PARENTAL RESPONSIBILITY: STIGMATIZATION OF PARENTS BASED ON CHILD WEIGHT

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Abstract: Qualitative evidence, judicial decisions, and media reports suggest that parents of children with obesity experience stigma on account of their children's weights. However, to the best of my knowledge, little empirical work actually explores whether social perceivers stigmatize the parents of children with higher weight. Here, I test whether social perceivers stigmatize parents of children with "obesity," and ask what might drive this stigma. Specifically, I test a theory derived from an attribution explanation of weight stigma. An attribution theory explanation for stigmatizing adults who themselves have obesity argues that this stigma is driven by the negative attributions social perceivers make as to why targets have obesity (e.g., laziness). To test whether parents of children with obesity are stigmatized because the parents are attributed blame for children's weight, I conducted a highly-powered, pre-registered experiment using US participants (N = 254). I find that parents of children with obesity (versus healthy-weight) are stigmatized as parents, and this relationship between child weight and parental stigma is statistically mediated by attributions of blame toward parents for children's weights. In light of gender role breakdowns in parenting, I also tested whether this blame—and thus stigma—is greater for mothers versus fathers, but found no support for this. In addition to these focal tests, I also explore whether parents of children with obesity (a) are stigmatized in general (versus as "parents") and (b) are attributed any negative personal characteristics stereotypically associated with obesity (e.g., greedy), as a traditional stigma-by-association account might imply, finding support for both of these propositions. In all, findings support an attribution theory of weight stigma, such that parents are blamed for their children's obesity and thus viewed as poor parents. I discuss implications and future directions for this work.

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CHAPTER I

PARENTAL RESPONSIBILITY: STIGMATIZATION OF PARENTS BASED ON CHILD WEIGHT

In 2011, Ohio became the latest state—joining New York, California, Iowa, Indiana, New Mexico, Pennsylvania, and Texas—to remove a child with obesity from their parents' custody until that child reaches and maintains a healthy weight. U.S. courts seem to blame parents for child obesity and have determined that removal from homes is justified (Murtagh, 2007; Murtagh & Ludwig, 2011)—even as, in reality, any individual's weight is determined by a complex interplay of genes, culture, and environment (Albuquerque, et al., 2017; Faith & Kral, 2006). Although this ruling represents an extreme instance of stigma against parents of children with obesity, it is not singular (e.g., adults with obesity are denied rights to adopt children; Carter, 2009; Patel, 2005).

These legal interventions—along with qualitative interviews of mothers of children with obesity—strongly suggest that parents of children with obesity are likely to be stigmatized as being deficient parents. However, there is little empirical work investigating social perceivers' attitudes toward and inferences about the parents of children with obesity. The current work provides a first empirical test of whether parents of children with obesity are stigmatized—and why. To preview my argument, I take an attribution theory approach in suggesting that, to the extent that social perceivers deem parents responsible for children's weights, perceivers will

stigmatize those parents. Moreover, because mothers may often be attributed more responsibility for children's weight-and-appearance-related outcomes, I additionally explore whether mothers (versus fathers) thus face greater stigmatization.

Weight-Related Stigma

Obesity is a major public health concern in the US and is an escalating global issue (WHO, 2020). In the U.S., over 70% of adults have overweight or obesity (Centers for Disease Control and Prevention [CDC], 2018), and over 50% percent of children have overweight or obesity (CDC, 2018). In fact, childhood obesity is increasing at a faster rate than adult obesity, and this childhood obesity has quadrupled since 1980 (Lakshman et al., 2012). Children who have obesity are likely to become adults with obesity (Biro & Wien, 2010). Beyond any issues associated with weight, however, weight-related stigma itself has become an issue of global concern (Rubino et al., 2020).

At its base, *weight-related stigma* involves devaluing and/or ignoring people with overweight or obesity. Both adults and children—particularly women and girls—with higher weights experience stigma, negative stereotyping, and discrimination (e.g., Brewis et al., 2018; Major et al., 2018; Puhl & Brownell, 2003; Rubino et al., 2020). For example, fifth and sixth graders rated that they would least like to be friends with children with obesity when compared to children with various physical disabilities and "typical" children (Ludwig, 2012). Notably, even some parents stigmatize their own heavier-weight children, especially daughters (Eisenberg, Berge, et al., 2011; Holub, Tan, & Patel, 2011; Kenrick, Shapiro, & Neuberg, 2013). Puhl and colleagues (2008) found that participants reported being stigmatized for weight by mothers (53%) and fathers (44%), and being the target of weight-based teasing and pejorative comments from parents. Such weight-related teasing is associated with low self-esteem, high depressive symptoms, suicidal ideation, as well as later unhealthy weight and binge eating (Eisenberg,

Neumark-Sztainer, & Story, 2003; Neumark-Sztainer et al., 2002). Again, daughters with obesity and overweight (versus sons) seem to face greater negative outcomes, for example receiving less financial support to pay for college (Crandall, 1991, 1995). Thus, the consequences of weight-based stigma are often profound, including painful maltreatment, poorer medical outcomes, and diminished economic and educational opportunities (Puhl & Brownell, 2001, 2003; Roehling, 1999; Teachman, Gapinski, et al., 2003).

An Attribution Theory Account for Weight-Related Stigma

A number of theories have been proposed as to why adults (and children) with overweight or obesity are stigmatized (for reviews, see Diedrichs & Puhl, 2016; Puhl & Brownell, 2003). The predominant and most empirically-well supported explanation is an attribution theory account for weight-related stigma (Crocker et al., 1993; Heider, 1958; Kelley, 1967; Weiner, 1972). In general, attribution theory attempts to explain how people attribute the causes of events or behavior (e.g., Heider, 1958). With respect to weight-related stigma, people attribute the cause of an individual's overweight or obesity as owing to that individual's negative traits (e.g., laziness, lack of self–control; Puhl & Heuer, 2010). Indeed, obesity is often regarded as due to a lack of personal willpower (Boero, 2007).[1] Supporting this attribution theory account, studies have found that the more people believe individuals are responsible for their own weight problems, the more people stigmatize individuals with overweight or obesity (Crandall et al., 2001; Durso & Latner, 2008; Hilbert et al., 2008). For example, when informed that a person's weight is due to a medical issue beyond their personal control (i.e., a thyroid condition), participants were less likely to stigmatize that person (DeJong, 1993).

[1] In reality, overweight and obesity are caused by a highly complex interplay of genetics, environment, and other biopsychosocial factors (Albuquerque, et al., 2017; Faith & Kral, 2006).

From this perspective, we should expect that children will also experience weight-related stigma to the extent that those children are blamed for their own weights (e.g., Crandall et al., 2001; Puhl & Heuer, 2010). For example, to the extent that children are deemed able to control their own food intake, make their own healthy food choices, dictate their own activity levels, and bear on other factors perceived to be associated with their weights, children will experience weight-related stigma. However, there is reason to suspect that people might not perceive children as being able to control these weight-related phenomena or their weights. Evidence suggests that people view external causes as key in children's obesity (Murtagh & Ludwig, 2011; Varness et al., 2009). Relatedly, people also stigmatize children with obesity less than adults with obesity (Sikorski et al., 2012), perhaps owing to this perception that, whereas adults can control their weights, children cannot.

This raises an important question: If children are not deemed responsible for controlling their weights, who is? I suggest that people view children's parents—and especially children's mothers—as responsible for their weights, causing people to stigmatize parents of children with obesity.

Stigma Against Parents of Children with Obesity

Although, to the best of my knowledge, no existing work empirically demonstrates it, some existing evidence does support this proposition that parents of children with overweight or obesity are themselves blamed and stigmatized owing to their children's weights. For example, an anonymous poll of physicians found that even 69% of medical physicians reported that parents are to blame for their child's weight (Sermo, 2015). Further, courts have removed children from parental custody (biological and foster) until those children could maintain "healthy" weights, implying that courts similarly deemed children's unhealthy weights to be caused, at least in part,

by parental behavior (Garrahan & Eichner, 2012; Murtagh, 2007; Murtagh & Ludwig, 2011; Patel, 2005; Stashenko, 2008).

Parents themselves report worrying about being blamed for their children's obesity (e.g., by physicians)—just as parents of children with other issues report worry about being stigmatized (e.g., autism, ADHD; Edmunds, 2005; Gorlick, et al., 2020; Jackson, et al., 2007; Kokkonin, 2009; Turner, et al., 2012; Zenlea, et al., 2017). Moreover, qualitative data derived from interviews reveals that parents, and particularly mothers, perceive themselves as being stigmatized because of their children's weights (Edmonds, 2005; Gorlick et al., 2020; Jackson, et al., 2007; Kokkonin, 2009; Turner, et al., 2012; Zenlea et al., 2017).

There are two primary theoretical accounts that could explain such stigma toward parents of children with overweight and obesity. First, drawing on an attribution theory framework, I suggest that parents of children with obesity are stigmatized—specifically in their roles as parents—to the extent that those parents are attributed responsibility for their children's weights. (Although this explanation does not specifically predict that parents of children with obesity will additionally be stigmatized in general, I also explore this possibility.)

This account might further suggest that, to the extent mothers (versus fathers) are seen as more responsible for children's weight-and appearance-related outcomes, the more blamed and stigmatized mothers will be. Evidence does suggest mothers (compared to fathers) may be held especially responsible for parenting and their children's appearance and development in the eyes of others (Boero, 2009; Caplan, 1989; Caplan & Caplan, 2000; Friedman, 2015; Ladd-Taylor & Umansky, 1998). For example, Woolhouse and colleagues (2019) conducted qualitative interviews and found that mothers reported having the prime responsibility for nurturing the family (i.e., providing a healthy diet), and noted that they also had to demonstrate that time and effort had been taken to prepare the meals with fresh ingredients; these mothers also reported that

failure to meet these expectations resulted in a label of "lazy" and blame for family members' health problems (especially for children). Likewise, reports detailing children removed from parental custody because of obesity depict the children as victims of inadequate parenting and the mother as an uncaring caregiver (Friedman, 2015). Thus, compared to fathers, mothers of children with overweight or obesity might experience greater blame and stigma, and this would accord with qualitative reports in which mothers of children with obesity report being stigmatized (Edmunds, 2005; Jackson, et al., 2007; Turner, et al., 2012). Notably, those responses may themselves be driven by these stereotypes, as reports featured predominantly mothers reporting being stigmatized.

A second possible explanation for why parents of children with obesity might be stigmatized—although not exclusively in their roles as parents—centers on stigma-by-association. Work on stigma-by-association, also referred to as courtesy stigma, suggests that association with anyone possessing a generally devalued identity (i.e., stigmatized) might themselves be stigmatized on account of this association (Goffman, 1963; Neuberg, et al., 1994; Pryor, et al., 2012). On this view, then, compared to parents of children with healthy-weight, parents of children with overweight or obesity might be inferred as more likely to possess negative traits associated with obesity (e.g., lacking self-control).[2] For example, Teachman and Brownell (2001) found that family members associated with a person with obesity were more likely to be judged as lazy than violent, as laziness (but not violence) was implicitly associated

[2] Children with obesity are more likely than healthy-weight children to also have parents with obesity. To explore a stigma-by-association hypothesis and my focal hypotheses without introducing this possible confound, my stimuli depict and describe parents as themselves being healthy-weight. Although this may sacrifice some ecological validity, it allows me to explore my hypotheses without introducing the confound of parent weight.

with obesity.[3] On this view, then, parents of children with obesity might be stigmatized (relative to parents of children with healthy-weight). Insofar as these trait inferences (e.g., laziness) might also render a person perceived as bad parent, it is possible that such stigma-by-association would cause parents not only to be devalued as individuals, but also as parents.

Overview

Whereas many studies have investigated stigma toward adults with obesity (e.g., see Puhl & Brownell, 2003), and many others have investigated stigma toward children with obesity (Holub, et al., 2011; Puhl & Latner, 2007; Bacardi-Gascon et al., 2007), little empirical work has explored whether parents of children with obesity are stigmatized (but see Arriola-Sanchez et al., 2020; Wolfson et al., 2015)—and why this might be. Consistent with both qualitative work in which parents report being stigmatized on account of their children's weights and also court rulings suggesting that parents are blamed and stigmatized for their children's weights (Hamlington et al., 2015; Sikorski et al., 2012), I propose and test an attribution theory-based explanation for parental stigma as a function of child weight. Specifically, I expect that parents of daughters[4] with obesity will be stigmatized as bad parents relative to parents of children with healthy-weight, and that this stigmatization will be driven by attributions of responsibility on the part of parents for their children's weight. To the extent that mothers are attributed greater responsibility there, they might also be more stigmatized. I additionally test predictions implied by a stigma-by-association account—that parents of daughters with obesity are viewed negatively

[3] I also note, however, other work also suggests that non-voluntary association with stigmatized targets—as when one is interacting with a family member—are somewhat buffered from such stigma-by-association (Birenbaum, 1992; Kulik, et al., 2008).

[4] I focus on parents of *daughters* with obesity, given the greater weight-related stigma toward girls and women with obesity (Stice et al., 2005; Taylor et al., 2012; Tehard et al., 2002).

(i.e., are stigmatized in general) and as having negative obesity-linked characteristics (e.g., lazy, lacking self-control).

CHAPTER II

METHODS

Participants

A power analysis in G*Power suggested that 199 participants were necessary for .80 power small-to-medium- sized effects (f = .20), I aimed to recruit 250 U.S. participants from Amazon's Mechanical TurkPrime (MTurk). Of the 269 people who began my survey, I included 254 participants (56.7% female) in analyses who passed my attention check items and completed dependent variables (M_{age} = 41.91, SD_{age} = 13.44), with 77.8% reporting their ethnicity as Caucasian, 9.9% as Asian/Asian American, and 4.1% or fewer reporting other races/ethnicities.

Procedure and Design

Participants were informed they were taking part in a study on the accuracy of perceptions based on little information, and they thus were supplied short descriptions of a focal target parent, with some of that description redacted (e.g., "Tom is a 34-year-old man living in [redacted]"); in reality, the redacted information was unimportant to the predictions, and was kept constant across stimuli (e.g., Krems et al., in press;). See Appendix A for stimuli. Participants were randomly assigned to view one of four stimuli depicting the target parent, either the male/father (Tom) or the female/mother (Carol). In all conditions, parents appeared as healthy-weight parenting-aged adults, and were described as the father/mother of an 8-

year-old daughter (Emma). The daughter, Emma, was depicted as either healthy-weight in the "healthy-weight" condition or obese in the "obese" condition. See Appendix A for stimulus examples.

Thus, participants were randomly assigned to view and respond to one of four stimuli varying in child weight and parent gender, giving the experiment a 2 (Daughter weight: healthy-weight, obese) x 2 (Parent gender: male, female) between-subjects design.

Materials

In each stimulus, participants received some brief descriptive information about the target, Tom or Carol (e.g., "Tom is a 34-year-old man living in [redacted], in the United States. He works as a [redacted], and, on his days off, his favorite thing to do is just [redacted]. He is married to a woman he met almost 10 years ago, named [redacted]. Tom is depicted below with their 8-year-old daughter, Emma."). In addition to the descriptive text, participants were shown graphic depictions of the target parent and the daughter—described to participants as "artist renderings."

Figures were taken from the BODy Size and Shape figure set (BODSS; Neuberg & Krems, 2016). Target stimuli (Tom or Carol) were depicted as "healthy-weight" and parenting-aged. The daughter (Emma) was depicted as a pre-pubescent female with either healthy-weight or obesity (with fat primarily located in her abdominal area). Both the target parent and the daughter figures had their faces obscured by a black bar to focus participants on target bodies (rather than faces; e.g., Krems & Neuberg, 2021).

After viewing the stimulus, participants were tasked were tasked with making a series of inferences about the target parent (Tom or Carol). Participants were informed they would rate this person on one or more of three domains—as a parent, as a romantic partner, or as an employee. In reality, all participants rated the target in general and well as in their role as a parent.

Measures

To assess inferences about the target parent, participants were asked to rate their agreement with a series of items about their attitudes towards and inferences about the target. See Appendix B for all measures.

General stigma. To measure *general stigma* toward the target, participants completed two traditional operationalizations of stigma. First, I used a *feeling thermometer,* asking participants to report their feelings toward the target on a 10-point slider (0 = *Cold*, 10 = *Warm*) with the slider set to the midpoint (e.g., Abelson, Kinder, Peters, & Fiske, 1982). Higher numbers indicate greater warmth and less stigma. Second, I asked participants to rate their agreement with statements about how positively and negatively they felt toward the target, using a 7-point Likert-type scale (1 = *not at all agree*, 7 = *very much agree*). This second operationalization of stigma was thus computed by subtracting endorsement of disliking from liking, such that lower numbers again indicate greater stigma toward the target. I measured general stigma prior to my focal dependent variable, parenting stigma, both in line with the cover story told to participants and also to avoid the possibility that reporting stigma toward targets as parents first, prior to general stigma, would affect those later general stigma ratings (whereas the reverse was less likely to occur).

Parental stigma. To measure *stigma toward the target as a parent,* my focal measure, participants rated their agreement to two face-valid items (e.g., "To what extent do you think that Tom is…a good parent?", "…a bad parent?") on a 7-point Likert-type scale (1 = *not at all agree*, 7 = *very much agree*). I subtracted ratings of "bad" parent from ratings of "good" parent to produce a single measure of stigma toward the target as a parent, such that lower numbers again indicate greater stigma. Findings reported below replicate when using only endorsement of the latter item.

Low-quality parenting characteristics. In addition to—and perhaps driving—stigma toward parents of children with obesity, people might view parents of children with obesity (versus healthy-weight) as possessing low-quality parenting characteristics, and in particular those that might be intuitively associated with their children's weights. To assess this, participants rated their agreement with a number of statements on a 7-point Likert-type scale (e.g., "Tom is…an overly indulgent parent"; $\alpha = .83$ - $.89$).

Obesity-linked characteristics. A stigma-by-association account implies that, even as the target parents are depicted as being healthy-weight, they might nevertheless be inferred to have negative characteristics associated with obesity when the daughter is depicted as obese (versus healthy-weight; e.g., Pryor, et al., 2012). To assess inferences about the target as having obesity-linked characteristics participants rated their agreement with a number of statements on the same 7-point Likert-type scale as above (e.g., "Tom is…lazy?"; $\alpha = .88$). To help obscure the aims of the study, these inferences were embedded alongside distractor inferences (e.g., "warmth", "competence").

Parental responsibility for child weight. To test whether perceptions of the target (i.e., the parent Tom or Carol) as being responsible for their child's appearance might drive stigmatization, participants completed two distinct measures. First, participants responded to measures adapted from work by Sikorski et al., (2012), assessing various causes of obesity. Specifically, to measure participants' perceptions of target responsibility for child appearance, participants rated their agreement with a series of 32 face-valid statements on a 7-point Likert-type scales (1 = *not at all*, 7 = *very much*). Drawing on work by Sikorski et al. (2012), participants were shown statements attributing responsibility for daughter appearance to: (a) parental behavior (e.g., "Carol is responsible for how much her daughter eats"), (b) daughter's own behavior (e.g., "Emma is responsible for her own weight"), (c) genetic factors (e.g., "Genetic

factors dictate Emma's health"), and (d) societal factors (e.g., "Societal and cultural factors dictate how much Emma eats"; $\alpha = .87 - .88$).

Second, participants completed a modified budget allocation paradigm, an established paradigm borrowed from behavioral economics (e.g., Li et al., 2002). This was a seemingly more face-valid measure, and my focal responsibility measure. Participants were allotted 100 "responsibility points" to allocate to genetic factors, societal factors, parent behavior, and child behavior to indicate how responsible participants believed each was for contributing to the child's weight and appearance. This measure forced participants to assign responsibility points in a zero-sum manner, such that the more the participants attributed blame to parents, the less they could attribute blame to the child. To help obscure the aims of my study, participants completed this same 100-point budget allocation paradigm for the child's athletic prowess and academic success as well as weight.

Other perception measures. I also assessed several other perceptions of targets, most notably perceptions of target BMI. Participants were asked, "Where on the Body Mass Index (BMI) scale do you think [target] falls?", reporting answers on a 100-point slider (0 = underweight, 50 = healthy-weight, 100 = obese). Other target perceptions were not relevant to the current analyses.

Demographics and other individual differences measures. Finally, all participants completed common demographic measures (e.g., sex, age, parental status), and several measures linked to the topics of interest (e.g., Body Mass Index), and received a debriefing.

CHAPTER III

RESULTS

General Stigma

Do people report feeling greater general stigma toward parents—and especially mothers—of children with obesity more than parents of healthy-weight children? I first aimed to examine general stigma and stigma as measured via the feeling thermometer and the liking/disliking measure. (Note that parental stigma was the focus, however.) For each dependent variable, I conducted a 2 (Child weight) x 2 (Parent gender) between-factors Analysis of Variance (ANOVA). Findings suggest yes, people do stigmatize parents of daughters with obesity more, and this is apparent via multiple outcome measures.[5]

Feeling thermometer. I explored stigma first using the feeling thermometer. That ANOVA yielded a main effect of Child size, $F(1, 250) = 10.58$, $p = .001$, $\eta_p^2 = .041$, such that people reported feeling less warm toward parents of daughters with obesity ($M = 6.23$, $SE = 0.16$) than healthy-weight ($M = 6.96$, $SE = 0.16$). Although the interaction was not significant

[5] Because child size and parent gender affected people's perceptions of parents' own BMI, I re-ran these analyses with target BMI as a covariate, replicating the pattern of results reported above. These analyses are reported in detail in the Supplemental Material.

(p = .274), I explored whether this effect held across Parent gender, given my a priori predictions.

People reported feeling significantly less warm toward mothers of daughters with obesity (M = 6.16, SE = 0.23) than healthy-weight (M = 7.14, SE = 0.22), F(1, 250)= 9.39, p = .002, η_p^2= .036, 95%CI = [0.35, 1.61]. Although the pattern of data was the same for fathers, with people reporting feeling less warm toward fathers of daughters with obesity (M = 6.29, SE = 0.22) than healthy-weight (M = 6.78, SE = 0.23), this difference was not statistically significant, F(1, 250) = 2.34, p = .127, η_p^2= .009, 95%CI = [-0.14, 1.11]. See Figure 1a. There were not significant differences in participants' responses to parents of daughters with obesity (p = .681) or healthy-weight (p = .255) as a function of parent gender. See Figure 1a.

Taken together, this suggests that parents—and particularly mothers—of daughters with obesity are stigmatized more than parents of daughters with healthy-weight.

Liking/Disliking. I also explored general stigma second using a composite of reported liking of the target minus reported disliking of the target (e.g., Krems & Neuberg, 2021). Replicating the pattern of findings for the feeling thermometer, that ANOVA yielded a main effect of Child size, F(1, 250) = 12.41, p = .001, η_p^2= .047, such that people reported liking parents of daughters with obesity (M = 2.07, SE = 0.18) less than healthy-weight (M = 2.97, SE = 0.18). Although the interaction was not significant (p = .180), I explored whether this effect held across Parent gender, given my a priori predictions.

I again find that people reported liking mothers of daughters with obesity (M = 2.07, SE = 0.26) significantly less than mothers of daughters with healthy-weight (M = 3.31, SE = 0.26), F(1, 250) = 11.76, p = .001, η_p^2= .045, 95%CI = [0.53, 1.97]. Although the pattern of data was the same for fathers, with people reporting liking fathers of daughters with obesity (M = 2.08, SE = 0.25) less than healthy-fathers of daughters with healthy-weight (M = 2.64, SE = 0.26), this was

not statistically significant, $F(1, 250) = 2.39$, $p = .124$, $\eta_p^2 = .009$, 95%CI = [-0.15, 1.27]. See Figure 1b.

Although there were again no significant differences in participants' responses to mothers versus fathers of daughters with obesity ($p = .973$), there was a marginally significant difference in participants' responses to parents of daughters with healthy-weight, such that participants reported liking the mother of the daughter with healthy-weight ($M = 3.31$, $SE = 0.26$) *more* than the father of the daughter with healthy-weight ($M = 2.64$, $SE = 0.26$), $F(1, 250) = 3.50$, $p = .063$, $\eta_p^2 = .014$, 95%CI=[-0.04, 1.39].

Parental Stigma

Do people infer parents—and perhaps especially mothers—of children with obesity to be worse parents (my focal research question) and possess low-quality parenting characteristics? For each dependent variable—the aggregated of good minus bad parent inferences, and inferences of low-quality parenting characteristics—I conducted a 2 (Child size) x 2 (Parent gender) ANOVA. Findings suggest people do infer parents of daughters with obesity to be worse parents than parents of daughters with healthy-weight, and this is apparent via both measures.

Bad parent. I explored stigma toward the target as a parent, conducting a 2 (Child size) x 2 (Parent gender) ANOVA. This yielded a main effect of Child size, $F(1, 250) = 29.06$, $p = .001$, $\eta_p^2 = .104$, such that people reported viewing parents of daughters with obesity as worse parents ($M = 1.51$, $SE = 0.20$) than parents of daughters with healthy-weight ($M = 3.04$, $SE = 0.20$). Although the interaction was not significant ($p = .899$), I explored whether this effect held across Parent gender, given my a priori predictions.

Replicating the pattern for stigma found for both measures of general stigma, people reported mothers of daughters with obesity as worse parents ($M = 1.66$, $SE = 0.29$) than mothers

of daughters with healthy-weight (M = 3.16, SE = 0.28), $F(1, 250) = 13.75$, $p < .001$, $\eta_p^2 = .052$, 95%CI = [0.70, 2.29]. People also reported *fathers* of daughters with obesity as worse parents (M = 1.35, SE = 0.28) than fathers of daughters with healthy-weight (M = 2.92, SE = 0.29), $F(1, 250) = 15.34$, $p < .001$, $\eta_p^2 = .058$, 95%CI = [0.78, 2.36], which replicates the pattern seen for both measures of general stigma, although those measures had not reached statistical significance. See Figure 2. There were no significant differences as a function of parent gender ($ps \geq .445$).

Low-quality parenting characteristics. I explored participants' inferences of low-quality parenting using a 2 (Child size) x 2 (Parent gender) ANOVA. This yielded a main effect of Child size, $F(1, 250) = 62.90$, $p = .001$, $\eta_p^2 = .201$, such that people reported more low-quality parenting inferences of parents of daughters with obesity (M = 3.78, SE = 0.06) than parents of daughters with healthy-weight (M = 3.09, SE = 0.06). The interaction was significant ($p = .020$). See Figure 3.

Continuing the pattern for stigma found thus far for general stigma, people reported mothers of daughters with obesity (M = 3.93, SE = 0.09) as having more low-quality parenting characteristics than mothers of daughters with healthy-weight (M = 3.06, SE = 0.09), $F(1, 250) = 49.25$, $p < .001$, $\eta_p^2 = .165$, 95%CI = [0.623, 1.12]. People also reported fathers of daughters with obesity (M = 3.64, SE = 0.09) as having more low-quality parenting characteristics than fathers of daughters with healthy weight (M = 3.13, SE = 0.09), $F(1, 250) = 17.53$, $p < .001$, $\eta_p^2 = .066$, 95%CI = [.272, .754], though this effect size was smaller than that for mothers. Additionally, people reported mothers of daughters with obesity (M = 3.93, SE = 0.09) as having more low-quality parenting characteristics than fathers of daughters with obesity (M = 3.64, SE = 0.09), $F(1, 250) = 5.52$, $p < .020$, $\eta_p^2 = .022$, 95%CI = [0.05, 0.53].

Obesity-linked Characteristics

Do people infer parents of children with obesity to themselves possess negative obesity-linked characteristics (as implied by a stigma-by-association account)? I find some support for this prediction implied by a stigma-by-association account. I ran a 2 (Child size) x 2 (Parent gender) ANOVA on the extent to which participants inferred parents to themselves possess characteristics associated with obesity (e.g., laziness), even as those parents were depicted as being healthy-weight. This yielded a main effect of Child size, $F(1, 250) = 30.85$, $p = .001$, $\eta_p^2 = .110$, such that people reported parents of daughters with obesity ($M = 3.07$, $SE = 0.10$) as having more negative obesity-linked characteristics than parents of daughters with healthy-weight ($M = 2.27$, $SE = 0.10$). Although the interaction was not significant ($p = .073$), I explored whether this effect held across Parent gender, given my a priori predictions.

People reported mothers of daughters with obesity ($M = 3.28$, $SE = 0.15$) as having more negative obesity-linked characteristics than mothers of daughters with healthy-weight ($M = 2.22$, $SE = 0.14$), $F(1, 250) = 26.98$, $p < .001$, $\eta_p^2 = .097$, 95%CI = [0.66, 1.47]. People reported fathers of daughters with obesity ($M = 2.86$, $SE = 0.14$) as having more negative obesity-linked characteristics than fathers of daughters with healthy-weight ($M = 2.32$, $SE = 0.15$), $F(1, 250) = 7.02$, $p < .009$, $\eta_p^2 = .027$, 95%CI = [0.14, 0.94]. For daughters with obesity, people reported that mothers ($M = 3.28$, $SE = 0.15$) had more negative obesity-linked characteristics than fathers ($M = 2.22$, $SE = 0.14$), $F(1, 250) = 4.30$, $p < .039$, $\eta_p^2 = .017$, 95%CI = [0.02, 0.83]. See Figure 4.

Responsibility

Do people blame parents—and especially mothers—for their children's obesity? I find mixed results here.

Parental responsibility (a). I also explored my simpler, more face-valid and focal measure of parental responsibility. Because outcomes in this paradigm are dependent (e.g., budget points allocated to parental responsibility cannot also be allocated to child responsibility),

I followed established methods (e.g., Li et al., 2002; Neel et al., 2013) and analyzed only the outcome measure of interest—budget allocated to parental responsibility for child appearance—using a parametric analysis. A 2 (Daughter size) x 2 (Parent gender) reveals a main effect for Child size, $F(1, 240) = 8.95$, $p = .003$, $\eta_p^2 = .036$ such that people reported parents of daughters with obesity ($M = 38.98$, $SE = 1.84$) bear more responsibility for child weight than parents of daughters with healthy-weight ($M = 31.27$, $SE = 1.81$). The interaction was not significant ($p = .726$.

There were no significant differences as a function of Parent gender ($p \geq .085$), and people did not attribute more blame to mothers than fathers in either child size condition ($ps > .139$) See Figure 5.

Parental responsibility (b). I adapted a measure of parental responsibility for daughter appearance from Sikorski et al., (2012) and conducted a 2 (Daughter size) x 2 (Parent gender) x 4 [Responsibility: Parent, Daughter, Society, Genetics] mixed-factors ANOVA to explore whether people allocated more responsibility to mothers (vs. fathers) for child appearance. This yielded a significant main effect of Daughter size, $F(3, 729) = 107.40$, $p < .001$, $\eta_p^2 = .307$, and a significant interaction of Daughter size and Parent gender, $F(3, 729) = 2.92$, $p = .033$, $\eta_p^2 = .012$. The three-way interaction was not significant ($p = .358$).

Exploring the two-way interaction, I find no significant difference in the responsibility for child weight attributed to parents as a function of child size ($p = .652$), and no significant difference in the responsibility for child size attributed to society as a function of child size ($p = .647$); however, children were attributed more responsibility for their own weights when they were depicted as healthy-weight ($M = 4.18$ $SE = 0.11$) than with obesity ($M = 3.85$, $SE = 0.11$), $F(1, 243) = 4.53$, $p = .034$, $\eta_p^2 = .018$, 95%CI=[0.02, 0.62], and genetic factors were attributed more responsibility for child weight when children were depicted as healthy-weight ($M = 4.55$,

SE = 0.10) than with obesity (*M* = 4.19, *SE* = 0.10), $F(1, 243) = 6.73$, $p = .010$, $\eta_p^2 = .027$, 95%CI=[0.09, 0.62].

Notably, parents were always attributed the greatest responsibility for their children's weights relative to other factors, but perhaps surprisingly, this held regardless of child size or parent gender (*p*s < .005). Parent gender never reached significance for any factor, regardless of child size (*p*s > .140).

Mediation

My *a priori* prediction was that parents of children with obesity (vs. healthy-weight) would be more strongly stigmatized as parents, with perceptions of parental responsibility for child weight mediating this relationship. See Figure 6 for a depiction of the model. I tested this prediction via PROCESS Model 4 (Hayes, 2017). I used 5,000 bootstrapped iterations to compute a bias-corrected 95% confidence interval (CI) for the indirect effects.

Using the budget measure for parent responsibility, I find that the relationship between child size and parent stigma is significantly partially statistically mediated by attributions of parent responsibility for child weight, b = -0.21, SE = 0.11, 95% CI = [-0.47, -0.05]. The direct effect of child size on parental stigma remained significant, b = -1.31, SE = 0.29, 95% CI = [-1.88, -0.75].

To be thorough, I conducted this same mediation analysis using the exploratory measurement of parental responsibility. Using my more exploratory measure of attributions of parental responsibility for child weight, health, and appearance adapted from a similar measure by Sikorski and colleagues (2012), I do not find significant statistical mediation, and the direct effect remains significant.

I also raised the possibility that mothers might be more stigmatized for child obesity, at least in part because greater responsibility for child weight may be attributed to mothers (versus fathers). Even as the data above did not clearly support this, I nevertheless explored this possibility using PROCESS Model 8 (Hayes, 2017), whereby parent gender would moderate the (a) and (c) paths depicted in Figure 6 above. Whether using the budget measure of parental responsibility or the measure adapted from previous research, I did not see a significant index of moderated mediation (confidence intervals included zero), suggesting that the relationships explored here were not significantly different as a function of parent gender. This finding accords with the patterns of statistical significance reported above.

CHAPTER IV

DISCUSSION

I predicted and found that U.S. social perceivers stigmatized parents of daughters with obesity (versus with healthy-weight), specifically viewing both mothers and fathers as "worse" parents. Consistent with an attribution theory framework, the more that people tended to attribute responsibility for the daughter's weight to the parent (via the face-valid budget paradigm), the more that the parent was stigmatized. As expected, inferences that parents possessed low-quality features (e.g., was an "indifferent parent") followed this same pattern, such that people inferred parents of daughters with obesity (versus with healthy-weight) to be lower-quality parents. To the best of my knowledge, this is among the first demonstrations that social perceivers stigmatize parents because of their children's weight (but see Arriola-Sanchez et al., 2020). My results accord with (a) evidence from qualitative interviews with parents—mostly mothers—who report being stigmatized by others on account of their children's weights (Edmonds, 2005; Gorlick et al., 2020; Jackson, et al., 2007; Kokkonin, 2009; Turner, et al., 2012; Zenlea et al., 2017), and (b) legal rulings, in which children with obesity were removed from parental custody, presumably owing to attributions that parents were responsible for children's weights (Murtagh, 2007; Murtagh & Ludwig, 2011).

In light of gender roles (and gender role beliefs) prevalent in the U.S., which suggest that people might view mothers as more responsible for children's weight and appearance, I also

explored whether mothers (versus fathers) might be attributed greater responsibility for daughter weight, and thus more strongly stigmatized. The data did not support this; mothers and fathers of daughters with obesity were not significantly differently stigmatized or attributed different levels of responsibility for daughter weight. However, we did find that, compared to fathers, mothers of daughters with obesity (versus healthy weight) are viewed as possessing more low-quality parenting traits, and are also both stigmatized in general and seen as possessing more obesity-linked characteristics, suggesting that—even as mothers of children with obesity are not seen as worse parents than fathers—parenting stigma levied at mothers might bleed into how people view mothers as people (beyond as a parent).

Indeed, I also found people were also more generally stigmatizing toward parents as people (e.g., via the feeling thermometer measure) when their child had obesity (versus healthy-weight); further, people more strongly transferred negative obesity-linked stereotypes to parents (e.g., greedy) when their child had obesity (versus healthy-weight). This latter finding accords with predictions implied by a stigma-by-association account, whereby one's association with a person possessing a stigmatized identity can cause people to assume that the non-stigmatized associate possesses features associated with that stigmatized identity (Neuberg et al., 1994; Pryor et al., 2012).

Limitations and Future Directions

The current study did not manipulate how the fathers and mothers were portrayed in the stimuli; mothers and fathers were depicted as healthy-weight parenting-aged adults (Krems & Neuberg, 2016). Whereas the experimental condition (daughter with obesity) seemed to influence how mothers were views—specifically mothers' inferred Body Mass Index (BMI). This potentially spurious effect did not drive findings reported above: when including inferred parent BMI as a covariate in analyses, the pattern of findings did not change. Moreover, in reality,

children with obesity are more likely to have parents with obesity; however, depicting parents as obese would have evoked stigma toward parents as a function of their size (as well as their children's weights), making it difficult to disentangle stigma toward parents with obesity owing to parent size versus perceived poor parenting. Because the focus of the study was understanding the stigmatization of people in their roles as parents, I used healthy-weight figures to depict parents. Yet parental weight does affect inferences people make about parental quantities (e.g., Sacco et al., 2020). Future work should aim to disentangle parental stigma directed at parents with obesity as a function of child weight and weight-related stigma directed toward parents who themselves have obesity.

Somewhat similarly, figures here were not explicitly described or depicted as a particular socioeconomic status (SES) or race/ethnicity. The majority White sample of participants tended to expect that the figures were White as well. Yet in the U.S., people with lower SES and people of color are more likely to have overweight and obesity (e.g., Mendes et al., 2012); in addition, people from environments where resources are scare and unpredictable—environments in which Black Americans disproportionately live (Massey, 2004)—are negatively stereotyped as "worse" parents (i.e., less investment in their children; Williams et al., 2016). Given that participants largely reported perceiving the parent-child dyads as White, it is possible that manipulating parent race (and size) would impact future findings. Future studies should explore perceptions of responsibility and stigmatization by explicitly manipulating how the parents are portrayed in terms of weight, SES, ecology, and race/ethnicity.

The interplay of weight, SES, ecology, and race/ethnicity discussed above may be somewhat specific to the U.S. Thus, one might wonder whether I would find the same pattern of results in other nations or cultures. Indeed, aspects of the physical and social ecology can influence how people value—or devalue—features of individuals, perhaps including individuals' weights (e.g., Anderson et al., 1992). Nevertheless, there remains strong anti-fat stigma across

nations (e.g., Krems & Neuberg, 2021; Rubino et al., 2020). To the extent that this stigma is greater in nations like the U.S., where individuals endorse a strong Protestant Work Ethic (PWE; Crandall, 1994)—a dispositional variable positively associated with greater stigmatization of people with higher weights—then we would expect to see some systematic variation in weight-related stigma across nations.

One might also wonder whether findings would be different for parents of sons. Here, I focused on daughters because girls and women seem to face greater appearance-related pressures and stigma (e.g., Puhl & Heuer, 2009). Indeed, previous work finds that parents stigmatize their own daughters with obesity and invest less in them (Crandall, 1991; Kenrick et al., 2013). Future studies should include sons to explore if there are any changes in stigmatization of the parent and allocation of responsibility when the child is male.

Focusing on those daughters and sons might also be a valuable fruitful direction for future research. Work suggests people are well aware of the stigma and negative stereotypes that other people hold about one's groups (e.g., people with higher weights know that others view people with obesity as lazy; (Vorauer, Main, & O'Connell, 1998). Further, members of stigmatized groups even use such meta-stereotypical knowledge to guide their behavior, acting in counter-stereotypical ways to avoid stigma and discrimination (e.g., Neel et al., 2013). The present findings suggest that researchers should investigate (a) the extent to which children with obesity are aware that their parents are stigmatized as a function of child weight and (b) the many painful possible outcomes associated with such meta-stereotypical knowledge.

Related, these findings also suggest that—as parents are stigmatized, perceived to have low-quality parenting characteristics, and transferred negative obesity-linked characteristics—even healthy-weight people can feel the sting of fat stigma. The mental and physical tolls of weight-related stigma are still being unpacked (Brewis, 2018; Major et al., 2018; Rubino et al.,

2020; Tomiyama et al., 2018). In light of work suggesting that experiencing weight-related stigma might not only insidiously facilitate weight gain but also increase all-cause mortality—over and above a person's actual weight—future work should examine whether the stigma detailed here levies similar effects on parents and whether children might further suffer similar consequences from causing their parents to receive stigma.

The current study introduces a possible mechanism by which people stigmatize parents of children with obesity (and also potentially other identity features subject to stigma): allocation of responsibility. An attribution theory framework for weight-related stigma suggests that, to the extent people blame a person for their weight, they more strongly stigmatize that person. For example, experimental work revealed people were less stigmatizing toward targets with obesity when those targets were described as having a thyroid condition that affect their weights (DeJong, 1993). Here, I find support for the prediction that, to the extent people attribute parents as responsible for their children's weight, the direct parental stigma is toward the parents. Future work should explore this possible mechanism by manipulating it, the gold-standard for testing mediation. If attributions of parental responsibility for children's weight drive the stigma, then manipulations that decrease those attributions of parental responsibility should decrease parental stigma. For example, if social perceivers were informed that a child has obesity due to a thyroid issue, that should decrease attributions of parental responsibility and parental stigma. Likewise, attributions of parental responsibility for children's weights should decrease with increasing child age and independence; if social perceivers viewed *adult* children with obesity (e.g., 30 years old), this too should decrease attributions of parental responsibility and parental stigma.

These findings have implications for future intervention work. For example, courts have removed children with obesity from their parents due to perceived fault of the parent for child size (e.g., Murtagh, 2007), and these rulings seem to reflect the psychology uncovered here. Thus, my work suggests, for example, that educational interventions detailing the complex interplays of

biology and environment that underlie childhood obesity—perhaps especially directed at social workers and others in child welfare positions—might attenuate the unnecessarily separation of families.

Conclusions

Over 50% of children in the US have overweight or obesity (CDC, 2018) and childhood obesity is increasing at a faster rate than adult obesity (Lakshman et al., 2012). Obesity is complex, and parents are not necessarily to blame for their children's sizes; yet parents report being stigmatized for their children's weights and children with obesity are legally removed from parental care in some instances, suggesting that social perceivers and courts view parents as causing child weight. Here, I present some of the first data testing whether social perceivers stigmatize (healthy-weight) parents as a function of their daughters' weights—and what might drive this. Consistent with an attribution theory framework, the extent to which people saw parents as responsible for daughter weight mediated the relationship between daughter weight and viewing parents as "bad" parents (i.e., parental stigma). People did not attribute more blame to or more strongly stigmatize mothers than fathers of daughters with obesity. People did, however, more strongly stigmatize parents in general and also attribute them negative qualities stereotypically linked with obesity (e.g., greedy), consistent with a stigma-by-association view. Effective health policy, interventions, and court policies require a full understanding of weight-related stigma and the role parents genuinely play in the complex phenomenon of childhood obesity.

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APPENDICES

INSTRUCTIONS TO PARTICIPANTS

We are interested in your reactions to people in real-world social scenarios. We'll ask you to read a very brief scenario, and tell us what you think about some of the people in it.

However, we are going to **redact certain information from the scenario**; that is, we'll delete information from the scenario by using *[redacted]*. We want to know what inferences you make in the absence of certain social information.

This forces you to try to make accurate judgments of others based on what researchers call "thin slices" of information.

We will ask you about your inferences regarding the person in the scenario. We will ask about your inferences along two of four possible domains (e.g., parent, romantic partner, employee, friend). We have this person's REAL ANSWERS on these questions. To assess your accuracy, we'll compare your inferences to the person's real answers.

Usually, people are fairly accurate in their appraisals of these situations and the people in them. Try to be as accurate as possible.

Figure 1. Description and stimuli for mother and daughter with healthy-weight.

Carol is a 34-year-old woman living in [redacted], in the United States. She works as a [redacted], and, on her days off, her favorite thing to do is just [redacted].

She is married to a man who she met almost 10 years ago, named [redacted]. Carol is depicted below with their 8-year-old daughter, Emma.

A professional body-rendering artist drew these pictures of Carol and Emma, who is a healthy weight for her height. (Because these are drawings of real people, the experimental team has blacked out their faces.)

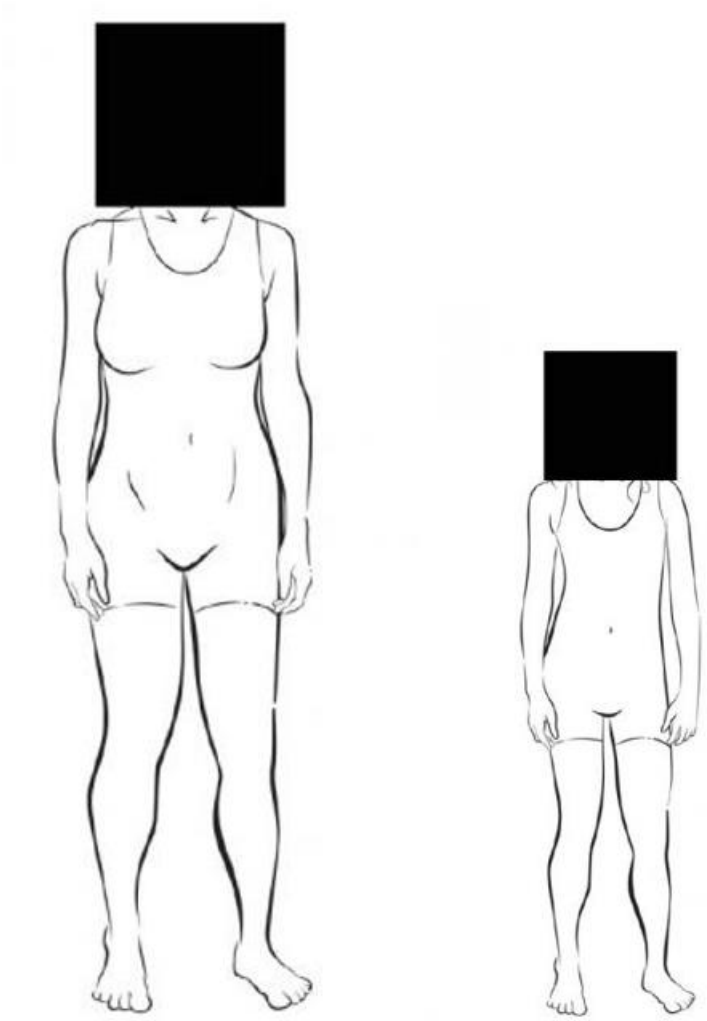


Figure 2. Description and stimuli for mother with healthy-weight and daughter with obesity.

Carol is a 34-year-old woman living in [redacted], in the United States. She works as a [redacted], and, on her days off, her favorite thing to do is just [redacted].

She is married to a man who she met almost 10 years ago, named [redacted]. Carol is depicted below with their 8-year-old daughter, Emma.

A professional body-rendering artist drew these pictures of Carol and Emma, who is clinically obese for her height. (Because these are drawings of real people, the experimental team has blacked out their faces.)

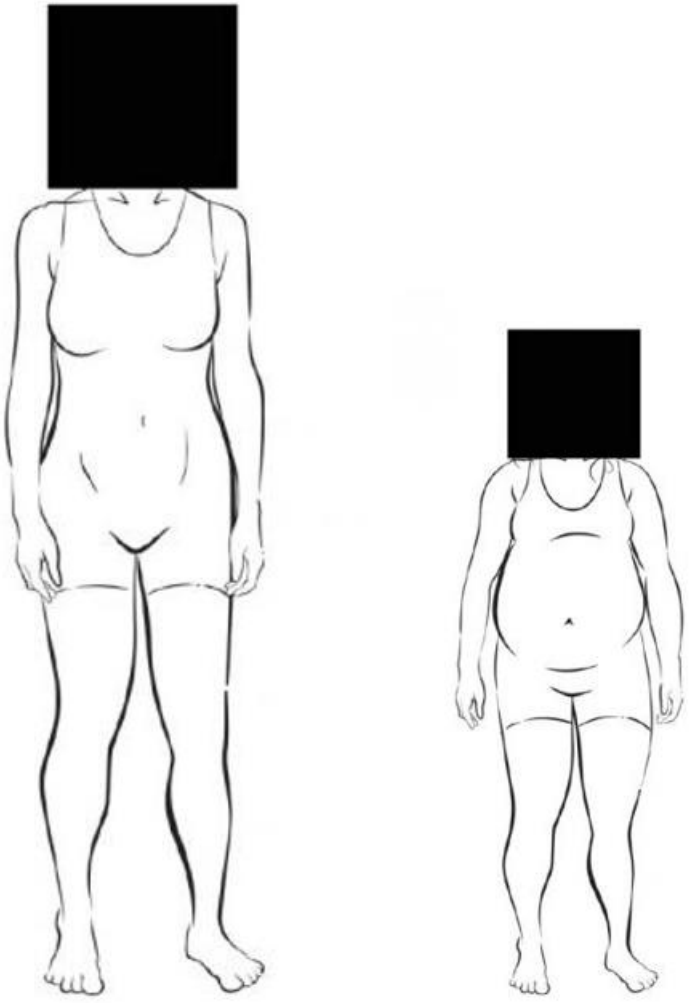


Figure 3. Description and stimuli for father with healthy-weight and daughter with healthy-weight.

Tom is a 34-year-old man living in [redacted], in the United States. He works as a [redacted], and, on his days off, his favorite thing to do is just [redacted].

He is married to a woman he met almost 10 years ago, named [redacted]. Tom is depicted below with their 8-year-old daughter, Emma.

A professional body-rendering artist drew these pictures of Tom and Emma, who is a healthy weight for her height. (Because these are drawings of real people, the experimental team has blacked out their faces.)

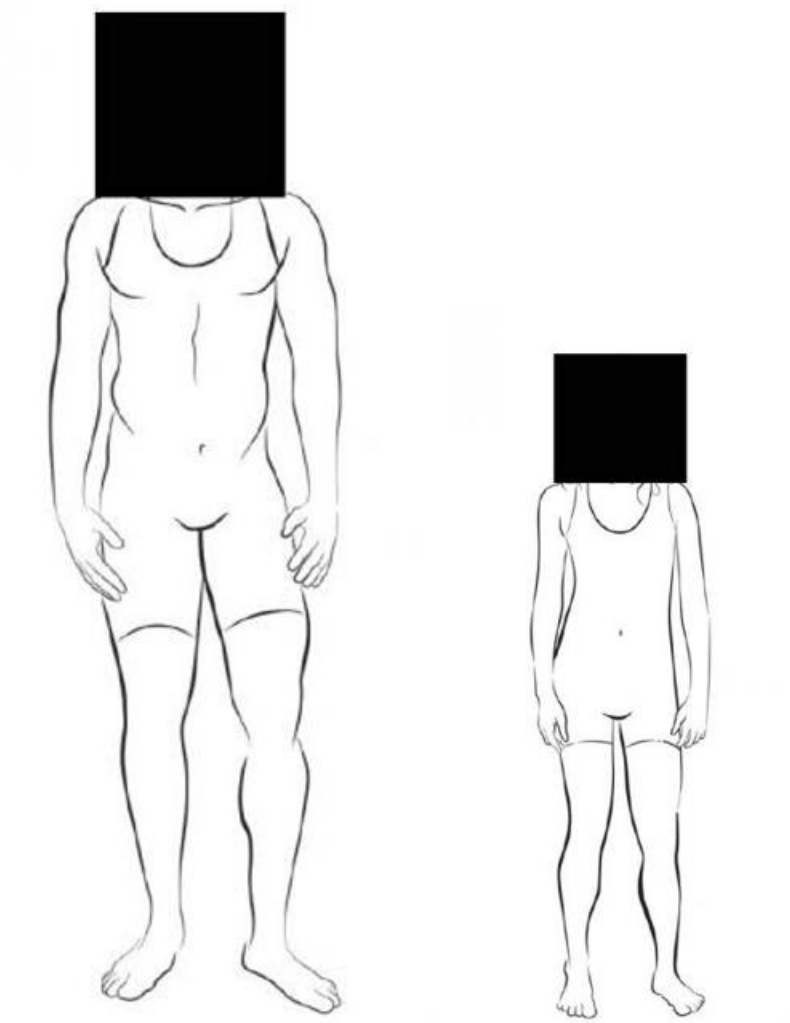
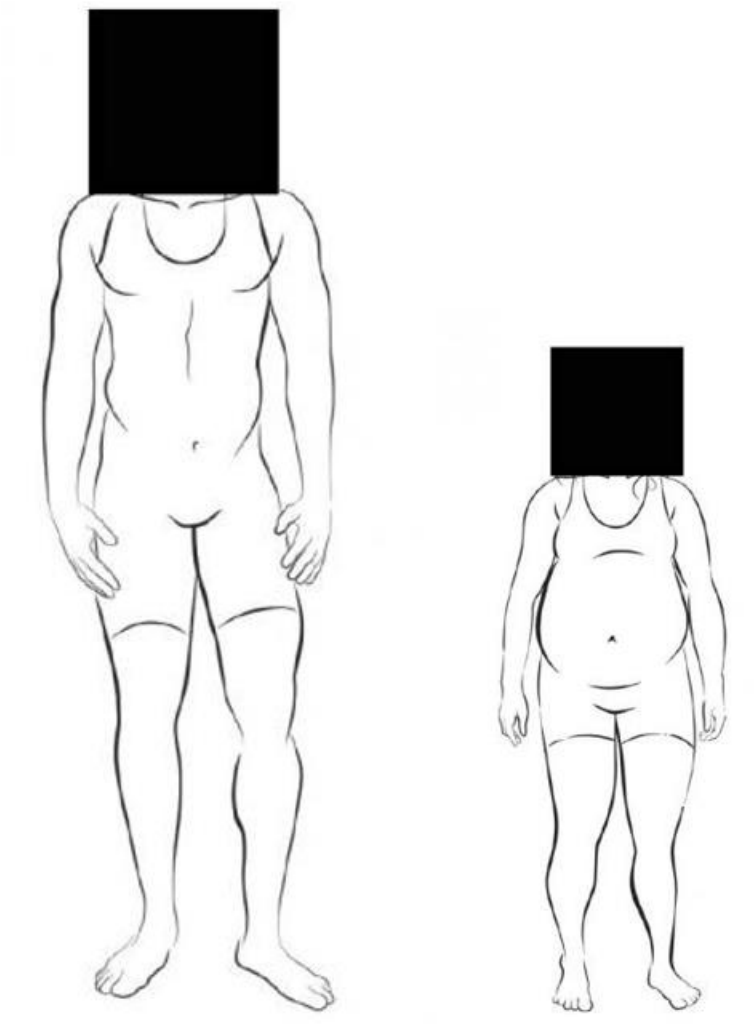


Figure 4. Description and stimuli for father with healthy-weight and daughter with obesity.

Tom is a 34-year-old man living in [redacted], in the United States. He works as a [redacted], and, on his days off, his favorite thing to do is just [redacted].

He is married to a woman he met almost 10 years ago, named [redacted]. Tom is depicted below with their 8-year-old daughter, Emma.

A professional body-rendering artist drew these pictures of Tom and Emma, who is clinically obese for her height. (Because these are drawings of real people, the experimental team has blacked out their faces.)



SURVEY ITEMS SAMPLE

Face-valid items are bolded

GENERAL STIGMA Now we will ask you some questions to assess how accurately you are able to make **judgements about Carol**, the person described above. *Please rate your agreement with the following statements about Carol IN GENERAL.*							
	1 (Not at all agree)	2	3	4	5	6	7 (Very much agree)
I like Carol.	O	O	O	O	O	O	O
I dislike Carol.	O	O	O	O	O	O	O
Carol is warm.	O	O	O	O	O	O	O
Carol is friendly.	O	O	O	O	O	O	O
Carol is competent.	O	O	O	O	O	O	O

Carol is intelligent.	○	○	○	○	○	○	○
Carol is lazy.	○	○	○	○	○	○	○
Carol is self-indulgent.	○	○	○	○	○	○	○
Carol is a go-getter.	○	○	○	○	○	○	○
Carol lacks self-discipline.	○	○	○	○	○	○	○

PARENT STIGMA Now we will ask you some questions to assess how accurately you are able to make **judgements about Carol**, the person described above. *Please rate your agreement with the following statements about Carol as a PARENT.*							
	1 (Not at all agree)	2	3	4	5	6	7 (Very much agree)
Carol is a good parent.	○	○	○	○	○	○	○
Carol is a bad parent.	○	○	○	○	○	○	○
Carol is a nurturing parent.	○	○	○	○	○	○	○
Carol is a responsible parent.	○	○	○	○	○	○	○
Carol is an overly indulgent parent.	○	○	○	○	○	○	○

Carol is a successful parent.	○	○	○	○	○	○	○
Carol is a capable parent.	○	○	○	○	○	○	○
Carol is an indifferent parent.	○	○	○	○	○	○	○
Carol is a lazy parent.	○	○	○	○	○	○	○
Carol is click three if you are being attentive.	○	○	○	○	○	○	○

RESPONSIBILITY Please rate your agreement with the following statements:							
	1 (Not at all)	2	3	4	5	6	7 (Very much)
Carol is responsible for her daughter getting enough physical activity.	O	O	O	O	O	O	O
Carol is responsible for how much her daughter eats.	O	O	O	O	O	O	O
Carol is responsible	O	O	O	O	O	O	O

for whether her daughter eats nutritious meals.							
Her daughter's health is Carol's responsibilit y.	○	○	○	○	○	○	○
Carol is responsible for her daughter's weight.	○	○	○	○	○	○	○
Carol is responsible for whether her daughter is a good athlete.	○	○	○	○	○	○	○

Carol is responsible for making sure her daughter can catch and throw a ball.	○	○	○	○	○	○	○
Carol is responsible for her daughter's academic achievements and grades.	○	○	○	○	○	○	○
Carol is responsible for making sure her daughter can read, write, and do math proficiently.	○	○	○	○	○	○	○

Emma is responsible for getting enough physical activity.	○	○	○	○	○	○	○
Emma is responsible for how much she eats.	○	○	○	○	○	○	○
Emma is responsible for whether she eats nutritious meals.	○	○	○	○	○	○	○
Emma is responsible for her own health.	○	○	○	○	○	○	○

Emma is responsible for her own weight.	○	○	○	○	○	○	○
Emma is responsible for whether she is a good athlete.	○	○	○	○	○	○	○
Emma is responsible for making sure that she can catch and throw a ball.	○	○	○	○	○	○	○
Emma is responsible for her own academic achievements and grades.	○	○	○	○	○	○	○

Emma is responsible for making sure she learns how to read, write, and do math proficiently.	○	○	○	○	○	○	○
Societal and cultural factors dictate how much physical activity Emma engages in.	○	○	○	○	○	○	○
Societal and cultural factors dictate whether	○	○	○	○	○	○	○

Emma eats nutritious food.							
Societal and cultural factors dictate how much Emma eats.	○	○	○	○	○	○	○
Societal and cultural factors dictate Emma's health.	○	○	○	○	○	○	○
Societal and cultural factors dictate Emma's weight.	○	○	○	○	○	○	○

Societal and cultural factors dictate Emma's physical appearance.	○	○	○	○	○	○	○
Societal and cultural factors dictate whether Emma will be good at sports.	○	○	○	○	○	○	○
Societal and cultural factors dictate how athletic Emma is.	○	○	○	○	○	○	○

Societal and cultural factors dictate whether Emma does well in school.	○	○	○	○	○	○	○
Societal and cultural factors dictate how good Emma is at reading, writing, and math.	○	○	○	○	○	○	○
Genetic factors dictate Emma's health.	○	○	○	○	○	○	○

Genetic factors are responsible for Emma's weight.	○	○	○	○	○	○	○
Genetic factors are responsible for Emma's athletic abilities.	○	○	○	○	○	○	○
Genetic factors are responsible for Emma's academic abilities.	○	○	○	○	○	○	○
Carol is click five if you are being attentive.	○	○	○	○	○	○	○

We're interested in how responsible different factors are in affecting Emma, Carol's 8-year-old daughter--specifically in affecting Emma's athletic abilities, Emma's academic achievement, and Emma's weight.

Below is a point scheme. There are 100 percentage points total for each of Emma's features.

Please assign points to genetic factors, societal cultural factors, Emma's personal responsibility, and her mother's responsibility.

Assigning more points to a factor indicates that you think that factor is more influential in Emma's outcomes. For example, when it came to Emma's athletic abilities, if you assigned 50 percentage points to genetic factors and 50 percentage points to Emma's personal responsibility, this would indicate that you thought that genetic factors were 50% responsible for Emma's athleticism and that Emma herself was 50% responsible for her athleticism---and thus that neither societal/cultural factors nor Emma's mother effected her athletic outcomes at all.

The total in **each row** (i.e., athletic abilities, academic achievement, etc.) MUST add up to 100 percentage points.

	Genetic factors	Societal/cultural factors	Emma's personal responsibility	Emma's mother's (Carol) responsibility	Total
Emma's athletic abilities	_____	_____	_____	_____	_____
Emma's academic achievement	_____	_____	_____	_____	_____
Emma's weight	_____	_____	_____	_____	_____

DEMOGRAPHIC ITEMS

1. What is your gender?

- ○ Male
- ○ Female
- ○ Other

2. How old are you?

18

3. What is your ethnicity?

- ○ White
- ○ Black or African American
- ○ Hispanic or Hispanic American or Latinx
- ○ Native American or Alaska Native
- ○ Asian or Asian American
- ○ Indian or Indian American
- ○ Middle Eastern
- ○ Hawaiian or Pacific Islander
- ○ Biracial or Multiracial
- ○ Other

4. What is your height?

feet

inches

5. What is your weight?

pounds

6. Are you a parent?

- ○ Yes
- ○ No

7. How many children do you have?

0

If the participant indicates they have at least one child, the following items will be asked.

The following few questions will ask about your heaviest child (e.g., has highest BMI in your family, highest weight for height in your family). If you only have one child, then please answer about that child. If you have more than one child, please answer about the heaviest.

1. What is your heaviest child's biological sex?

- ○ Male
- ○ Female
- ○ Other

2. How old is your heaviest child?

1

3. How much does your heaviest child weight?

pounds

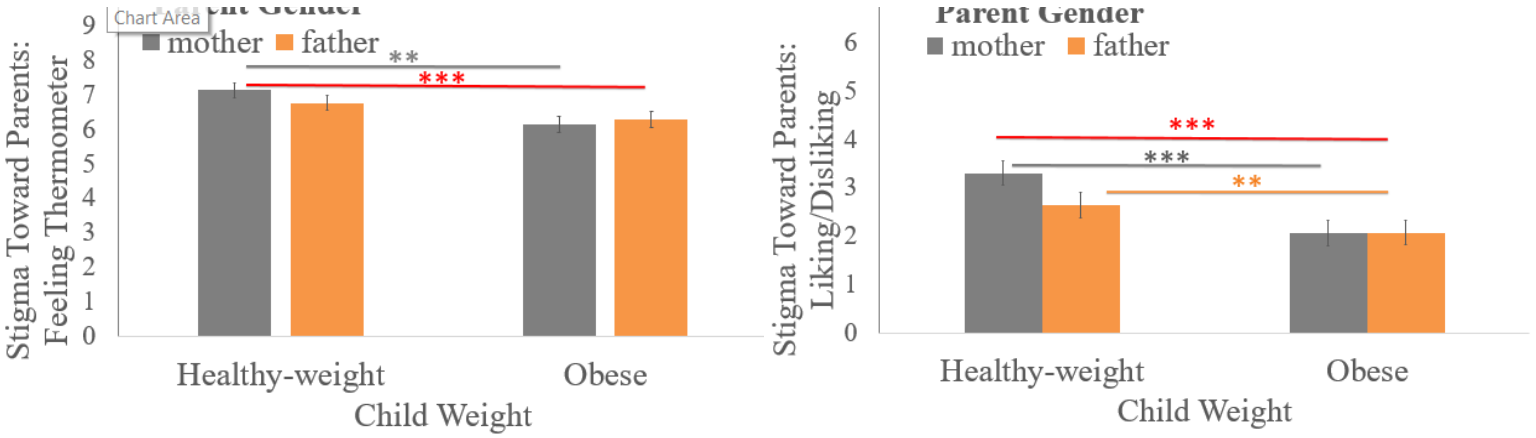
4. Where does your child fall on the following continuum, compared to their same-sex and same-age peers?

Very Underweight ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ Very Obese

FIGURES

Figure 1a and 1b

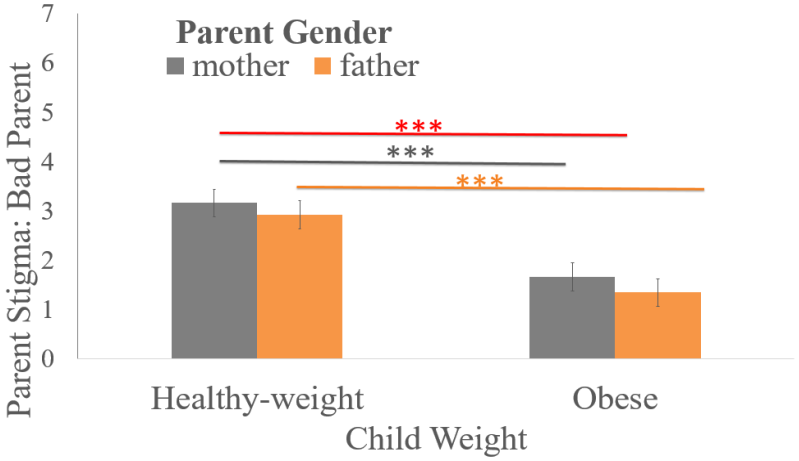
Participants' stigmatization of mothers and fathers of daughters with healthy-weight versus obesity



Note. Error bars represent standard errors; * Indicates p < .05 ** Indicates p < .01 *** Indicates p < .001

Figure 2

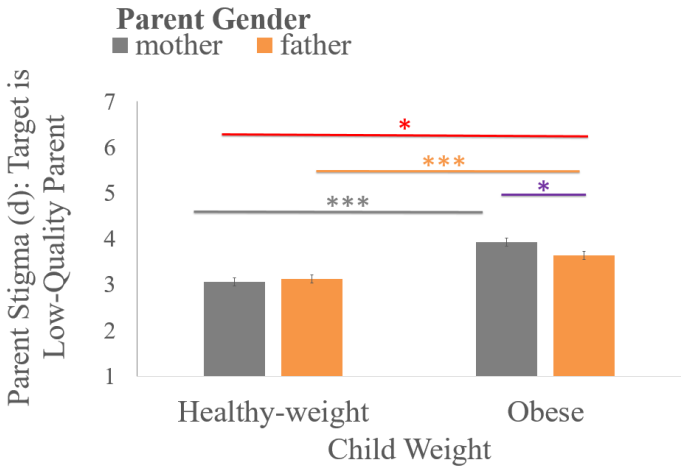
Participants' stigmatization of mothers and fathers of daughters with healthy-weight versus obesity as a parent



Note. Error bars represent standard errors; * Indicates p < .05 ** Indicates p < .01 *** Indicates p < .001

Figure 3

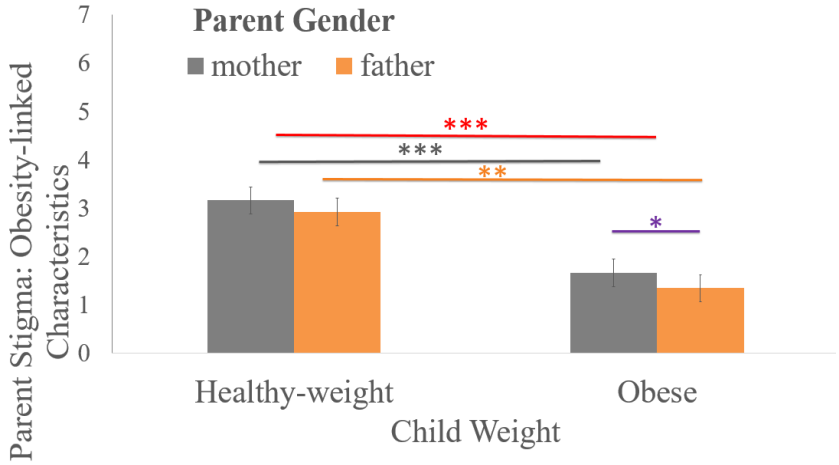
Participants' reports of low-quality parenting inferences of mothers and father



Note. Error bars represent standard errors; * Indicates p < .05 ** Indicates p < .01 *** Indicates p < .001

Figure 4

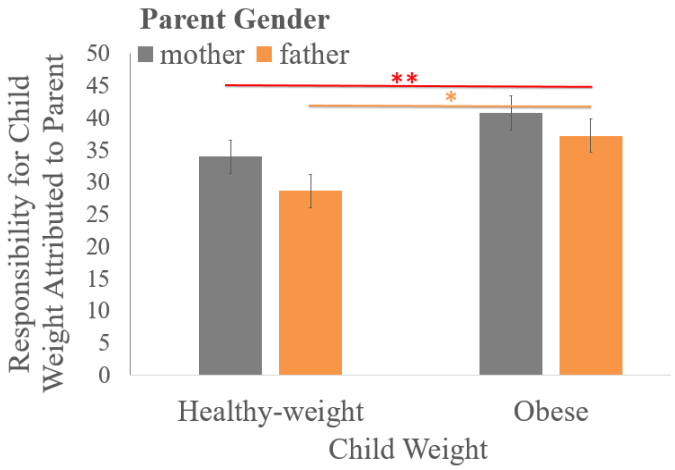
Participants' reports of obesity-linked characteristics of mothers and fathers



Note. Error bars represent standard errors; * Indicates p < .05 ** Indicates p < .01 *** Indicates p < .001

Figure 5

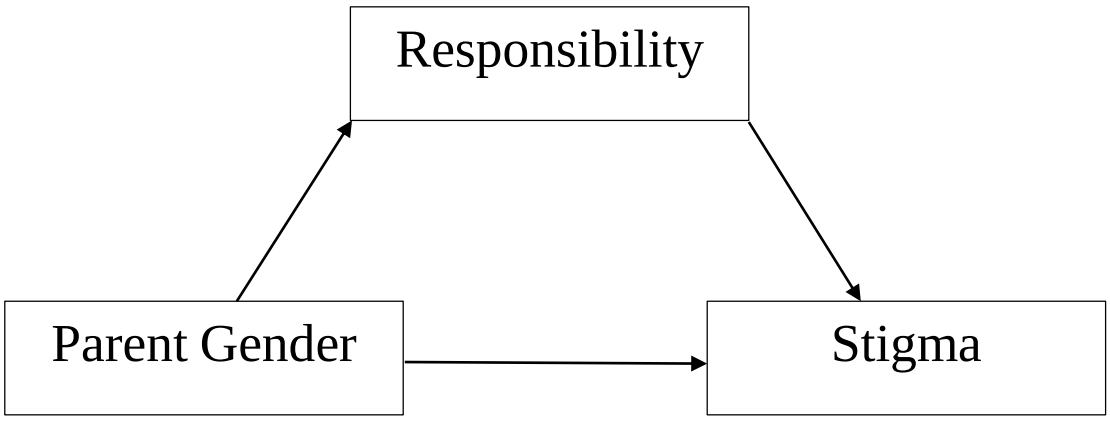
Participants' attribution of responsibility for child weight



Note. Error bars represent standard errors; * Indicates p < .05 ** Indicates p < .01 *** Indicates p < .001

Figure 6

Mediation model for parents of daughters with obesity



SUPPLEMENTAL MATERIALS

I found that perceptions of parent Body Mass Index (BMI) differed in ways not predicted a priori. Specifically, people perceived the mothers of daughters with obesity (M = 55.48, SE = 17.62) as having a significantly higher BMI than fathers of daughters with obesity (M = 49.90, SE = 13.66), $F(1, 240) = 5.30$, $p = .022$, $\eta_p^2 = .022$, even as this was not the case for parents of healthy-weight daughters ($p = .422$), and neither mothers nor fathers were viewed differently as a function of their children's size ($ps \geq .270$). Given this, I re-ran all of the analyses reported in the main text using Parent BMI estimations as a covariate.

General Stigma

Feeling thermometer

Re-running the 2 (Child size) x 2 (Parent gender) ANOVAs from the main text, now including Parent BMI estimation as a covariate, I see, first, that Parent BMI estimation is significant, $F(1, 239) = 4.30$, $p = .039$, $\eta_p^2 = .018$. I again see the predicted effect of Child size, $F(1, 239) = 10.43$, $p = .001$, $\eta_p^2 = .042$. When exploring a priori predictions via simple comparisons, I see the same pattern of results (and statistical significance) as reporting in the main text: People reported feeling significantly less warm toward mothers of daughters with obesity ($M = 6.14$, $SE = 0.23$) than healthy-weight ($M = 7.09$, $SE = 0.23$), $F(1, 239) = 8.43$, $p = .004$, $\eta_p^2 = .034$, 95%CI= [.30, 1.59]. Again, although the pattern of data was the same for fathers, with people reporting feeling less warm toward fathers of daughters with obesity ($M = 6.29$, $SE = 0.23$) than healthy-weight ($M = 6.83$, $SE = 0.23$), this difference was not statistically significant, $F(1, 239) = 2.75$, $p = .099$, $\eta_p^2 = .011$, 95%CI= [-0.10, 1.18].

General Stigma

Liking/Disliking

Re-running the composite of reported liking of the target minus reported disliking of the target, now including the Parent BMI covariate, I see the Parent BMI estimation is not significant, $F(1, 239) = 0.70$, $p = 0.405$, $\eta_p^2 = .003$. However, I see the effect of Child size, $F(1, 239) = 11.22$,

p = .001, η_p^2= .045. When exploring a priori predictions via simple comparisons, I see people reported liking mothers of daughters with obesity (M = 2.06, SE = 0.27) significantly less than mothers of daughters with healthy-weight (M = 3.27, SE = 0.26), F(1, 239) = 10.54, p = .001, η_p^2= .042, 95%CI= [.477, 1.95]. Although the pattern of data was the same for fathers, with people reporting liking fathers of daughters with obesity (M = 2.10, SE = 0.27) less than fathers of daughters with healthy-weight (M = 2.66, SE = 0.26), this difference was not statistically significant, F(1, 239) = 2.20, p = .139, η_p^2= .009, 95%CI [-0.18, 1.29].

Parent Stigma

Bad Parent

Re-running the stigma toward the target as a parent, now including Parent BMI as a covariate, I see that Parent BMI estimation is not significant, F(1, 239) = 1.03, p = .312, η_p^2= .004. The predicted effect of Child size is also not significant, F(1, 239) = 0.001, p = .979, η_p^2< .001. When exploring a priori predictions via simple comparisons, I see people reported parents of daughters with obesity (M =1.51, SE = 0.21) as significantly worse parents than parents of daughters with healthy-weight (M = 3.05, SE = 0.21), F(1, 239) = 27.54, p < .001, η_p^2= .103, 95%CI [0.96, 2.11]. Further, I see people reported mothers of daughters with obesity (M = 1.63, SE = 0.30) as significantly worse parents than mothers of daughters with healthy weight (M = 3.17, SE = 0.29), F(1, 239) = 13.85, p < .001, η_p^2= .055, 95%CI = [0.73, 2.36]. I see the same pattern for fathers, with people reporting fathers of daughters with obesity (M = 1.39, SE = 0.30) as worse parents than fathers of daughters with healthy weight (M = 2.92, SE = 0.29), F(1, 239) = 13.64, p < .001, η_p^2= .054, 95%CI = [0.71, 2.34].

Parent Stigma

Low-Quality Parenting Characteristic

Re-running participants' low-quality parenting inferences about targets, now including Parent BMI as a covariate, I see the Parent BMI estimation is not significant, F(1, 239) = 0.86, p = 0.354, η_p^2= .004, and the effect of Child size, F(1, 239) = 0.01, p = 0.921, η_p^2< .001, is not

significant. When exploring a priori predictions via simple comparisons, I see that people reported parents of daughters with obesity (M = 3.62, SE = 0.09) as having significantly more low-quality parenting characteristics than parents of daughters with healthy-weight (M = 2.72, SE = 0.09), $F(1, 239) = 51.07$, $p < 0.001$, $\eta_p^2 = .176$, 95%CI = [0.66, 1.16]. People reported mothers of daughters with obesity (M = 3.61, SE = 0.13) as having more low-quality parenting characteristics than mothers of daughters with healthy-weight (M = 2.69, SE = 0.13), $F(1, 239) = 26.14$, $p < 0.001$, $\eta_p^2 = .099$, 95%CI = [0.56, 1.27]. People also reported fathers of daughters with obesity (M = 3.64, SE = 0.13) as having more low-quality parenting characteristics than fathers of daughters with healthy-weight (M = 2.75, SE = 0.13), $F(1, 239) = 24.83$, $p < 0.001$, $\eta_p^2 = .094$, 95%CI = [0.54, 1.25].

When exploring people's inferences of the target parent having negative obesity-linked characteristics, I see that Parent BMI as a covariate is not significant, $F(1, 239) = .61$, $p = 0.435$, $\eta_p^2 = .003$. I also see the effect of Child size was not significant, $F(1, 239) = 2.62$, $p = 0.107$, $\eta_p^2 = .011$. A priori predictions via simple comparisons show that people reported parents of daughters with obesity (M = 3.06, SE = 0.11) as having more negative obesity-linked characteristics than parents of daughters with healthy-weight (M = 2.26, SE = 0.11), $F(1, 239) = 28.94$, $p < 0.001$, $\eta_p^2 = .108$, 95%CI = [0.51, 1.10]. People reported mothers of daughters with obesity (M = 3.24, SE = 0.15) as having significantly more negative obesity-linked characteristics than mothers of daughters with healthy-weight (M = 2.19, SE = 0.15), $F(1, 239) = 24.40$, $p < 0.001$, $\eta_p^2 = .093$, 95%CI = [0.63, 1.46]. I see a similar pattern of data with fathers; people reported fathers of daughters with obesity (M = 2.89, SE = 0.15) as having significantly more negative obesity-linked characteristics than fathers of daughters with healthy-weight (M = 2.33, SE = 0.15), $F(1, 239) = 7.06$, $p = 0.008$, $\eta_p^2 = .029$, 95%CI = [0.15, 0.98].

Parental Responsibility

Budget

Re-running the participants' attribution of responsibility on a budget paradigm, now including Parent BMI estimation as a covariate, I find that Parent BMI estimation is not significant, $F(1, 239) < .01$, $p = 0.973$, $\eta_p^2 < .001$. The predicted effect of Child size is also not significant, $F(1, 239) = .12$, $p = 0.729$, $\eta_p^2 = .001$. When exploring a priori predictions via simple comparisons, I see a similar pattern of results as reporting in the main text. I find that people report significantly more responsibility to parents of daughters with obesity ($M = 38.98$, $SE = 1.84$) for child weight than to parents of daughter with healthy-weight ($M = 31.27$, $SE = 1.81$), $F(1, 239) = 8.91$, $p = 0.003$, $\eta_p^2 = .036$, 95%CI = [2.62, 12.79]. People reported fathers of daughters with obesity ($M = 37.19$, $SE = 2.61$) having more responsibility for child weight than fathers of daughters with healthy-weight ($M = 28.59$, $SE = 2.56$), $F(1, 239) = 5.56$, $p = 0.019$, $\eta_p^2 = .023$, 95%CI = [1.41, 15.79]. Although the pattern of data is the same for mothers, where people reported mothers of daughters with obesity ($M = 40.76$, $SE = 2.62$) as having more responsibility for child size than mothers of daughters with healthy-weight ($M = 33.95$, $SE = 2.56$), this difference was not statistically significant, $F(1, 239) = 3.47$, $p = 0.064$, $\eta_p^2 = .014$, 95%CI = [-0.40, 14.01].

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