Body Image 31 (2019) 19–23

Contents lists available at ScienceDirect

Body Image

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

Evaluative implications of intersecting body weight and other social categories: The role of typicality

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ARTICLE INFO

Article history:
Received 28 July 2018
Received in revised form 6 August 2019
Accepted 7 August 2019

Keywords:
Weight stigma
Social categories
Social perception
Bodies

ABSTRACT

Body weight is a critical dimension by which we evaluate others, with heavier individuals facing higher levels of stigma and discrimination compared to thinner individuals. Yet, the perception of body weight can be ambiguous, suggesting that stereotypic associations and heuristics influence which bodies are deemed as "typical" for a particular group or social category. Here, we investigate whether interdependent associations between body weight and social category dimensions (ethnicity, gender, age, and sex) affect the typicality ratings of a heavier body. Specifically, we hypothesize that heavier bodies labelled as Asian, feminine, younger, or female, compared to Black, White, masculine, older, or male, will be rated less typical and these typicality judgments will mediate social evaluations. Participants made typicality and social evaluative judgments about a wireframe body with a set BMI of 38, accompanied by one of sixteen category labels (e.g., Asian man). Our results show that typicality judgments broadly align with our hypotheses and mediate social evaluations of the heavier body. Overall, we showcase the interdependent nature of weight and other social categories, highlighting the role of typicality for social evaluations of heavier targets.

1. Introduction

Body weight is often denoted in precise quantifiable terms, with dieters declaring their intention to lose five pounds; newscasters reporting the estimated weight of criminal suspects; and medical professionals weighing new patients. This focus on weight underscores its role in social evaluations, with higher weight individuals facing stigma across multiple domains (Brochu & Morrison, 2007; Hunger, Major, Blodorn, & Miller, 2015; Puhl & Heuer, 2009), including employment (Giel et al., 2012; Roehling, Roehling, & Pichler, 2007), healthcare (Phelan et al., 2015), and intimate relationships (Boyes & Latner, 2009; Puhl & Brownell, 2006). Yet, our judgment of others' weight, which guides who faces such prejudice, is imprecise (Harris, Bradlyn, Coffman, Gunel, & Cottrell, 2008), suggesting that what one views as a typical body weight may be influenced by seemingly irrelevant information such a person's social categorical membership (e.g., ethnicity, gender, age, or sex).[2] Here, we propose that this other social category information systematically biases the perceived typicality of heavier bodies, which in turn affects social evaluations of that individual.

While body weight is frequently delineated by arbitrarily defined medical guidelines such as body mass index (BMI) categories (Centers for Disease Control & Prevention, 2017), our moment-to-moment assessment of body weight is remarkably inaccurate. Indeed, lay individuals underestimate their own weight (Yaemsiri, Slining, & Agarwal, 2011) and the weight of others (Harris et al., 2008). Even trained medical professionals underestimate the weight of their patients (Yoong et al., 2014). We argue that the ambiguity surrounding weight judgments can lead perceivers to apply stereotypic social categorical associations which bias whether a heavier body is deemed "typical" for that particular group. Accumulating evidence supports this assertion, with perceivers holding different category thresholds for overweight

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[1] Nicholas P. Alt acknowledges support under and awarded by DoD, Air Force Office of Scientific Research, National Defense Science and Engineering Graduate (NDSEG) Fellowship, 32 CFR 168a.

[2] We distinguish between sex as a categorical descriptor (male, female) and gender, which we use to distinguish masculinity and femininity (Deaux, 1985).

https://doi.org/10.1016/j.bodyim.2019.08.004
1740-1445/

and obesity when assessing male and female bodies (Oldham & Robinson, 2018). Additionally, images of Black men's bodies, compared to White men's bodies, were assessed to be more muscular, formidable, and larger (Wilson, Hugenberg, & Rule, 2017), a finding that aligns with U.S. stereotypes related to threat and African Americans (Devine, 1989). Still, no systematic investigation has examined whether ethnicity, gender, age, and sex influence body typicality judgments.

Typicality is a crucial judgment as it reliably informs social evaluations (Jackson, Sullivan, & Hodge, 1993; Johnson & Tassinary, 2007; Olson, Roese, & Zanna, 1996). Across a wide-range of stimuli (e.g., line drawings, applicant resumes, etc.), those that match our prototypes or expectations receive more favorable affective responses and evaluative judgments (Gordon & Holyoak, 1983; Perry, 1994). These typicality effects are driven in part by the fluency in cognitive processing garnered from prototypes matching what we deem typical (Alter & Oppenheimer, 2009). Thus, applied to bodies, social category membership might delineate whether a heavier body is deemed "typical" for a member of that group, in turn modulating social penalties of being heavier. Aligning with prior literature denoting biases in body image perception based on social categories such as sex and ethnicity (Oldham & Robinson, 2018; Wilson et al., 2017), as well as the pattern of results from our pilot studies, we tested the prediction that heavier bodies labelled as Asian, feminine, younger, or female would be rated less typical than heavier bodies labelled as Black, White, masculine, older, or male, respectively.[3] Moreover, given the role typicality plays in social evaluations (Alter & Oppenheimer, 2009; Gordon & Holyoak, 1983), we hypothesized that typicality judgments would mediate the relationship between social categories and evaluations of heavier bodies.

2. Method

2.1. Participants

We recruited 1678 participants through Amazon Mechanical Turk, aiming for 100 participants per condition. Prior to data analysis, we excluded 60 participants who answered the manipulation check incorrectly, leaving a total sample size of 1618 participants ($M_{age=}$ 37.89, $SD_{age=}$ 12.25; 600 men, 1013 women, 5 gender unreported; 77.6% White, see Supplemental Material for demographic information by condition).

2.2. Procedure

Participants were randomly assigned to one of 16 conditions in which they saw a target body identified by Sex (Male, Female) and one other social category label: Ethnicity (Black, White, Asian), Gender (Masculine, Feminine), or Age (Younger, Older), in a between-subject design. We also included a condition in which only Sex (Male, Female) was manipulated. The target was one of two wireframe bodies (one male and one female), shown in profile with a BMI of 38 (Perceiving Systems, 2011) accompanied by a category description (e.g., "masculine woman," "Asian man," etc.). Participants provided two types of judgments. First, participants judged the target's attractiveness (1 = *not at all attractive* to 11 = *extremely attractive*), how warmly they felt toward the target (1 = *not at all warm* to 11 = *extremely warm*), and an overall impression (1 = *very negative* to 11 = *very positive*). These items were averaged into an Evaluations score ($\alpha = .82$), where higher values indicated more favorable evaluations. Next, participants indicated how typical the target appeared compared to "most" people within the group (e.g., "How typical does this body appear compared to most [Asian men]," 1 = *not at all typical* to 11 = *very typical*). Finally, as a manipulation check, participants recalled the social category information that accompanied the body before reporting their demographics and being debriefed.

3. Results

3.1. Typicality judgments

3.1.1. Ethnicity

We used a 3 (Ethnicity: Asian, Black, White) by 2 (Sex: male, female) between-subjects analysis of variance (ANOVA) to test the prediction that a higher weight Asian body would be judged as less typical than a higher weight White or Black body. Results indicated that typicality judgments differed by Ethnicity, $F(2, 611) = 195.21$, $p < .001$, $\eta_p^2 = .39$. Planned contrasts revealed that the Asian body ($M = 3.38$, $SE = 0.13$) was rated less typical than the Black ($M = 6.02$, $SE = 0.13$) or White body ($M = 6.72$, $SE = 0.13$), $Fs(1, 614) = 211.31$ and 341.18, $ps < .001$, η_p^2s = .26 and .36, respectively. Furthermore, the Black body was rated less typical than the White body, $F(1, 614) = 14.56$, $p < .001$, $\eta_p^2 = .02$. There was no significant main effect of Sex, $F(1, 611) = 0.02$, $p = .896$, $\eta_p^2 < .001$, with male ($M = 5.36$, $SE = 0.10$) and female bodies ($M = 5.38$, $SE = 0.10$) rated relatively equal in typicality.

These findings were qualified by a significant two-way interaction between Ethnicity and Sex, $F(2, 611) = 9.20$, $p < .001$, $\eta_p^2 = .03$. For the female body, planned contrasts revealed that the Asian body ($M = 3.16$, $SE = 0.18$) was rated less typical than the Black ($M = 6.47$, $SE = 0.18$) or White body ($M = 6.47$, $SE = 0.18$), $Fs(1, 301) = 168.11$ and 172.05, $ps < .001$, η_p^2 s = .36 and .36, respectively. Typicality ratings did not differ between the Black and White female bodies, $F(1, 301) < 0.001$, $p = .989$, $\eta_p^2 < .001$. For the male body, planned contrasts revealed that the Asian body ($M = 3.59$, $SE = 0.18$) was rated less typical than the Black ($M = 5.60$, $SE = 0.18$) or White body ($M = 6.70$, $SE = 0.18$), $Fs(1, 310) = 63.00$ and 177.97, $ps < .001$, η_p^2 s = .17 and .37, respectively. In addition, the Black male body was rated less typical than the White male body, $F(1, 310) = 29.06$, $p < .001$, $\eta_p^2 = .09$.

3.1.2. Gender

We used a 2 (Gender: masculine, feminine) by 2 (Sex: male, female) ANOVA to test the prediction that a higher weight feminine body would be rated less typical than a higher weight masculine body. Results revealed a marginally significant effect for Gender, $F(1, 386) = 3.46$, $p = .064$, $\eta_p^2 = .01$, with the feminine body ($M = 5.63$, $SE = 0.17$) rated less typical than the masculine body ($M = 6.07$, $SE = 0.17$). There was also a marginally significant effect for Sex, $F(1, 386) = 2.97$, $p = .086$, $\eta_p^2 = .01$, with the female body rated more typical ($M = 6.05$, $SE = 0.17$) than the male body ($M = 5.64$, $SE = 0.17$).

These effects were qualified by a marginally significant two-way interaction between Gender and Sex, $F(1, 386) = 3.71$, $p = .055$, $\eta_p^2 = .01$.[4] Investigating the effect of Gender within female and male bodies separately, revealed a nonsignificant effect of Gender for female bodies, $t(195) = 0.05$, $p = .963$, $d = 0.01$; however, there was a significant effect of Gender for male bodies, $t(191) = -2.71$, $p = .007$,

[3] See Supplemental Materials for two pilot studies that largely find interdependent associations between social categories (ethnicity, gender, age, and sex) and body weight. Generally, we found that higher BMI bodies were judged as Black, masculine, and older whereas lower BMI bodies were judged as Asian, feminine, and younger (Study 1). Additionally, the same body was judged heavier when labeled White or Black relative to Asian, older relative to younger, and male relative to female.

[4] This was the only result moderated by Participant Sex, with a significant three-way interaction across Participant Sex, Target Sex, and Target Gender, $F(1, 381) = 10.39$, $p = .001$, $\eta_p^2 = .03$ (for analyses see Supplemental Information).

Table 1
Mediation Models for Evaluations.

	B (*SE*)	*t*	*p*	95% CI
Asian vs. Black → Typicality → Evaluation				
Ethnicity → Typicality	−2.66 (0.18)	14.73	<.001	[−3.01, −2.31]
Ethnicity → Evaluations	−0.01 (0.17)	−0.08	0.935	[−0.35, 0.33]
Typicality → Evaluations	0.17 (0.03)	5.06	<.001	[0.10, 0.23]
Indirect Effect	−0.45 (0.10)			[−0.67, −0.26]
White vs. Black → Typicality → Evaluation				
Ethnicity → Typicality	0.72 (0.18)	3.95	0.001	[0.36, 1.07]
Ethnicity →Evaluations	−0.50 (0.15)	−3.28	0.001	[−0.79, −0.20]
Typicality → Evaluations	0.17 (0.03)	5.06	<.001	[0.10, 0.23]
Indirect Effect	0.12 (0.04)			[0.05, 0.22]
Masculine vs. Feminine → Typicality → Evaluations				
Gender → Typicality	−0.42 (0.24)	−1.77	0.077	[−0.90, 0.05]
Gender → Evaluations	0.29 (0.16)	1.75	0.08	[−0.03, 0.61]
Typicality →Evaluations	0.30 (0.03)	8.69	<.001	[0.23, 0.37]
Indirect Effect	−0.13 (0.07)			[−0.28, 0.008]
Older vs. Younger → Typicality → Evaluations				
Age → Typicality	−1.56 (0.10)	−15.98	<.001	[−1.75, −1.37]
Age → Evaluations	0.24 (0.10)	2.41	0.016	[0.04, 0.44]
Typicality → Evaluations	0.19 (.04)	4.7	<.001	[0.11, 0.27]
Indirect Effect	−0.30 (0.07)			[−0.44, −0.17]
Male vs. Female → Typicality → Evaluations				
Sex →Typicality	−0.27 (0.14)	−1.86	0.065	[−0.55, 0.02]
Sex →Evaluations	0.29 (0.10)	2.83	0.005	[0.09, 0.50]
Typicality → Evaluations	0.27 (0.5)	5.23	<.001	[0.17, 0.37]
Indirect Effect	−0.07 (0.04)			[−0.16, −0.0004]

$d = -0.39$, such that feminine male bodies ($M = 5.19$, $SE = 0.23$) were rated less typical than masculine male bodies ($M = 6.09$, $SE = 0.24$).

3.1.3. Age

We used a 2 (Age: older, younger) by 2 (Sex: male, female) ANOVA to test the prediction that a higher weight younger body would be rated less typical than a higher weight older body. Results revealed a significant main effect of Age, with the younger body ($M = 4.66$, $SE = 0.14$) rated less typical than the older body, ($M = 7.75$, $SE = 0.14$), $F(1, 399) = 249.22$, $p < .001$, $\eta_p^2 = .38$. There was no significant main effect of Sex, $F(1, 399) = 0.14$, $p = .712$, $\eta_p^2 < .001$, with male ($M = 6.17$, $SE = 0.14$) and female bodies ($M = 6.24$, $SE = 0.14$) rated as similar on typicality and no significant two-way interaction between Age and Sex, $F(1, 399) = 0.78$, $p = .377$, $\eta_p^2 = .002$.

3.1.4. Sex

We used a *t*-test to test the prediction that a higher weight female body would be rated less typical than a higher weight male body. Results revealed a marginally significant effect with the female body ($M = 6.46$, $SE = 0.18$) rated less typical than the male body ($M = 6.99$, $SE = 0.22$), $t(202) = -1.86$, $p = .065$, $d = -0.26$.

3.2. Mediation analyses

We used SPSS PROCESS macro model 4 (Hayes, 2012) to examine the hypothesis that typicality judgments would mediate the relationship between social category membership and social evaluations of higher weight bodies. We proposed that the more typical a higher weight body was judged, the more positive the evaluations.[5] For each analysis, Social Category was the predictor, Typicality was the mediator, and Evaluations was the outcome (see Table 1 for full results). A significant indirect effect was signified by zero not included in 95% bias-corrected confidence intervals based on 10,000 boot-strapped samples.

3.2.1. Ethnicity

Ethnicity was dummy coded as a multi-categorical predictor with Black as the reference group since this category received the most favorable evaluations. Results revealed evidence of a negative indirect effect of typicality for the Asian body (relative to the Black body), $B = -0.45$, $SE = 0.10$, 95% CI [−0.67, −0.26], such that the heavier Asian body was judged as less typical, which in turn predicted more negative evaluations. For the White body (relative to the Black body), results revealed evidence of a positive indirect effect, $B = 0.12$, $SE = 0.04$, 95% CI [0.04, 0.10], such that the heavier White body was judged as more typical, which in turn predicted more positive evaluations.

Since there was a significant interaction between Ethnicity and Sex on typicality judgments, we explored this interaction using PROCESS model 8. For the male body, the pattern of results was equivalent as above, with a negative indirect effect for the Asian male body, $B = -0.36$, $SE = 0.09$, 95% CI [−0.56, −0.20] and a positive indirect effect for the White male body, $B = 0.25$, $SE = 0.07$, 95% CI [0.13, 0.40], compared to the Black male body. For the female body, the negative indirect effect emerged only for the Asian body, $B = -0.59$, $SE = 0.13$, 95% CI [−0.87, −0.35], with no evidence for an indirect effect for the White body, $B = 0.002$, $SE = 0.05$, 95% CI [-0.09, 0.10], compared to the Black body. Overall results indicated that higher weight Asian bodies were judged as less typical and thus compelled more negative evaluations; higher weight White bodies were judged as more typical and thus compelled more positive evaluations compared to Black bodies. This pattern characterized judgments of male bodies, but there was no significant indirect effect of typicality for White female bodies compared to Black female bodies.

3.2.2. Gender

Results with Gender as the predictor variable (0 = masculine, 1 = feminine) revealed that 95% confidence intervals included zero, indicating no evidence of a significant mediation, $B = -0.13$, $SE = 0.07$, 95% CI [−0.28, 0.01].

[5] See supplemental materials for results with Evaluations as the dependent variable.

3.2.3. Age

Results with Age as the predictor variable (0 = older, 1 = younger) indicated a significant negative indirect effect of typicality, $B = -0.30$, $SE = 0.07$, 95% CI [−0.44, −0.17]. Aligning with hypotheses, the younger body was judged as less typical, which in turn predicted more negative evaluations.

3.2.4. Sex

Results with Sex as the predictor variable (0 = male, 1 = female) indicated a significant negative indirect effect of typicality, $B = -0.07$, $SE = 0.04$, 95% CI [−0.16, −0.004]. Aligning with hypotheses, the female body was judged as less typical, which in turn predicted more negative evaluations.

4. Discussion

The present study showed that social category membership impacts the perceived typicality of heavier bodies. Specifically, heavier bodies that were labelled as Asian, younger, or female were rated less typical compared to heavier bodies that were labelled as Black, White, older, or male, respectively. These differences in typicality judgments were critical, as they significantly mediated the relationship between social categories (ethnicity, age, and sex) and social evaluations. Overall, these results highlight interdependent associations between social categories and body weight and examine a critical mechanism—typicality—by which heavier individuals may experience more negative social evaluations.

This systematic investigation into the coupling of social category information (ethnicity, gender, age, and sex) with body typicality and social evaluations contributes important insights into why some groups face greater weight bias compared to others (Carr, Jaffe, & Friedman, 2008; Mendelson, White, & Mendelson, 1996). For instance, women, who on average weigh less than men, tend to report more frequent experiences with weight bias (Fikkan & Rothblum, 2012), which our findings suggest is due, in part, to perceivers seeing a heavier woman's body as less typical. Given that typicality operated in a similar manner for ethnicity, age, and sex, these different expectations about heavier bodies likely underlie pernicious effects of weight stigma. Our results also suggest that certain group members (e.g., Asian, younger, women) face greater cultural and societal pressure to be thinner, a factor possibly underlying higher rates of body image concerns (Culbert, Racine, & Klump, 2015).

Although our findings largely supported predictions, gender (masculine/feminine) produced inconsistent results, with a marginally significant difference for typicality ratings and no significant indirect effect. While speculative, one reason for these results may be that gender, when considered alongside sex, evokes sexual identity, as gender atypicality is frequently associated with sexual minority identities (Kite & Deaux, 1986; Rieger, Linsenmeier, Gygax, Garcia, & Bailey, 2010). This inadvertent social category likely complicates the interpretation of results; for instance, stereotypes characterize gay men as fit and body-conscious (Gettelman & Thompson, 1993; Kane, 2010), which would impact typicality judgments. Future work should tease apart the effects of sex, gender, and sexual identity on body typicality judgments.

Importantly, these results inform future research directions. First, our stimuli, while holding constant the visual percept from which perceivers made their judgment, also precluded manipulation of features typically associated with social categories (e.g., adiposity cueing age) and other body features (e.g., muscularity, fat distribution). Utilizing a different stimulus set will help generalize our findings and may elucidate important moderating influences. Second, we tested our effects with heavier bodies since weight stigma is disproportionately directed at heavier compared to thinner individuals (Allison & Lee, 2015). Typicality judgments may, however, be affected by social category information in a similar manner for much lower weight individuals, albeit likely to a weaker degree.

Collectively, these findings show that the intersection of body weight and other social categories give rise to expectations about bodily appearance, as evidenced by typicality judgments, which in turn mediates social evaluations of heavier individuals. As research in body image advances, these insights help inform a more nuanced understanding of the interplay between social categories, body weight, and weight stigma.

Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:https://doi.org/10.1016/j.bodyim.2019.08.004.

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