



THE UNIVERSITY *of* EDINBURGH

Edinburgh Research Explorer

## Family body culture, disordered eating and mental health among young adult females during COVID-19

**Citation for published version:**

White, HJ, Sharpe, H & Plateau, CR 2023, 'Family body culture, disordered eating and mental health among young adult females during COVID-19', *Eating Behaviors*, vol. 51, 101792, pp. 1-6.  
<https://doi.org/10.1016/j.eatbeh.2023.101792>

**Digital Object Identifier (DOI):**

[10.1016/j.eatbeh.2023.101792](https://doi.org/10.1016/j.eatbeh.2023.101792)

**Link:**

[Link to publication record in Edinburgh Research Explorer](#)

**Document Version:**

Publisher's PDF, also known as Version of record

**Published In:**

Eating Behaviors

**General rights**

Copyright for the publications made accessible via the Edinburgh Research Explorer is retained by the author(s) and / or other copyright owners and it is a condition of accessing these publications that users recognise and abide by the legal requirements associated with these rights.

**Take down policy**

The University of Edinburgh has made every reasonable effort to ensure that Edinburgh Research Explorer content complies with UK legislation. If you believe that the public display of this file breaches copyright please contact [openaccess@ed.ac.uk](mailto:openaccess@ed.ac.uk) providing details, and we will remove access to the work immediately and investigate your claim.





# Family body culture, disordered eating and mental health among young adult females during COVID-19

Hannah J. White<sup>a,\*</sup>, Helen Sharpe<sup>b</sup>, Carolyn R. Plateau<sup>a</sup>

<sup>a</sup> School of Sport, Exercise and Health Sciences, Loughborough University, Loughborough, UK

<sup>b</sup> School of Health in Social Science, University of Edinburgh, Teviot Place, EH8 9AG Edinburgh, UK

## ARTICLE INFO

### Keywords:

Eating psychopathology  
Body dissatisfaction  
Anxiety  
Depression  
Parents  
Body weight  
Body shape

## ABSTRACT

Different family interactions related to body weight and shape may co-occur and represent a broader 'family body culture'. This may be important in the context of COVID-19 due to a heightened focus on body weight/shape, and many young adults living back with their families. This study aimed to, first, explore relationships between different family body-related interactions to assess the presence of a family body culture, and second, explore relationships between aspects of family body culture, disordered eating and mental health among young adult females during the COVID-19 pandemic. Participants were 233 females aged 18–25 years who completed measures of family body culture (family fat talk; family weight concern; family weight teasing), disordered eating, anxiety and depression. Results showed all aspects of family body culture were significantly, positively related. Engaging in fat talk with family members (self fat talk) was a key correlate of disordered eating, anxiety and depression. Family concern with weight was also significantly associated with disordered eating. Findings suggest that among some families there is a more problematic family body culture with a greater importance placed on body weight and shape through various body-related interactions. Additionally, findings highlight two key aspects of family body culture related to disordered eating and wellbeing among young adult females. Specifically, vocalising critical remarks about one's own body when with family and an environment that may indirectly communicate a high importance of body weight and shape (e.g., via dieting). These should be considered in future family interventions to support healthy eating behaviours.

## 1. Introduction

In sociocultural models of disordered eating, such as the Tripartite Influence model (Thompson et al., 1999), family members are identified as important social influences on young people's eating attitudes and behaviours, specifically via appearance pressures. Appearance- or body-related interactions and pressures within the family can vary in nature (e.g., comments related to body weight, shape and eating; weight teasing; encouragement to diet) and source (e.g., parents; siblings). Such interactions can place undue importance on appearance, body weight and shape, and lead to the internalisation of the thin ideal (Thompson et al., 1999).

Most research has focused on exploring these interactions among adolescents, showing them to be problematic for disordered eating (for reviews see: Dahill et al., 2021; Gillison et al., 2016; Yourell et al., 2021). However, such interactions are also recognised to be problematic for young adults, particularly females (Rodgers et al., 2009). Specifically,

among young adult females, exposure to parental weight talk has been associated with engaging in more unhealthy weight control behaviours (Simone et al., 2021), and greater family fat talk has been associated with higher levels of body concerns and body shame (MacDonald et al., 2015), and lower levels of body appreciation (Webb et al., 2018). Furthermore, parental negative comments (related to weight, shape, eating habits and fitness) have been linked to body dissatisfaction (both directly, and indirectly, via appearance comparison and internalisation of media ideals, Rodgers et al., 2009). Together, these findings highlight the important role of family body-related interactions in relation to disordered eating among young adult females.

Despite the wide potential variety of family body-related interactions, these have typically been explored individually in research. Yet there are nuanced differences between these interactions (e.g., engaging in fat talk around family members compared to perceived encouragement to diet from a parent), meaning that focusing on aspects in isolation may not give a full picture of family influence. Little research

\* Corresponding author at: School of Sport, Exercise & Health Sciences, Loughborough University, Loughborough, Leicestershire LE11 3TU, UK.

E-mail addresses: [H.J.White@lboro.ac.uk](mailto:H.J.White@lboro.ac.uk) (H.J. White), [H.Sharpe@ed.ac.uk](mailto:H.Sharpe@ed.ac.uk) (H. Sharpe), [C.R.Plateau@lboro.ac.uk](mailto:C.R.Plateau@lboro.ac.uk) (C.R. Plateau).

<https://doi.org/10.1016/j.eatbeh.2023.101792>

Received 10 May 2023; Received in revised form 9 August 2023; Accepted 10 August 2023

Available online 24 August 2023

1471-0153/© 2023 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

has been conducted with young adult females to explore the individual and combined influence of such interactions, which may reflect the degree of systemic importance placed on appearance and body weight and shape within a family. For example, one study identified that maternal and paternal weight teasing, criticism about weight and encouragement to control weight were all significantly positively correlated, and also related to a greater family focus on appearance (Kluck, 2010), suggesting the interactions reflect a broader weight- and shape-focused family culture.

In line with this systemic approach, Jones (2004) describes how adolescents create an ‘appearance culture’ among peers via appearance/body-related conversations and teasing, which includes appearance-related norms and expectations (Jones and Crawford, 2006; Paxton et al., 1999). It is likely that the same exists among families where particular interactions, pressures and expectations relating to body weight and shape contribute towards a ‘family body culture’. Two mechanisms of parental influence have been outlined previously, via modelling of eating behaviours and body image concerns and via ‘direct’ commentary related to their child’s eating and/or body weight/shape (Abraczinskas et al., 2012; Rodgers and Chabrol, 2009) – with the suggestion the latter may have a stronger influence on disordered eating (Rodgers and Chabrol, 2009). However, within Rodgers and Chabrol’s review, it is acknowledged that there has been a stronger focus on “direct and explicit” references to the young person’s weight, without consideration of more subtle interactions (e.g., comments about others) (2009, p145). Exploring how young adult females perceive different body-related interactions within the family may therefore help to increase understanding of the broader family body culture and allow for more systematic examination of relationships with disordered eating.

Whilst the link with disordered eating is relatively well established, less is known about these interactions in relation to broader mental health difficulties (e.g., depression, anxiety). The limited studies conducted among young adults report no significant associations between maternal fat talk, or family influences towards appearance, and self-esteem among female undergraduates (Arroyo and Andersen, 2016; Rodgers et al., 2011). Among Latinx college students, negative parental comments about body weight and shape were correlated with depressive symptoms, but only had an indirect effect on these via body image dissatisfaction (Hitti et al., 2020). Research is yet to confirm a relationship between family body interactions and depression among young adult females, and even less is known about relationships with anxiety. However, it has been shown longitudinally that experiencing negative family body interactions during adolescence, is linked to poorer emotional wellbeing as a young adult (e.g., Lessard et al., 2021; Szwimer et al., 2020), signifying that these pressures are likely still important and warrant further exploration.

Family influences for young adults may be particularly important to consider at the current time, in the context of the COVID-19 pandemic, for two reasons. First, many young adults had to change their living arrangements and return home to live with their parents (Fry et al., 2020), for example, when University campuses closed. Although previous research has not directly tested whether physical proximity moderates these relationships, some have hypothesised that living at home may heighten the role of parents in young adults’ body image (Rodgers et al., 2011). It has also been suggested that the disruption due to the pandemic “may feel especially heavy” for young adults, with lockdowns generating more intense family interactions (Settersten et al., 2020, p.4). Second, during the pandemic there was a heightened focus on body weight and shape within the media (e.g., ‘Quarantine 15’; Pearl, 2020). Many adult females also reported greater difficulties with regulating eating (e.g., Robinson et al., 2021) and reported exercising more (e.g., Robertson et al., 2021) during this time, which may have been related to more body-related interactions among families. Yet little is known about family body interactions during this time and how these may relate to disordered eating and mental health symptoms among young adult females. Therefore, the current study explored family body culture among

young adult females during the COVID-19 pandemic through three specific research questions (RQ) and related hypotheses:

- 1) To what extent are different aspects of family body culture (i.e., family fat talk, weight concern, weight teasing) related to each other? Based on the findings of Kluck (2010), we hypothesised that there would be significant positive relationships between all aspects of family body culture.
- 2) Which aspects of family body culture are related to disordered eating? Based on previous literature (MacDonald et al., 2015; Rodgers et al., 2009; Simone et al., 2021; Webb et al., 2018), we hypothesised that all aspects of family body culture would be significantly, positively, related to disordered eating.
- 3) Which aspects of family body culture are related to depression and anxiety symptoms? Based on the findings of Hitti et al. (2020), we hypothesised that family body culture would be significantly, positively, related to depression. Despite a lack of previous research, we also hypothesised that it would be the same for anxiety.

## 2. Method

### 2.1. Procedure

After obtaining institutional ethical approval, participants were recruited from various sources to capture a range of experiences; these included: university psychology research participation scheme; social media; eating disorder charity; student mental health research network; call for participants website. Participants needed to be between the ages of 18 and 25 years old to take part. After providing informed consent participants completed an online survey between June 2020 and April 2021. Participants were provided with the option of university course credits (if applicable) or entering an Amazon voucher prize draw as a thank you for participating.

### 2.2. Outcome measures

#### 2.2.1. Eating Disorder Examination Questionnaire – brief (EDE-Q7; Grilo et al., 2015)

The original EDE-Q (Fairburn and Beglin, 2008) is a 28-item measure of disordered eating attitudes. The brief EDE-Q7 includes seven of the original items scored on a six-point Likert-type scale (0–6), assessing eating disordered attitudes on three subscales (Dietary Restraint, 3-items; Shape/Weight Overevaluation, 2-items; Body Dissatisfaction, 2-items) with scores based on item means; higher scores indicate greater levels of psychopathology. Reliability in the current sample was good ( $\alpha \geq 0.87$ ) and comparable to other research with young adults ( $\alpha \geq 0.89$ ; Grilo et al., 2015).

#### 2.2.2. Hospital Anxiety and Depression Scale (HADS; Zigmond and Snaith, 1983)

The HADS is comprised of two seven-item subscales assessing Anxiety and Depression. Items are scored on a four-point Likert-type scale (0–3). Subscales scores are based on the sum of items, where higher scores are indicative of greater symptoms of anxiety and/or depression. Reliability in the current sample was good for Anxiety ( $\alpha = 0.84$ ), and acceptable for Depression ( $\alpha = 0.76$ ) and identical to those reported in other research with UK adults (Galvin et al., 2022).

### 2.3. Family body culture measures

#### 2.3.1. Family Fat Talk Questionnaire (FFTQ; MacDonald et al., 2015)

The FFTQ assesses fat talk conversations within the family during the past year via two eight-item subscales. The *Self* subscale reflects the participant’s own body-related interactions with family members (i.e., *Engaging in Fat Talk with Family*) and the *Family* subscale reflects the body-related interactions the participant has observed within the family

during the past year (i.e., *Hearing Fat Talk from Family*). Responses were on a five-point Likert-type scale (1 = Never to 5 = Always). Higher subscale total scores indicate greater levels of fat talk within the family. Cronbach's alpha scores for the current sample were good (Engaging in Fat Talk with Family,  $\alpha = 0.85$ ; Hearing Fat Talk from Family,  $\alpha = 0.90$ ), and comparable to previous research among female undergraduates ( $\alpha = 0.88$ ;  $\alpha = 0.90$ ; MacDonald et al., 2015).

### 2.3.2. Perceived Family Preoccupation with Weight and Dieting Scale (Family Concern with Weight; Schutz et al., 2002)

The Perceived Family Preoccupation with Weight and Dieting Scale assesses family concern with weight. It is comprised of nine items, seven of which assess how often family members engage in behaviours such as dieting, commenting on each other's weight or encouraging each other to lose weight. The final two questions assess how much notice is given to, and the perceived importance of, body shape and weight in the family. All item responses are on a five-point Likert-type scale (1 = Never to 5 = Very often) and are summed together. Higher scores indicate a greater level of family concern with weight and shape. Reliability in the current sample was good ( $\alpha = 0.89$ ) and comparable to the score within the original research with adolescent girls ( $\alpha = 0.87$ ; Schutz et al., 2002).

### 2.3.3. Family weight teasing (Neumark-Sztainer et al., 2010)

Family weight teasing was assessed by a single question from the Project-EAT survey; "Within the past year, have you been teased or made fun of by family members because of your weight?". Responses were on a five-point Likert-type scale (1 = Never to 5 = Very often). For all analyses, as in previous research (e.g., Hooper et al., 2021), responses were dichotomised into no occurrences (i.e., 1 (never)), or any weight teasing (i.e., 2–5 (rarely to very often)).

## 2.4. Data analysis

Normality tests highlighted that the data for all variables were not normally distributed (i.e., Shapiro-Wilks tests  $p < .05$ ), hence non-parametric tests were used where possible. Two hundred and forty-two females participated. Nine participants were removed due to extreme Z scores (i.e.,  $\geq \pm 3.29$ ; Tabachnick and Fidell, 2013) or missing responses for over 50 % of a measure, leaving a final sample of 233.

To address RQ1, Spearman's correlations were conducted to examine relationships between Engaging in Fat Talk with Family (Self Fat Talk), Hearing Fat Talk from Family (Family Fat Talk) and Family Concern with Weight. Mann-Whitney U Tests were conducted to explore differences in family body culture based on Family Weight Teasing (any/none). To address RQ2 and RQ3, first, Spearman's correlations (and Mann-Whitney U Tests for Family Weight Teasing) examined relationships (and differences) between aspects of family body culture and EDE-Q7 and HADS scores. Second, a series of standard entry method multiple regressions were performed to explore whether each aspect of family body culture (positioned as independent variables) was significantly associated with EDE-Q7 and HADS subscale scores (with these each positioned as dependent variables). Preliminary analyses on potential covariates highlighted a significant relationship between BMI and EDE-Q7-Body Dissatisfaction, but no significant relationships for age, or significant differences based on living arrangements during the first UK lockdown (with family or not) for any aspect of family body culture, disordered eating or mental health. Therefore, only BMI was included in the models as a covariate. As missing data was minimal (0.9–2.6 % at a subscale/scale level), expectation maximisation was used to calculate missing values. The significance level was set at  $p < .05$  for this exploratory study.

## 3. Results

### 3.1. Participants

Two-hundred and thirty-three participants were included in the analysis. All reported their sex as female and were aged between 18 and 25 years ( $M = 20.45$ ;  $SD = 2.31$ ). The sample was predominately White British/other ( $n = 185$ ; 79.4 %), with the majority reporting their occupation pre-COVID-19 as student ( $n = 175$ ; 75.1 %). Most participants ( $n = 170$ ; 73 %) reported living with their parents or family for all or most of the time during/since the first COVID-19 lockdown period in the UK (i.e., from 23rd March 2020 to when they answered the survey (up to April 2021)). The mean BMI of participants was 21.95 kg/m<sup>2</sup> ( $SD = 3.46$ ;  $n = 221$ ), based on self-reported height and weight information. Fourteen percent of the sample ( $n = 33$ ; 14.2 %) reported currently or previously receiving treatment for an eating disorder.

Mean scores and standard deviations are shown in Table 1 (see Supplementary material Table S1 for analyses with age, BMI and living arrangements). As shown in Table 1, significant medium-to-large positive associations were reported between aspects of family body culture, with the strongest correlations reported between Hearing Fat Talk from Family (Family Fat Talk) and Family Concern with Weight (large effect size;  $r = 0.66$ ). The sample was almost equally split with 50.2 % ( $n = 117$ ) reporting experiencing any Family Weight Teasing and 49.8 % ( $n = 116$ ) reporting none. Significantly higher levels of Engaging in Fat Talk with Family (Self Fat Talk), Hearing Fat Talk from Family (Family Fat Talk) and Family Concern with Weight were reported among those who reported any occurrence of Family Weight Teasing, as opposed to none. Significant small-to-large positive associations were also reported between aspects of family body culture and all EDE-Q7 subscale scores. Engaging in Fat Talk with Family (Self Fat Talk) and Family Concern with Weight were significantly positively related to both HADS Anxiety and Depression (small effect sizes). However, a small positive significant association was only reported between Hearing Fat Talk from Family (Family Fat Talk) and HADS Anxiety, not HADS Depression. Significantly higher levels of all EDE-Q7 and HADS subscales were reported among those who reported any occurrence of Family Weight Teasing (as opposed to none).

As shown in Table 2, the regression models to assess the association between family body culture (and BMI) and disordered eating/mental health were all significant ( $F = (5, 215) = 5.56\text{--}25.34$ , all  $p < .001$ ). The variables accounted for a higher level of the total variance for disordered eating (31.5–37.1 %), compared to mental health (20.3 % for Anxiety; 11.4 % for Depression). Engaging in Fat Talk with Family (Self Fat Talk) had a significant positive association in all models, and was the only significant independent variable in the model for Anxiety and Depression. Family Concern with Weight was also significantly associated with Dietary Restraint and Shape and Weight Overevaluation.

## 4. Discussion

This study aimed to explore relationships between aspects of family body culture, disordered eating, and mental health concerns among young adult females during COVID-19. Findings highlight that all aspects of family body culture were significantly, positively related to each other, meaning that appearance-related interactions are likely to be more common in some families than others. This extends previous research by Kluck (2010) to suggest the presence of a more problematic family body culture with an overall greater importance of body weight/shape within families being reflected through various interactions and pressures.

The results highlighted engaging in fat talk with family members as a consistent and key correlate of disordered eating and mental health difficulties among young adult females during the pandemic. In contrast, *hearing* fat talk from family members and family weight teasing were not significantly associated with disordered eating or mental health

**Table 1**

Descriptive statistics, two-tailed Spearman's correlations exploring associations, and Mann-Whitney *U* tests exploring differences between those who reported any family weight teasing (vs none), for family body culture, disordered eating and mental health among young adult females (*N* = 233) during the COVID-19 pandemic.

	<i>M</i> ( <i>SD</i> )/ <i>n</i> (%)	1.	2.	3.	4.	5.	6.	7.	8.
Spearman's <i>r</i>									
1. Engaging in fat talk with family	16.31 (6.72)	–	–	–	–	–	–	–	–
2. Hearing fat talk from family	20.09 (7.63)	0.39***	–	–	–	–	–	–	–
3. Family concern with weight	25.28 (7.19)	0.40***	0.66***	–	–	–	–	–	–
4. EDE-Q7 Dietary restraint	2.48 (1.94)	0.50***	0.21***	0.31***	–	–	–	–	–
5. EDE-Q7 Shape/weight overevaluation	3.33 (1.86)	0.50***	0.33***	0.39***	0.61***	–	–	–	–
6. EDE-Q7 Body dissatisfaction	3.42 (1.80)	0.50***	0.26***	0.34***	0.58***	0.79***	–	–	–
7. HADS Anxiety	9.80 (4.34)	0.38***	0.29***	0.24***	0.32***	0.40***	0.41***	–	–
8. HADS Depression	5.31 (3.45)	0.26***	0.13	0.14*	0.24***	0.34***	0.39***	0.61***	–
Mann Whitney <i>Z</i>									
9. Family weight teasing (Y/N)	50.2 % Y	4.50***	3.86***	6.42***	3.68***	4.74***	4.22***	2.72**	2.34*

Notes: EDE-Q7 = Eating Disorder Examination Questionnaire - brief version (Grilo et al., 2015); HADS = Hospital Anxiety and Depression Scale (Zigmond and Snaith, 1983).

\*  $p \leq .05$ .

\*\*  $p \leq .01$ .

\*\*\*  $p \leq .001$ .

outcomes in the regression models. The current findings suggest that when young adult females engage in critical discussions about their own bodies in front of family members it may be more detrimental to disordered eating and mental health than hearing others discuss and criticise their bodies. This is interesting as both family fat talk and weight teasing individually have been shown to be problematic for disordered eating among young females (e.g., Hooper et al., 2021; MacDonald et al., 2015), and are also likely to have an important role in promoting how an individual talks about their own body within the family environment. For example, mothers and daughters' fat talk have been shown to correlate previously (e.g., Arroyo and Andersen, 2016; Rogers et al., 2017). Thus, suggesting there may be a shared value of thinness and highlighting how the environment can also promote this discourse (Rogers et al., 2017). While fat talk has been suggested to be a social norm and a form of social cohesion (Shannon and Mills, 2015), the current findings reinforce the problematic nature of vocalising self-disparaging remarks about one's own body. They also underpin the importance of exploring different facets of the family body culture in a fine-grained manner, rather than combining variables together into a single proxy.

A second key finding was that family concern with weight was also significantly associated with disordered eating. This factor relates to a perceived family environment where dieting, skipping meals and encouragement to lose weight is prevalent along with high importance placed on body weight and shape (Schutz et al., 2002). Family concern with weight was highlighted as a significant correlate of dietary restraint and shape and weight overevaluation, but not for body dissatisfaction. This suggests that there are components of family body culture that relate to disordered eating, which are not directed specifically towards the individual, but indirectly reinforce the value of body weight and shape and provide examples of modelling unhealthy weight control behaviours (e.g., dieting, skipping meals). Parental modelling of weight concerns and dieting has been shown to relate to daughters disordered eating previously (Abraczinskas et al., 2012; Rodgers and Chabrol, 2009). Perceptions of maternal modelling have also been shown to have a role in the relationship between mother and daughter disordered eating, highlighting the importance of this indirect weight-related communication and suggesting an intergenerational transmission of disordered eating (Arroyo et al., 2017).

The current findings highlight two important avenues for future family interventions to support the wellbeing of young females. First, further education and support is needed to identify and reduce negative body-related dialogue. Due to the problematic nature of engaging in critical comments about one's own body, interventions should focus on reducing self fat talk, when around family members – but also across a

range of other environments (e.g., peers; sports teams). Minimising broader exposure to discussions about body weight in these environments may help to reduce the disparaging comments young females make about their own bodies in an attempt to 'fit in'. New social norms are needed which focus on the positive aspects of one's body, aligning with the drive towards body positive communication (Rodgers et al., 2022). For example, positive body talk has previously been associated with increased body satisfaction and self-esteem among young adult women (Rudiger and Winstead, 2013). Considering the family specifically, research with adolescents highlights the varying emotional reactions to parental weight communication (Puhl and Himmelstein, 2018), with a large percentage of adolescents reporting never wanting their parents to talk about their weight (positively or negatively; Puhl et al., 2022). Consequently, parental sensitivity is needed with an increased understanding of which conversations may be helpful for their child's wellbeing, such as engaging in health-focused conversations instead of weight-focused (Yourell et al., 2021), or promoting self-compassion (Carbonneau et al., 2020).

The second intervention target, specifically in relation to disordered eating, relates to the broader family body culture. Parents may indirectly communicate an importance of body weight and shape and assign a high value to certain body shapes (i.e., the thin ideal). This may be reflected in broader body-related discussions or via modelling of unhealthy weight control behaviour (e.g., dieting, meal skipping). Healthcare providers should work with families to promote healthy relationships with food and regular eating patterns. For example, research examining the Social Cognitive Approach, has shown the beneficial role of perceived maternal modelling of adaptive weight-related behaviours (e.g., healthy eating and positive (maternal) body talk) in relation to healthy eating, intuitive eating and body satisfaction among adult women (Arroyo et al., 2020).

While this study has several strengths (i.e., the inclusion of multiple measures of family body culture, addressing a gap in the literature in relation to aspects of family body culture and anxiety), it is important to acknowledge the limitations. Specifically, the cross-sectional nature of the study limits the causal interpretation of the findings; further longitudinal research is needed to explore the role of the family environment in relation to disordered eating and mental health longer term and how aspects interlink. Additionally, with a current sample of females who are predominantly White British/other and undergraduate students – like much research on disordered eating – there are limits to the generalisability of the findings. Further research is needed to explore the role of family body culture in relation to disordered eating and mental health among more diverse groups.

It is important to acknowledge that this research was conducted

**Table 2**  
Regression analyses (N = 221) exploring the associations between different aspects of family body culture (independent variables) and disordered eating, anxiety and depression (dependent variables).

Independent variables	Dietary restraint			Shape/weight overevaluation			Body dissatisfaction			Anxiety			Depression		
	B (SE(B))	$\beta$	t	B (SE(B))	$\beta$	t	B (SE(B))	$\beta$	t	B (SE(B))	$\beta$	t	B (SE(B))	$\beta$	t
Constant	-0.19 (0.76)		-0.25	-0.83 (0.70)		-1.18	-2.09 (0.67)		-3.13**	5.54 (1.84)		3.01**	3.28 (1.52)		2.16*
BMI	-0.03 (0.03)	-0.05	-0.77	0.04 (0.03)	0.08	1.36	0.13 (0.03)	0.26	4.53***	-0.07 (0.08)	-0.06	-0.89	-0.05 (0.07)	-0.05	-0.77
Engaging in fat talk with family	0.14 (0.02)	0.49	7.41***	0.11 (0.02)	0.41	6.35***	0.11 (0.02)	0.41	6.46***	0.24 (0.05)	0.37	5.15***	0.16 (0.04)	0.31	4.10***
Hearing fat talk from family	-0.04 (0.02)	-0.14	-1.74	-0.00 (0.02)	-0.00	-0.05	-0.01 (0.02)	-0.04	-0.52	0.08 (0.05)	0.14	1.64	-0.00 (0.04)	-0.01	-0.09
Family concern with weight	0.06 (0.02)	0.22	2.66**	0.05 (0.02)	0.18	2.19*	0.04 (0.02)	0.14	1.75	0.00 (0.06)	0.01	0.08	0.01 (0.05)	0.03	0.31
Family weight teasing (Y/N) <sup>a</sup>	0.19 (0.25)	0.05	0.78	0.36 (0.23)	0.10	1.57	0.24 (0.22)	0.07	1.08	0.28 (0.60)	0.03	0.46	0.47 (0.50)	0.07	0.95
F	19.77***			22.51***			25.34***			10.92***			5.56***		
R	0.56			0.59			0.61			0.45			0.34		
R <sup>2</sup>	0.32			0.34			0.37			0.20			0.11		

NOTE: Twelve participants had missing data for calculating BMI (i.e., self-reported height and/or weight), resulting in a full sample of 221 for inclusion in the regression analyses.

\* p ≤ .05.

\*\* p ≤ .01.

\*\*\* p ≤ .001.

<sup>a</sup> Any weight teasing (Y) = 1; No weight teasing (N) = 0.

during the COVID-19 pandemic, which was a time where there was a heightened focus on body weight and shape. This was seen through increased social media posts and videos relating to changes in weight (e.g., Lessard and Puhl, 2021; Pearl, 2020; Tang et al., 2022), an increased availability of exercise content available online (e.g., Branley-Bell and Talbot, 2020) and public health messaging in relation to obesity as a risk factor for COVID-19 (Public Health England, 2020). This societal messaging may have filtered into families and contributed to an increased dialogue and range of interactions related to body weight along with attempts to control weight. Alongside this, young women were reported as ‘at-risk’ for increased disordered eating and poorer mental health during the pandemic (Linardon et al., 2022), which may in turn have influenced perceptions of body-related interactions around them. The current findings may therefore reflect a ‘family pandemic body culture’. Further research on the nature of family body-related interactions and relationships with disordered eating and mental health beyond the pandemic is needed. Considering the context further, preliminary analyses within the current study reported no significant differences in family body culture, disordered eating or mental health based on participants living arrangements (i.e., living with their families or not for all/most of the first UK lockdown). This could reflect the transient living arrangement of young adults during the pandemic, but may also highlight family body culture as an important factor for disordered eating and wellbeing whether living with the family or not.

In conclusion, this novel study highlights that for young adult females, engaging in self fat talk when with family members may be important in relation to disordered eating and mental health. Additionally, a family environment which indirectly communicates a high importance of body weight and shape may also be a contributor towards disordered eating in young adults. Going forward, researchers should explore different aspects of family body culture in relation to disordered eating and mental health, as the current findings suggest that there are a number of aspects of the family environment which may need to be addressed (e.g., modelling of unhealthy weight control behaviours) to help to support young adult females in relation to eating behaviours and wellbeing.

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.eatbeh.2023.101792>.

#### CRedit authorship contribution statement

**Hannah J. White:** Conceptualization, Investigation, Methodology, Formal analysis, Writing – original draft. **Helen Sharpe:** Writing – review & editing. **Carolyn R. Plateau:** Conceptualization, Methodology, Writing – review & editing.

#### Declaration of competing interest

None.

#### Data availability

The authors do not have permission to share data.

#### References

- Abrazinskas, M., Fisak, B., Jr., & Barnes, R. D. (2012). The relation between parental influence, body image, and eating behaviors in a nonclinical female sample. *Body Image*, 9(1), 93–100. <https://doi.org/10.1016/j.bodyim.2011.10.005>
- Arroyo, A., & Andersen, K. K. (2016). Appearance-related communication and body image outcomes: Fat talk and old talk among mothers and daughters. *Journal of Family Communication*, 16(2), 95–110. <https://doi.org/10.1080/15267431.2016.1144604>
- Arroyo, A., Segrin, C., & Andersen, K. K. (2017). Intergenerational transmission of disordered eating: Direct and indirect maternal communication among grandmothers, mothers, and daughters. *Body Image*, 20, 107–115. <https://doi.org/10.1016/j.bodyim.2017.01.001>

- Arroyo, A., Stillion Southard, B. A., Cohen, H., & Caban, S. (2020). Maternal communication strategies that promote body image in daughters. *Communication Research*, 47(3), 402–427. <https://doi.org/10.1177/0093650218781737>
- Branley-Bell, D., & Talbot, C. V. (2020). Exploring the impact of the COVID-19 pandemic and UK lockdown on individuals with experience of eating disorders. *Journal of Eating Disorders*, 8, 44. <https://doi.org/10.1186/s40337-020-00319-y>
- Carbonneau, N., Goodman, L. C., Roberts, L. T., Bégin, C., Lussier, Y., & Musher-Eizenman, D. R. (2020). A look at the intergenerational associations between self-compassion, body esteem, and emotional eating within dyads of mothers and their adult daughters. *Body Image*, 33, 106–114. <https://doi.org/10.1016/j.bodyim.2020.02.007>
- Dahill, L. M., Touyz, S., Morrison, N. M., & Hay, P. (2021). Parental appearance teasing in adolescence and associations with eating problems: A systematic review. *BMC Public Health*, 21, 1–13. <https://doi.org/10.1186/s12889-021-10416-5>
- Fairburn, C. G., & Beglin, S. (2008). Eating disorder examination questionnaire (EDE-Q 6.0). In C. G. Fairburn (Ed.), *Cognitive behavior therapy and eating disorders*. New York: Guilford Press.
- Fry, R., Passel, J. S., & Cohn, D. (2020, September 4). *A majority of young adults in the U.S. live with their parents for the first time since the Great Depression*. Pew Research Center. <https://www.pewresearch.org/fact-tank/2020/09/04/a-majority-of-young-adults-in-the-u-s-live-with-their-parents-for-the-first-time-since-the-great-depression/>.
- Galvin, J., Evans, E. H., Talbot, C. V., Wilson, C., & Richards, G. (2022). The associations between autistic traits and disordered eating/drive for muscularity are independent of anxiety and depression in females but not males. *PLoS One*, 17(10), Article e0276249. <https://doi.org/10.1371/journal.pone.0276249>
- Gillison, F. B., Lorenc, A. B., Sleddens, E. F., Williams, S. L., & Atkinson, L. (2016). Can it be harmful for parents to talk to their child about their weight? A meta-analysis. *Preventive Medicine*, 93, 135–146. <https://doi.org/10.1016/j.ypmed.2016.10.010>
- Grilo, C. M., Reas, D. L., Hopwood, C. J., & Crosby, R. D. (2015). Factor structure and construct validity of the eating disorder examination-questionnaire in college students: Further support for a modified brief version. *International Journal of Eating Disorders*, 48(3), 284–289. <https://doi.org/10.1002/eat.22358>
- Hitti, S. A., Avila, M., McDonald, S. E., Romo, S., Benzel, G. K., Hernandez, R. E., ... Corona, R. (2020). The relation between body image perceptions, parental messages, and depressive symptoms among Latinx college students. *Cultural Diversity and Ethnic Minority Psychology*, 26(3), 412. <https://doi.org/10.1037/cdp0000309>
- Hooper, L., Puhl, R., Eisenberg, M. E., Crow, S., & Neumark-Sztainer, D. (2021). Weight teasing experienced during adolescence and young adulthood: Cross-sectional and longitudinal associations with disordered eating behaviors in an ethnically/racially and socioeconomically diverse sample. *International Journal of Eating Disorders*, 54(8), 1449–1462. <https://doi.org/10.1002/eat.23534>
- Jones, D. C. (2004). Body image among adolescent girls and boys: A longitudinal study. *Developmental Psychology*, 40(5), 823–835. <https://doi.org/10.1037/0012-1649.40.5.823>
- Jones, D. C., & Crawford, J. K. (2006). The peer appearance culture during adolescence: Gender and body mass variations. *Journal of Youth and Adolescence*, 35, 243–255. <https://doi.org/10.1007/s10964-005-9006-5>
- Kluck, A. S. (2010). Family influence on disordered eating: The role of body image dissatisfaction. *Body Image*, 7(1), 8–14. <https://doi.org/10.1016/j.bodyim.2009.09.009>
- Lessard, L. M., & Puhl, R. M. (2021). Adolescents' exposure to and experiences of weight stigma during the COVID-19 pandemic. *Journal of Pediatric Psychology*, 46(8), 950–959. <https://doi.org/10.1093/jpepsy/jsab071>
- Lessard, L. M., Puhl, R. M., Larson, N., Simone, M., Eisenberg, M. E., & Neumark-Sztainer, D. (2021). Parental contributors to the prevalence and long-term health risks of family weight teasing in adolescence. *Journal of Adolescent Health*, 69(1), 74–81. <https://doi.org/10.1016/j.jadohealth.2020.09.034>
- Linardon, J., Messer, M., Rodgers, R. F., & Fuller-Tyszkiewicz, M. (2022). A systematic scoping review of research on COVID-19 impacts on eating disorders: A critical appraisal of the evidence and recommendations for the field. *International Journal of Eating Disorders*, 55(1), 3–38. <https://doi.org/10.1002/eat.23640>
- 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. <https://doi.org/10.1016/j.bodyim.2014.10.001>
- 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(3), 270–276. <https://doi.org/10.1016/j.jadohealth.2010.02.001>
- Paxton, S. J., Schutz, H. K., Wertheim, E. H., & Muir, S. L. (1999). Friendship clique and peer influences on body image concerns, dietary restraint, extreme weight-loss behaviors, and binge eating in adolescent girls. *Journal of Abnormal Psychology*, 108(2), 255. <https://doi.org/10.1037/0021-843X.108.2.255>
- Pearl, R. L. (2020). Weight stigma and the “Quarantine-15”. *Obesity*, 28(7), 1180. <https://doi.org/10.1002/oby.22850>
- Public Health England. (2020, July). Excess weight and COVID-19. Insights from new evidence. [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/907966/PHE\\_insight\\_Excess\\_weight\\_and\\_COVID-19\\_FINAL.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/907966/PHE_insight_Excess_weight_and_COVID-19_FINAL.pdf).
- Puhl, R. M., & Himmelstein, M. S. (2018). A word to the wise: Adolescent reactions to parental communication about weight. *Childhood Obesity*, 14(5), 291–301. <https://doi.org/10.1089/chi.2018.0047>
- Puhl, R. M., Lessard, L. M., Foster, G. D., & Cardel, M. I. (2022). A comprehensive examination of the nature, frequency, and context of parental weight communication: Perspectives of parents and adolescents. *Nutrients*, 14(8), 1562. <https://doi.org/10.3390/nu14081562>
- Robertson, M., Duffy, F., Newman, E., Bravo, C. P., Ates, H. H., & Sharpe, H. (2021). Exploring changes in body image, eating and exercise during the COVID-19 lockdown: A UK survey. *Appetite*, 159, Article 105062. <https://doi.org/10.1016/j.appet.2020.105062>
- Robinson, E., Boyland, E., Chisholm, A., Harrold, J., Maloney, N. G., Marty, L., ... Hardman, C. A. (2021). Obesity, eating behavior and physical activity during COVID-19 lockdown: A study of UK adults. *Appetite*, 156, Article 104853. <https://doi.org/10.1016/j.appet.2020.104853>
- Rodgers, R., & Chabrol, H. (2009). Parental attitudes, body image disturbance and disordered eating amongst adolescents and young adults: A review. *European Eating Disorders Review*, 17(2), 137–151. <https://doi.org/10.1002/erv.907>
- Rodgers, R., Chabrol, H., & Paxton, S. J. (2011). An exploration of the tripartite influence model of body dissatisfaction and disordered eating among Australian and French college women. *Body Image*, 8(3), 208–215. <https://doi.org/10.1016/j.bodyim.2011.04.009>
- Rodgers, R. F., Paxton, S. J., & Chabrol, H. (2009). Effects of parental comments on body dissatisfaction and eating disturbance in young adults: A sociocultural model. *Body Image*, 6(3), 171–177. <https://doi.org/10.1016/j.bodyim.2009.04.004>
- Rodgers, R. F., Wertheim, E. H., Paxton, S. J., Tylka, T. L., & Harriger, J. A. (2022). #Bopo: Enhancing body image through body positive social media-evidence to date and research directions. *Body Image*, 41, 367–374. <https://doi.org/10.1016/j.bodyim.2022.03.008>
- 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. <https://doi.org/10.1016/j.bodyim.2017.01.004>
- 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(4), 462–471. <https://doi.org/10.1016/j.bodyim.2013.07.010>
- Schutz, H. K., Paxton, S. J., & Wertheim, E. H. (2002). Investigation of body comparison among adolescent girls 1. *Journal of Applied Social Psychology*, 32(9), 1906–1937. <https://doi.org/10.1111/j.1559-1816.2002.tb00264.x>
- Settersten, R. A., Jr., Bernardi, L., Härkönen, J., Antonucci, T. C., Dykstra, P. A., Heckhausen, J., ... Thomson, E. (2020). Understanding the effects of Covid-19 through a life course lens. *Advances in Life Course Research*, 45, Article 100360. <https://doi.org/10.1016/j.alcr.2020.100360>
- Shannon, A., & Mills, J. S. (2015). Correlates, causes, and consequences of fat talk: A review. *Body Image*, 15, 158–172. <https://doi.org/10.1016/j.bodyim.2015.09.003>
- Simone, M., Hazzard, V. M., Berge, J. M., Larson, N., & Neumark-Sztainer, D. (2021). Associations between weight talk exposure and unhealthy weight control behaviors among young adults: A person-centered approach to examining how much the source and type of weight talk matters. *Body Image*, 36, 5–15. <https://doi.org/10.1016/j.bodyim.2020.10.004>
- Szwimer, E., Mougharbel, F., Goldfield, G. S., & Alberga, A. S. (2020). The association between weight-based teasing from peers and family in childhood and depressive symptoms in childhood and adulthood: A systematic review. *Current Obesity Reports*, 9, 15–29. <https://doi.org/10.1007/s13679-020-00367-0>
- Tabachnick, B. G., & Fidell, L. S. (2013). *Using multivariate statistics* (6th ed.). Boston, MA: Pearson.
- Tang, H., Kim, S., Laforet, P. E., Tettey, N. S., & Basch, C. H. (2022). Loss of weight gained during the COVID-19 pandemic: Content analysis of YouTube videos. *JMIR Formative Research*, 6(2), Article e35164. <https://doi.org/10.2196/35164>
- Thompson, J. K., Heinberg, L. J., Altabe, M., & Tantleff-Dunn, S. (1999). *Exacting beauty: Theory, assessment, and treatment of body image disturbance*. American Psychological Association. <https://doi.org/10.1037/10312-000>
- Webb, J. B., Rogers, C. B., Etzel, L., & Padro, M. P. (2018). “Mom, quit fat talking—I’m trying to eat (mindfully) here!”: Evaluating a sociocultural model of family fat talk, positive body image, and mindful eating in college women. *Appetite*, 126, 169–175. <https://doi.org/10.1016/j.appet.2018.04.003>
- Yourell, J. L., Doty, J. L., Beauplan, Y., & Cardel, M. I. (2021). Weight-talk between parents and adolescents: A systematic review of relationships with health-related and psychosocial outcomes. *Adolescent Research Review*, 6, 409–424. <https://doi.org/10.1007/s40894-021-00149-2>
- Zigmond, A. S., & Snaith, R. P. (1983). The hospital anxiety and depression scale. *Acta Psychiatrica Scandinavica*, 67(6), 361–370. <https://doi.org/10.1111/j.1600-0447.1983.tb09716.x>