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Unpacking the psychological weight of weight stigma: A rejection-expectation pathway☆

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HIGHLIGHTS

- Tested a rejection-expectation pathway underlying harmful effects of weight stigma
- Women and men gave a dating speech while their weight was seen (vs. unseen).
- Higher BMI women anticipated rejection, leading to negative psychological effects.
- Lower BMI women anticipated acceptance, leading to positive psychological effects.
- Men were largely unaffected by having their weight seen during the dating speech.

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ABSTRACT

The present research tested the hypothesis that the negative effects of weight stigma among higher body-weight individuals are mediated by expectations of social rejection. Women and men who varied in objective body-weight (body mass index; BMI) gave a speech describing why they would make a good date. Half believed that a potential dating partner would see a videotape of their speech (weight seen) and half believed that a potential dating partner would listen to an audiotape of their speech (weight unseen). Among women, but not men, higher body-weight predicted increased expectations of social rejection, decreased executive control resources, decreased self-esteem, increased self-conscious emotions and behavioral displays of self-consciousness when weight was seen but not when weight was unseen. As predicted, higher body-weight women reported *increased* expectations of social rejection when weight was seen (versus unseen), which in turn predicted decreased self-esteem, increased self-conscious emotions, and increased stress. In contrast, lower body-weight women reported *decreased* expectations of social rejection when weight was seen (versus unseen), which in turn predicted increased self-esteem, decreased self-conscious emotions, and decreased stress. Men's responses were largely unaffected by body-weight or visibility, suggesting that a dating context may not be identity threatening for higher body-weight men. Overall, the present research illuminates a rejection-expectation pathway by which weight stigma undermines higher body-weight women's health.

Despite the fact that the majority of American adults are now categorized as "overweight" or "obese" (Flegal, Carroll, Odgen, & Curtin, 2010), the stigmatization of higher body-weight individuals, particularly women, is severe (Andreyeva, Puhl, & Brownell, 2008).[1] Higher body-weight individuals are negatively stereotyped as lazy and lacking in self-control and face widespread discrimination (e.g., Puhl & Heuer, 2009). Self-reported experiences of weight stigma are related to poorer psychological and physical health (Hatzenbuehler, Keyes, & Hasin, 2009; Hunger & Major, 2015), increased cortisol and oxidative stress (Tomiyama et al., 2014), maladaptive eating behaviors (Haines, Neumark-Sztainer, Eisenberg, & Hannan, 2006), and an increased risk of obesity (Sutin & Terracciano, 2013).

Experimental research has shown that among higher body-weight women, exposure to weight stigma leads to increased psychological and physiological stress and decreased self-control. For example, higher body-weight women asked to give speech about why they would be a good date showed greater blood pressure reactivity, greater stress emotions, and poorer Stroop performance (a task requiring executive

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[1] Following the approach of Logel, Stinson, and Brochu (2015), we use the term body-weight to "refer to a person's relative fatness or leanness" (Logel et al., 2015, pp. 4) rather than terms such as "overweight" or "obese". In addition, we use quotation marks when using terms such as "overweight" or "obese" in order to denote that some consider these categories to be arbitrary and stigmatizing.

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control resources) if they thought they could be seen by an evaluator, compared to both higher body-weight women who thought they could not be seen and lower body-weight women in either condition (Major, Eliezer, & Rieck, 2012). Furthermore, higher body-weight women, but not lower body-weight women, consumed more calories after exposure to weight-stigmatizing media than after exposure to neutral media (Major, Hunger, Bunyan, & Miller, 2014; Schvey, Puhl, & Brownell, 2011).

Exposure to weight stigma is theorized to activate *weight-based social identity threat* among higher body-weight individuals (Hunger, Major, Blodorn, & Miller, 2015; Major et al., 2012). Social identity threat is a psychological state experienced in situations where a person feels at risk of being rejected, devalued, or judged through the lens of negative stereotypes due to his or her social identity (Major & O'Brien, 2005; Steele, Spencer, & Aronson, 2002). Social identity threat associated with race, gender, age, and social class has been shown to initiate involuntary physiological, cognitive, and behavioral responses that have negative implications for health and well-being, especially when experienced chronically (Major, Mendes, & Dovidio, 2013; Schmader, Johns, & Forbes, 2008).

A key theoretical premise of weight-based social identity threat is that exposure to weight stigmatizing situations activates concerns about social rejection and devaluation among higher body-weight individuals. Because social rejection and devaluation threaten the fundamental need to belong, these experiences lead to increased stress (Stroud, Tanofsky-Kraff, Wilfley, & Salovey, 2000), impaired self-regulation (Baumeister, DeWall, Ciarocco, & Twenge, 2005), decreased self-esteem (Leary, Tambor, Terdal, & Downs, 1995), and increased self-conscious emotions (Leary, Koch & Hechenbleikner, 2001). This theoretical premise of weight-based social identity threat, however, has yet to be directly tested.

The primary aim of the current research was to address this gap in the literature. We hypothesized that making weight salient in a potentially weight-stigmatizing situation elicits expectations of social rejection among higher body-weight individuals, leading to the deleterious effects of weight-based social identity threat. Specifically, we hypothesized that among higher body-weight individuals, having one's weight visible in a situation where weight stigmatization is anticipated – such as being evaluated as a potential dating partner – would lead to decreased executive functioning, decreased self-esteem, increased self-conscious emotions, and increased stress. Further, we hypothesized that these negative effects would be mediated by increased expectations of social rejection. We also tested whether weight visibility in a weight stigmatizing situation would lead to behavioral displays of anxiety and a less favorable impression among higher body-weight individuals.

A secondary aim of the current research was to examine whether higher body-weight women and men are equally likely to experience weight-based social identity threat in the dating domain. Because the vast majority of experiments examining the effects of weight stigma have been conducted with women, little is known about whether men are also vulnerable to weight-based social identity threat. There is substantial evidence that higher body-weight women face greater stigmatization than higher body-weight men (e.g., Roehling, Roehling, & Pichler, 2007), and this discrepancy is pronounced in romantic relationships. While higher body-weight women have lower rates of marriage and marry partners who are of lower status than their thinner counterparts, such weight penalties are not evident for men (e.g., Conley & Glauber, 2007). For this reason, we hypothesized that having one's weight seen by a potential dating partner would be more likely to trigger concerns about rejection among higher body-weight women than men, resulting in more negative psychological effects among the former.

Finally, we examined the implications of having one's weight seen by a potential dating partner for lower body-weight women. Preliminary evidence suggests that weight visibility can have beneficial effects for lower body-weight women in a dating context. Specifically, lower body-weight women asked to give a dating speech were less physiologically stressed and had better executive functioning when they thought their evaluator could (versus could not) see them (Major et al., 2012). Because Western standards of beauty equate thinness with attractiveness in women (e.g., Sypeck, Gray, & Ahrens, 2004), lower body-weight women may anticipate social acceptance in a dating context. Perceived social acceptance is associated with increased self-esteem and general positive emotions (e.g. Baumeister & Leary, 1995, Leary, Cottrell, & Phillips, 2001). Thus, having one's weight seen (versus unseen) by a potential dating partner might trigger *decreased* expectations of social rejection among lower body-weight women, leading to more beneficial psychological outcomes.

1. Study overview

Women and men who varied in body-weight gave a speech describing why they would make a good dating partner. All participants were exposed to a potentially weight-stigmatizing situation—they believed that a potential dating partner would evaluate their speech. Half believed the evaluator would see their speech (weight seen condition) and half believed the evaluator would only hear their speech (weight unseen condition).

2. Method

2.1. Participants

One hundred sixty[2] individuals (age: 18–29, $M = 20.88$, $SD = 2.95$; 52% women) participated in exchange for partial course credit or pay. Participants were recruited from a United States university, a community college, and the surrounding community. Due to the specifics of the manipulation being used, all participants self-identified as either White ($n = 109$) or Latino/a ($n = 52$) and as heterosexual. Twenty-two participants (13.8%) indicated that they were currently in a "serious romantic relationship." Given that past research has explored both objective body-weight (body mass index, BMI; Major et al., 2012) and self-perceived weight (Major et al., 2014) as predictors of weight-based social identity threat, we assessed both BMI and self-perceived weight in the present research. In an online pre-study, participants reported their self-perceived weight (1 = very underweight, 4 = average weight, 7 = overweight; $M = 4.52$, $SD = 1.11$). At the conclusion of the study, participants were weighed and measured for height in order to calculate their BMI (BMI: 17.05–41.66, $M = 25.93$, $SD = 5.21$). Based on standards established by the World Health Organization, 1.9% were "underweight" (BMI < 18.5), 48.4% were "average weight" (BMI 18.5–24.99), 24.2% were "overweight" (BMI 25–29.99) and 24.8% were "obese" (BMI ≥ 30).

2.2. Procedure

Participants completed the Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965; $\alpha = .90$) in the online pre-study survey. This allowed us to assess the impact of activating weight-based social identity threat on our dependent measures while controlling for pre-existing differences in trait self-esteem. Higher BMI was associated with lower trait self-esteem ($\beta = -.17$, $p = .040$). Experimental condition was unrelated to trait self-esteem ($\beta = -.07$, $p = .375$) and did not interact with BMI to predict trait self-esteem ($\beta = -.11$, $p = .173$).

Upon arrival to the lab, participants were asked to give a speech describing why they would make a good dating partner and were told that

[2] 167 participants were enrolled in the study, but 7 participants were excluded prior to hypothesis testing. Four were omitted because they withdrew from the study and/or opted out of the speech task, one participant was omitted because she lived with one of our research assistants, and two were omitted because they were extreme univariate outliers on BMI (i.e., greater than 3.3 SD above the mean; Tabachnick & Fidell, 2013).

another participant would rate their dating potential. We informed participants that we had "randomly selected some of our participants to be speech evaluators" and that "we have asked your evaluator to provide us with a picture and to complete a brief profile so that you can have a mental image of him/her while giving your speech." The profile included a picture, demographic information, an "about me" section (i.e., "I like listening to music, going to the movies, going to the gym, and having fun"), and a "my ideal date" section (i.e., "She/he shares my interests, is fit, and likes to have fun").[3] The speech evaluators were single, attractive, ethnicity-matched members of the opposite sex. Modeled after Major et al. (2012), in the weight seen condition participants were told that their evaluator would see a videotape of their speech. In the weight unseen condition, participants were told that their evaluator would listen to an audiotape of their speech. In reality, the speeches were not evaluated by another participant.

Participants were given 3 min to review their evaluator's profile and to mentally prepare their speech. Prior to giving the speech, they completed a rejection expectations measure. They then gave a five-minute speech while either facing a video camera or speaking into a microphone. Immediately afterwards, participants completed a stress emotions measure. Next, participants completed the Stroop task, a reaction time-based measure of executive functioning (Miyake et al., 2000), and measures of state self-esteem and self-conscious emotions, in that order (see additional measures in the Supplemental materials). Finally, participants were asked for consent to be weighed and measured and were thoroughly debriefed. It is important to note that at no time were participants informed that their weight was a selection criterion or the focus of the study.

2.3. Measures

2.3.1. Rejection expectations

Eight items created for the purposes of the study assessed participants' expectations about how they would be regarded by their evaluator (e.g., "I think the person evaluating my speech will like me" and "I am afraid that I will be rejected"; see the Supplemental materials). Items were answered on a 7-point scale (*1 not at all* to *7 very much*) and averaged such that higher scores indicate higher rejection expectations ($\alpha = .87$).

2.3.2. Executive functioning

We used the Stroop task to index executive functioning. Words were presented on the computer screen and participants were tasked with categorizing, as quickly and accurately as possible, the color in which the word was printed. The words presented were either consistent (e.g., red printed in red), inconsistent (e.g., green printed in red), or control strings (e.g., XXXX printed in red). Participants completed 12 practice trials, followed by 6 blocks of 12 trials each, for a total of 24 consistent trials, 24 inconsistent trials, and 24 control trials presented in randomized order. Response latencies for incorrect trials and response latencies greater than 6SD were removed, and latencies 3SD above and below the mean were recoded to 3SD. Stroop interference scores were calculated by subtracting the average for the control trials from the average of the inconsistent trials. Higher scores indicate more Stroop interference, or reduced executive functioning.

2.3.3. State self-esteem

Participants completed the social self-esteem (7 items; e.g., "I feel inferior to others") and appearance self-esteem (6 items; e.g., "I feel unattractive") subscales of the state self-esteem scale (Heatherton & Polivy, 1991). Participants indicated the extent to which each statement was true of them *at the moment* on a 5-point scale (*1 not at all* to *5 extremely*). The social and appearance self-esteem subscales were highly correlated ($r = .68$, $p < .001$) and were combined into a single measure of state self-esteem ($\alpha = .90$).[4]

2.3.4. Self-conscious emotions

Four items created for the purposes of the present study assessed the extent to which participants were currently feeling negative self-conscious emotions (i.e., guilty, disgusted with myself, pleased with myself, ashamed). Items were answered on a 7-point scale (*1 not at all* to *7 very much*) and were combined with higher scores indicating more negative self-conscious emotions ($\alpha = .77$).

2.3.5. Stress emotions

After their speech, participants indicated the extent to which they were currently feeling two stress emotions (i.e., anxious, uncomfortable; adapted from Eliezer, Major, & Mendes, 2010). Items were answered on a 7-point scale (*1 not at all* to *7 very much*) and combined into a composite with higher scores indicating greater stress.

2.3.6. Speech coding

Participants' dating speeches were coded in two ways. First, in order to assess for behavioral displays of anxiety and impression-related cues, eight coders (5 women, 3 men) blind to condition listened to 60-second audio clips and rated participants on the extent to which they were exhibiting self-consciousness (ICC = .76) and anxiety (an average of ratings of nervous (ICC = .86) and lack of confidence (ICC = .90), $r = .86$, $p < .001$), as well as their attraction to the participant (an average of liking (ICC = .81) and physical attractiveness (ICC = .82); $r = .66$, $p < .001$; see the Supplemental materials for additional audio coding). Second, in order to assess for verbal displays of distress, we used the Linguistic Inquiry and Word Count (LIWC) program (Pennebaker, Booth, & Francis, 2007) to analyze speech transcripts for verbal disfluency (i.e., non-fluencies; see the Supplemental materials for additional LIWC outcomes). Note that the visuals from the recordings were not coded because these ratings would have been biased by participants' weight.

3. Results

3.1. Analytic strategy

We tested both BMI and self-perceived weight as predictors in the present study. Interestingly, BMI emerged as a consistently stronger predictor than self-perceived weight. Due to space constraints, we report the analyses conducted with BMI below and the analyses conducted with self-perceived weight in the Supplemental materials. We return to the issue of BMI versus self-perceived weight as predictors of weight-based social identity threat in the Discussion section.

Hierarchical linear regression analyses assessed the effects of condition, BMI, and gender on the dependent measures. We entered mean-centered condition (−.51 = audiotaped speech, .49 = videotaped speech), BMI, and gender (−.52 = men, .48 = women) at Step 1, the two-way interactions at Step 2, and the three-way interaction at Step 3. To ensure that the effects of the experimental manipulation were

[3] We used a total of eight evaluator pictures (two of each gender and ethnicity). At the end of the study, participants rated the attractiveness of their speech evaluator on a 7-point scale. Overall, the evaluator was rated as attractive ($M = 5.85$, $SD = 1.14$). A regression with condition, BMI, and gender as predictors revealed only a main effect of gender, such that women rated their speech evaluator as less attractive than men ($\beta = -.18$, $p = .024$).

[4] The pattern of results was similar when the appearance self-esteem and social self-esteem subscales were analyzed independently.

due to the activation of weight-based social identity threat, rather than general threats to self-esteem in a socially evaluative context, we entered trait self-esteem (RSES) as a covariate at Step 1 in all analyses.[5] Degrees of freedom vary due to missing data (see the Supplemental materials for additional analyses).

3.2. Regression results

In Table 1, we report the results of the hierarchical regression analyses for our primary dependent measures (rejection expectations, executive functioning, state self-esteem, self-conscious emotions, stress emotions). The predicted three-way interaction was significant for all outcomes except for stress emotions (see Table 1 for parameter estimates and *p* values).

3.2.1. Rejection expectations

Tests for simple interactions revealed the predicted condition × BMI interaction was significant among women ($\beta = .29$, $p = .001$), but not among men ($\beta = -.08$, $p = .430$). Among women, BMI was positively related to rejection expectations in the videotaped condition ($\beta = .58$, $p < .001$), but unrelated to rejection expectations in the audiotaped condition ($\beta = .01$, $p = .968$). Higher BMI women had higher rejection expectations in the videotaped than the audiotaped condition ($\beta = .31$, $p = .015$), whereas lower BMI women had lower rejection expectations in the videotaped than the audiotaped condition ($\beta = -.26$, $p = .044$). See Fig. 1.

3.2.2. Executive functioning

The condition × BMI interaction approached significance among women ($\beta = .20$, $p = .053$) but not among men ($\beta = -.15$, $p = .206$). Among women, BMI was positively related to Stroop interference (i.e., reduced executive functioning) in the videotaped condition ($\beta = .57$, $p < .001$), but unrelated to Stroop interference in the audiotaped condition ($\beta = .17$, $p = .203$). Although higher BMI women's Stroop interference did not differ significantly across conditions, the means were in the predicted direction ($\beta = .13$, $p = .363$). Lower BMI women tended to have less Stroop interference in the videotaped than the audiotaped condition ($\beta = -.27$, $p = .078$). See Fig. 2.

3.2.3. State self-esteem

The condition × BMI interaction was significant among women ($\beta = -.23$, $p = .001$), but not among men ($\beta = .03$, $p = .738$). Among women, BMI was negatively related to state self-esteem in the videotaped condition ($\beta = -.59$, $p < .001$), but unrelated to state self-esteem in the audiotaped condition ($\beta = -.13$, $p = .153$). Higher BMI women reported lower state self-esteem in the videotaped than the audiotaped condition ($\beta = -.27$, $p = .006$), whereas lower BMI women tended to report higher state self-esteem in the videotaped than the audiotaped condition ($\beta = .20$, $p = .050$). See Fig. 3.

3.2.4. Self-conscious emotions

The condition × BMI interaction was significant among women ($\beta = .26$, $p = .005$), but not among men ($\beta = -.03$, $p = .776$). Among women, BMI was positively related to self-conscious emotions in the videotaped condition ($\beta = .44$, $p = .002$), but unrelated to self-conscious emotions in the audiotaped condition ($\beta = -.09$, $p = .456$). Higher BMI women reported more self-conscious emotions in the videotaped than the audiotaped condition ($\beta = .42$, $p = .002$), whereas lower BMI women did not differ across conditions ($\beta = -.11$, $p = .412$). See Fig. 4.

3.2.5. Stress emotions

Main effects were observed for RSES ($\beta = -.21$, $p = .007$), BMI ($\beta = .19$, $p = .016$), and gender ($\beta = .16$, $p = .036$). Irrespective of condition, individuals with higher trait self-esteem reported lower stress, individuals with higher BMI reported greater stress, and women reported greater stress than men. No other effects were significant.

3.3. Regression results—speech coding

In Table 2, we report the results of the hierarchical regression analyses for the coding of participants' speeches (self-consciousness, anxiety, attraction, and verbal disfluency). The predicted three-way interaction only approached significance for ratings of self-consciousness (see Table 2 for parameter estimates and *p* values).

3.3.1. Self-consciousness

Tests for simple interactions revealed that the predicted condition × BMI interaction was significant among women ($\beta = .26$, $p = .014$), but not among men ($\beta = -.01$, $p = .938$). Among women, BMI was positively related to self-consciousness ratings in the videotaped condition ($\beta = .52$, $p = .002$), but unrelated to self-consciousness ratings in the audiotaped condition ($\beta = -.01$, $p = .946$). Higher BMI women were rated as more self-conscious in the videotaped than the audiotaped condition ($\beta = .47$, $p = .002$), whereas ratings of lower BMI women's self-consciousness did not differ by condition ($\beta = -.06$, $p = .702$). See Fig. 5.

3.3.2. Anxiety

There was a significant condition × BMI interaction ($\beta = .17$, $p = .030$) predicting ratings of anxiety. BMI was non-significantly positively related to ratings of anxiety in the videotaped condition ($\beta = .20$, $p = .082$) and unrelated to anxiety in the audiotaped condition ($\beta = -.16$, $p = .135$). Higher BMI individuals were rated as more anxious in the videotaped than the audiotaped condition ($\beta = .27$, $p = .019$), whereas ratings of lower BMI individuals' anxiety did not differ across condition ($\beta = -.10$, $p = .360$). See Fig. 6. There was also a significant condition × gender interaction ($\beta = .16$, $p = .045$). Women were rated as more anxious in the videotaped than the audiotaped condition ($\beta = .23$, $p = .035$), whereas ratings of men's anxiety did not differ across condition ($\beta = -.08$, $p = .484$). No other interactions were significant.

3.3.3. Attraction

Attraction ratings were higher for women than men ($\beta = .25$, $p = .002$). In addition, attraction ratings tended to be higher for those higher in RSES ($\beta = .15$, $p = .054$). No other effects were significant.

3.3.4. Verbal disfluency

There were no significant effects predicting non-fluencies in the speech transcripts.

3.4. Tests of indirect effects

To test whether exposure to a weight-stigmatizing situation affected the dependent variables through rejection expectations, but in opposite directions for higher BMI and lower BMI women, we conducted moderated mediation analyses using Hayes' PROCESS macro model 8 (Hayes, 2013). Since there were no significant effects among men, we conducted these with women only. Controlling for RSES, we ran moderated mediation analyses with the interaction between condition (0 = audiotaped, 1 = videotaped) and BMI predicting the dependent measures through rejection expectations.

[5] The pattern of results was similar when RSES was not included as a covariate. With the exception of executive functioning, all results were slightly stronger when RSES was omitted from analyses. Due to differences in cultural norms related to weight (Crandall & Martinez, 1996), we tested participant ethnicity as a covariate. Ethnicity was not a significant covariate in any analyses, and thus was not included as a covariate. We also tested relationship status, evaluator picture version, participant age, form of compensation (paid vs. credit), and recruitment source (student vs. community) as potential covariates. As none of these variables were not significant covariates in any analyses, we do not include them as covariates.

Table 1
Hierarchical regression analyses with condition, BMI, gender, and their interactions as predictors.

Outcome	Step 1		β	Step 2		β	Step 3		β
Rejection expectations	$F(4, 153) = 16.78$, $p < .001$, $R^2 = .305$	Cond	−.02	$\Delta F(3, 150) = 1.58$, $p = .197$, $\Delta R^2 = .021$	Cond × BMI	.13†	$\Delta F(1, 149) = 7.398$, $p = .007$, $\Delta R^2 = .032$	Cond × BMI × Gend.	.29**
		BMI	.19**		Cond × Gend	.05			
		Gend	.12†		BMI × Gend	.06			
		RSES	−.47***						
Executive functioning	$F(4, 150) = 4.18$, $p = .003$, $R^2 = .100$	Cond	−.14†	$\Delta F(3, 147) = .74$, $p = .529$, $\Delta R^2 = .013$	Cond × BMI	.05	$\Delta F(1, 146) = 5.00$, $p = .027$, $\Delta R^2 = .029$	Cond × BMI × Gend	.18*
		BMI	.27**		Cond × Gend	.08			
		Gend	.02		BMI × Gend	.08			
		RSES	.13						
State self-esteem	$F(4, 153) = 54.49$, $p < .001$, $R^2 = .588$	Cond	−.07	$\Delta F(3, 150) = 2.20$, $p = .091$, $\Delta R^2 = .017$	Cond × BMI	−.12*	$\Delta F(1, 149) = 6.26$, $p = .013$, $\Delta R^2 = .016$	Cond × BMI × Gend	−.13*
		BMI	−.28***		Cond × Gend	.03			
		Gend	−.16**		BMI × Gend	−.06			
		RSES	.64***						
Self-conscious emotions	$F(4, 153) = 13.77$, $p < .001$, $R^2 = .265$	Cond	.14†	$\Delta F(3, 150) = 1.30$, $p = .276$, $\Delta R^2 = .019$	Cond × BMI	.14†	$\Delta F(1, 149) = 4.35$, $p = .039$, $\Delta R^2 = .020$	Cond × BMI × Gend	.15*
		BMI	.13†		Cond × Gend	.02			
		Gend	.17*		BMI × Gend	.01			
		RSES	−.41***						
Stress emotions	$F(4, 153) = 5.28$, $p = .001$, $R^2 = .121$	Cond	−.004	$\Delta F(3, 150) = 1.15$, $p = .330$, $\Delta R^2 = .020$	Cond × BMI	.10	$\Delta F(1, 149) = .03$, $p = .868$, $\Delta R^2 = .000$	Cond × BMI × Gend	−.01
		BMI	.19*		Cond × Gend	.03			
		Gend	.16*		BMI × Gend	.11			
		RSES	−.21**						

Note:
† $p < .10$.
* $p < .05$.
** $p < .01$.
*** $p < .001$.

The overall indirect effects of the condition × BMI interaction on state self-esteem (−.03, 95% CI −.06 to −.01), self-conscious emotions (=.04, 95% CI .01 to .08), and stress emotions (.09, 95% CI .02 to .20) through rejection expectations were significant. Among higher BMI women, the videotaped (vs. audiotaped) condition led to decreased self-esteem (−.19, 95% CI −.41 to −.02), increased self-conscious emotions (.24, 95% CI .03 to .56), and increased stress emotions (.57, 95% CI .12 to 1.42) via increased rejection expectations. Among lower BMI women, the videotaped (vs. audiotaped condition) led to increased state self-esteem (.14, 95% CI .02 to .32), decreased self-conscious emotions (−.19, 95% CI −.39 to −.04), and decreased stress emotions (−.44, 95% CI −1.08 to −.09) via decreased rejection expectations. The overall indirect effects of the condition × BMI interaction on Stroop performance (.62, 95% CI −1.38 to 3.31), coders' ratings of self-consciousness (.01, 95% CI −.001 to .04), anxiety (.01, 95% CI −.02 to .04), and attraction (−.01, 95% CI −.03 to .01) during the speech, and speech non-fluencies (.03, 95% CI −.02 to .12), and fillers (.02, 95% CI −.02 to .06) via rejection expectations, however, were not significant.

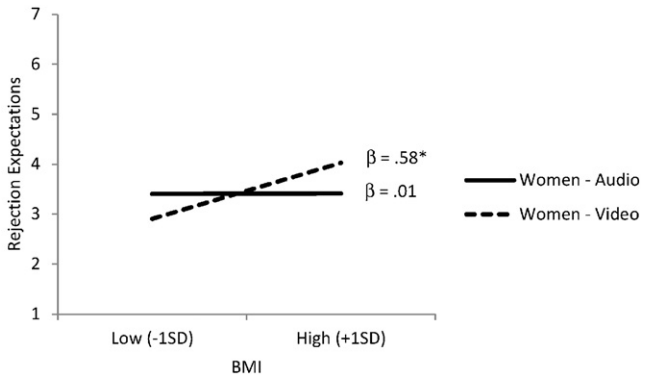

Fig. 1. Interaction between condition and BMI predicting rejection expectations among women. Note: *$p < .001$..

4. Discussion

This research tested the theoretical premise that exposure to weight stigma elicits expectations of social rejection among higher body-weight individuals, contributing to the deleterious effects of weight-based social identity threat. As predicted, higher body-weight women who believed that a potential dating partner could see their weight had greater expectations that they would be socially rejected than higher body-weight women who believed their weight could not be seen. Greater rejection expectations, in turn, predicted decreased state self-esteem, increased self-conscious emotions, and increased stress emotions.

In contrast, lower body-weight women reacted positively to having their weight seen by a potential dating partner. Lower body-weight women who believed their weight could be seen (versus unseen) demonstrated *decreased* rejection expectations, which in turn were related to *increased* state self-esteem, decreased negative self-conscious emotions, and decreased stress emotions. These findings contribute to a

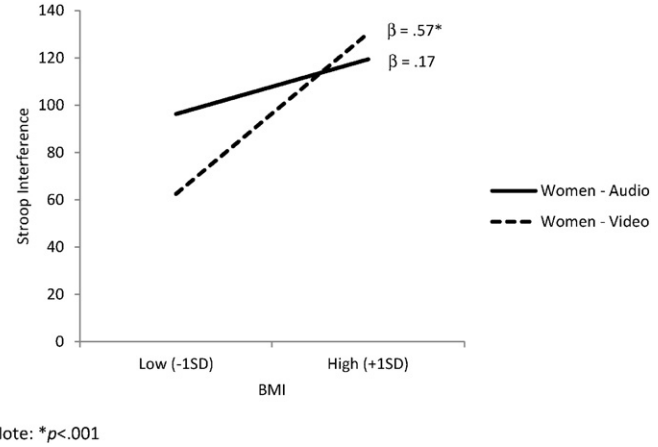

Fig. 2. Interaction between condition and BMI predicting Stroop performance among women. Note that higher scores indicate greater Stroop interference (i.e., reduced executive functioning). Note: *$p < .001$.

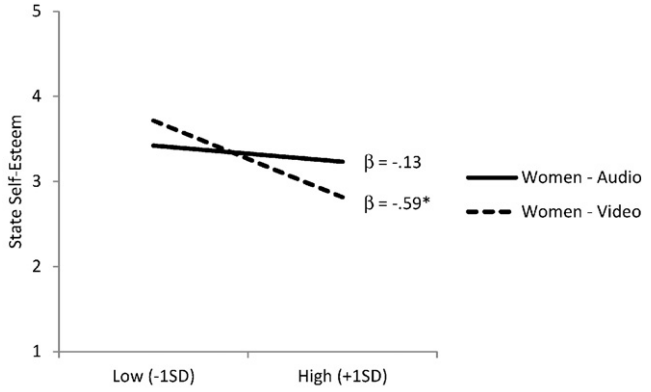

Fig. 3. Interaction between condition and BMI predicting state self-esteem among women. Note: *$p < .001$.

growing literature suggesting that the same situations that activate weight-based social identity threat among higher body-weight women may have *positive* identity implications for lower body-weight women (e.g., Major et al., 2012), akin to "stereotype lift" effects observed among positively stereotyped group members (e.g., Walton & Cohen, 2003).

In line with our hypotheses and prior research (Major et al., 2012), we found that higher body-weight was related to poorer executive functioning among women who believed that a potential dating partner could see their weight. Contrary to predictions, however, this effect was not mediated by rejection expectations. Furthermore, this effect was driven primarily by the lower body-weight women who showed somewhat better executive functioning when they thought they could be seen (versus not seen) by a potential dating partner. Additional research is needed to identify the mechanisms underlying the effects of weight-based social identity threat on executive functioning. For example, attempts to regulate stress emotions may play a more central role than rejection expectations in undermining executive functioning among women experiencing identity threat.

The activation of weight-based social identity threat also affected higher BMI individuals' behavior during the dating speeches. Higher BMI women, but not higher BMI men, were rated as displaying more self-consciousness when their weight was seen (versus unseen). In addition, higher BMI individuals, irrespective of gender, were also rated as more anxious in the seen (vs. unseen) condition. Exploratory analyses revealed that this latter effect was due primarily to higher BMI women—the condition × BMI interaction was significant among

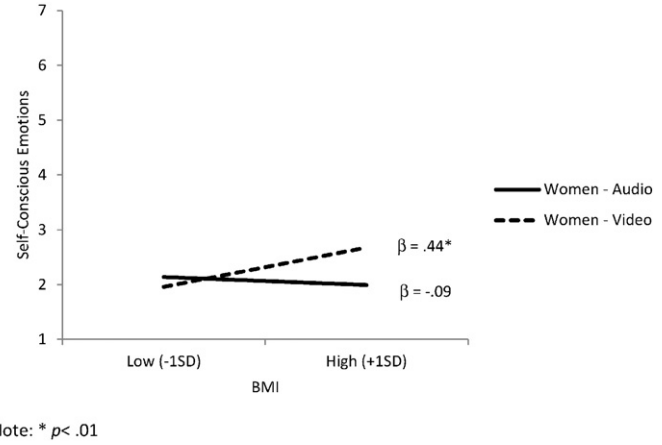

Fig. 4. Interaction between condition and BMI predicting self-conscious emotions among women. Note: *$p < .01$.

women ($\beta = .26$, $p = .015$) but not men ($\beta = .06$, $p = .595$). It is possible that our coding scheme was not sensitive enough to detect subtle gender differences in the effects of weight-based social identity threat on behavioral (e.g., nervousness) and impression-related cues (e.g., liking, attractiveness). It is also possible that higher body-weight men experience anxiety when they are seen that they are unwilling or unable to report on self-report measures. Additional research is needed to clarify the extent to which various indices used to assess the consequences of weight-based social identity threat (e.g., behavioral, cognitive, self-report) align.

In general, the same dating situation that activated weight-based social identity threat among higher body-weight women appeared to be less clearly identity threatening for higher body-weight men. Despite the largely null findings among men in the present study, weight stigma is correlated with decreased health among higher body-weight men (Hatzenbuehler et al., 2009; Hunger & Major, 2015). Furthermore, the activation of negative weight-related stereotypes led higher body-weight men to order more calories in a food choice task (Brochu & Dovidio, 2014). Given the underrepresentation of men in experimental research on weight stigma, an effort should be made to examine a broader range of weight-stigmatizing domains (e.g., physical fitness, healthcare) that may elicit weight-based social identity threat among men.

The effects observed among higher body-weight women in the present research help to illuminate a social pathway by which the *anticipation* of weight-based stigmatization, even in the absence of experienced discrimination, may be detrimental to physical and mental health. This is consistent with research demonstrating that anticipated stigma among those with concealable stigmatized identities predicts decreased psychological and physical health (Quinn & Chaudoir, 2009). In our work, anticipated stigma elicited fear of rejection, leading to a variety of negative psychological outcomes with important implications for health and well-being.[6] As self-esteem and negative emotions are key contributors to mental health (Taylor & Brown, 1988), the rejection-expectation pathway informs our understanding of the mechanisms underlying the well-established relationship between weight stigma and psychiatric disorders (Hatzenbuehler et al., 2009). Likewise, experiencing self-conscious emotions in response to anticipated weight stigma has the potential to undermine physical health as such emotions are associated with elevated cortisol (Gruenewald, Kemeny, Najib, & Fahey, 2004). When experienced chronically, the psychological effects of anticipating weight-based devaluation and rejection can contribute to poor health among higher body-weight women (Hunger et al., 2015; Major et al., 2013).

4.1. Unanswered questions and future research directions

Researchers have yet to systematically examine when objective weight versus self-perceived weight carries more "weight" in predicting weight-based social identity threat. In the present research, as in Major et al. (2012), BMI emerged as the critical predictor of threat-related effects among women in a dating domain. In another study that examined the effects of exposure to weight-stigmatizing messages on eating, however, self-perceived weight emerged as a more important predictor than BMI (Major et al., 2014). One potential explanation for this discordance is differences in the weight-stigmatizing context. In a dating situation or social interaction where another person will see them and potentially categorize them as "overweight," people's self-perceived weight may be less relevant than their objective (observable) weight. When exposed to weight-stigmatizing media in private, as in Major et al. (2014), however, a person's self-perceived weight may be most

[6] Although an experimental paradigm was used in the present study, we are unable to determine the directionality of the variables measured after the manipulation. Future research should attempt to address the limitation of such cross-sectional mediation analyses.

Table 2
Hierarchical regression analyses with condition, BMI, gender, and their interactions as predictors of speech coding.

Outcome	Step 1		β	Step 2		β	Step 3		β
Self-conscious	$F(4, 152) = 1.07$, $p = .375$, $R^2 = .027$	Cond	.12	$\Delta F(3, 149) = 3.35$, $p = .021$, $\Delta R^2 = .061$	Cond × BMI	.14†	$\Delta F(1, 148) = 2.915$, $p = .090$, $\Delta R^2 = .018$	Cond × BMI × Gend	.14†
		BMI	.05		Cond × Gend	.08			
		Gend	.02		BMI × Gend	.20*			
		RSES	−.09						
Anxious	$F(4, 152) = 1.03$, $p = .395$, $R^2 = .026$	Cond	.08	$\Delta F(3, 149) = 3.23$, $p = .024$, $\Delta R^2 = .059$	Cond × BMI	.17*	$\Delta F(1, 148) = 1.50$, $p = .222$, $\Delta R^2 = .009$	Cond × BMI × Gend	.10
		BMI	−.01		Cond × Gend	.16*			
		Gend	.01		BMI × Gend	.08			
		RSES	−.14†						
Attraction	$F(4, 152) = 3.53$, $p = .009$, $R^2 = .085$	Cond	.07	$\Delta F(3, 149) = 1.58$, $p = .198$, $\Delta R^2 = .028$	Cond × BMI	−.01	$\Delta F(1, 148) = 1.53$, $p = .218$, $\Delta R^2 = .009$	Cond × BMI × Gend	−.10
		BMI	.03		Cond × Gend	−.09			
		Gend	.25**		BMI × Gend	−.15†			
		RSES	.15†						
Verbal disfluency	$F(4, 152) = .59$, $p = .668$, $R^2 = .015$	Cond	−.06	$\Delta F(3, 149) = .83$, $p = .481$, $\Delta R^2 = .016$	Cond × BMI	.11	$\Delta F(1, 148) = .31$, $p = .578$, $\Delta R^2 = .002$	Cond × BMI × Gend	.05
		BMI	−.07		Cond × Gend	−.02			
		Gend	−.08		BMI × Gend	.07			
		RSES	−.02						

Note:
† $p < .10$.
* $p < .05$.
** $p < .01$.

relevant. Another potential explanation for differences across studies has to do with the convergence between self-perceived and objective weight in different samples. Objective and self-perceived weight were more congruent in the present research ($r = .84$, $p < .001$) than in the study by Major et al. (2014; $r = .59$, $p < .001$; $z = 4.11$, $p < .001$). When objective and self-perceived weight are highly congruent, objective weight may emerge as the stronger predictor for purely statistical reasons—BMI has more variability than self-perceived weight. Additional research is needed to clarify this issue.

Future research should also take into account individual difference variables that may moderate experiences of weight-based social identity threat. For example, individual differences in chronic tendencies to be concerned about, or anxiously anticipate, the potential for weight-based stigmatization may moderate experiences of weight-social identity threat. This would be consistent with evidence that individuals high in stigma consciousness (Brown & Pinel, 2003) and race-rejection sensitivity (Mendoza-Denton, Downey, Purdie, Davis, & Pietrzak, 2002) are more susceptible to identity threat effects. Discrepancies between one's actual and ideal weight (i.e., body dissatisfaction) have also been found to be a relevant predictor of identity threat (Logel, Page-Gould, Hall & Cohen, 2015). Future research should assess whether body dissatisfaction moderates or accounts for weight-based social identity threat.

5. Conclusions

The present research identified rejection expectations as a key contributor to the deleterious psychological effects of weight-based social identity threat among overweight women. Anticipated rejection in response to weight-stigmatizing situations threatens the fundamental need to belong, undermining self-esteem and increasing negative self-conscious emotions and stress. To the extent that higher body-weight women anticipate rejection and devaluation from close others (e.g., friends and family; Puhl & Brownell, 2006), they may avoid the very relationships that are known for their social support and health benefits (Cohen, 2004). Furthermore, anticipation of weight-based rejection and devaluation may lead higher body-weight women to exhibit anxiety and self-consciousness in interpersonal interactions and avoid the formation of new relationships. These data thus inform our understanding of the socially mediated pathways by which weight stigma undermines higher body-weight women's health, and points to the need for research investigating methods for protecting women with higher body-weights from experiencing weight-based social identity threat.

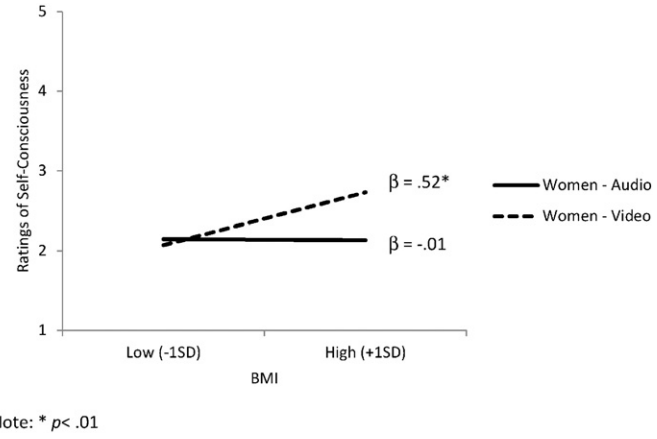

Fig. 5. Interaction between condition and BMI predicting ratings of self-consciousness among women. Note: *$p < .01$.

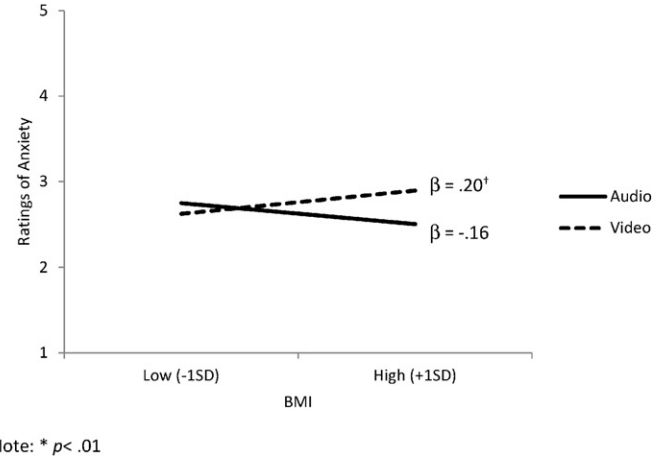

Fig. 6. Interaction between condition and BMI predicting ratings of anxiety among women and men. Note: *$p < .01$.

Appendix A. Supplementary data

Supplementary data to this article can be found online at http://dx.doi.org/10.1016/j.jesp.2015.12.003.

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