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Weight Labeling and Disordered Eating Among Adolescent Girls: Longitudinal Evidence From the National Heart, Lung, and Blood Institute Growth and Health Study

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A B S T R A C T

Purpose: Weight stigma is implicated in disordered eating, but much of this research focuses on forms of stigma such as weight-based teasing.
Methods: In a large cohort of adolescent girls (N = 2,036), we tested the hypothesis that being labeled as "too fat" by others predicts subsequent greater disordered eating cognitions and behaviors.
Results: Compared with girls who did not report weight labeling, girls who were labeled at age 14 showed an increase in unhealthy weight control behaviors and disordered eating cognitions over the subsequent 5 years. These effects were independent of objective body mass index, race, parental income and education, and initial levels of disordered eating.
Conclusions: Exploratory analyses suggest that weight labeling from family members is more strongly associated with disordered eating than labeling from nonfamily members. This study highlights how the long-term consequences of weight stigma can potentially begin when one is labeled as "too fat."

IMPLICATIONS AND CONTRIBUTION

Whereas past research on weight stigma and disordered eating has focused on forms of stigma such as weight-based teasing, the current study shows that being labeled as "too fat" by others is prospectively associated with greater disordered eating cognitions and behaviors in a large cohort of adolescent girls.

Weight stigma—negative stereotypes, social devaluation, and pervasive mistreatment of heavier individuals—is strongly implicated in disordered eating. Among adolescents in particular, experiences with weight stigma are associated with the use of unhealthy weight control practices, binge eating, and bulimic tendencies [1,2]. Although research in this area is overwhelmingly cross-sectional, existing longitudinal data likewise support such a relationship. For example, in one study of adolescents, weight-based teasing predicted greater binge eating and unhealthy weight control behaviors (UWCBs) among boys and increased dieting among girls [3]. Puhl et al. [4] subsequently found that the negative psychological (e.g., poor body image) and behavioral (e.g., dieting) effects of early weight teasing persist well into adulthood.

Clearly, forms of weight stigma, such as weight-based teasing, bullying, and discrimination, are detrimental to health [1,2]. However, what are the longitudinal consequences of other forms of weight stigma, such as being labeled by others as "too fat"? A modified labeling theory approach [5] would suggest that the effects of stigma begin when an individual is labeled as a member of a stigmatized group. Indeed, prior research [6] has found that girls who were labeled as too fat at age 10 were more likely to have a body mass index (BMI) categorized as obese 9 years later, regardless of their initial weight. Here we examine the prospec-

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tive implications of weight labeling for disordered eating in a large cohort of adolescent girls. We hypothesize that being labeled too fat will be associated with an increase in disordered eating behaviors and cognitions over time, independent of BMI.

Method

Sample

The National Heart, Lung, and Blood Institute Growth and Health Study (NGHS) followed self-identified as black and white girls from 10 to 19 years of age (detailed study information is available at https://biolincc.nhlbi.nih.gov/static/studies/nghs/Protocol.pdf). Data for the current study (N = 2,036) were drawn from ages 14 and 19 when target measures were available (see Table 1 for sample demographics and descriptive statistics). The institutional review board at each site (University of California, Berkeley; University of Cincinnati; and Westat, Rockville, Maryland) approved the NGHS protocol. The University of California, Los Angeles institutional review board approved the current study. The child provided written assent and a parent/guardian provided written informed consent until the child became 18 years old, at which point she provided written informed consent.

Weight labeling

At age 14, girls reported whether they had ever been told they were too fat by the following individuals: father, mother, brother, sister, a best girlfriend, the boy you like best, any other girl, any other boy, and any teacher. Consistent with past research [6], girls were coded as experiencing weight labeling if any individual told them they were too fat.

Disordered eating cognitions and behaviors

At ages 14 and 19, the Eating Disorders Inventory (EDI) [7] assessed bulimic tendencies, drive for thinness, and body dissatisfaction; we summed these scales to create an EDI total score. In line with other research [4], at ages 15 and 19, girls reported their use (or not) of four UWCBs over the past 30 days: not eating for a day or more, vomiting, taking diet pills, and using laxatives. At age 19, the participants also reported two additional unhealthy weight control behaviors: skipping meals and smoking.

Control variables

Objective BMI, race, parental education, and household income were assessed at age 14.

Results

Linear regression analyses revealed that girls who were labeled as too fat at age 14 reported greater UWCBs, bulimic tendencies, drive for thinness, and body dissatisfaction at age 19. Importantly, these effects held when controlling for baseline levels of each respective disordered eating outcome, objective BMI, parental education, household income, and race. In sensitivity analyses, we dichotomized all outcomes at the upper quartile and conducted logistic regression. Labeling predicted greater odds of being in the upper quartile for all outcomes, although the effects on body dissatisfaction and EDI total were attenuated. The effects of weight labeling on disordered eating were not moderated by race or BMI. In exploratory analyses, we tested labeling separately from family and nonfamily members. These analyses suggest that weight labeling by family is a stronger predictor of

Table 1
Sample demographics and descriptive statistics

	Black girls (n = 1,075)	White girls (n = 961)
Body mass index	M = 23.66 (SD = 5.78)	M = 21.53 (SD = 4.14)
Parental education (%)		
Less than high school	30.9	19.2
1–3 y post high school	47.8	30.4
≥4 y of college	21.3	50.4
Parental income (%)		
Less than $5,000	27.7	6.7
$5,000–$19,999	19.0	9.4
$20,000–$39,000	29.3	31.9
$40,000 or more	23.9	51.9
Overall weight labeling (%)	39.7	34.8
Family labeling (%)	34.5	27.2
Nonfamily labeling (%)	22.4	19.9
EDI drive for thinness (age 14)	M = 4.05 (SD = 5.13)	M = 5.12 (SD = 6.06)
EDI drive for thinness (age 19)	M = 4.61 (SD = 5.49)	M = 5.57 (SD = 5.95)
EDI body dissatisfaction (age 14)	M = 6.69 (SD = 6.66)	M = 8.16 (SD = 7.64)
EDI body dissatisfaction (age 19)	M = 8.22 (SD = 7.47)	M = 9.94 (SD = 8.11)
EDI bulimia (age 14)	M = 1.90 (SD = 3.21)	M = 1.29 (SD = 2.76)
EDI bulimia (age 19)	M = .98 (SD = 2.27)	M = .91 (SD = 2.29)
EDI total score (age 14)	M = 12.60 (SD = 11.87)	M = 14.55 (SD = 14.24)
EDI total score (age 19)	M = 13.81 (SD = 12.71)	M = 16.43 (SD = 14.13)
Unhealthy weight control (age 15)	M = .07 (SD = .28)	M = .05 (SD = .26)
Unhealthy weight control (age 19)	M = .26 (SD = .61)	M = .30 (SD = .69)

EDI = Eating Disorders Inventory; SD = standard deviation.

Table 2
Linear and logistic regression analyses predicting age 19 disordered eating outcomes from age 14 weight labeling (N = 2,036)

	Linear regression results				
	EDI Drive for thinness	EDI Body dissatisfaction	EDI Bulimia	EDI Total score	Unhealthy weight control behaviors
	β	*β*	*β*	*β*	*β*
Objective BMI	.14***	.21***	.06*	.19***	.12***
Baseline disordered eating	.36***	.38***	.31***	.40***	.14***
Race (black = 1)	–.08***	–.12***	–.04	–.11***	–.07***
Parental education	–.01	–.05*	.00	–.03	.03
Parental income	.04	.04	–.01	.05	.00
Overall weight labeling	.08***	.06*	.06*	.06**	.10***
Family labeling	.09***	.07***	.05*	.07***	.10***
Nonfamily labeling	.09***	.04	.04	.00	.10***
	Upper quartile (≥9)	Upper quartile (≥14)	Upper quartile (≥1)	Upper quartile (≥24)	Upper quartile (≥1)
	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Objective BMI	1.06 (1.03–1.06)***	1.08 (1.05–1.11)***	1.01 (.99–1.04)	1.08 (1.05–1.11)***	1.06 (1.03–1.08)***
Baseline disordered eating	1.12 (1.10–1.15)	1.10 (1.08–1.13)	1.16 (1.12–1.20)***	1.06 (1.05–1.07)***	2.43 (1.73–3.42)***
Race (black = 1)	.67 (.57–.87)	.65 (.50–.86)***	.78 (.61–.99)*	.58 (.44–.77)***	.76 (.59–.99)*
Parental education	1.09 (.90–1.31)	.91 (.75–1.10)	1.04 (.88–1.23)	.94 (.77–1.16)	1.08 (.90–1.30)
Parental income	1.08 (.94–1.23)	1.15 (1.00–1.32)	1.00 (.89–1.14)	1.07 (.92–1.24)	1.04 (.91–1.18)
Overall weight labeling	1.48 (1.13–1.96)***	1.31 (.99–1.73)	1.60 (1.24–2.05)***	1.33 (.99–1.77)	1.67 (1.28–2.17)***
Family labeling	1.58 (1.20–2.08)***	1.45 (1.10–1.32)**	1.51 (1.17–1.95)***	1.46 (1.10–1.95)**	1.60 (1.23–2.09)***
Nonfamily labeling	1.53 (1.15–2.05)***	1.12 (.83–1.51)	1.40 (1.06–1.84)*	1.20 (.88–1.62)	1.71 (1.30–2.26)***

Baseline disordered eating reflects the initial level of that respective outcome.
BMI = body mass index; CI = confidence interval; EDI = Eating Disorders Inventory; OR = odds ratio.
*** $p < .005$, ** $p < .01$, * $p < .05$.

disordered eating than labeling by nonfamily members (see Table 2 for full results).

Discussion

As predicted, girls who were labeled as too fat showed increased disordered eating cognitions and behaviors 5 years later, and this may be most pronounced when labeling comes from a family member. Why might weight labeling have potentially distal outcomes for health? Modified labeling theory [5] posits that individuals understand from a very early age how society treats members of stigmatized groups (e.g., individuals deemed "overweight"). Once labeled, these beliefs about stigmatized others become a fear that they themselves could be looked down upon or rejected because of their group membership. The mere *potential* for devaluation or rejection, absent direct experiences of discrimination, can still undermine health [8,9]. Labeling, perhaps more so from family, may be associated with an overemphasis on weight within a person's immediate social environment. Additionally, individuals who experience labeling may also experience other forms of weight stigma, which may be particularly impactful, given the heightened vulnerability for weight-related issues during adolescence.

The present study benefited from a large sample and longitudinal design. However, one limitation is that these findings only apply to black and white adolescent girls. Moving forward, researchers should examine the effects of weight labeling on disordered eating in boys as well. The present study is also limited by its weight-labeling measure, as we do not know how this measure relates to other forms of weight stigma (e.g., teasing). Future research should adopt a more comprehensive approach to weight stigma assessment. Focusing on a single dimension (e.g., weight labeling, weight-based teasing, and internalized weight bias) likely results in a conservative estimate of the true relationship between weight stigma and health. Finally, additional empirical and theoretical refinement will clarify the relationship between weight labeling, weight stigma, and related eating disorder risk factors, such as negative appearance-related commentary [10]. Nevertheless, weight stigma in all forms is a potent yet modifiable risk factor for disordered eating.

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