

Adolescents' Exposure to and Experiences of Weight Stigma During the COVID-19 Pandemic

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Abstract

Objective The COVID-19 pandemic has increased attention to the proliferation of pediatric obesity amidst significant changes in weight-related health functioning (e.g., compromised physical activity, limited food access, increased stress). The present cross-sectional study investigated adolescents' feelings about their bodies and perceived changes in weight stigma from peers, parents, and social media during the pandemic. **Methods** Four hundred fifty-two adolescents (11–17 years old) completed an online survey during the Fall of 2020. Measures assessed perceived changes in exposure to weight stigmatizing social media content (stress eating jokes, weight gain memes) and experiences of weight stigma (weight-based bullying, teasing, hurtful comments) by parents and peers, as well as body dissatisfaction, during the COVID-19 pandemic. Weight status and gender were examined as individual difference variables. **Results** The majority (53%) of adolescents reported increased exposure to at least one form of weight stigmatizing social media content during the pandemic. Additionally, pandemic-related increases in body dissatisfaction were prevalent (41%), especially among girls with higher body mass index (≥ 85 th percentile; 67%). On average, the extent to which adolescents experienced weight-based mistreatment from parents and peers remained consistent with their pre-pandemic experiences. **Conclusions** Overall, these findings highlight changes in the social messages that adolescents receive about their bodies, as well as their subjective body satisfaction, during the pandemic. Results underscore the need for healthcare providers and mental health professionals to be aware of the potential rise in weight stigma during the pandemic, and encourage families and schools to engage in supportive, rather than stigmatizing, weight-related communication with youth.

Key words: adolescence; body dissatisfaction; COVID-19; overweight; weight stigma.

Introduction

The novel COVID-19 virus has brought about unprecedented change in daily functioning with indisputable implications for weight-related health. Resulting patterns of compromised physical activity (e.g., stay at home orders), eating (e.g., limited access to healthy foods), and multiple sources of stress (e.g., social isolation, changes in routines, threats to family finances) have led scholars to acknowledge increased risks and

exacerbation of pediatric obesity during the pandemic (Browne et al., 2021). These marked environmental shifts have coincided with an influx of stigmatizing weight-related communication in the media, particularly regarding weight gain (e.g., “quarantine-15”) and overeating during the pandemic (Flint, 2020; Pearl, 2020), and may also contribute to interpersonal experiences of weight stigma, such as teasing and bullying due to body weight. While consequential across

developmental stages, the potential of pandemic increases in weight stigmatizing media consumption and treatment from others may be critically impactful for adolescents given their heightened sensitivity to social input (Blakemore & Mills, 2014) and concern for appearance (Gowers & Shore, 2001). However, it is unclear how adolescents' experiences of and exposure to weight stigma have changed during the COVID-19 pandemic, and whether youth are feeling more or less dissatisfied with their bodies. To provide insight into these questions, the current study examines adolescents' perceptions of changes in the prevalence of weight stigma on social media and from interpersonal sources (i.e., parents and peers) amidst COVID-19, as well as pandemic-related changes in body dissatisfaction. Furthermore, we consider how individual differences (i.e., weight status, gender) may heighten risk of negative weight-related experiences during the pandemic.

One of the many unexpected implications of the COVID-19 pandemic has been the increased salience of body weight. Among adolescents, extended school closure and remote learning instated to minimize disease spread have left students to contend with challenging physical activity and food environments at home that are expected to exacerbate weight gain (Rundle et al., 2020). On top of compromised access to healthy food (Tester et al., 2020), and decreases in opportunities to engage in physical activity (Munasinghe et al., 2020), the heightened stress and uncertainty surrounding the pandemic can contribute to the use of eating as a coping strategy (Mason et al., 2021). Insofar as shame and ridicule are common responses to high body weight (and weight gain; Puhl et al., 2020), these novel pandemic conditions are likely to heighten adolescents' exposure to weight stigma, in ways that may directly harm their health and wellbeing (Puhl & Lessard, 2020).

Changes in adolescents' exposure to weight stigma may be particularly prevalent on social media platforms, given the ubiquity of weight stigmatizing content on social media (Chou et al., 2014) and adolescents' increased usage of social media during the pandemic (Ellis et al., 2020). Despite an absence of empirical evidence, narrative commentaries have called attention to the upsurge in derogatory and blame-laden portrayals of obesity during the COVID-19 pandemic (e.g., memes about gaining weight and overeating; Flint, 2020; Pearl, 2020). Adolescents' predominant use of image-based social media platforms (e.g., Instagram, Snapchat; Vannucci & McCauley Ohannessian, 2019), which emphasize physical appearance, could further amplify exposure to weight stigmatizing content. The implications of potential increases in adolescents' consumption of weight stigmatizing content are concerning given that

exposure to weight stigma in media can enhance implicit weight bias (Karsay & Schmuck, 2019), which, particularly when internalized, can in turn harm health and wellbeing (Pearl & Puhl, 2018). Indeed, college students have reported elevated concerns about weight, shape, and eating since COVID-19 began (Keel et al., 2020). Moreover, higher social media use among female youth during the pandemic (Ellis et al., 2020), and increased levels of social media addiction among youth with overweight amidst COVID-19 (Chen et al., 2021) may further heighten opportunities for exposure to weight stigmatizing content among particular groups of adolescents.

Environmental and lifestyle shifts resulting from the COVID-19 pandemic may also alter adolescents' direct experiences of weight stigma, including weight-related bullying, teasing, and hurtful comments. Notably, the familial context, identified as a common source of weight stigma (Puhl et al., 2017), has been significantly altered during the pandemic (Prime et al., 2020). With remote learning and canceled after-school activities, adolescents are spending more time at home alongside family members and parents who may be experiencing heightened stress and economic uncertainty because of the pandemic (Brown et al., 2020). There is some evidence to suggest that parent-adolescent relationships in turn have become less supportive on average during the pandemic (Donker et al., 2021). Furthermore, with increased opportunities to monitor adolescent eating and activity habits, parental weight-based mistreatment may be exacerbated. Relatedly, within the peer context, while reduced time spent in school (e.g., via remote learning) may lessen the frequency of targeted peer weight-related mistreatment, it is possible that in-person bullying has been replaced by electronic (cyber) bullying. Given the long-term health-related implications of weight-based teasing and bullying from parents and peers during adolescence (Puhl et al., 2017), it is important to understand whether and how COVID-19 has heightened, or ameliorated, experienced weight stigma among adolescents.

Current Study

Despite recognition of a general proliferation of weight stigmatizing social media content during COVID-19, little is known about how weight stigma among youth has changed during the pandemic. The current study aims to fill this gap by examining adolescent-reported changes in body dissatisfaction, exposure to weight stigmatizing content on social media (i.e., stress eating memes, jokes about weight gain), and experienced weight stigma from parents and peers. In light of heightened prevalence of stigmatizing weight-related communication in the media (Flint, 2020; Pearl, 2020), we hypothesized increases

in adolescents' exposure to weight stigma during the COVID-19 pandemic. Furthermore, given environmental and lifestyle changes brought about by the pandemic that may contribute to weight gain (Rundle et al., 2020) and an overall heightened salience of body weight, it was expected that adolescents would report increased body dissatisfaction and experienced weight stigma since the COVID-19 pandemic began. Finally, to shed light on whether and how COVID-19 has exacerbated disproportionate prevalence of weight stigma among adolescent girls (Puhl et al., 2017) and those with higher body weight (Puhl & Lessard, 2020), we investigated gender and weight status differences in pandemic-related changes in weight stigma and body dissatisfaction.

Methods

Participants

Participants were adolescents aged 11–17 years old ($M_{\text{age}} = 14.91$, $SD_{\text{age}} = 2.14$) residing predominantly in the Northeast region of the United States. Of eligible participants (i.e., between the ages of 11 and 17) with parental consent ($n = 565$), 452 adolescents elected to participate and comprised the analytic sample. Based on adolescent-reports, 55% identified as female and the sample was 69.9% White, 8.2% Black or African American, 8.0% Latino/a, 6.6% Multiethnic, 5.5% Asian or Pacific Islander, and 1.8% other ethnicity. According to parental-report, the majority (72%) of adolescents in the sample had a parent with at least a college degree.

Procedure

The study was approved by the Institutional Review Board at the University of Connecticut (UCONN). Parents of youth aged 11–17 years old within the UCONN Kids in Developmental Science research database, originally recruited to the participant pool from New England community outreach (e.g., family events, fairs, libraries) and social media, were contacted about the study; this recruitment was followed up with word-of-mouth advertisements (e.g., via local teen organizations, schools). The study was advertised to include questions related to teen experiences at school, such as those related to body weight, teasing and bullying. Interested parents provided consent electronically for their adolescent to participate, along with an email address for their adolescent to receive the survey information. Eligible adolescents (i.e., within age range) whose parents had provided consent ($n = 565$) were subsequently emailed a weblink to the online survey (hosted by Qualtrics.com). Voluntary participation was emphasized and informed assent was obtained by adolescents prior to completing the questionnaire, which took about 30 minutes to

complete. Data were collected during the Fall of 2020 (late August to December), and adolescents were compensated for study participation with a \$10 e-gift card.

Measures

Body Dissatisfaction

One item, developed for the purpose of the current investigation, was used to assess perceived changes in body dissatisfaction. Adolescents indicated how their feelings of body dissatisfaction [i.e., “feeling dissatisfied with (‘unhappy about’) your body”] have changed since the COVID-19 pandemic began, using five categorical response options: decreased a lot, decreased slightly, no changes, increased slightly, increased a lot. Given our interest in overall decreases or increases compared to no changes, and to ensure adequate cell sizes for group comparisons, the two “decrease” and the two “increase” categories were combined, resulting in the following three category distinction: decrease, no change, and increase.

Exposure to Weight Stigma on Social Media

Participants were asked how much their exposure to weight stigma on social media has changed since the COVID-19 pandemic began. Informed by scholarly commentary on weight stigmatizing social media content during the COVID-19 pandemic (e.g., Pearl, 2020), adolescents reported on changes in “seeing memes about people gaining weight on social media,” and “seeing jokes on social media about people eating food because they are stressed”. Five categorical response options were provided (identical to body dissatisfaction options noted above), which were coded into three categories: decrease, no change, and increase.

Experienced Weight Stigma from Parents and Peers

Participants were asked to indicate how each of the following have changed for them since the COVID-19 pandemic began: “being teased or bullied *by parents* about your weight,” “having *parents* make negative comments about your weight that make you feel bad,” “being teased or bullied *by peers* about your weight,” and “having *peers* make negative comments about your weight that make you feel bad.” Adolescents responded to these four questions using the same five-category options noted above, coded to reflect decrease, no change, and increase. Adapted from Project EAT (a longitudinal study of eating and activity behaviors among diverse young people; e.g., Eisenberg et al., 2011), these items were developed to be specific to the novel COVID-19 pandemic. Bullying was defined in the survey before these questions were presented to participants (cf. Lessard et al., 2021).

Weight Status

Adolescents' body mass index (BMI) was calculated based on self-reported height and weight, while taking into account sex assigned at birth and age, based on the Centers for Disease Control and Prevention (CDC) 2000 growth charts. After screening for biologically implausible values using the CDC SAS Program (no exclusions made), participants with a BMI at or above the 85th percentile were differentiated from their counterparts with BMIs less than the 85th percentile.

Gender Identity

Adolescents indicated their gender identity using the following options: male; female; transgender; do not identify myself as male, female, or transgender. Given low prevalence of adolescents who identified as transgender ($n = 7$) or another gender identity ($n = 6$), gender difference analyses compared those who identified as male versus female.

Analytic Plan

Statistical analyses were conducted in SPSS, version 27. We first descriptively assessed relative changes in exposure to weight stigma on social media, experienced weight stigma from parents and peers, and body dissatisfaction since the COVID-19 pandemic began. After elucidating overall trends among the full adolescent sample, differences in the weight stigma indicators and body dissatisfaction were subsequently examined as a function of adolescents' weight status (i.e., comparing adolescents with BMIs at or above, versus below, the 85th percentile) and gender identity (i.e., comparing male versus female youth) using chi-square tests, with statistical significance set at $p < .05$. Finally, crosstabs analyses were conducted to investigate associations between relative changes in weight stigma and body dissatisfaction. Listwise deletion was used for missing data handling.

Results

Adolescents' Exposure to Weight Stigma on Social Media

On average, 45% of adolescents reported increases in seeing jokes on social media about people eating food because they are stressed, whereas 46% indicated no changes in stress eating jokes and only 9% noted a decrease. Additionally, increases in seeing memes about people gaining weight on social media were reported by 37% of adolescents, while 51% reported no changes, and 12% indicated decreases in viewing weight gain memes. When considered simultaneously, 53% of our sample reported increased exposure to at least one form of weight stigmatizing social media content (i.e., stress eating jokes and/or weight gain memes).

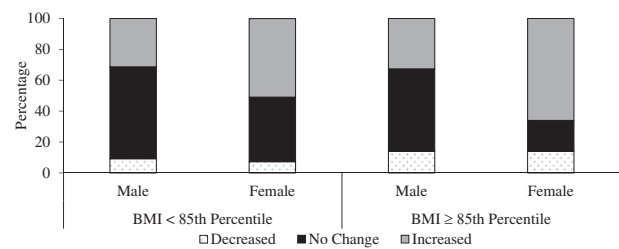


Figure 1. Relative changes in exposure to stress eating jokes on social media since the COVID-19 pandemic began.

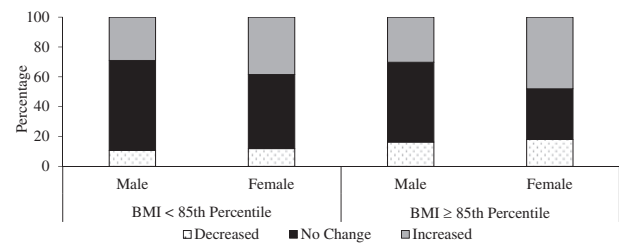


Figure 2. Relative changes in exposure to weight gain memes on social media since the COVID-19 pandemic began.

Although adolescents across weight statuses reported similar overall change in exposure to stress eating jokes [$\chi^2(2) = 5.68, p = .059$], and weight gain memes [$\chi^2(2) = 3.47, p = .177$] since the COVID-19 pandemic began, relative changes in viewing weight stigmatizing content on social media varied between male and female adolescents [stress eating jokes: $\chi^2(2) = 21.79, p < .001$; weight gain memes: $\chi^2(2) = 7.01, p = .030$]. For example, 55% of female youth reported increased exposure to social media jokes about stress eating, while approximately a third (32%) of male youth indicated increases in viewing this content since the COVID-19 pandemic began. Relatedly, increases in seeing weight gain memes during the pandemic were reported by 41% of female adolescents, compared to 29% of male adolescents. When taking into account both weight status and gender, exposure to weight stigmatizing content on social media was especially pronounced among female adolescents with higher weight: 66% reported increases in seeing jokes about stress eating (see Figure 1) and 48% indicated increased viewing of weight gain memes (see Figure 2).

Adolescents' Experiences of Weight Stigma from Parents and Peers

Adolescents' perceptions of relative changes in experiences of weight stigma from parents and peers since the COVID-19 pandemic are presented in Table I. Overall, the large majority of adolescents indicated that the extent to which they experienced weight-based mistreatment did not change during the COVID-19 pandemic, both in terms of weight-based

Table I. Relative Changes in Weight Stigma Experiences Since the COVID-19 Pandemic Began, Stratified by Weight Status and Gender

	Total sample	Weight status		Gender	
		BMI < 85th percentile Column % (N)	BMI ≥ 85th percentile Column % (N)	Male Column % (N)	Female Column % (N)
Weight-based teasing and bullying from parents					
Increased	11.1%	9.8% (31 ^a)	15.3% (15 ^a)	6.3% (11 [^])	14.3% (33 [*])
No change	76.0%	79.4% (251 ^a)	64.3% (63 ^b)	78.7% (137 [^])	73.5% (169 [^])
Decreased	13.0%	10.8% (34 ^a)	20.4% (20 ^b)	14.9% (26 [^])	12.2% (28 [^])
Hurtful weight-related comments from parents					
Increased	12.8%	9.8% (31 ^a)	22.7% (22 ^b)	3.5% (6 [^])	19.6% (45 [*])
No change	74.2%	79.4% (251 ^a)	56.7% (55 ^b)	80.9% (140 [^])	68.7% (158 [*])
Decreased	13.0%	10.8% (34 ^a)	20.6% (20 ^b)	15.6% (27 [^])	11.7% (27 [^])
Weight-based teasing and bullying from peers					
Increased	3.4%	2.2% (7 ^a)	7.1% (7 ^b)	2.9% (5 [^])	3.9% (9 [^])
No change	79.6%	83.2% (263 ^a)	67.3% (66 ^b)	77.6% (135 [^])	80.9% (186 [^])
Decreased	17.1%	14.6% (46 ^a)	25.5% (25 ^b)	19.5% (34 [^])	15.2% (35 [^])
Hurtful weight-related comments from peers					
Increased	3.8%	2.8% (9 ^a)	7.1% (7 ^a)	4.6% (8 [^])	3.5% (8 [^])
No change	79.6%	83.5% (264 ^a)	66.3% (65 ^b)	77.6% (135 [^])	80.9% (186 [^])
Decreased	16.6%	13.6% (43 ^a)	26.5% (26 ^b)	17.8% (31 [^])	15.7% (36 [^])

Note. Values in the same row and subgrouping (i.e., weight status, gender) not sharing the same superscript are significantly different at $p < .05$.

teasing and bullying from parents (76%) and peers (80%), and in experiencing hurtful comments about their weight from parents (74%) and peers (80%). Weight status differences were observed in relative changes in perceived weight-based teasing and bullying from parents [$\chi^2(2) = 9.64, p = .008$] and peers [$\chi^2(2) = 12.98, p = .002$], and hurtful weight-related comments from parents [$\chi^2(2) = 20.27, p < .001$] and peers [$\chi^2(2) = 13.86, p = .001$]. Adolescents with higher weight were less likely to endorse consistency in experiences of weight stigma since the COVID-19 pandemic began compared to those with lower BMIs. For example, whereas 79% of youth with a BMI less than the 85th percentile noted no changes in parental negative comments about their weight that made them feel bad, 57% of youth with higher weight endorsed this consistency. In turn, both increases (23%) and decreases (21%) in experiencing negative weight-related comments from parents were more common among youth with BMIs at or above the 85th percentile compared to peers with lower BMIs (increases: 10%; decreases: 11%).

Although relative changes in weight-based mistreatment from peers were similar between males and females [weight-teasing and bullying: $\chi^2(2) = 1.53, p = .466$; hurtful weight-related comments: $\chi^2(2) = 0.73, p = .695$], gender differences emerged with respect to parental weight teasing and bullying [$\chi^2(2) = 6.79, p = .034$] and hurtful weight-related comments [$\chi^2(2) = 23.32, p < .001$]. Notably, increases in hurtful weight-related comments (20%) and teasing and bullying (14%) from parents were reported more often among females, compared to their male counterparts

(hurtful weight-related comments: 4%; weight-teasing and bullying: 6%). When taking into account both weight status and gender, increases in reported experiences of weight stigma from parents were particularly prevalent among females with higher weight: 24% reported increased weight-based victimization from parents, and over a third (36%) indicated parents' hurtful weight-related comments increased since the COVID-19 pandemic began.

Relative Changes in Body Dissatisfaction

Overall, 41% of adolescents reported increased body dissatisfaction since the COVID-19 pandemic began, while 49% reported no changes in body dissatisfaction and 10% reported a decrease. Chi-square tests revealed that relative changes in body dissatisfaction differed as a function of adolescent weight status [$\chi^2(2) = 7.37, p = .025$] and gender [$\chi^2(2) = 50.35, p < .001$]. Specifically, increases in body dissatisfaction were especially pronounced in youth with higher weight (51%) compared to their lower-weight peers (38%), as well as among females (55%) relative to males (22%; regardless of weight status). Notably, more than two-thirds (67%) of girls with higher weight reported increased body dissatisfaction during the pandemic.¹

1 *Post hoc* analyses were conducted to examine grade level differences [i.e., high school (grades 9–12) versus middle school (grades 5–8)] in the indicators of changes in weight stigma and body dissatisfaction. COVID-related changes in experiences of weight stigma from parents and peers were similar between middle and high school students, with the exception of hurtful comments from parents [$\chi^2(2) = 8.80, p = .012$] wherein increases were more common among high

Table II. Crosstabs of Relative Changes in Body Dissatisfaction During COVID-19 and Weight Stigma Indicators

	Body dissatisfaction		
	Increased Row % (N)	No change Row % (N)	Decreased Row % (N)
Exposure to weight stigma			
Increased			
Stress eating jokes / weight gain memes	64.0% (119) / 62.5% (95)	29.6% (55) / 29.6% (45)	6.5% (12) / 7.9% (12)
No change			
Stress eating jokes / weight gain memes	19.6% (37) / 28.6% (60)	74.1% (140) / 66.7% (140)	6.3% (12) / 4.8% (10)
Decreased			
Stress eating jokes / weight gain memes	31.6% (12) / 25.5% (13)	21.1% (8) / 35.3% (18)	47.4% (18) / 39.2% (20)
Experienced weight stigma from parents			
Increased			
Teasing and bullying / hurtful comments	69.6% (32) / 77.4% (41)	23.9% (11) / 20.8% (11)	6.5% (3) / 1.9% (1)
No change			
Teasing and bullying / hurtful comments	38.0% (119) / 36.7% (112)	56.9% (178) / 57.4% (175)	5.1% (16) / 5.9% (18)
Decreased			
Teasing and bullying/hurtful comments	31.5% (17)/27.8% (15)	25.9% (14)/29.6% (16)	42.6% (23)/42.6% (23)
Experienced weight stigma from peers			
Increased			
Teasing and bullying / hurtful comments	85.7% (12) / 75.0% (12)	7.1% (1) / 12.5% (2)	7.1% (1) / 12.5% (2)
No change			
Teasing and bullying / hurtful comments	39.8% (131) / 39.0% (128)	54.7% (180) / 55.8% (183)	5.5% (18) / 5.2% (17)
Decreased			
Teasing and bullying / hurtful comments	35.7% (25) / 40.6% (28)	31.4% (22) / 26.1% (18)	32.9% (23) / 33.3% (23)

Note. Due to rounding, percentages across each row do not always add up to 100.

Relative Changes in Body Dissatisfaction as a Function of Weight Stigma

Table II presents crosstab analyses comparing relative changes in body dissatisfaction as a function of weight stigma. Adolescents' perceived changes in body dissatisfaction were aligned with changes in their exposure to and experiences of weight stigma during the pandemic. For example, increased body dissatisfaction was reported by 64% and 63% of adolescents who indicated increases in exposure to stress eating jokes and weight gain memes on social media, respectively, during the pandemic. Similarly, the majority of adolescents who reported experiencing increased weight-based bullying and hurtful comments during COVID-19 indicated feeling more negatively about their bodies during this same time period, especially when weight-based mistreatment was perpetrated by peers.

school (16%) versus middle school (6%) students. Changes in exposure to weight stigmatizing content on social media varied by grade level [stress eating jokes: $\chi^2(2) = 7.00, p = .030$; weight gain memes: $\chi^2(2) = 7.65, p = .022$], such that increases were more common among high school (stress eating jokes: 50%, weight gain memes: 42%) versus middle school (stress eating jokes: 36%, weight gain memes: 28%) students, and no changes were less common among high school (stress eating jokes: 42%, weight gain memes: 47%) versus middle school (stress eating jokes: 53%, weight gain memes: 58%) students. Finally, grade level differences in COVID-related body dissatisfaction changes were revealed [$\chi^2(2) = 16.34, p < .001$], such that increases were more common, and no change and decreases were less common, among high school (increases: 47%, no changes: 46%, decreases: 7%) versus middle school (increases: 28%, no changes: 56%, decreases: 16%) students.

Discussion

The social messages that adolescents receive about their bodies (Puhl & Lessard, 2020), as well as their subjective body satisfaction (Neumark-Sztainer et al., 2006), can critically shape their health behaviors and psychological wellbeing. Despite increasing emphasis on the effects of COVID-19 on adolescents' mental health (e.g., Magson et al., 2021), much remains unknown about how adolescents' feelings about their bodies and social influences about weight have been impacted by the pandemic. Our cross-sectional study is among the first to examine pandemic-related changes in weight stigma and body dissatisfaction among adolescents, who are in a critical developmental stage when weight-based mistreatment has long-term health implications (Puhl et al., 2017) and appearance concerns are heightened (Gowers & Shore, 2001). With growing attention to pediatric obesity amidst the pandemic, our findings provide important insights into psychosocial changes during this time period that are highly relevant to adolescent health.

Supporting narrative accounts of an upsurge in weight stigma on social media platforms during the pandemic (Flint, 2020; Pearl, 2020), we found that the majority of our adolescent sample (53%) indicated increased exposure to some form of weight stigmatizing content on social media (i.e., weight gain memes and/or stress eating jokes). While joking can function as an effective tool to positively reappraise stressful situations (Papousek et al., 2019), it is important that

individuals are encouraged to utilize strategies to cope with pandemic-related challenges and stress that do not imply personal responsibility and blame for body weight. Even if adolescents do not feel directly targeted by derogatory memes and jokes about obesity, climates of heightened weight stigma can be negatively impactful for all youth who are exposed (Lessard & Juvonen, 2020).

Our results indicate that increased exposure to weight stigmatizing social media content is likely to have implications for adolescents' health and well-being, particularly taking a toll on how adolescents feel about their bodies. Indeed, while 41% of our overall adolescent sample reported feeling more dissatisfied with their bodies since the COVID-19 pandemic, nearly two-thirds of those who indicated increased exposure to weight stigma on social media reported increased dissatisfaction with their bodies. This is particularly concerning given that body dissatisfaction during adolescence is predictive of unhealthy weight control (e.g., laxative use) and eating behaviors (e.g., binge eating; Neumark-Sztainer et al., 2006). With increases in body dissatisfaction also documented among nearly a third (26-32%) of adolescents in our sample who reported decreased social media weight stigma exposure, future research should also take into account unexamined factors (e.g., stress, isolation) and the enduring impact of weight stigma.

In our sample, increases in body dissatisfaction were most pronounced among older adolescents (i.e., high school students), as well as female youth, especially those with higher weight, who were also more likely to report increased exposure to weight stigmatizing content. It is possible that differential exposure to weight stigma is reflective of gender differences in social media usage, such as girls' increased time spent on social media (Vannucci & McCauley Ohannessian, 2019) and more frequent use of image-centric platforms (e.g., Instagram, Snapchat; Ohannessian & Vannucci, 2020) that may heighten the salience of physical appearance, weight and eating content. Nevertheless, the gender differences we documented in body dissatisfaction also align with evidence suggesting disproportionate increases in depression and anxiety among adolescent girls (compared to boys) during the pandemic (Magson et al., 2021). Given that social media provides an important avenue for adolescents to stay in touch with peers and maintain support while physically distanced during the pandemic in ways that support mental health (Orben et al., 2020), it is also important that our findings are not interpreted to discourage adolescent social media use. Rather, encouraging youth to stay socially connected with electronic methods such as synchronous and multi-modal communication, are likely to support adolescent health during the pandemic (Juvonen et al., 2021).

In contrast to the increasing prevalence of weight stigma on social media, our cross-sectional findings documented relative consistency in adolescents' direct experiences of weight stigma, including teasing and bullying due to body weight. In light of increased electronic usage during the pandemic (Ellis et al., 2020), it is possible that in-person methods of victimization have been replaced in part by cyberbullying. Nevertheless, without baseline (i.e., pre-pandemic) assessment, we cannot rule out the possibility that no changes in weight-based mistreatment reflects a consistent lack of experienced weight stigma. Weight-based cyberbullying is likely to be disproportionately directed toward adolescents with higher weight, who are often targets of weight-related harassment by their peers (Puhl & Lessard, 2020) and who have reported higher levels of weight stigma during COVID-19 relative to their peers without overweight (Chen et al., 2021). Thus, despite not experiencing disproportionate increases in weight-based mistreatment during the pandemic, it is important to acknowledge that youth with higher weight may still be facing frequent bullying and teasing given higher pre-pandemic base rates of victimization.

Adolescents also reported consistency in experiences of weight stigma from parents during the pandemic. However, increases in weight-based mistreatment from parents were reported more often compared to that from peers. This could reflect increased opportunities for parental monitoring of adolescents' physical activity and eating behaviors (e.g., snacking) while youth are spending more time at home. Insofar as eating is a common way to cope with stress and worries (Nguyen-Rodriguez et al., 2009), both of which have increased in adolescents during the pandemic (Ellis et al., 2020; Scott et al., 2021), parents may recognize changes in their children's eating habits that raise their concerns. Additionally, heightened stress among parents during the pandemic (Marchetti et al., 2020) may manifest as criticism and judgmental comments toward children. Regardless of the reasons and motivations accounting for parental weight-related mistreatment, it is important that parents are aware of the long-term health harms associated with such mistreatment (Lessard et al., 2020) and that alternative coping and communication responses are encouraged.

Limitations

Several study limitations should be noted. First, our data were largely descriptive in nature; future studies should take into account additional individual difference (e.g., social media usage, mental health) and socio-contextual (e.g., stay-at-home mandates) factors. Relatedly, it would be important to consider how adolescents' pre-pandemic levels of body

dissatisfaction and weight stigma contributed to the change in these variables during COVID-19, as well as the role of pre-pandemic weight and weight fluctuations during the pandemic. Although assessment of relative change provides indication of the pandemic's degree of disruption in adolescents' lives, it remains unknown whether youth already facing high levels of weight-based victimization were more likely to experience increased mistreatment during the pandemic. It is also possible that individual difference factors, such as body dissatisfaction or weight status, contribute to weight stigma exposure. Longitudinal studies allowing for comparison across multiple timepoints (i.e., pre-, during, and post-pandemic) and tests of directionality are needed to understand whether and how disparities in body dissatisfaction and weight stigma have been affected (e.g., exacerbated or ameliorated) by the pandemic.

In addition, we relied on self-report, single-item assessments that have not been validated. Weight status was assessed based on self-reported, rather than objective, height and weight measures. Given that multiple item measures tend to have better psychometric properties, future research with more extensive and objective assessments are needed. Relatedly, our indicators of weight stigma solely capture changes in frequency (i.e., frequency in exposure to and experienced weight stigma), rather than severity and associated distress. Furthermore, future research is needed to investigate how pandemic-related changes in weight stigma vary by modality. For example, are adolescents more likely to view weight stigmatizing content on Instagram and Snapchat, compared to TikTok? Moreover, despite overall consistency in reported experiences of peer weight-based victimization, has electronic (cyber) bullying because of body weight become increasingly common? Finally, given our predominantly White sample based in the Northeast U.S., we cannot presume that the present findings generalize across diverse groups and within other geographic regions. Sociodemographic and cultural differences in weight stigma are likely to uniquely shape adolescents' weight-related social experiences.

Conclusions and Clinical Implications

The present study highlights changes in adolescents' weight-related media consumption and consistencies in interpersonal weight-related mistreatment during the pandemic, both of which have implications for subjective body (dis)satisfaction. Given prospective links between weight stigma and unhealthy eating and weight gain (Puhl et al., 2017), the current findings suggest that ongoing attention toward pandemic-related increases in obesity would benefit from an increased focus on understanding and addressing the

prevalence and impact of weight stigma amidst COVID-19. Furthermore, our results underscore the need for healthcare providers and mental health professionals to be both aware of the potential rise in weight stigma during the pandemic, and encourage families and schools to engage in supportive, rather than stigmatizing, weight-related communication with youth. Unlike weight-focused conversations which can be harmful to wellbeing (Gillison et al., 2016), sensitive and reassuring communication (Bartlett et al., 2020; Dalton et al., 2020) that emphasizes health (Berge et al., 2013) and self-compassion (Coyne et al., 2020) is likely to help support adolescents especially during these challenging times.

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References

- Bartlett, J. D., Griffin, J., & Thomson, D. (2020). *Resources for support children's emotional well-being during the COVID-19 pandemic*. Child Trends. <https://aisa.or.ke/wp-content/uploads/resources/health-and-wellbeing/well-being-resources/resources-for-supporting-childrens-emotional-well-being-during-the-covid-19-pandemic-290320.pdf>
- 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. 10.1001/jamapediatrics.2013.78
- Blakemore, S. J., & Mills, K. L. (2014). Is adolescence a sensitive period for sociocultural processing? *Annual Review of Psychology*, *65*, 187–207. 10.1146/annurev-psych-010213-115202
- Brown, S. M., Doom, J. R., Lechuga-Peña, S., Watamura, S. E., & Koppels, T. (2020). Stress and parenting during the global COVID-19 pandemic. *Child Abuse & Neglect*, *110*, 104699.10.1016/j.chiabu.2020.104699
- Browne, N. T., Snethen, J. A., Greenberg, C. S., Frenn, M., Kilanowski, J. F., Gance-Cleveland, B., Burke, P. J., & Lewandowski, L. (2021). When pandemics collide: The impact of COVID-19 on childhood obesity. *Journal of Pediatric Nursing*, *56*, 90–98. 10.1016/j.pedn.2020.11.004
- Chen, C.-Y., Chen, I.-H., O'Brien, K. S., Latner, J. D., & Lin, C.-Y. (2021). Psychological distress and internet-related behaviors between schoolchildren with and without overweight during the COVID-19 outbreak. *International Journal of Obesity*, *45*, 677–686. 10.1038/s41366-021-00741-5
- Chou, W. S., Prestin, A., & Kunath, S. (2014). Obesity in social media: A mixed methods analysis. *Translational*

- Behavioral Medicine*, 4, 314–323. 10.1007/s13142-014-0256-1
- Coyne, L. W., Gould, E. R., Grimaldi, M., Wilson, K. G., Baffuto, G., & Biglan, A. (2020). First things first: Parent psychological flexibility and self-compassion during COVID-19. *Behavior Analysis in Practice*. 10.1007/s40617-020-00435-w
- Dalton, L., Rapa, E., & Stein, A. (2020). Protecting the psychological health of children through effective communication about COVID-19. *The Lancet Child & Adolescent Health*, 4, 346–347. 10.1016/S2352-4642(20)30097-3
- Donker, M. H., Mastrotheodoros, S., & Branje, S. (2021). Development of parent-adolescent relationships during the COVID-19 pandemic: The role of stress and coping. *Developmental Psychology* 10.1037/dev0001212.
- Eisenberg, M. E., Berge, J. M., Fulkerson, J. A., & Neumark-Sztainer, D. (2011). Weight comments by family and significant others in young adulthood. *Body Image*, 8(1), 12–19. 10.1016/j.bodyim.2010.11.002
- Ellis, W. E., Dumas, T. M., & Forbes, L. M. (2020). Physically isolated but socially connected: Psychological adjustment and stress among adolescents during the initial COVID-19 crisis. *Canadian Journal of Behavioural Science*, 52, 177–187. 10.1037/cbs0000215
- Flint, S. W. (2020). Stigmatizing media portrayal of obesity during the Coronavirus (COVID-19) pandemic. *Frontiers in Psychology*, 11, 2124. 10.3389/fpsyg.2020.02124
- Gillison, F. B., Lorenc, A. B., Sleddens, E. F. C., 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. 10.1016/j.ypmed.2016.10.010
- Gowers, S. G., & Shore, A. (2001). Development of weight and shape concerns in the aetiology of eating disorders. *The British Journal of Psychiatry*, 179, 236–242. 10.1192/bjp.179.3.236
- Juvonen, J., Schacter, H. L., & Lessard, L. M. (2021). Connecting electronically with friends to cope with isolation during COVID-19 pandemic. *Journal of Social and Personal Relationships*. 38, 1782–1799. 10.1177/0265407521998459
- Karsay, K., & Schmuck, D. (2019). “Weak, sad, and lazy fatties”: Adolescents’ explicit and implicit weight bias following exposure to weight loss reality TV shows. *Media Psychology*, 22(1), 60–81. 10.1080/15213269.2017.1396903
- Keel, P. K., Gomez, M. M., Harris, L., Kennedy, G. A., Ribeiro, J., & Joiner, T. E. (2020). Gaining “The Quarantine 15:” Perceived versus observed weight changes in college students in the wake of COVID-19. *The International Journal of Eating Disorders*, 53, 1801–1808. 10.1002/eat.23375
- Lessard, L. M., & Juvonen, J. (2020). Weight stigma in the school setting: The role of inclusive weight climate. *The Journal of School Health*, 90, 507–510. 10.1111/josh.12898
- Lessard, L. M., Lawrence, S. E., & Puhl, R. M. (2021). Weight-based victimization and school performance in adolescence: Can teachers help reduce academic risks? *School Psychology*, 36(1), 69–74. 10.1037/spq0000371
- Lessard, L. M., Puhl, R. M., Larson, N., Simone, M., Eisenberg, M. E., & Neumark-Sztainer, D. (2020). Parental contributors to the prevalence and long-term health risks of family weight teasing in adolescence. *Journal of Adolescent Health*. 10.1016/j.jadohealth.2020.09.034
- Magson, N. R., Freeman, J. Y. A., Rapee, R. M., Richardson, C. E., Oar, E. L., & Fardouly, J. (2021). Risk and protective factors for prospective changes in adolescent mental health during the COVID-19 pandemic. *Journal of Youth and Adolescence*, 50(1), 44–57. 10.1007/s10964-020-01332-9
- Marchetti, D., Fontanesi, L., Mazza, C., Di Giandomenico, S., Roma, P., & Verrocchio, M. C. (2020). Parenting-related exhaustion during the Italian COVID-19 lockdown. *Journal of Pediatric Psychology*, 45, 1114–1123. 10.1093/jpepsy/jsaa093
- Mason, T. B., Barrington-Trimis, J., & Leventhal, A. M. (2021). Eating to cope with the COVID-19 pandemic and body weight change in young adults. *Journal of Adolescent Health*, 68, 277–283. 10.1016/j.jadohealth.2020.11.011
- Munasinghe, S., Sperandei, S., Freebairn, L., Conroy, E., Jani, H., Marjanovic, S., & Page, A. (2020). The impact of physical distancing policies during the COVID-19 pandemic on health and well-being among Australian adolescents. *The Journal of Adolescent Health*, 67, 653–661. 10.1016/j.jadohealth.2020.08.008
- Neumark-Sztainer, D., Paxton, S. J., Hannan, P. J., Haines, J., & Story, M. (2006). Does body satisfaction matter? Five-year longitudinal associations between body satisfaction and health behaviors in adolescent females and males. *The Journal of Adolescent Health*, 39, 244–251. 10.1016/j.jadohealth.2005.12.001
- Nguyen-Rodriguez, S. T., Unger, J. B., & Spruijt-Metz, D. (2009). Psychological determinants of emotional eating in adolescence. *Eating Disorders*, 17, 211–224. 10.1080/10640260902848543
- Ohannessian, C. M., & Vannucci, A. (2020). Social media use and externalizing behaviors during early adolescence. *Youth & Society*. 10.1177/0044118X20901737
- Orben, A., Tomova, L., & Blakemore, S.-J. (2020). The effects of social deprivation on adolescent development and mental health. *The Lancet Child & Adolescent Health*, 4, 634–640. 10.1016/S2352-4642(20)30186-3
- Papousek, I., Rominger, C., Weiss, E. M., Perchtold, C. M., Fink, A., & Feyaerts, K. (2019). Humor creation during efforts to find humorous cognitive reappraisals of threatening situations. *Current Psychology*. 10.1007/s12144-019-00296-9
- Pearl, R. L. (2020). Weight Stigma and the “Quarantine-15”. *Obesity*, 28, 1180–1181. 10.1002/oby.22850
- Pearl, R. L., & Puhl, R. M. (2018). Weight bias internalization and health: A systematic review. *Obesity Reviews*, 19, 1141–1163. 10.1111/obr.12701
- Prime, H., Wade, M., & Browne, D. T. (2020). Risk and resilience in family well-being during the COVID-19 pandemic. *The American Psychologist*, 75, 631–643. 10.1037/amp0000660

- Puhl, R. M., & Lessard, L. M. (2020). Weight stigma in youth: Prevalence, consequences, and considerations for clinical practice. *Current Obesity Reports*, 9, 402–411. 10.1007/s13679-020-00408-8
- Puhl, R. M., Himmelstein, M. S., & Pearl, R. L. (2020). Weight stigma as a psychosocial contributor to obesity. *The American Psychologist*, 75, 274–289. 10.1037/amp0000538
- Puhl, R. M., Wall, M. M., Chen, C., Bryn Austin, S., Eisenberg, M. E., & Neumark-Sztainer, D. (2017). Experiences of weight teasing in adolescence and weight-related outcomes in adulthood: A 15-year longitudinal study. *Preventive Medicine*, 100, 173–179. 10.1016/j.ypmed.2017.04.023
- Rundle, A. G., Park, Y., Herbstman, J. B., Kinsey, E. W., & Wang, Y. C. (2020). COVID-19–related school closings and risk of weight gain among children. *Obesity*, 28, 1008–1009. 10.1002/oby.22813
- Scott, S. R., Rivera, K. M., Rushing, E., Manczak, E. M., Rozek, C. S., & Doom, J. R. (2021). “I Hate This”: A qualitative analysis of adolescents’ self-reported challenges during the COVID-19 pandemic. *Journal of Adolescent Health*, 68, 262–269. 10.1016/j.jadohealth.2020.11.010
- Tester, J. M., Rosas, L. G., & Leung, C. W. (2020). Food insecurity and pediatric obesity: A double whammy in the era of COVID-19. *Current Obesity Reports*, 9, 442–450. 10.1007/s13679-020-00413-x
- Vannucci, A., & McCauley Ohannessian, C. (2019). Social media use subgroups differentially predict psychosocial well-being during early adolescence. *Journal of Youth and Adolescence*, 48, 1469–1493. 10.1007/s10964-019-01060-9