over the past four weeks?"). Although originally intended to be analyzed as continuous variables, each of the three items was zero-inflated: 95.1% had not vomited in the last four weeks, 96.9% had not used laxatives, and 98.8% had not used diuretics. As a result, these items were recoded to dichotomous variables (0 = No; 1 = Yes).

Exercise. Participants indicated how often they exercised hard in the past four weeks ("How many times over the past four weeks have you exercised hard as a means of controlling your shape or weight?"). Participants then entered the number of times they exercised, with the reported number of events ranging from 0 to 40.

Restricted eating. Participants completed the five-item Restraint subscale of the Eating Disorder Examination Questionnaire (EDE-Q Restraint),[36] which provides a measure of one's excessive weight control via restricted eating (e.g., "Have you been deliberately trying to limit the amount of food you eat to influence your shape or weight?"). Items were rated on a seven-point scale (0 = Not at All; 6 = Markedly), with higher mean scores indicating more restricted eating. This scale has been shown to be reliable in prior work,[36] and reliability was good in the present sample (Cronbach's $\alpha = 0.85$).

Data Analytic Approach

First we conducted bivariate correlations among all the variables included in the study. We then specified a three-stage path model in which early family adversity predicted personal resources, personal resources predicted body dissatisfaction, and body dissatisfaction predicted the variables related to disordered eating and exercise to control weight. It is important to note that the terminology of "predict" is used in a statistical sense to indicate that a unidirectional relationship is being proposed between two variables; it is not intended to suggest that one variable necessarily temporally preceded or caused the other, which is not possible to adequately test using only cross-sectional data. The disordered eating and exercise variables were tested in the same model and were allowed to co-vary; non-significant relationships were subsequently removed. All models were tested using Structural Equation Modeling in AMOS (AMOS 18.0).

For each stage of the model, a series of latent variables was specified using the scale averages for the personal resources and body dissatisfaction variables, and the items for purging behaviors. For personal resources, self-esteem and personal growth initiative were entered as an index of intrapersonal resources, and gratitude and social support were entered as an index of interpersonal resources. The two personal resource factors were

allowed to co-vary. For body dissatisfaction, the BSQ, EDE-Q Shape Concern subscale, and EDE-Q Weight Concern subscale were entered as indicators of a latent body dissatisfaction factor. The binge and exercise variables, and the EDE-Q Restraint subscale, were entered as manifest indicators; vomiting, laxatives, and diuretics were entered as indicators of a latent purge factor.

To determine model fit, we used a range of indicators including the chi-square (χ^2), comparative fit index (CFI), normed fit index (NFI), standardized root mean square residual (SRMR), and root mean square error of approximation (RMSEA). Along with χ^2, we report the degrees of freedom and the accompanying p-value. The χ^2 statistic is the traditional index for evaluating goodness of fit which is determined by an non-significant chi-square at the $p = 0.05$ level.[37] However, large sample sizes like the one used in this study are known to bias chi-square towards significance. Thus, other fit indices, which are less sensitive to sample size, are commonly included to assist in making judgments about model fit.[37] A CFI value greater than 0.95, NFI value greater than 0.95, SRMR less than or equal to 0.08, and RMSEA less than or equal to 0.05 with a confidence interval (CI) from 0.00 to 0.08 are all demonstrative of good model fit.[38]

Finally, we tested for indirect effects of early family adversity on body dissatisfaction via intrapersonal and interpersonal resources, of early family adversity on the disordered eating and exercise variables via intrapersonal and interpersonal resources and body dissatisfaction, and of intrapersonal and interpersonal resources on the disordered eating and exercise variables via body dissatisfaction. To do so we used a boot-strapping procedure specifying 5,000 resamples and 90% bias corrected confidence intervals.[39] This procedure treats the data as a population, and takes the specified number of resamples and reruns the model for each one. This process creates a sampling distribution, produces standard errors, and creates confidences intervals thus assessing the stability of parameter estimates. For the present purposes, we are interested in whether the confidence interval for our proposed indirect effects includes 0, which would indicate a null effect within some subsample of the data.

## Results

Correlational Analyses

Table 1 presents the bivariate correlations among all the study variables. Of particular note, RFQ scores were negatively associated with intrapersonal resources (self-esteem and personal growth initiative) and interpersonal resources (social support and gratitude), were positively correlated with body dissatisfaction (BSQ, EDE-Q Shape Concern, and EDE-Q Weight Concern), and were related to some of the disordered eating variables, including more frequent binging, purging (i.e., vomiting and laxative use), and restricted eating (i.e., EDE-Q Restraint subscale). Furthermore, both intrapersonal resources and interpersonal resources were negatively correlated with body dissatisfaction. Finally, body dissatisfaction was related to all (BSQ) or most (EDEQ-Shape Concern; EDE-Q Weight Concern) of the disordered eating and exercise variables, including more frequent binging, purging (i.e., vomiting and laxative use for

TABLE 1. Bivariate correlations, ranges, means, and standard deviations for all variables included in the study

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. RFQ	—													
2. SES	−0.42	—												
3. PGIS	−0.30	0.61	—											
4. GQ	−0.36	0.47	0.39	—										
5. SSA	−0.44	0.63	0.46	0.55	—									
6. BSQ	0.26	−0.55	−0.31	−0.17	−0.28	—								
7. EDE-Q Shape	0.21	−0.49	−0.30	−0.11	−0.22	0.88	—							
8. EDE-Q Weight	0.18	−0.44	−0.26	−0.09	−0.18	0.84	0.90	—						
9. Binged	0.15	−0.27	−0.16	−0.06	−0.15	0.31	0.28	0.23	—					
10. Vomited	0.08	−0.15	−0.09	−0.06	−0.06	0.25	0.20	0.16	0.16	—				
11. Laxatives	0.13	−0.18	−0.06	−0.04	−0.08	0.25	0.20	0.18	0.18	0.28	—			
12. Diuretics	0.001	−0.06	−0.03	−0.04	−0.003	0.11	0.03	0.06	−0.02	0.20	0.26	—		
13. Exercised	−0.03	−0.03	0.04	0.04	0.06	0.17	0.21	0.14	0.05	0.12	0.06	0.03	—	
14. EDE-Q Restraint	0.08	−0.24	−0.12	−0.01	−0.06	0.64	0.67	0.61	0.13	0.33	0.24	0.12	0.35	—
Range	1–5	0–3	1–6	1–7	1–4	1–6	0–6	0–6	0–30	0–1	0–1	0–1	1–40	0–6
Mean	1.86	2.15	4.43	6.09	3.44	2.63	2.71	2.67	2.60	0.05	0.03	0.01	4.71	1.68
SD	0.71	0.57	0.93	1.01	0.44	1.15	1.70	1.79	4.99	0.22	0.17	0.11	7.36	1.52

Note. RFQ = Risky Families Questionnaire, SES = Rosenberg Self-Esteem Scale, PGIS = Personal Growth Initiative Scale, GQ = Gratitude Questionnaire, SSA = Social Support Appraisal Scale, BSQ = Body Shape Questionnaire, EDE-Q Shape = Shape Concern subscale of the Eating Disorder Examination Questionnaire, EDE-Q Weight = Weight Concern subscale of the Eating Disorder Examination Questionnaire, and EDE-Q Restraint = Restraint subscale of the Eating Disorder Examination Questionnaire. Correlations greater than |0.08| are significant at $p < .05$, and greater than |0.12| are significant at $p < .001$.

FIGURE 1.   Structural equation model examining early adversity predicting intrapersonal and interpersonal resources, body dissatisfaction, and disordered eating and exercise. All paths show standardized regression weights. RFQ = Risky Families Questionnaire; BSQ = Body Shape Questionnaire; EDEQ = Eating Disorder Examination Questionnaire. For ease of presentation, co-variances between the disordered eating and exercise variables are not presented in the figure but include the following pathways: binging co-varied with purging ($r = .18$, $p = .001$) and restricted eating ($r = -.07$, $p = .038$), and restricted eating co-varied with purging ($r = .35$, $p < .001$) and exercise ($r = .29$, $p < .001$). ***$p < .001$.
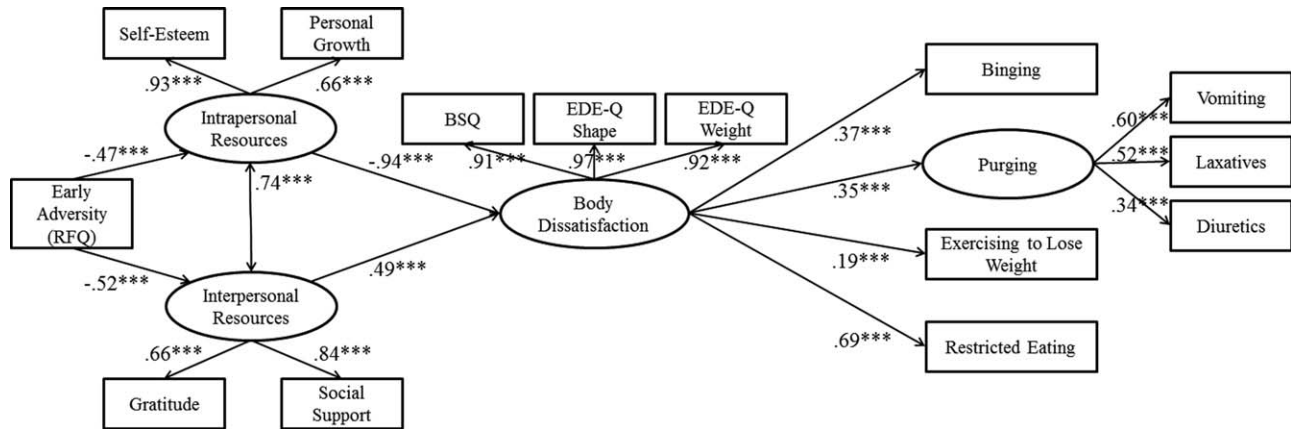
all three scales, and diuretic use for only the BSQ), more frequently exercising to lose weight, and more restricted eating.

Structural Equation Model

Measurement Models.   We first examined a series of measurement models to determine whether the indicators of the personal resources, body dissatisfaction, and purging latent factors fit the data as specified; each latent factor was tested in a separate measurement model. For personal resources, we tested a model in which self-esteem and personal growth indicated a latent intrapersonal resources factor, and gratitude and social support indicated a latent interpersonal resources factor, and in which the latent interpersonal and intrapersonal factors co-varied (the model in which these latent factors did not co-vary was unidentified). All the indicators loaded significantly (intrapersonal resources: βs > 0.68, ps < 0.001; interpersonal resources: βs > 0.64, ps < 0.001), and the model fit the data well: χ^2 (1) = 3.46, p = .063, CFI = 0.998, NFI = 0.997, SRMR = 0.01, RMSEA = 0.06, RMSEA 90% CI = 0.00–0.13. As an alternative, we also explored a model in which all indicators loaded on a single latent factor, however this model did not fit the data well: χ^2 (2) = 43.15, p < .001, CFI = 0.960, NFI = 0.958, SRMR = 0.04, RMSEA = 0.17, RMSEA 90% CI = 0.13–0.21. Thus, we retained the interpersonal and intrapersonal resource model.

For the body dissatisfaction and purging latent factors, only three items were used in each model and thus the measurement models were saturated.

Although the overall model fit cannot be tested, parameter estimates and standard errors can still be generated and used to test individual parameters,[40] and thus can indicate acceptability of the latent factor. For the body dissatisfaction latent factor, BSQ, EDE-Q Shape Concern, and EDE-Q Weight Concern all loaded highly (βs > 0.90, ps < 0.001). Vomiting, laxatives, and diuretics all loaded highly on the purging latent factor (βs > 0.43, ps < 0.001). Thus, support was found for using these body dissatisfaction and purging latent factors in the main model.

Main Model.   The first stage of the model specified RFQ scores predicting personal resources. As can be seen in **Figure 1**, the two resiliency factors significantly co-varied. As predicted, greater early childhood adversity predicted lower interpersonal and intrapersonal resources.

The second stage of the model specified the two resiliency factors predicting body dissatisfaction. As expected, greater intrapersonal resilience predicted lower body dissatisfaction. Unexpectedly, and in contrast to the bivariate correlations reported above, individuals' interpersonal resilience was positively associated with body dissatisfaction. We also explored whether there was a direct effect of RFQ scores on body dissatisfaction, above the indirect effect of RFQ through personal resources. This pathway was not significant and was thus not included in the analyses.

The third stage of the model specified the disordered eating and exercise to control weight variables. Greater body dissatisfaction predicted more

TABLE 2. Indirect effects of RFQ, intrapersonal resources, and interpersonal resources on the disordered eating and exercise variables

Predictor	Dependent Variable	Indirect Effect *b* (SE)	90% Confidence Interval	
			Lower	Upper
RFQ	Body dissatisfaction	0.27* (0.05)	0.19	0.35
	Binging	0.39* (0.09)	0.27	0.55
	Purging	0.01* (0.003)	0.004	0.01
	Exercising Hard	0.47* (0.10)	0.23	0.55
	Restricted Eating	0.27* (0.05)	0.19	0.35
Intrapersonal Resources	Binging	−2.72* (0.63)	−3.93	−1.97
	Purging	−0.06* (0.02)	−0.10	−0.03
	Exercising Hard	−2.56* (0.73)	−3.95	−1.61
	Restricted Eating	−1.86* (0.37)	−2.58	−1.44
Interpersonal Resources	Binging	1.12* (0.42)	0.65	1.95
	Purging	0.02* (0.01)	0.01	0.05
	Exercising Hard	1.06* (0.44)	0.55	1.93
	Restricted Eating	0.77* (0.27)	0.45	1.27

Note. RFQ = Risky Families Questionnaire. The indirect effect of the RFQ on body dissatisfaction is via intrapersonal and interpersonal resources. The indirect effects of the RFQ on the disordered eating and exercise variables are via intrapersonal and interpersonal resources, and body dissatisfaction. The indirect effects of intrapersonal and interpersonal resources on the disordered eating and exercise variables are via body dissatisfaction. *$p < .001$.

frequent binging, purging, exercising hard to control weight, and restricted eating (see **Fig. 1**). We also explored whether RFQ, intrapersonal resources, and/or interpersonal resources had a direct effect on any of the disordered eating and exercise variables in the model. RFQ and interpersonal resources did not significantly predict any of the disordered eating and exercise variables. Similarly, intrapersonal resources did not have a direct effect on purging and exercising, but did predict binging ($\beta = -0.23$, $p = .031$) and restricted eating ($\beta = 0.18$, $p = .031$). Given the inconsistent and mostly null effects, we did not include any of these direct pathways of personal resources on disordered eating and exercise in the final model depicted in **Figure 1**.

The overall model predicted 38.5% of the variance in body dissatisfaction, 13.8% of the variance in binging, 12.3% of the variance in purging, 3.8% of the variance in exercising hard to control weight, and 47.0% of the variance in restricted eating. The model fit the data well: χ^2 (68) = 256.09, $p < .001$, CFI = 0.962, NFI = 0.949, SRMR = 0.05, RMSEA = 0.06, RMSEA 90% CI = 0.05–0.07.

Finally, we found significant indirect effects for all expected pathways. As can be seen in **Table 2**, there was an indirect effect of the RFQ on body dissatisfaction via intrapersonal and interpersonal resources. Also, there were indirect effects of the RFQ on the disordered eating and exercise variables via intrapersonal and interpersonal resources and body dissatisfaction. Finally, there were indirect effects of intrapersonal and interpersonal resources on the disordered eating and exercise variables via body dissatisfaction.

Discussion

Early adversity has been associated with a range of negative psychological and physical health outcomes, and this study examined the connections among early adversity, body dissatisfaction, and disordered eating behaviors in a sample of young women. In addition, this study examined whether early adverse experiences had an indirect effect on body dissatisfaction/disordered eating behaviors via intrapersonal resources and interpersonal resources. Early adversity was associated with lower intrapersonal and interpersonal resources. As predicted, intrapersonal resources (self-esteem and personal growth initiative) were associated with lower body dissatisfaction. Unexpectedly, although interpersonal resources were negatively associated with body dissatisfaction in the bivariate correlational analyses, when these factors were examined in the structural equation model, there was a positive association between interpersonal resources and body dissatisfaction. Note that this pattern of results does not necessarily imply that social support and gratitude (i.e., the indicators of interpersonal resources) are directly related to greater body dissatisfaction. Rather, it suggests that there is a unique component of interpersonal resources that, in addition to the more general positive effect of one's resources (which is accounted for in the large covariance between interpersonal and intrapersonal resources), may negatively influence body-related outcomes. Finally, body dissatisfaction was associated with disordered eating and exercise behaviors.

The present results broaden our understanding of how early experiences can impact body dissatisfaction and disordered eating. Past research

suggests an association (albeit a weak association) between childhood sexual abuse and clinical eating disorders.[1] Because both CSA and clinical eating disorders have relatively low base-rates, this study expanded on that earlier work by focusing on constructs that would be relevant to a greater range and number of individuals. Indeed, our results add to a growing body of research suggesting that a broad array of early adverse experiences are related to disordered eating,[7,8,10] and further add to that literature by suggesting that body dissatisfaction might be one of the mechanisms through which early adversity has its impact on disordered eating. It is worth noting that, although early adversity was not consistently and directly associated with the disordered eating and exercise variables (either in the bivariate correlations or in the structural equation model), adversity does appear to be associated with an individual's personal resources, which in turn are associated with body dissatisfaction and eating pathology (as indicated by the significant indirect effects for the RFQ).

Our results also show that intrapersonal and interpersonal resources can play an important role in understanding the association between early adversity and body dissatisfaction. With respect to intrapersonal resources, it appears that the risks posed by adverse early experiences may arise from impairments in self-esteem and personal growth initiative. This finding is consistent with other work suggesting that intrapersonal resources can reduce the risk of developing body dissatisfaction and eating pathology.[16–18] Higher self-esteem in particular is associated with lower levels of disordered eating behaviors, including lower dieting frequency in young women.[41] Furthermore, longitudinal data from participants beginning in adolescence through young adulthood showed that increases in self-esteem were associated with a reduction in binge eating.[42]

With respect to interpersonal resources, the bivariate correlations showed the predicted negative association between interpersonal resources and body dissatisfaction, consistent with other research.[22] In the structural equation model including both intrapersonal and interpersonal factors, however, interpersonal resources were positively associated with body dissatisfaction. This may reflect a suppression effect indicating that when one's personal resources are accounted for, resources related to others may predict greater body dissatisfaction. In other words, although perceived social support generally has positive effects on health and mood, when the protective effects of social support are partialled out, what may remain

is concern for how others view the individual; such concerns may have a negative effect in the context of worrying about one's body appearance. For example, one third of college women report being self-conscious of their bodies when engaging in physical intimacy with their partner.[43] Furthermore, research asking women to report on their experiences with weight stigma indicated that a common source of that stigma was close friends, family, and significant others.[44] It is also possible that the positive association between interpersonal resources and body dissatisfaction is related to the fact that our measure of social support included support from friends; young women may regularly engage in appearance-based social comparisons with their female friends, in turn resulting in greater body dissatisfaction.[45] Future work should explore the potential of certain aspects of interpersonal resources to have a negative effect on one's body image and eating habits.

The current findings have implications for early prevention efforts aimed at reducing the risk of body dissatisfaction and disordered eating among young women. First, by expanding the scope of risk factors beyond CSA to include a broader range of early adverse experiences, the current findings suggest that a broader range of individuals could be targeted with prevention efforts. Second, the identification of personal resources as a potential mechanism connecting early adversity to body dissatisfaction and disordered eating extends a growing body of research indicating that intrapersonal resources and interpersonal resources can help reduce the risk of body dissatisfaction and eating pathology. Building on this evidence base, interventions or prevention programs that specifically target enhancing self-esteem and personal growth might be useful means of reducing the potential deleterious effects of early adversity on the development of later body dissatisfaction and disordered eating behaviors. Moreover, targeting these factors early in life for those at risk may be particularly important because research suggests that personality tends to become more fixed with age.[46] Thus, interventions to enhance personal resources may find their most success among (younger) cohorts during developmental stages when personality is more malleable.

There are some limitations to the present research that should be noted. First, the cross-sectional nature of the study does not allow us to make causal inferences about the associations among the variables. For some of the variables, the temporal sequence can be reasonably assumed (e.g., early adversity is logically the first step in the chain), and other associations have been determined by

previous longitudinal studies (e.g., self-esteem pro-spectively predicts body dissatisfaction).[16] The literature on adults' retrospective reports of childhood experiences, however, suggests that recall of early experiences can be biased (e.g., in that they may fail to indicate a proportion of negative events that have occurred).[47] Thus, further research with objective measurement of early adversity coupled with a longitudinal design testing these effects would be the "gold-standard" to confirm the sequence described in this study. In addition, the sample only consisted of young, female undergraduates. Thus, we cannot yet speak to how interpersonal and intrapersonal resources function for men or for older women. As another potential limitation, the reported rates of purging were low and, as such, could indicate that our sample was a generally healthy sample in terms of disordered eating behaviors. If so, this low prevalence of purging may affect the ability to generalize to samples in which purging is more common, and thus suggests the need to examine these relationships among individuals with more severe disordered eating. Note, however, that the low prevalence of purging also restricted variability in this measure, which typically makes it more difficult to observe effects and may thus produce conservative estimates of the association. The fact that a relationship between body dissatisfaction and purging was still observed suggests the relation of body dissatisfaction to disordered eating is robust. Finally, future work should more broadly assess the constructs of interpersonal and intrapersonal resources as this would expand our understanding of the risk and resiliency factors involved in the development of body dissatisfaction and disordered eating. In addition, future work should consider collecting data on a range of theoretically and clinically meaningful covariates when studying early family adversity. In particular, measuring socioeconomic status (SES) might prove fruitful as some aspects of early adversity may be more prevalent among those with lower SES, and lower SES has been shown to subsequently predict reduced personal coping resources, such as lower socioemotional functioning.[48]

In conclusion, early adverse experiences are associated with body dissatisfaction and, in turn, to a range of disordered eating behaviors. Importantly, early adversity is associated with body dissatisfaction, at least in part, indirectly via interpersonal and intrapersonal resources. Although our model was constructed using cross-sectional data, these findings suggest potential targets for early prevention efforts aimed at reducing the risk of developing body dissatisfaction and disordered eating in young females. Specifically,

psychotherapeutic intervention in early life for individuals exposed to early adversity could potentially enhance individuals' personal resources which may in turn result in reduced downstream consequences related to body dissatisfaction and disordered eating.

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