



Brief research report

## Body size and body esteem in women: The mediating role of possible self expectancy

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## ABSTRACT

We predicted that an expectancy of acquiring a feared fat self and an expectancy of acquiring a hoped-for thin self both mediate the impact of body size on women's body esteem. We also predicted that the mediating pathway through the feared fat self would be stronger than that through the hoped-for thin self. A community sample of 251 women reported their age, height, weight, and completed measures of body esteem and expectancy perceptions of acquiring the feared fat and hoped-for thin selves. Bayesian Structural Equation Modeling (SEM) demonstrated that expectancies about the feared fat self and about the hoped-for thin self mediated the relationship between body size and body esteem. Bayesian SEM also revealed that the pathway through the feared fat self was stronger than that through the hoped-for thin self. Implications for future research and the development of eating pathology are discussed.

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### Introduction

Body size (body mass index: BMI; kg/m<sup>2</sup>) is one of the most important correlates of how a woman thinks and feels about her body (McLaren, Hardy, & Kuh, 2003). Since low body esteem in women is associated with a host of health problems (Grabe, Ward, & Hyde, 2008), researchers have attempted to elucidate why larger women tend to think and feel more negatively about their bodies than smaller women (Cash & Smolak, 2011). As a result, the relationship between BMI and a woman's body esteem has come to be seen as caused by perceptions of being unable to conform to an internalized thin-ideal self (Castonguay, Brunet, Ferguson, & Sabiston, 2012). However, this research appears to have neglected concerns about conforming to an undesired fat self (Woodman & Hemmings, 2008). In this paper, we seek to compare the mediational roles of both these self standards by placing the relationship between women's BMI and body esteem within a possible selves framework (Markus & Nurius, 1986).

Possible selves are those future oriented aspects of the self-concept that one hopes to become and that one fears to become (Markus & Nurius, 1986). While possible selves have been found to exert their impact across a variety of domains, research suggests that women possess possible selves in the body image domain (Knox, 2006). More precisely, women appear to have internalized influential feared fat and hoped-for thin selves that reflect

Western culture's idealization of thinness and stigmatization of fatness (Dalley & Buunk, 2011; Thompson, Schaefer, & Menzel, 2012).

Both hoped-for and feared possible selves are thought to exert their mediational influence on personal functioning by acting as reference standards against which the current self is evaluated (vanDellen & Hoyle, 2008). Central in this regard is an expectancy judgment about the likelihood of acquiring a particular possible self (Oyserman & James, 2011). Theoretically, an increasing likelihood of acquiring a hoped-for thin self should be associated with increasing body esteem because it makes salient that the rewards of thinness are within reach (Lockwood, 2002; Mills, Polivy, Herman, & Tiggemann, 2002). Conversely, an increasing likelihood of acquiring a feared fat self should be associated with decreasing body esteem because it makes salient that the punishments associated with fatness are within reach (Lockwood, 2002). With this in mind, we propose that because expectancies are influenced by personal perceptions (Olson, Roese, & Zanna, 1996), knowledge about one's body size (and thus BMI) influences body esteem through expectancies about the likelihood of acquiring a particular possible self. Accordingly, with increasing body size, a woman should experience lower body esteem because she perceives a lower likelihood of acquiring her hoped-for thin self, as well as a higher likelihood of acquiring a feared fat self.

We also propose, perhaps more importantly, that the mediating pathway through the feared fat self will have a greater impact on women's body esteem than the mediating pathway through the hoped-for thin self. We base this proposal on a significant body of research demonstrating that people are affected more by negative

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entities, and in particular feared selves, than by positive entities and hoped-for selves (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001; vanDellen & Hoyle, 2008). Following on from this, and more specifically, research suggests that young women's self-esteem is better predicted by the likelihood of acquiring feared selves than by the likelihood acquiring hoped-for selves (Knox, 2006).

## Method

### Participants

Two hundred and seventy one women volunteered to participate in this study. The participants were recruited from three local health clubs in a mid-size European city. However, twenty participants were removed from the study because they did not complete the questionnaires. The mean age of the remaining participants was 29.63 years ( $SD = 9.88$ ).

### Measures

**Possible self expectancy.** Participants read the following: "From time to time we all think about the sort of body we could have in the future. Sometimes, what comes to mind, is a hoped-for (feared) body that is thin (fat or overweight)". Participants' possible self expectancy was operationalized in terms of perceived likelihood (Knox, 2006; Lockwood, 2002). Following Lockwood (2002) participants indicated their likelihood of acquiring a possible self on a single item: "How likely is it that you will acquire this hoped-for (feared) body in the future?". Responses were scored on a Likert scale ranging from 1 (*not at all likely*) to 9 (*extremely likely*).

**Body esteem.** The Body Esteem-Weight subscale (Mendelson, Mendelson, & White, 2001) was translated to Dutch by an independent translator. A university colleague who is fluent in both Dutch and English and who has published research in the body image domain then verified the translation. This scale consists of 8 items (e.g., "I am satisfied with my weight", "I really like what I weigh"). Responses were scored on a Likert scale ranging from 1 (*never*) to 5 (*always*) and summed. The Body Esteem-Weight subscale has been reported to have an internal reliability of .95 (Mendelson et al., 2001). In this study, the internal reliability was .91.

**Body size.** The BMI of each participant was recorded using self-reported height and weight data. According to Bowman and DeLucia (1992), height and weight recorded from self-reports differ by 1–3.5% from the factual height and weight.

### Procedure

The study was granted approval from the departmental ethics committee of the University of Groningen. Participants completed the questionnaire in a designated area within the health and fitness club. The sections concerning the feared fat and hoped-for thin possible selves were completed first and were counterbalanced. Participants then completed the Body Esteem-Weight subscale, and finally gave their age, height, and weight.

### Data Analysis

The correlational analyses were conducted in SPSS 18.0. Next, we use Bayesian Structural Equation Modeling (SEM) in SPSS AMOS 16.0 (Arbuckle, 2009). This approach is preferable to mediation models (Preacher & Hayes, 2008), because it (a) allows testing of the strength of relative paths and (b) allows comparison of different models. This Bayesian SEM approach uses an iterative Monte

**Table 1**

Means, standard deviations, and Pearson correlations between variables in the study.

Variable	1	2	3	4	MD	SD
1. BMI	–				22.73	3.59
2. EF	.36**	–			3.94	2.12
3. EH	–.20**	–.23**	–		6.27	1.96
4. BE	–.49**	–.41**	.25**	–	25.91	7.11

Note:  $N = 251$ . BMI: body mass index; EF: expectancy of the feared fat self; EH: expectancy of the hoped-for thin self; BE: body esteem.

\*\*  $p < .01$ .

Carlo Markov Chain (MCMC) procedure to estimate all the parameters in the models we propose (Arbuckle, 2009). Using Bayes theorem, the given data (and prior knowledge) are used to generate a posterior likelihood distribution of parameter estimates. This implies that there are no  $p$  values but rather that credible intervals for parameter estimates (or models) are given. Further details of the Bayesian SEM approach used here can be found: (<http://sites.google.com/site/thomasvpollet/si.body.image.2013>).

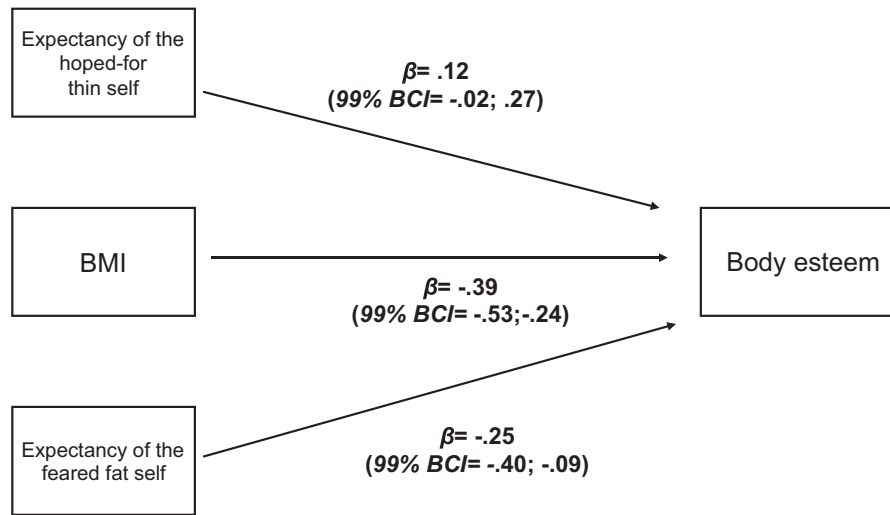
Our models had 500 burn-in samples and >95,000 post-burn-in samples, which were thinned two times. We report the standardized estimates of the paths and their 99% Bayesian confidence intervals. A baseline model will first be tested with three main effects. Next, the predicted model with mediations via expectancy of acquiring the feared fat self and via expectancy of acquiring a hoped-for thin self will be tested. Finally, we will compare whether a feared fat expectancy matters more than a hoped-for thin expectancy by omission of these respective paths, and by comparing these reduced models in terms of model fit. In Bayesian SEM, models can be compared in terms of model fit by use of the Deviance Information Criterion (DIC) (Spiegelhalter, Best, Carlin, & van der Linde, 2002).

## Results

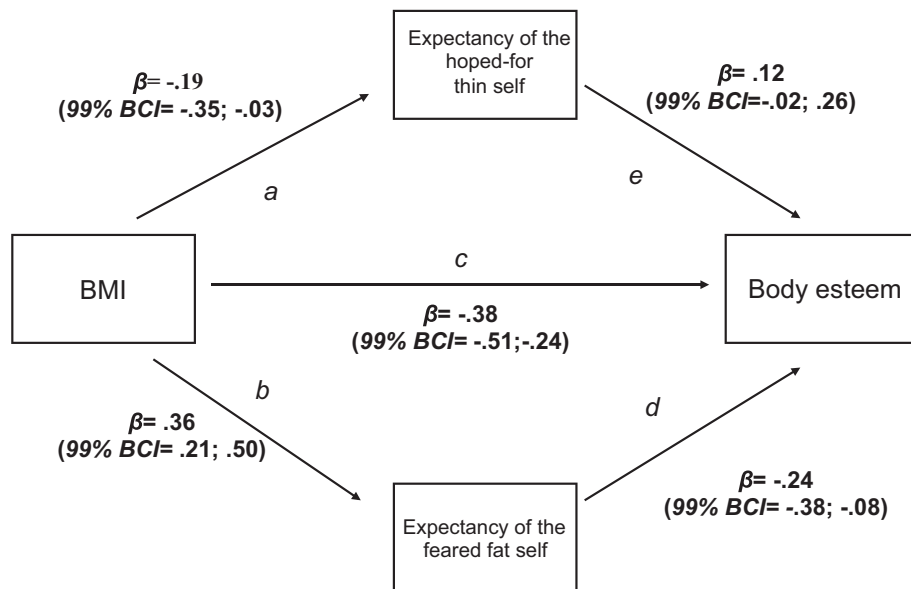
Correlational analyses are presented in Table 1. The baseline model with simple main effects is displayed in Fig. 1a. None of the Bayesian credible intervals overlaps with zero, except for the path from the hoped-for thin self on body esteem. Therefore with 99% certainty, the model shows that both BMI and expectancy of acquiring the feared fat self have a negative impact on body esteem. While we cannot state with 99% certainty that the expectancy of acquiring the hoped-for thin self does have a positive impact, the impact appears weak.

Fig. 1b displays the predicted model, which outperforms the baseline model in terms of fit ( $\Delta DIC > 40$  units). There is thus strong evidence for this model, which posits a mediation effect of BMI via an expectancy of acquiring the feared fat self, as well as via an expectancy of acquiring the hoped-for thin self on body esteem, over a model with just main effects. Apart from the path through the hoped-for thin self, all paths in Fig. 1b do not overlap with zero. With 99% certainty we can therefore state that the paths displayed in Fig. 1b exist, with the exception of the path through the hoped-for thin self to body esteem. While there is some evidence for a weak effect of the hoped-for self on body esteem, the indirect standardized path ( $b*d$ ) through the feared self portrayed in Fig. 1b is around four times stronger than that of hope ( $a*e$ ) ( $\beta(b*d) = -.09$  versus  $\beta(a*e) = -.02$ ).

In order to formally test whether 'fear matters more than hope' a model based on the hoped-for thin self (Fig. 1b, paths a, c, and e) is compared in terms of model fit to a model based on the feared fat self (Fig. 1b, paths b, c, and d). Observation of the indirect paths suggests that a fear based model outperforms (DIC = 44.79) a model based on hope (DIC = 82.46), as  $\Delta DIC$  exceeds more than 35 units. However, a model incorporating both indirect paths outcompetes



a) Baseline model



b) Predicted model

**Fig. 1.** Bayesian structural equation baseline and predicted models representing the relationships between BMI, expectancy of the hoped-for thin self, expectancy of the feared fat self, and body esteem. *Note.* Standardized path coefficients and 99% Bayesian confidence intervals (BCI) are presented. In the baseline model Deviance Information Criterion (DIC) = 75.25. In the predicted model DIC = 34.23. BMI: body mass index (for both models,  $N = 251$ ).

each model with just a single indirect path (both  $\Delta\text{DIC} > 10$  units). If one had to choose between a model with just main effects (as portrayed in Fig. 1a) versus a model with a single mediation based on expectancy of acquiring the hoped for thin self, then a main effects model should be preferred as it is a closer fit to the data ( $\Delta\text{DIC} > 7$  units in favor of a main effects models). However, a model with a single mediation via expectancy of acquiring the feared fat self outperforms a model with just main effects ( $\Delta\text{DIC} > 30$  units). Nevertheless a model incorporating both mediations is a closer fit than these three alternative models (main effects model; hoped-for mediation; feared mediation; all comparisons  $\Delta\text{DIC} > 10$  units in favor of model with both hope and fear mediation).

Incidentally, an alternative procedure using the Sobel test for comparing the indirect paths of hope versus fear expectancy leads

to the same conclusion. Specifically, the path via expectancy of acquiring a feared fat self is stronger than the path via expectancy of acquiring the hoped-for thin self (Sobel  $Z(\text{fear}) = 350.51$ ; Sobel  $Z(\text{hope}) = 179.79$ ;  $\Delta Z = 171.12$ ;  $p < .0001$ ).

## Discussion

We predicted that expectancy judgments about a feared fat and a hoped-for thin self would mediate the impact of BMI on women's body esteem. We also predicted that the mediating pathway through the feared fat self would have a greater impact on body esteem than the mediating pathway through the hoped-for thin self. Our results were in line with these predictions.

The mediating roles played by the feared fat self and the hoped-for thin self indicate, firstly, that our participants have internalized the contemporary Western values of idealizing thinness and stigmatizing fatness. This is consistent with the view that possible selves are ultimately social constructions (Markus & Nurius, 1986). Secondly, these mediating effects suggest that, for a more complete understanding of women's body image, researchers and health professionals need to take account of both an attractive thin-ideal self and an unattractive fat self (Woodman & Hemmings, 2008).

The greater influence of the mediating pathway through the feared fat self suggests that the nature of women's body esteem is more reflective of concerns about becoming fat than concerns about not becoming thin. This converges with research in general psychology demonstrating that individuals are more concerned about avoiding a bad self-definition than approaching a positive self-definition (Baumeister et al., 2001). More specifically, the greater impact of the feared fat self also converges with research indicating that it is a fear of fatness rather than the hope of being thin which predominantly motivates dieting in women (Dalley & Buunk, 2011).

Given our results we speculate that the low body esteem and psychological problems often experienced by the obese is because they perceive they are too close to their feared fat self. Under such circumstances these individuals would be predominantly involved in unhealthy avoidance regulation. As a result, the feared fat self would be particularly salient in memory and thus a continual reminder of their present condition and/or their potential for acquiring this future self (Elliot & McGregor, 1999).

However, not all obese individuals experience low body esteem and psychological problems (Friedman & Brownell, 1995). We also speculate, therefore, that individual differences, such as neuroticism and unhealthy perfectionism, can exacerbate the influence of BMI on body esteem. That is to say, such differences could enhance expectancy perceptions of acquiring the feared fat self. Indeed, we reason that neuroticism and unhealthy perfectionism may exert their effects over and above that of actual BMI and, by so doing, promote eating pathology. In support of this reasoning neuroticism is not only associated with the establishment of threatening avoidance goals, but is also a known risk factor for eating pathology (Cervera, Lahortiga, Martínez-González, Gual, Irala-Estévez, & Alonso, 2003). Furthermore, expectancy judgments about the feared fat self have recently been found to mediate the impact of unhealthy perfectionism on women's dietary restraint over and above self-reported BMI (Dalley, Toffanin, & Pollet, 2012).

Several limitations of this research should be acknowledged. Firstly, while self-reported height and weight may have satisfactory accuracy, future researchers should use measurements of actual body height and weight. We also did not take account of ethnicity and our speculations should also be restricted to a gym population of women. Finally, the correlational analysis showed that expectancies about the feared fat self and the hoped-for thin self are weakly to moderately correlated. This could indicate that there is a single unifying construct underlying expectancy judgments about these possible selves. However, a Bayesian SEM with a latent construct capturing both expectancy judgments was inestimable. We therefore suggest that these are relatively independent constructs with distinct effects on body esteem, but with the pathway through the feared fat self being substantially stronger than the pathway through the hoped-for thin self. Future research is,

however, necessary to disentangle the degree to which these constructs overlap.

In conclusion, our study suggests that concern about becoming fat is a more important mediator for the effect of body size on women's body esteem than concern about not being thin. While future research is needed to confirm our findings such results build on previous research demonstrating the importance of the feared fat self to how a woman thinks and feels about her body (Woodman & Hemmings, 2008). With this in mind, eating disorder interventions should perhaps focus on both getting women to challenge the negative meanings associated with fatness, as well as resist the unrealistic thin-ideal.

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