Body Image 24 (2018) 36–43

Contents lists available at ScienceDirect

Body Image

journal homepage: www.elsevier.com/locate/bodyimage

The role of fat talk in eating pathology and depressive symptoms among mother-daughter dyads☆

Chong Man Chow[a,*], Cin Cin Tan[a,b]

[a] Eastern Michigan University, United States
[b] University of Michigan, United States

ARTICLE INFO

Article history:
Received 28 February 2017
Received in revised form 19 October 2017
Accepted 8 November 2017

Keywords:
Eating
Adolescent
Mother
Fat talk
Depression
Actor-partner interdependence model

ABSTRACT

The present study investigated how eating pathology and depressive symptoms were related to the dyadic dynamics of fat talk in mother-daughter relationships during adolescence. The current sample included 100 mother-daughter dyads who completed a survey on their fat talk disclosure, eating pathology, and depressive symptoms. The Actor-Partner Interdependence Model (APIM) was utilized for the dyadic data. Adolescent girls' and mothers' engagement in fat talk was related to their own eating pathology. Daughters, but not mothers, who engaged in more fat talk reported more depressive symptoms. When mothers and daughters both had high levels of fat talk, it was associated with a higher risk of daughters' eating pathology. Adolescent girls who engaged in fat talk reported higher depressive symptoms when their mothers did not reciprocate with more fat talk. This study highlights the importance of an interpersonal approach to fat talk research and clinical interventions addressing adolescents' eating disorders and depression.

1. Introduction

Body image disturbances (e.g., body dissatisfaction, pathological eating) are prominent among women and girls (Morrison, Morrison, & Sager, 2004; Smolak, 2004). According to the Tripartite Model, parent-child relationships, in addition to peers and media, are important socialization agents of body dissatisfaction and eating problems among adolescent girls (Keery, Van den Berg, & Thompson, 2004). One mechanism in which parent-child relationships may excerpt influence on adolescents' body image disturbances is through their weight-related conversations (Neumark-Sztainer et al., 2010), including fat talk (Shannon & Mills, 2015). Fat talk is a form of dyadic conversation that includes mutual disclosure and support of appearance related dissatisfaction (Shannon & Mills, 2015). Past studies on adults have demonstrated the adverse consequences of fat talk on body image problems and disordered eating behaviors (Mills & Fuller-Tyszkiewicz, 2016; Shannon & Mills, 2015). Surprisingly, since Nichter and Vuckovic's (1994) seminal qualitative work, very little research attention has been devoted to fat talk in mother-daughter relationships during adolescence. In addition to eating disorder symptoms, adolescent girls are also at risk for developing depressive symptoms (Stice, Presnell, & Bearman, 2001). An interpersonal perspective on socioemotional development suggests that gender differences in adolescents' psychological adjustment are attributable to the interactional styles of girls versus boys with their family and peers (Rose & Rudolph, 2006). Fat talk as an interpersonal dynamic that revolves around body dissatisfaction and negative affect, therefore, is expected to be related to depressive symptoms (Arroyo & Harwood, 2012). Given the salience of eating problems (45%; Neumark-Sztainer and Hannan, 2000) and depressive symptoms (25%; Saluja et al., 2004) among adolescent girls, the present study investigated how these psychological problems were related to fat talk in mother-daughter relationships during adolescence.

1.1. Fat talk

Fat talk is common in families, especially between mothers and daughters (Rogers, Martz, Webb, & Galloway, 2017). Cross-sectional research on adults has consistently demonstrated the negative impacts of engaging in, as well as exposure to, fat talk with family members (e.g., mothers) on body image disturbances (e.g., body dissatisfaction, eating disorder symptoms; Arroyo & Andersen, 2016; Kluck, 2008, 2010; MacDonald, Dimitropoulos, Royal, Polanco, & Dionne, 2015). Although not directly capturing fat talk, a small body of research has been devoted to examining weight and dieting conversation in parent-adolescent relationships (Berge

☆ This research was supported by EMU Provost's New Faculty Award granted to the first author. We thank Ellen Hart for proofreading the manuscript.
* Corresponding author at: Psychology Department, Eastern Michigan University, Ypsilanti, MI 48197, United States.
E-mail address: cchow@emich.edu (C.M. Chow).

https://doi.org/10.1016/j.bodyim.2017.11.003
1740-1445/

et al., 2013, 2015; Neumark-Sztainer et al., 2010). It was found that parent-adolescent conversation about each other's weight or size was related to adolescents' engagement in unhealthy weight changing behaviors (e.g., fasting, dieting), extreme weight changing behaviors (e.g., using diet pills, laxatives, diuretics), and binge eating concurrently (Berge et al., 2013, 2015; Neumark-Sztainer et al., 2010). These adolescent studies, however, have primarily focused on how parents manage their adolescents' diets and weight (e.g., encouragement of dieting, criticism of weight/size) through conversations. Family conversations that encompasses mutual disclosure and validation of each other's body image concerns (i.e., fat talk) have been largely overlooked in the existing research.

In addition to eating pathology (Mills & Fuller-Tyszkiewicz, 2016), engagement in fat talk is also expected to be associated with more depressive symptoms in adolescent girls. According to the affect regulation theory, individuals may engage in maladaptive behaviors (e.g., fat talk) as a regulatory mechanism in response to the experience of negative affect stemming from body dissatisfaction (Webb, Fiery, & Jafari, 2016). Research on co-rumination within adolescent friendships suggests that extensive discussion of problems and negative feelings is a risk factor for the emergence of depression, especially among girls (Rose, 2002). Because fat talk involves mutual disclosure and rehashing of body dissatisfaction and negative affect, its tone and content is similar to the conversational style of co-rumination (Rudiger & Winstead, 2013). Thus, when mothers and daughters engage in fat talk, the focus on body dissatisfaction may perpetuate more negative affective experience of both members and, in the long run, more depressive symptoms. Supporting this idea, Arroyo and Harwood (2012) found that engagement in fat talk was related to depression longitudinally. In the same study, it was found that daily fat talk was also related to more depressive symptoms. In a dyadic study of female friends, cross-sectional research showed that one friend's heavy weight status was related to greater depressive symptoms of another friend when they engaged in more fat talk (Tan & Chow, 2014). The link between fat talk and depressive symptoms in adolescence, however, is unknown. Thus, it is important to investigate whether fat talk may be an important predictor of greater depressive symptoms among adolescent girls.

1.2. Actor-partner interdependence model of fat talk

According to interdependence theory, any given individual outcomes (e.g., eating pathology) in a relationship could be conceptualized as the independent and conjoint effects of two members' characteristics (Kelley, 2003). The actor-partner interdependence model (APIM; Kenny & Cook, 1999; Kenny, Kashy, & Cook, 2006) was developed to explicitly examine these interpersonal dynamics. There are 3 components that constitute the interdependence in dyadic relationships: *actor*, *partner*, and *actor-partner interaction* effects. Actor effect refers to individuals' direct association with their own outcome, partner effect refers to individuals' direct association with their partner's outcome, and actor-partner interaction refers to two members' conjoint effect (e.g., reciprocity of characteristics) on each other's outcome. When these ideas are applied to parent-adolescent dyads, individuals' eating pathology and depressive symptoms should be related to their own self-disclosure of fat talk (actor effect), partner-disclosure of fat talk (partner effect), and the interaction or reciprocity between two members' disclosure of fat talk (actor-partner interaction effect).

Numerous research studies have provided evidence that demonstrates that fat talk is related to eating pathology and depressive symptoms at the actor level (Arroyo & Harwood, 2012; Tan & Chow, 2014). To our knowledge, however, no existing studies have simultaneously investigated mother-adolescent fat talk in relation to both members' eating pathology and depressive symptoms. Consequently, we know very little about how mothers' and adolescents' fat talk disclosure may be related each other's eating pathology and depressive symptoms (partner effect). Most importantly, past studies that examined only one member of a relationship have failed to show the reciprocity of mothers' and adolescents' fat talk (actor-partner interaction effect) and its relation to both members' psychological outcomes. For example, it would be important to examine whether mothers and daughters who engage in similar levels of high fat talk will experience higher risks for eating pathology and depressive symptoms. It also vital to demonstrate whether mother-daughter dyads with different levels of fat talk (e.g., the mother engages in low fat talk while their daughter engages in high fat talk) may benefit by another person's low engagement in fat talk. These interpersonal dynamics, however, can only be illuminated by adopting a dyadic design that examines mothers and daughters simultaneously.

1.3. The current study

The current study examined the role of fat talk in eating pathology and depressive symptoms among mother-daughter dyads. Previous studies have suggested that engaging in fat talk disclosure is related to more eating pathology (Arroyo & Harwood, 2012) and depressive symptoms (Tan & Chow, 2014). Thus, we hypothesized that mothers' and daughters' fat talk disclosure would be related to their own higher eating pathology and depressive symptoms (actor effect). Although verbally participating in fat talk is associated with women's body image disturbances, some studies have also demonstrated the potential harmful effects of listening to others' fat talk (Arroyo & Andersen, 2016; Lin & Soby, 2017). Therefore, we hypothesized that mothers' and daughters' fat talk disclosure would be related to each other's eating pathology and depressive symptoms (partner effect).

According to APIM (Kenny & Cook, 1999), it is crucial to examine the interaction of mothers' and daughters' fat talk disclosure in relation to each other's eating pathology and depressive symptoms, above and beyond the actor and partner effects. This model, however, offers little insight into the specific combinations of the two members' behaviors, nor how these dyadic combinations would be related to various outcomes. Therefore, we derived our hypotheses from previous models of co-rumination (Rose, 2002) and dyadic coping (Badr, 2004). Research on co-rumination suggests that when two members engage in emotion-focused conversations, they may mutually reinforce each other's negative affect which in turn, leads to more depressive symptoms (Rose, 2002). Thus, we hypothesized that mothers and daughters with similarly high fat talk disclosure will experience more eating pathology and depressive symptoms. In contrast, mothers and daughters with similarly low fat talk disclosure will have less eating pathology and depressive symptoms. Furthermore, the dyadic coping model suggests that the negative effects of one partner's maladaptive coping could be buffered by another partner's adaptive coping (Badr, 2004). Based on this perspective, we hypothesized that the association between one member's fat talk disclosure and her own eating pathology and depressive symptoms will be buffered by another partner's low fat talk. Fig. 1 depicts the model that includes the actor, partner, and actor-partner interaction effects of fat talk on eating pathology/depressive symptoms.

2. Method

2.1. Participants and procedures

Adolescent girls who met the age requirement (11 to 18 years old), along with their mothers, were recruited from a Midwest-

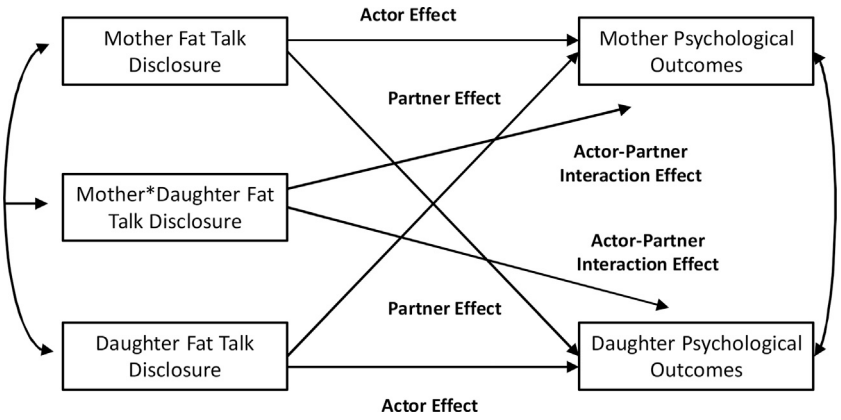

Fig. 1. Graphical representation of the Actor–Partner Interdependence Model. Same model was estimated twice for eating pathology and depressive symptoms. Double headed arrows represent covariances. Although not shown, age and BMI of both members were included as covariates.

ern metropolitan area in the USA. No other exclusion criteria were used in addition to the age of the adolescent girls. Information regarding this study was distributed through electronic flyers posted on webpages (e.g., Facebook, Craigslist) and physical flyers posted at community centers (e.g., colleges and schools) within an hour radius of the university. Mother-daughter dyads who were interested in the study contacted the researchers to schedule a lab session and were then invited to visit the psychology department's lab at a local university for the study. Participants were informed about the study's nature and purposes prior to consenting. Both adolescents and their mothers were required to provide written informed consent before participating. Adolescents and their mothers were then assigned to separate rooms to complete a computer-administered survey. Although not reported in this study, adolescents and their mothers also completed two video-recoded interactions. To compensate for their participation, each mother-daughter dyad received a $40 grocery gift card.

The current sample included 100 adolescent girls (M_{age} = 14.35 years, SD = 2.29) and their mothers (M_{age} = 44.03 years, SD = 7.23). Percentages of girls falling into early (10-13 years old), middle (14-16 years old), and late adolescence (17-18 years old) were 28.57%, 40%, and 31.43%, respectively. According to mother-report, about 48% of the adolescents were Caucasian, followed by African American (30%), Mixed race/Other (15%), Asian (4%), Hispanic (2%), and Middle Easterner (1%). Furthermore, the majority of the mothers reported a household income of $35,000 or above (79%) and had at least some college education (90%). About 60% of the mothers reported that they were married, 14% were single, 17% were divorced, and 9% were either widowed or other relationship status that is not listed above. Mothers' and daughters' body mass index (BMI; kg/m^2) were computed based on their self-reported weight and height. For this study, mothers' mean BMI was 30.28 (SD = 7.53) and daughters' mean BMI was 22.98 (SD = 6.49).

2.2. Measures

2.2.1. Fat talk

Mothers and daughters completed the Family Fat Talk Questionnaire's (MacDonald et al., 2015) disclosure subscale (8-items) to capture their fat talk tendencies. Although this measure was designed to measure fat talk among family members in general, it was modified to specifically capture mothers' and daughters' tendencies to engage in negative appearance-related disclosure with each other (e.g., "When I'm with my mother/daughter, I complain that my body is out of proportion."). Participants rated the items on a scale ranging from 1 (*Never*) to 5 (*Always*). The fat talk items were averaged to form the subscales. For this study, the alpha coefficients for mothers' and daugthers' fat talk variables were satisfactory, with Cronbach's alphas .85 and .91, respectively.

2.2.2. Eating pathology

Mothers and daugthers completed the 26-item Eating Attitudes Test (EAT-26) to measure their eating pathology (Garner, Olmsted, Bohr, & Garfinkel, 1982). This measure was designed to capture the attitudes and behaviors related to eating disorder symptoms, including dieting (e.g., "I am terrified about being overweight."), bulimia and food preoccupation (e.g., "I find myself preoccupied with food."), and oral control (e.g., "I Avoid eating when I am hungry."). Participants rated each item on a 6-point Likert scale, and a total score (ranging from 0 to 78) was computed by summing the items. The alpha coefficients for both mothers' and daugthers' EAT-26 score were satisfactory, with Cronbach's alphas .71 and .75, respectively.

2.2.3. Depressive symptoms

Mothers and daugthers completed the 7-item depression subscale of the Brief Symptom Inventory (Derogatis & Melisaratos, 1983). These questions asked how often they were bothered or distressed by a series of problems for the past 30 days (e.g., "Feeling no interest in things"). Items were rated on a scale from 0 (*Not at all*) to 4 (*Extremely*). The BSI depressive symptoms were averaged to form a composite. The alpha coefficients for both mothers' and daugthers' BSI depression subscales were satisfactory, with Cronbach's alphas .91 and .89, respectively.

2.3. Analysis plan

Preliminary analyses were first conducted to examine descriptive statistics and correlations for the target variables. Then, the Actor-Partner Interdependence Model (APIM) was used to examine the main hypotheses (Chow, Claxton, & van Dulmen, 2015; Garcia, Kenny, & Ledermann, 2015). As depicted in Fig. 1, the APIM estimates the effect of individuals' fat talk disclosure on their own eating pathology (actor effect) and on the other member's eating pathology (partner effect) simultaneously and independently. Furthermore, the model accounts for the degree of interdependence between mothers and daughters in the predictor and outcome variables (reflected as correlations). Finally, to examine the joint effect, an interaction term between the actor and partner scores on fat talk disclosure was estimated. In this model, age and BMI of mothers and their daughter were included as covariates. All predictors were standardized to the grand mean. The interaction term between the actor-partner fat talk was computed based on the standardized

Table 1
Descriptive Statistics and Correlations of Focal Variables (N = 100).

	1	2	3	4	5	6	7	8	9	10
1. D-BMI	–									
2. D-Age	.26*	–								
3. D-Fat Talk	.35*	.33*	–							
4. D-EAT26	.35*	.31*	.52*	–						
5. D-Dep	.26*	.20	.39*	.23*	–					
6. M-BMI	.35*	−.06	.17	.06	−.10	–				
7. M-Age	.05	.25*	.24*	.08	.16	−.29*	–			
8. M-Fat Talk	.24*	.09	.15	.25*	−.02	.28*	−.14	–		
9. M-EAT26	.04	−.07	.04	.08	−.16	.24*	−.24*	.35*	–	
10. M-Dep	−.08	.10	−.06	−.03	.01	.12	−.06	.15	.18	–
Means	22.98	14.35	1.86	7.15	1.90	30.28	44.03	2.07	7.21	1.59
SD	6.49	2.29	0.91	6.78	0.97	7.53	7.23	0.68	6.14	0.76

Notes. D = daughter-report variables M = mother-report variables. All coefficients were estimated with Maximum Likelihood estimator. The current sample included: (1) mothers who were normal weight or below (25.25%), overweight (32.32%), and obese (42.42%) and (2) daughters who were normal weight or below (72.41%), overweight (10.34%), and obese (17.24%). About 6% of adolescents and 5% of mothers met the cutoff scores of 20 for the EAT26.

* $p < .05$.

variables (Aiken & West, 1991). In order to display a significant interaction, graphical representation was constructed by calculating the simple effects corresponding to one standard deviation above and below the mean for daughters' and mothers' fat talk on the outcome variables (Aiken & West, 1991). In addition, a region of significance (or the Johnson-Neyman technique) was computed to determine a range of the mothers' fat talk scores (as a moderator) in which the effect of daughters' fat talk on an outcome variable was significant (Preacher, Curran, & Bauer, 2006). The APIM depicted in Fig. 1 was also used to examine the effects of fat talk disclosure on depressive symptoms. The APIMs were estimated with Structural Equation Modeling (SEM) implemented by *R*'s (Team, 2016) *lavaan* package (Rosseel, 2012).

3. Results

3.1. Preliminary analyses

There was a small amount of missing data across the observed variables. Thus, we conducted Little's Missing Completely at Random test (Little, 1988) and found that the missingness mechanism was considered at random ($\chi^2 = 41.22$, $df = 37$, $p = .29$). Therefore, direct model fitting with Maximum Likelihood estimator was adequate for handling the missing data (Allison, 2002), and this approach was adopted for the estimation of descriptive statistics, correlations, and the APIMs.

Descriptive statistics and correlations of all variables are presented in Table 1. Bivariate correlations showed that daughters' engagement in fat talk disclosure was related to more eating pathology and depressive symptoms. Although mothers' fat talk disclosure was related to more eating pathology, it was not related to depressive symptoms. Daughters' fat talk was not related to their mothers' eating pathology and depressive symptoms. Mothers' fat talk was related to their daughters' eating pathology, but not depressive symptoms. Additional analyses found that mother-report higher household income was not significantly related to adolescent-report fat talk, eating pathology, or depressive symptoms. Mother-report higher household income was not significantly related to self-report fat talk or eating pathology, but was related to less depressive symptoms ($r = -.28$, $p = .01$).

3.2. Actor-partner interdependence models

3.2.1. Eating pathology

Controlling both members' age and BMI, actor effects showed mothers and daughters who engaged in more fat talk reported more eating pathology (Table 2). The partner effects of fat talk on eating pathology, however, were not significant for either mothers or daughters. Supporting our hypothesis, the interaction between mother-daughter fat talk on daughters' eating pathology was found significant (actor-partner interaction). The simple slopes are displayed in Fig. 2. In order to display this interaction, Fig. 2 presents a graphical representation derived by calculating the simple slopes corresponding to one standard deviation above and below the mean for daughters' and mothers' fat talk on daughters' eating pathology (Aiken & West, 1991). Simple slopes analysis showed that the actor effect of daughters' fat talk on their own eating pathology was stronger when their mothers also engaged with more fat talk ($b = 3.44$, $SE = .64$, $p < .05$), compared to those with mothers who engaged in less fat talk ($b = 1.32$, $SE = .85$, $p = .12$). Additional Johnson-Neyman analysis confirmed these patterns. The region of significance for this interaction effect was −41.87 to −.80, indi-

Table 2
Path Coefficients of the Eating Pathology Model

	D-EAT26		M-EAT26	
	b	*SE*	*b*	*SE*
Intercept	7.21		6.98	
D-Age	.76	.62	−.11	.66
M-Age	−.53	.62	−1.00	.64
D-BMI	1.35*	.64	−.54	.69
M-BMI	−1.02	.63	.82	.66
D-Fat Talk	2.33*	.57	.33	.60
M-Fat Talk	1.30	.69	2.22*	.72
D-Fat Talk*M-Fat Talk	1.01*	.48	−.15	.51
R^2	.38		.18	

Note. D = daughter-report variables, M = mother-report variables, *b* = unstandardized coefficients, *SE* = standard errors.

* $p < .05$.

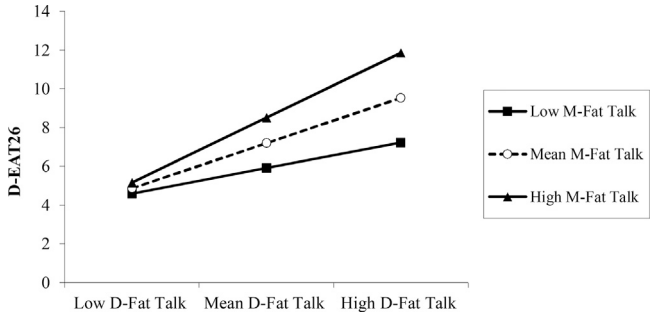

Fig. 2. Interactive effect of daughters' own fat talk (actor) and mothers' fat talk (partner) on daughters' eating pathology. Simple slopes show one standard deviation above and below the mean for fat talk.

Table 3
Path Coefficients of the Depressive Symptoms Model.

	D-Depressive Symptoms		M-Depressive Symptoms	
	b	*SE*	*b*	*SE*
Intercept	2.00		1.57	
D-Age	−.06	.10	−.01	.08
M-Age	.08	.10	.13	.08
D-BMI	.23*	.10	−.12	.09
M-BMI	−.23*	.10	.12	.09
D-Fat Talk	.37*	.09	−.07	.08
M-Fat Talk	−.13	.11	.11	.10
D-Fat Talk*M-Fat Talk	−.20*	.08	−.02	.07
R^2	.28		.08	

Note. D = daughter-report variables, M = mother-report variables, *b* = unstandardized coefficients, *SE* = standard errors.

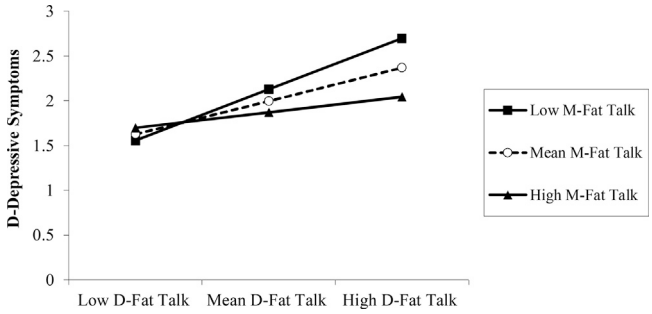

Fig. 3. Interactive effect of daughters' own fat talk (actor) and mothers' fat talk (partner) on daughters' depressive symptoms. Simple slopes show one standard deviation above and below the mean for fat talk.

cating that the effect of daughters' fat talk on eating pathology was significant when their mothers' fat talk (standardized) scores were falling outside of the range of these values. It appears that the buffering effect of mothers' low fat talk (between daughters' fat talk and eating pathology) was true for mothers who were .80 standard deviation below the average in fat talk. Finally, the interaction between mother-daughter fat talk on mothers' eating pathology, however, was not significant.

3.2.2. Depressive symptoms

Controlling for both members' age and BMI, actor effect showed that daughters who engaged in more fat talk also reported more depressive symptoms (Table 3). The actor effect of mothers' fat talk on their own depressive symptoms was not significant. The partner effects of fat talk on depressive symptoms, however, were not significant for either mothers or daughters. Supporting our hypothesis, the interaction between mother-daughter fat talk on daughters' depressive symptoms was found to be significant (actor-partner interaction). The simple slopes are displayed in Fig. 3. In contrast to our expectation, simple slopes analysis showed that the actor effect of daughters' fat talk on their own depressive symptoms was stronger for those with mothers who were low in fat talk ($b = .57$, $SE = .13$, $p < .05$). Also, the actor effect of daughters' fat talk on their own depressive symptoms was weaker for those with mothers who were high in fat talk ($b = .17$, $SE = .10$, $p = .08$). Additional Johnson-Neyman analysis confirmed these patterns. The region of significance for this interaction effect was .92 to 7.10, indicating the effect of daughters' fat talk on depressive symptoms was significant when their mothers' fat talk (standardized) scores were falling outside of the range of these values. In other words, the association between daughters' fat talk and depressive symptoms was not significant for mothers who had rather high fat talk (from .92 to 7.10 standard deviation above the mean). Finally, the interaction between mother-daughter fat talk on mothers' depressive symptoms, however, was not significant.

4. Discussion

This is the first study utilizing a dyadic design to examine the interdependence of fat talk, eating pathology, and depressive symptoms among mother-daughter dyads in adolescence. Not only did this study demonstrate the importance of considering the actor and partner effects, but it also highlighted the joint or interaction effect of two members' fat talk on their eating pathology and depressive symptoms. The current study also demonstrated that fat talk was associated with eating disorder symptoms and depressive symptoms differently, providing important insights for future clinical research and practitioners.

4.1. Eating pathology

Supporting our hypothesis, we found that adolescent girls' engagement in fat talk was related to their own eating pathology. Similarly, mothers who engaged in more fat talk disclosure also reported more eating pathology. In contrast to our expectation, the partner effects of fat talk on eating pathology were not significant for either mothers or daughters. It appears that listening to fat talk, as examined in the partner effects, may have a relatively weaker association with eating pathology compared to direct disclosure and participation in fat talk (Arroyo & Andersen, 2016; Lin & Soby, 2017). Lin and Soby (2017) suggest that although listening to others' body image concerns may activate individuals' own body schemas, it does not require them to actively and openly criticize their own appearance. In contrast, individuals who make self-disparaging remarks in relation to appearance may require deeper cognitive and emotional processing of negative body schemas, which may lead to more harmful outcomes, including eating pathology.

The most interesting finding was the interaction of fat talk between daughters and their mothers predicting adolescent girls' eating pathology. Specifically, we found that adolescent girls who engaged in fat talk reported more eating pathology when their mother also reciprocated with more fat talk, compared to their counterparts with mothers who reported lower engagement in fat talk. It appears that when mothers and daughters were both high on fat talk, it was related to the latter's higher risk of suffering from more eating pathology. This finding has advanced previous research (Lin & Soby, 2017) by showing that the influence of fat talk on eating pathology may go above and beyond directly disclosing versus listening to fat talk, but the reciprocity of these behaviors in mother-daughter relationships is also important. When daughters' disclosures of body image concerns are reciprocated by their mothers, such a process may permit the transmission of maternal body image concerns to their daughters and further escalate their daughters' eating problems. It is through fat talk that mothers and daughters reinforce the internalization of the sociocultural standards of attractiveness, which in turn leads to more dieting, bulimia, and food preoccupation behaviors among girls. Furthermore, although the current measure of fat talk did not capture maternal responses to daughters' fat talk disclosure, it is possible that when mothers participate in weight concern discussions, they may be providing negative feedback about their daughter's figures and eating patterns (Cooley, Toray, Wang, & Valdez, 2008; Neumark-Sztainer et al., 2010; Romo & Mireles-Rios, 2016), thus explaining why mutual participation in fat talk may be related to higher daughters' eating pathology.

Interestingly, the current study illustrated that the reciprocity of fat talk between daughters and their mothers had a detrimental effect on girls' pathological eating but not mothers' pathologi-

cal eating. One possible reason is that adolescence is a period in which girls' body image dissatisfaction and eating problems increase rapidly (Stice & Bearman, 2001). Therefore, adolescent girls are especially vulnerable to risk factors that contribute to eating pathology, including heightened mutual fat talk disclosure with their mothers. In contrast, research suggests that adult women's body image disturbances are rather stable after adolescence (Tiggemann, 2004). Not surprisingly, the current study found that while mothers who engaged in fat talk disclosure experienced more eating pathology, such a relationship was rather stable regardless of whether their daughters also engaged in fat talk. Another possible explanation could be due to the different family roles that mothers and daughters play in the association between fat talk and eating pathology. Whereas parent-adolescent relationships become more egalitarian over the course of development (De Goede, Branje, & Meeus, 2009), the hierarchical structure may not be fully dismissed until adulthood (Galambos & Kotylak, 2012). Therefore, daughters' eating pathology is more susceptive to familial influences due to this structural difference.

4.2. Depressive symptoms

Supporting our hypothesis, adolescent girls' engagement in fat talk was positively related to their own depressive symptoms. However, we did not find an association between mothers' engagement in fat talk and their daughter's depressive symptoms. We found a significant interaction effect of mother-daughter fat talk on adolescent girls' depressive symptoms. In contrast to our expectations, adolescent girls who engaged in fat talk reported higher depressive symptoms when mothers engaged in lower levels of fat talk than when mothers engaged in higher levels of fat talk. This finding is also inconsistent with the interaction pattern found in the eating pathology model. One possible explanation is that the primary motive for women and girls to engage in fat talk might be to reduce their anxiety associated with body image concerns and to fulfill their desire for social support (Shannon & Mills, 2015). Mutual sharing of body concerns, therefore, may provide a supportive means for relieving individuals' anxiety and negative affect stemming from body dissatisfaction. When adolescent girls' fat talk disclosure was not reciprocated by their mothers, it violated their expectation of "mutuality" in this process, and hence, they felt non-supported and experienced more negative affect. Indeed, the potential supportive function of fat talk has been previously demonstrated in research on adult female friendships (Tan & Chow, 2014) and sibling relationships (Greer, Campione-Barr, & Lindell, 2015) such that more fat talk may be related to lower body dissatisfaction for some individuals.

Interesting, mothers' fat talk disclosure was not related to their own depressive symptoms, nor was this relationship moderated by their daughters' fat talk. Similar to eating pathology, depressive symptoms among adult women are stabilized after adolescence (Hankin et al., 1998). Thus, the mothers' depressive symptoms might be less like to be influenced by the moderating effect of daughters' fat talk disclosure. Furthermore, as mentioned earlier, it is possible that a hierarchical structure still exists in parent-adolescent relationships, thus explaining why daughters' depressive symptoms might be more susceptive to familial influences, than their mothers.

4.3. Limitations and future directions

Several possible limitations of the current research should be noted. The current study relied on a self-report method such that the association between observed variables might be inflated by reporter-bias. Thus, future research may utilize observational methods for capturing the actual fat talk dynamic that occurs in mother-daughter relationships (Romo & Mireles-Rios, 2016). Also, this study's cross-sectional design has precluded us from drawing causal linkages among variables. For instance, it is certainly possible that adolescent girls' eating pathology and depressive symptoms may precede their engagement in fat talk. Nevertheless, the current findings are consistent with previous experimental studies that showed the causal influence of fat talk on body image disturbance (Mills & Fuller-Tyszkiewicz, 2016). Longitudinal research, however, should be conducted to detangle the potential bidirectional influence of fat talk and broader psychopathology.

In the current study, we only focused on fat talk. Indeed, prior work has suggested that conversations of body talk may include both positive (e.g., expressing feeling good about their bodies) and negative messages (e.g., expressing dissatisfaction about weight status; Romo & Mireles-Rios, 2016; Rudiger & Winstead, 2013), which may relate to different outcomes (Hart, Chow, & Tan, 2017). It is possible that the encouragement of positive body talk between mother-daughter dyads may function as a powerful tool in reducing body image disturbance and depressive symptoms in adolescent girls. Future research, therefore, may include both positive and negative fat talk variables so that the assessment of fat talk is more comprehensive (Rudiger & Winstead, 2013).

Past research has demonstrated that adolescent girls are more dissatisfied with their body as they mature physically (Duncan, Ritter, Dornbusch, Gross, & Carlsmith, 1985). A similar phenomenon has also been observed for the development of depressive symptoms (Hayward, Gotlib, Schraedley, & Litt, 1999). Given the broad range of ages among adolescents in the current study, their pubertal status may play a moderating role in the association between fat talk and eating pathology, as well as depressive symptoms. For instance, the actor, partner, and actor-partner interaction effects would be more salient among adolescent girls who are physically more mature. Therefore, future research on fat talk, eating pathology, and depressive symptoms should consider including pubertal status as an important covariate or moderator.

This study also provided little information about mothers' roles in comparison to other socialization agents when predicting adolescent girls' eating pathology and depressive symptoms. It is unknown whether engagement in fat talk with peers and other family relationships (e.g., fathers, siblings) may predict adolescent girls' outcomes, in addition to the influence of mothers. Indeed, prior work has showed that fathers play a role in girls' weight loss behaviors (Vincent & McCabe, 2000). Thus, future research should consider whether fat talk with other social relationships (e.g., peers, fathers) may play a similar role in the development of adolescent girls' body dissatisfaction and depressive symptoms.

4.4. Theoretical and clinical implications

Existing theories and research on fat talk have focused mainly on the intrapersonal component of fat talk that describes how participating in and listening to fat talk are related to psychological outcomes (e.g., eating pathology, depressive symptoms) within the same individuals (Arroyo & Andersen, 2016; Lin & Soby, 2017). Departing from past research, this study focused on both intrapersonal and interpersonal components of fat talk and showed that participating in or listening to fat talk alone does not fully illuminate how these behaviors are related to adolescent girls' eating pathology. Instead, the effect of fat talk is often the dyadic combination of two members' tendencies to engage in such a behavior. These findings are consistent with the Tripartite Model which highlights the importance of family communication on adolescents' body image and psychological health (Keery et al., 2004). Furthermore, the current findings are consistent with a general family systems model that focuses on psychological development as a dynamic interaction between the adolescents and family (Cox & Paley, 1997). Thus,

we argue that it is more appropriate to describe and investigate the fat talk as a complex interaction dynamic among members in a family relationship instead of looking only at the individual members.

Furthermore, this study demonstrated the complex effects of fat talk on various psychological outcomes, such that mother-daughter fat talk was related to more daughters' eating pathology but related to lower daughters' depressive symptoms. These findings may have practical implications, such that clinicians and practitioners who work with adolescents suffering from body image disturbance and depression should consider the differences between these pathologies. It is possible that the social support function of body talk may reduce the dyads' negative affect and depressive symptoms, but the body-focused conversations may increase the dyads' body image self-consciousness. Therefore, while families should be encouraged to develop emotional bonds and engage in mutual support, body related conversations should be limited between parents and children. This finding is consistent with the Fat Talk Free Week© movement (Garnett et al., 2014), a program that advocates for fat talk free conversations among college women friends in order to combat body image disturbance. Furthermore, because the effects of fat talk may be the combination of participating in and listening to fat talk, clinicians should consider the dyadic nature of fat talk when designing interventions dealing with eating pathology and depressive symptoms. This study suggests that both members of a parent-adolescent dyad should be treated as a unit in therapy instead of just the individuals.

References

Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. New York: Sage.

Allison, P. D. (2002). Missing data: Quantitative applications in the social sciences. *British Journal of Mathematical and Statistical Psychology*, *55*, 193–196. http://dx.doi.org/10.1348/000711002159653

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*, 95–110. http://dx.doi.org/10.1080/15267431.2016.1144604

Arroyo, A., & Harwood, J. (2012). Exploring the causes and consequences of engaging in fat talk. *Journal of Applied Communication Research*, *40*, 167–187. http://dx.doi.org/10.1080/00909882.2012.654500

Badr, H. (2004). Coping in marital dyads: A contextual perspective on the role of gender and health. *Personal Relationships*, *11*, 197–211. http://dx.doi.org/10.1111/j.1475-6811.2004.00078.x

Berge, J. M., MacLehose, R., Loth, K. A., Eisenberg, M., Bucchianeri, M. M., & Neumark-Sztainer, D. (2013). Parent conversations about healthful eating and weight: Associations with adolescent disordered eating behaviors. *JAMA Pediatrics*, *167*, 746–753. http://dx.doi.org/10.1001/jamapediatrics.2013.78

Berge, J. M., MacLehose, R. F., Loth, K. A., Eisenberg, M. E., Fulkerson, J. A., & Neumark-Sztainer, D. (2015). Parent-adolescent conversations about eating, physical activity and weight: Prevalence across sociodemographic characteristics and associations with adolescent weight and weight-related behaviors. *Journal of Behavioral Medicine*, *38*, 122–135. http://dx.doi.org/10.1007/s10865-014-9584-3

Chow, C. M., Claxton, S. E., & van Dulmen, M. H. (2015). Testing dyadic mechanisms the right way: A primer into moderated actor–partner interdependence model with latent variable interactions. *Emerging Adulthood*, *3*, 421–433. http://dx.doi.org/10.1177/2167696815605728

Cooley, E., Toray, T., Wang, M. C., & Valdez, N. N. (2008). Maternal effects on daughters' eating pathology and body image. *Eating Behaviors*, *9*, 52–61. http://dx.doi.org/10.1016/j.eatbeh.2007.03.001

Cox, M. J., & Paley, B. (1997). Families as systems. *Annual Review of Psychology*, *48*(1), 243–267. http://dx.doi.org/10.1146/annurev.psych.48.1.243

Duncan, P. D., Ritter, P. L., Dornbusch, S. M., Gross, R. T., & Carlsmith, J. M. (1985). The effects of pubertal timing on body image, school behavior, and deviance. *Journal of Youth and Adolescence*, *14*, 227–235. http://dx.doi.org/10.1007/BF02090320

De Goede, I. H., Branje, S. J., & Meeus, W. H. (2009). Developmental changes in adolescents' perceptions of relationships with their parents. *Journal of Youth and Adolescence*, *38*(1), 75–88. http://dx.doi.org/10.1007/s10964-008-9286-7

Derogatis, L. R., & Melisaratos, N. (1983). The Brief Symptom Inventory: An introductory report. *Psychological Medicine*, *13*, 595–605. http://dx.doi.org/10.1017/S0033291700048017

Galambos, N. L., & Kotylak, L. A. (2012). Transformations in parent-child relations from adolescence to adulthood. In B. Laursen & W. A. Collins (Eds.), *Relationship pathways from adolescence to young adulthood* (pp. 23–42). Los Angeles: Sage.

Garcia, R. L., Kenny, D. A., & Ledermann, T. (2015). Moderation in the actor?partner interdependence model. *Personal Relationships*, *22*, 8–29. http://dx.doi.org/10.1111/pere.12060

Garner, D. M., Olmsted, M. P., Bohr, Y., & Garfinkel, P. E. (1982). The Eating Attitudes Test: psychometric features and clinical correlates. *Psychological Medicine*, *12*, 871–878. http://dx.doi.org/10.1017/S0033291700049163

Garnett, B. R., Buelow, R., Franko, D. L., Becker, C., Rodgers, R. F., & Austin, S. B. (2014). The importance of campaign saliency as a predictor of attitude and behavior change: a pilot evaluation of social marketing campaign fat talk free week. *Health Communication*, *29*(10), 984–995. http://dx.doi.org/10.1080/10410236.2013.827613

Greer, K. B., Campione-Barr, N., & Lindell, A. K. (2015). Body talk: siblings' use of positive and negative body self-disclosure and associations with sibling relationship quality and body-esteem. *Journal of Youth and Adolescence*, *44*, 1567–1579. http://dx.doi.org/10.1007/s10964-014-0180-1

Hankin, B. L., Abramson, L. Y., Moffitt, T. E., Silva, P. A., McGee, R., & Angell, K. E. (1998). Development of depression from preadolescence to young adulthood: emerging gender differences in a 10-year longitudinal study. *Journal of Abnormal Psychology*, *107*, 128–140. http://dx.doi.org/10.1037/0021-843X.107.1.128

Hart, E., Chow, C. M., & Tan, C. C. (2017). Body talk, weight status, and pathological eating behavior in romantic relationships. *Appetite*, *117*, 135–142. http://dx.doi.org/10.1016/j.appet.2017

Hayward, C., Gotlib, I. H., Schraedley, P. K., & Litt, I. F. (1999). Ethnic differences in the association between pubertal status and symptoms of depression in adolescent girls. *Journal of Adolescent Health*, *25*, 143–149. http://dx.doi.org/10.1016/S1054139X(99)00048-8

Keery, H., Van den Berg, P., & Thompson, J. K. (2004). An evaluation of the Tripartite Influence Model of body dissatisfaction and eating disturbance with adolescent girls. *Body Image*, *1*, 237–251. http://dx.doi.org/10.1016/j.bodyim.2004.03.001

Kelley, H. H. (2003). *An atlas of interpersonal situations*. Cambridge University Press.

Kenny, D. A., & Cook, W. (1999). Partner effects in relationship research: Conceptual issues, analytic difficulties, and illustrations. *Personal Relationships*, *6*, 433–448. http://dx.doi.org/10.1111/j.1475-6811.1999. tb00202.x

Kenny, D., Kashy, D., & Cook, W. (2006). *Dyadic analysis*. New York: Guilford.

Kluck, A. S. (2008). Family factors in the development of disordered eating: Integrating dynamic and behavioral explanations. *Eating Behaviors*, *9*, 471–483. http://dx.doi.org/10.1016/j.eatbeh.2008.07.006

Kluck, A. S. (2010). Family influence on disordered eating: The role of body image dissatisfaction. *Body Image*, *7*, 8–14. http://dx.doi.org/10.1016/j.bodyim.2009.09.009

Lin, L., & Soby, M. (2017). Is listening to fat talk the same as participating in fat talk? *Eating Disorders*, *25*, 165–172. http://dx.doi.org/10.1080/10640266.2016

Little, R. J. (1988). A test of missing completely at random for multivariate data with missing values. *Journal of the American Statistical Association*, *83*, 1198–1202. http://dx.doi.org/10.1080/01621459.1988.10478722

MacDonald, D. E., Dimitropoulos, G., Royal, S., Polanco, A., & Dionne, M. M. (2015). The Family Fat Talk Questionnaire: Development and psychometric properties of a measure of fat talk behaviors within the family context. *Body Image*, *12*, 44–52. http://dx.doi.org/10.1016/j.bodyim.2014.10.001

Mills, J., & Fuller-Tyszkiewicz, M. (2016). Fat talk and its relationship with body image disturbance. *Body Image*, *18*, 61–64. http://dx.doi.org/10.1016/j.bodyim.2016.05.001

Morrison, M. A., Morrison, T. G., & Sager, C.-L. (2004). Does body satisfaction differ between gay men and lesbian women and heterosexual men and women?: A meta-analytic review. *Body Image*, *1*, 127–138. http://dx.doi.org/10.1016/j.bodyim.2004.01.002

Neumark-Sztainer, D., Bauer, K. W., Friend, S., Hannan, P. J., Story, M., & Berge, J. M. (2010). Family weight talk and dieting: How much do they matter for body dissatisfaction and disordered eating behaviors in adolescent girls? *Journal of Adolescent Health*, *47*, 270–276. http://dx.doi.org/10.1016/j.jadohealth.2010.02.001

Neumark-Sztainer, D., & Hannan, P. J. (2000). Weight-related behaviors among adolescent girls and boys: Results from a national survey. *Archives of Pediatrics & Adolescent Medicine*, *154*, 569–577. http://dx.doi.org/10.1001/archpedi.154.6.569

Nichter, M., & Vuckovic, N. (1994). In N. Sault (Ed.), *Many mirrors: Body image and social relations* (pp. 109–131). New Brunswick: Rutgers University Press.

Preacher, K. J., Curran, P. J., & Bauer, D. J. (2006). Computational tools for probing interaction effects in multiple linear regression, multilevel modeling, and latent curve analysis. *Journal of Educational and Behavioral Statistics*, *31*, 437–448.

Rogers, C. B., Martz, D. M., Webb, R. M., & Galloway, A. T. (2017). Everyone else is doing it (I think): The power of perception in fat talk. *Body Image*, *20*, 116–119. http://dx.doi.org/10.1016/j.bodyim.2017.01.004

Romo, L. F., & Mireles-Rios, R. (2016). Latina immigrant mother?daughter communication about their body self-esteem and weight dissatisfaction: An exploratory video-observational study. *Journal of Latina/o Psychology*, *4*, 18–31. http://dx.doi.org/10.1037/lat0000044

Rose, A. J. (2002). Co-rumination in the friendships of girls and boys. *Child Development*, *73*, 1830–1843. http://dx.doi.org/10.1111/1467-8624.00509

Rose, A. J., & Rudolph, K. D. (2006). A review of sex differences in peer relationship processes: potential trade-offs for the emotional and behavioral development of girls and boys. *Psychological Bulletin*, *132*, 98–131. http://dx.doi.org/10.1037/0033-2909.132.1.98

Rosseel, Y. (2012). *Lavaan: An R package for structural equation modeling and more. Version 0. 5-12 (BETA)*. Ghent, Belgium: Ghent University.
Rudiger, J. A., & Winstead, B. A. (2013). Body talk and body-related co-rumination: associations with body image, eating attitudes, and psychological adjustment. *Body Image*, *10*, 462–471. http://dx.doi.org/10.1016/j.bodyim.2013.07.010
Saluja, G., Iachan, R., Scheidt, P. C., Overpeck, M. D., Sun, W., & Giedd, J. N. (2004). Prevalence of and risk factors for depressive symptoms among young adolescents. *Archives of Pediatrics & Adolescent Medicine*, *158*, 760–765. http://dx.doi.org/10.1001/archpedi.158.8.760
Shannon, A., & Mills, J. S. (2015). Correlates, causes, and consequences of fat talk: A review. *Body Image*, *15*, 158–172. http://dx.doi.org/10.1016/j.bodyim.2015.09.003
Smolak, L. (2004). Body image in children and adolescents: where do we go from here? *Body Image*, *1*, 15–28. http://dx.doi.org/10.1016/S1740-1445(03)00008-1
Stice, E., & Bearman, S. K. (2001). Body-image and eating disturbances prospectively predict increases in depressive symptoms in adolescent girls: A growth curve analysis. *Developmental Psychology*, *37*, 597. http://dx.doi.org/10.1037/00121649.37.5.597
Stice, E., Presnell, K., & Bearman, S. K. (2001). Relation of early menarche to depression, eating disorders, substance abuse, and comorbid psychopathology among adolescent girls. *Developmental Psychology*, *37*(5), 608–619. http://dx.doi.org/10.1037/0012-1649.37.5.608
Tan, C. C., & Chow, C. M. (2014). Weight status and depression: Moderating role of fat talk between female friends. *Journal of Health Psychology*, *19*, 1320–1328. http://dx.doi.org/10.1177/1359105313488982
Team, R. C. (2016). *R: A language and environment for statistical computing*. Vienna, Austria: R Foundation for Statistical Computing. http.www.R-project.org
Tiggemann, M. (2004). Body image across the adult life span: Stability and change. *Body Image*, *1*, 29–41. http://dx.doi.org/10.1016/S1740-1445(03)00002-0
Vincent, M. A., & McCabe, M. P. (2000). Gender differences among adolescents in family, and peer influences on body dissatisfaction, weight loss, and binge eating behaviors. *Journal of Youth and Adolescence*, *29*, 205–221. http://dx.doi.org/10.1023/A:1005156616173
Webb, J. B., Fiery, M. F., & Jafari, N. (2016). You better not leave me shaming!: Conditional indirect effect analyses of anti-fat attitudes, body shame, and fat talk as a function of self-compassion in college women. *Body Image*, *18*, 5–13. http://dx.doi.org/10.1016/j.bodyim.2016.04.009