



# Drive for Thinness Versus Fear of Fat: Approach and Avoidance Motivation Regarding Thin and Non-thin Images in Women

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## Abstract

Internalization of sociocultural attitudes regarding the so-called virtues of thinness and vices of fatness can lead to two motivational orientations: drive for thinness and fear of fat. The current study assessed drive for thinness and fear of fat, via approach and avoidance motivation towards thin-ideal and non-thin bodies respectively, and also the relation between these approach-avoidance tendencies and key eating disorder-related constructs. Participants were 95 female undergraduate students. Results revealed an approach bias for thin-ideal bodies and an avoidance bias for non-thin bodies. Furthermore, a greater approach bias towards thin-ideal bodies was associated with greater body dissatisfaction, thin-ideal internalization, and dietary restraint whilst controlling for body mass index. An avoidance bias away from non-thin bodies did not significantly correlate with any eating disorder-related constructs. These findings imply that drive for thinness may be more relevant than fear of fat as a risk factor for eating disorder symptoms in women.

**Keywords** Approach-avoidance · Drive for thinness · Fear of fat · Body dissatisfaction · Dietary restraint · Thin-ideal internalization

Women are inundated with social pressures and media messages which glorify thinness and stigmatise fatness. According to sociocultural theory, perceived pressures from social agents (e.g., media and peers) to conform to the thin-ideal body shape contribute to the development and maintenance of body image and eating disorder pathology (Thompson et al. 1999). The tendency to internalise these sociocultural attitudes, and thus conform to the thin-ideal, may give rise to two motivational orientations: approaching the thin-ideal and avoiding the stigma of fatness. These motivational constructs can be operationalised as representing a drive for thinness (also referred to as thinspiration) and fear of fat, respectively.

Several researchers have proposed that drive for thinness and fear of fat are indeed distinct constructs that comprise approach and avoidance mechanisms, respectively, within the context of body image and eating disturbances (Dalley 2016; Levitt 2003; Rodgers et al. 2018). Approach motivation is defined as a behaviour that is initiated by, or in the direction towards, positive stimuli. In contrast, avoidance motivation is defined as a behaviour which is initiated by, or in the direction away from, negative stimuli (Elliot 2006). Theoretical frameworks and empirical evidence support the notion that stimuli with a positive or negative emotional valence facilitate compatible approach or avoidance tendencies (Chen and Bargh 1999; Eder and Rothermund 2008; Krieglmeier et al. 2010). Thus, an approach bias towards thin bodies, typically associated with a positive valence, can be conceptualised as drive for thinness, and an avoidance bias away from non-thin bodies, typically associated with a negative valence, can be conceptualised as fear of fat. Further, according to the hierarchical model of approach-avoidance motivation, individuals have a dispositional motivational orientation which dictates the specific goals that they pursue in their daily lives (Elliot 2006; Elliot et al. 2006). Thus, an individual with a predominant approach temperament is potentially more sensitive to the rewards of thinness,

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whereas an individual with a predominant avoidance temperament is likely to be more reactive to the penalties associated with fatness (Dalley 2016; Elliot and Thrash 2010). Taken together, these theoretical accounts suggest that approach/avoidance behaviour can be evoked by exposure to external standards (e.g., emotionally valenced stimuli) but it is also the case that approach/avoidance behaviour might be directed or energised by internal standards/goals (e.g., predominant approach/avoidance temperament).

Drive for thinness and fear of fat have both been implicated as key motivational factors in the development and maintenance of body image and eating disturbances. More specifically, studies based on cross-sectional data have provided evidence for an association between fear of fat and dietary restraint in community samples of women (Chow et al. 2017; Dalley and Buunk 2009, 2011). There is also evidence to suggest that the relationship between fear of fat and general eating disorder symptomatology exists amongst women from various cultural backgrounds (Shaw et al. 2004). Drive for thinness has been shown to prospectively predict eating disorder symptomatology in community samples of females (Dobmeyer and Stein 2003; Peñas-Lledó et al. 2015). Moreover, Wiederman and Pryor (2000) found that both in women with and without eating disorders, drive for thinness was uniquely associated with body dissatisfaction.

While evidence exists for the relevance of both fear of fat and drive for thinness orientations for broader eating disorder constructs, few studies have sought to determine whether either of these orientations is more strongly associated with eating disorder symptoms. Such information is essential for the creation of successful prevention and treatment interventions for eating disorders (Levitt 2003). The few studies addressing this question have thus far yielded somewhat mixed findings. Most of the available evidence suggests that fear of fat plays a stronger role in the potential onset and/or maintenance of eating disorder symptomatology, relative to drive for thinness. As an illustration of these findings, Dalley and Buunk (2009) revealed that unfavourable perceptions of a non-thin prototype, but not favourable perceptions of a thin prototype, were positively associated with dieting in a community sample of women. Similarly, further research has shown that a self-reported fear of an overweight body is associated with motivation to engage in dieting (Dalley and Buunk 2011) and dietary restriction (Dalley et al. 2012), compared with a self-reported hoped-for thin body. However, a recent network analysis-based study found that desire for thinness, relative to fear of gaining weight, was most central to eating, shape, and weight-related cognitions in young undergraduate females (Rodgers et al. 2018).

In each of the aforementioned studies, the assessment of drive for thinness and fear of fat was based on explicit measures. Such measures are based on conscious awareness of the psychological attribute being measured and its impact on the

measurement outcome, and the participant's ability to control the measurement outcome. Conversely, implicit measures aim to capture these attributes without the participant's awareness of the attribute being measured and its impact on the measurement outcome, and also without their control over the measurement outcome (De Houwer 2006). Implicit measures are advantageous relative to explicit measures in that they reduce the risk of socially desirable responding and also due to their ability to capture psychological attributes that are outside of conscious awareness (Gawronski and De Houwer 2014). Socially desirable responding is a particular concern given research showing that exposure to thin-ideal images has reverse effects depending on whether explicit demand characteristics are present. For example, Mills et al. (2002) found that only when explicit demand characteristics were present (i.e., it was suggested that the study was examining mood in direct response to viewing thin-ideal images), participants reported feeling worse following exposure to thin-ideal images. While implicit measures also have several limitations (e.g., they do not necessarily reflect unconscious processes and/or the presumed mental construct) (Gawronski and Hahn 2019), their use helps to expand the research beyond its current focus on explicit measures.

In the few studies utilising implicit measures, fear of fat relative to drive for thinness has also emerged as the primary motivating factor. Specifically, females with anorexia nervosa (AN) demonstrated greater implicit negative affect regarding non-thin bodies relative to control groups (Cserjési et al. 2010; Spring and Bulik 2014). In both studies, there were no group differences in implicit affect regarding thin bodies. Thus, these results imply that AN is predominantly driven by a fear of gaining weight, which is also consistent with the diagnostic criteria for the disorder (American Psychiatric Association 2013). Since this research was conducted on individuals with an established eating disorder, it is not clear whether fear of fat or drive for thinness is the predominant motivational factor in the emergence of eating disorder symptomatology.

Yet, even in community samples, fear of fat has been found to predominate over a drive for thinness using an implicit measure. As previously mentioned, an arguably more valid operationalisation of fear of fat and drive for thinness (i.e., one that is less susceptible to the socially desirable responding inherent in self-report measures) is represented by an avoidance bias towards non-thin bodies and an approach bias towards thin bodies, respectively. Accordingly, Woud et al. (2011) conducted a study in which female undergraduate students undertook the stimulus response compatibility (SRC) task (Mogg et al. 2003). The SRC task requires participants to make symbolic approach and avoidance movements to thin and non-thin bodies by moving a manikin figure towards or away from the stimuli. Woud et al. (2011) found that avoidance of non-thin bodies, but not

approach towards thin bodies, was positively associated with drive for thinness, body dissatisfaction, dietary restraint, and thin-ideal internalization. These results further support the notion that fear of fat is more relevant in eating disorder symptomatology. However, these novel findings should be interpreted with some caution given the limitation in the choice of stimuli in terms of ecological validity. Specifically, the non-thin images utilised in this study were artificially created by stretching thin-ideal female body images 20% horizontally, to give the bodies a ‘plump’ appearance. This transformation stretched heads and hands as much as hips and thighs, whilst also misleadingly preserving key thin-ideal markers such as the thigh gap and hip-to-waist ratio. Thus it is not certain whether participants perceived the images as thin, non-thin or simply as odd. It may not be surprising then that participants demonstrated an overall ambivalent response (i.e., they were neither faster to make approach or avoidance movements) rather than the expected avoidant response regarding these atypical non-thin bodies. Thus, given the limitations of the study by Woud et al. (2011), it is uncertain whether an avoidance motivational orientation predominates in the emergence of eating disorder symptomatology.

In light of the above, the current study sought to address the gap in the literature by determining the salient motivational construct with regards to its association with body image and eating-related constructs in a community sample of females. More specifically, the current study aimed to capitalise on the advantages of the SRC task as a means of assessing drive for thinness and fear of fat in terms of approach-avoidance tendencies regarding thin and non-thin female body images. At the same time, this study sought to improve upon the SRC study by Woud et al. (2011) by representing the non-thin body category using real images of non-thin females, rather than stretched versions of thin females. Additionally, the body images employed in the current study were rated on emotional valence and arousal such that the two body categories differed on emotional valence (i.e., positively valenced thin bodies vs. negatively valenced non-thin bodies) but were found to be equally emotionally arousing (i.e., interesting) (Dondzilo et al. 2017). The necessity of utilising images differing on emotional valence is due to theoretical and empirical evidence suggesting that approach and avoidance motivation is driven by valence (i.e., approach towards positive stimuli and avoidance of negative stimuli) (Chen and Bargh 1999; Eder and Rothermund 2008; Krieglmeier et al. 2010). In turn, this is consistent with the well-established notion that thin-ideal bodies are viewed positively and non-thin bodies are regarded negatively (Harriger et al. 2010; Puhl and Heuer 2009; Thompson and Stice 2001). In investigating whether drive for thinness or fear of fat predominates in eating disorder symptoms among women, the associations between

approach-avoidance tendencies and important vulnerability factors for eating disorder symptomatology (i.e., body dissatisfaction, thin-ideal internalization, and dietary restraint; Stice et al. 2011, 2017; Stice and Shaw 2002; Thompson and Stice 2001) were examined.

It was hypothesised that participants would demonstrate an approach bias towards thin bodies (i.e., faster approach vs. avoidance tendencies) akin to drive for thinness, and an avoidance bias away from non-thin bodies (i.e., faster avoidance vs. approach tendencies) akin to fear of fat. Furthermore, given previous evidence implicating fear of fat as the more relevant factor in body image and eating pathology (Cserjési et al. 2010; Dalley and Buunk 2009, 2011; Dalley et al. 2012; Spring and Bulik 2014; Woud et al. 2011), it was hypothesised that avoidance biases away from non-thin bodies, but not approach biases towards thin-ideal bodies, would correlate with eating disorder-related constructs.

## Method

### Participants

Ninety-five female undergraduate students from the University of Western Australia took part in the study in exchange for course credit. Participants were between the ages of 17 and 54 ( $M = 21.02$ ,  $SD = 6.48$ ) and mostly of normal weight. Mean body mass index ( $BMI = \text{kg/m}^2$ ) was 22.17 ( $SD = 4.41$ ).

### Materials

#### Stimuli

Images of thin and non-thin female bodies, which have demonstrated effects in research assessing attentional bias for female bodies on eating disorder-related constructs (Dondzilo et al. 2018, 2017), were employed for the assessment of motivational orientation (i.e., drive for thinness and fear of fat). They consisted of 40 images of real female bodies, specifically 20 thin body images and 20 non-thin body images. These images were sourced from the internet using search terms such as “thin/slim” and “fat/overweight.” Images that were either extremely under- or overweight were omitted so that the thin image set depicted bodies representative of the thin-ideal and the non-thin image set depicted bodies in the overweight/mildly obese weight range. Each body image was cropped to focus on specific body regions typically associated with shape and weight concerns (i.e., thighs, abdomen, hips, and arms). There was an equal number of images for each focused body region. Further, bodies were presented in varying perspectives (i.e., front, right side, back, left side, depending on the feature in emphasis) and

were predominantly dressed in bathing suits and clothing which emphasised the specific body regions. Additionally, images were previously rated on emotional valence and arousal (Dondzilo et al. 2017) such that the thin images were of a positive valence (i.e., pleasant) and the non-thin images were of a negative valence (i.e., unpleasant). Importantly, the images differed significantly on valence but were found to be equally arousing (i.e., interesting).

The stimuli were presented on a 1024 × 768 Dell CRT monitor running at 85 Hz, using Matlab (2012b) and the Psychophysics Toolbox (Brainard 1997) to control stimuli presentation. Images were approximately 11 cm high and 7.3 cm wide on the screen. The monitor was positioned at a distance of approximately 125 cm from the participant.

### Stimulus Response Compatibility (SRC) Task

To assess the motivational valence of thin and non-thin bodies, the SRC task (Mogg et al. 2003) was utilised. The current study used trial specifications (i.e., frequency of the presentation of stimuli, number of practice trials, and number of critical trials) within a range most consistent with the majority of the extant literature showing effects based on the SRC task (e.g., Mogg et al. 2003; Neimeijer et al. 2017; Veenstra and de Jong 2010, 2011). Although this meant the number of critical trials was double the number employed by Woud et al. (2011), this equated to the same number of repetitions of each body image, given the current study comprised double the number of body images.

Each trial commenced with a 1000 ms presentation of a fixation cross in the centre of the screen. This was subsequently replaced by a thin or non-thin image and a female manikin figure (i.e., a female stick figure) displaced above or below the central image. Participants were instructed to move the manikin either towards or away from the image by using the appropriate arrow key on the computer keyboard. The required response (i.e., move towards or away) was explicitly defined by content of the image (i.e., thin or non-thin). If participants made an incorrect response, the manikin did not move and the next trial commenced. Reaction time (RT) and accuracy of responses was recorded. There was a 2 s interval between trials.

The SRC task consisted of two blocks, which differed in their stimulus–response assignment. In block 1, participants were instructed to move the manikin towards thin bodies and away from non-thin bodies. In block 2, these stimulus–response relationships were reversed (i.e., move away from thin and move towards non-thin images). The order of blocks 1 and 2 was counterbalanced across participants. Each stimulus was presented twice in each block, thus only four times throughout the entire experiment. Furthermore, within each block the manikin appeared above the image on half of the trials, and below it on the remaining half. For

each participant, trials were presented in a unique random order. Each block consisted of six practice trials, followed by 80 test trials.

## Self-Report Questionnaires

### Body Shape Questionnaire (BSQ)

Body dissatisfaction was measured using the BSQ (Cooper et al. 1987). This 34-item questionnaire assesses the occurrence of body shape/weight related concerns (e.g., “Have you thought that your thighs, hips or bottom are too large for the rest of you?”) over the past 4 weeks. Each of the items is assessed on a six-point Likert scale ranging from 1 (*never*) to 6 (*always*). The BSQ demonstrates high internal consistency and concurrent validity, and also the ability to discriminate between clinical and non-clinical individuals (Cooper et al. 1987; Rosen et al. 1996). It also provides a more comprehensive assessment of body dissatisfaction than the 9-item Body Dissatisfaction subscale of the Eating Disorder Inventory-II used by Woud et al. (2011). Cronbach’s alpha for the current sample was  $\alpha = 0.98$ .

### Sociocultural Attitudes Towards Appearance Scale-4 (SATAQ-4)

The five-item Thin-ideal Internalization subscale of the SATAQ-4 (Schaefer et al. 2015) was used to assess the degree to which individuals desire to attain a thin body shape with little body fat (e.g., “I want my body to look very thin”). Responses to these questions are given on a five-point Likert scale ranging from 1 (*definitely agree*) to 5 (*definitely disagree*). The thin-ideal internalization subscale has demonstrated acceptable internal consistency and convergent validity (Schaefer et al. 2015). Cronbach’s alpha for this sample was  $\alpha = 0.76$ .

### Dutch Eating Behaviour Questionnaire (DEBQ)

The Dietary Restraint subscale of the DEBQ (van Strien et al. 1986) was administered to measure the tendency to restrict food intake (e.g., “If you have put on weight, do you eat less than you usually do?”). Respondents are asked to answer ten questions on a five-point Likert scale ranging from 1 (*never*) to 5 (*very often*). This subscale has demonstrated sound psychometric properties (Allison et al. 1992). Cronbach’s alpha for the current sample was  $\alpha = 0.92$ .

## Procedure

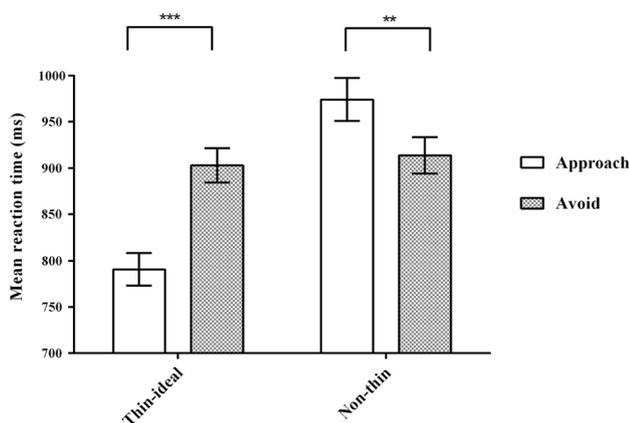
After providing informed consent, participants undertook the SRC task. Next, participants completed the self-report questionnaires via Qualtrics (2016), an online survey

system that was hosted on the University of Western Australia servers. Finally, participants' height and weight were measured for the calculation of BMI.

## Statistical Analysis

Data analyses were performed using SPSS. The criterion for statistical significance across all analyses was  $p < .05$ . RTs until first response were used in the data analyses for the SRC task. RT's were based on correct trials only and all RT's less than 300 ms and greater than 2.5 standard deviations above each individual's mean RT were excluded. Participants demonstrated high overall accuracy on the SRC task (i.e., 80.2%). To limit the potential effects of outlier RTs, the means reported in Fig. 1 are means of individual median RTs. One participant was removed from further analysis due to an error in data recording, rendering the final sample size  $n = 94$ . To test the hypothesis that participants would demonstrate an approach bias for thin bodies and an avoidance bias for non-thin bodies, a 2 (body type: thin, non-thin)  $\times$  2 (movement: approach, avoid) repeated measures ANOVA was conducted on the RT data.

Next, two SRC difference scores were computed by subtracting RTs of approach trials from corresponding avoidance trials for each body type (e.g., SRC thin difference score = thin avoidance – thin approach). Thus, a positive difference score indicates a tendency to approach body images and a negative difference score indicates a tendency to avoid body images. Correlational analyses were then performed to examine the relationships between SRC differences scores and eating disorder-related constructs.



**Fig. 1** Mean SRC reaction times (ms) for thin and non-thin body images. Error bars represent  $\pm 1$  standard error. \*\* $p < .01$ ; \*\*\* $p < .001$

## Results

### Approach and Avoidance Tendencies

Figure 1 illustrates the mean RTs for the SRC task. It can be seen that participants were faster to approach rather than avoid thin-ideal bodies, whereas they were faster to avoid than approach non-thin bodies. A 2 (movement: towards, away)  $\times$  2 (body type: thin, non-thin) repeated measures ANOVA revealed a significant interaction between movement and body type,  $F(1,93) = 29.74$ ,  $p < .001$ ,  $\eta^2 = 0.24$ . Additionally, there were significant main effects of movement,  $F(1,93) = 9.51$ ,  $p = .003$ ,  $\eta^2 = 0.09$ , and of body type,  $F(1,93) = 63.31$ ,  $p < .001$ ,  $\eta^2 = 0.41$ .

The movement  $\times$  body type interaction is illustrated in Fig. 1 and was clarified by conducting simple main effect analyses for each body type. These indicated an approach bias for thin bodies (i.e., faster approach responses relative to avoidance responses),  $t(93) = 6.59$ ,  $p < .001$ ,  $d = 0.64$ , 95% CI [78.44, 146.05], and an avoidance bias for non-thin bodies (i.e., faster avoidance responses relative to approach responses),  $t(93) = -3.22$ ,  $p = .002$ ,  $d = 0.29$ , 95% CI [-97.68, -23.09].

### Associations Between Approach-Avoidance Tendencies and Eating Disorder-Related Constructs

To examine the relationships between approach-avoidance tendencies (represented by the SRC difference scores) and eating disorder-related constructs (i.e., body dissatisfaction, thin-ideal internalization, and dietary restraint), simple and partial correlational analyses were performed. Specifically, partial correlations controlled for the effects of BMI, due to evidence indicating the influence of one's own body size on the perception of others' bodies (Gao et al. 2013; Roefs et al. 2008). BMI correlated with approach biases towards thin-ideal bodies ( $r = -.40$ ,  $p < .001$ ) but not with avoidance biases away from non-thin bodies ( $r = .14$ ,  $p = .17$ ).

Means, standard deviations, and correlational analyses can be seen in Table 1. The Bonferroni correction for multiple comparisons ( $n = 12$ ) was applied to the significance levels in order to reduce Type 1 errors. Results revealed that a greater approach bias towards thin-ideal bodies was associated with greater reports of thin-ideal internalization, dietary restraint, and body dissatisfaction, but only whilst controlling for BMI. On the other hand, there were no significant correlations between avoidance biases away from non-thin bodies and eating disorder-related constructs.

**Table 1** Descriptive statistics and simple and partial correlations between approach-avoidance tendencies and eating disorder-related constructs

	Thin-ideal internalization		Body dissatisfaction		Dietary restraint	
	Simple	Partial	Simple	Partial	Simple	Partial
SRC thin	0.27	0.30*	0.09	0.30*	0.15	0.30*
SRC non-thin	−0.11	−0.12	−0.04	−0.11	−0.02	−0.06
Mean (SD)	3.34 (0.84)		94.85 (40.98)		2.64 (0.83)	

Positive bias scores indicate stronger approach tendencies toward body images. Partial correlations controlled for the effects of BMI. Thin-ideal internalization, SATAQ-4; Body dissatisfaction, BSQ; Dietary restraint (DEBQ)

SRC stimulus response compatibility task, SD standard deviation

\* $p < .05$  (adjusted  $p$  values based on multiple comparisons corrections)

## Discussion

The current study sought to assess drive for thinness and fear of fat via approach and avoidance motivation towards thin-ideal and non-thin bodies, respectively, among women. As hypothesised, participants showed an approach bias towards thin-ideal bodies (akin to drive for thinness) and an avoidance bias regarding non-thin bodies (akin to fear of fat). Thus, it can be inferred that participants demonstrated both an implicit drive for thinness and fear of fat. The current findings are in line with motivational theories and research indicating approach movements are compatible with stimuli of a positive emotional valence (i.e., thin bodies) and avoidance movements are compatible with stimuli of a negative emotional valence (i.e., non-thin bodies) (Chen and Bargh 1999; Eder and Rothermund 2008; Krieglmeier et al. 2010). Importantly, the current findings demonstrate that when presented with ecologically valid images of non-thin bodies, participants demonstrate strong avoidance as opposed to the ambivalent responses reported in the study by Woud et al. (2011). Specifically, the current non-thin images reflected real female bodies estimated to be in the overweight/mildly obese weight range whereas those used by Woud et al. (2011) consisted of horizontally stretched versions of their thin-ideal female body images.

The primary aim of the current study was to examine the relationship between approach-avoidance tendencies and important eating disorder-related constructs. Contrary to expectations, it was approach bias towards thin-ideal bodies, and not avoidance bias away from non-thin bodies, that was associated with thin-ideal internalization, dietary restraint, and body dissatisfaction, whilst controlling for BMI. The strong relationship between approach biases and thin-ideal internalization is not surprising given that thin-ideal internalization could be conceptualised as an approach motivation. Crucially, the relationships with approach bias were all indicative of large effect sizes (Gignac and Szodorai 2016), and implicate drive for thinness as a potentially more important risk factor for eating disorder symptomatology, relative to fear of fat. This finding in turn potentially informs

interventions designed to promote healthy body image in women by suggesting a focus on drive for thinness. Specifically, if replicated, the current findings would support particular emphasis on targeting *approach* motivation, as opposed to avoidance motivation, in eating disorder prevention programs. To provide just one suggestion, motivational interviewing is designed to encourage individuals to explore their pursuit of potentially harmful behaviours (e.g., exploring the pros and cons of pursuing thinness) (Miller and Rollnick 2013).

The current findings are consistent with recent evidence which highlights the central role of drive for thinness in eating disorder symptomatology (Dondzilo et al. 2017; Rodgers et al. 2018). The findings by Dondzilo et al. (2017) offer a particularly direct comparison to the current study, given that both studies utilised an implicit measure, the same stimuli, and that participants were drawn from the same population (i.e., Australian female undergraduate students). Specifically, Dondzilo et al. (2017) showed that body dissatisfaction and dietary restraint were more strongly associated with attentional bias towards thin bodies relative to avoidance of non-thin bodies, based on the dot probe task. The distinction in attentional bias patterns to thin vs. non-thin bodies suggests different underlying motivations regarding specific body shapes. Attentional biases towards thin-ideal bodies may be conceptualised as representing an approach motivation, and thus a drive for thinness. This proposition is supported by evidence for a positive association between attentional and approach biases. That is, greater attentional biases for smoking-related images on the dot probe task were found to be associated with greater approach tendencies for smoking-related images on the SRC task, amongst smokers (Mogg et al. 2003). The interplay between attentional and motivational processes specific to body image is an intriguing line of research that deserves further investigation.

Nonetheless, the interpretation that drive for thinness is the more important motivational construct is at odds with the majority of previous research which implicates fear of fat as being more relevant (Cserjési et al. 2010; Dalley and Buunk 2009, 2011; Dalley et al. 2012; Spring and Bulik

2014; Woud et al. 2011). One potential explanation for these differing findings is methodological differences between studies. Specifically, some of these studies employed explicit measures of the motivational constructs (Dalley and Buunk 2009, 2011; Dalley et al. 2012) and the findings by Woud et al. (2011) should be interpreted with caution due to the fact that the non-thin stimuli lacked ecological validity. Furthermore, these differences could be because previous studies tended to focus on internal standards (e.g., favourability of a thin vs. overweight prototype) that energised behaviour whereas in the current study it was exposure to an external standard (i.e., emotionally valenced body images) that directed behaviour. In turn, this suggests that fear of fat may be an internalised motivation whereas drive for thinness might be triggered by external standards. Relatedly, it is also important to acknowledge the different domains in motivational orientation which operate in body image and eating disturbances. More specifically, the current study focused on body image as the central stimuli, whereas there is a substantial literature exploring the role of motivational orientation towards food cues. Studies in the food domain have found that individuals with problematic eating styles demonstrate a stronger approach bias to food cues, compared with healthy controls (Brignell et al. 2009; Kemps and Tiggemann 2015; Veenstra and de Jong 2010). It is uncertain, however, whether motivational orientation for food vs. body image is more relevant in eating disorder symptomatology. Thus, this highlights the need to consider the most influential standard (external vs. internal) and the central stimuli (body image vs. food), in addition to the predominant motivational orientation (approach vs. avoidance), as such considerations will have potential implications for therapeutic interventions targeting body image and eating disturbances.

A further consideration is that with increased severity and progression of eating disorder symptomatology, a shift might occur in the primary motivation from drive for thinness to fear of fat. In support of this notion, research suggests that fear of fat is the predominant motivation in AN. Namely, two studies have found that women with AN demonstrated greater implicit negative affect towards fatness, relative to controls, whereas there were no group differences regarding implicit positive affect towards thinness (Cserjési et al. 2010; Spring and Bulik 2014). In addition, a recent cross-sectional study of adults with bulimia nervosa (BN) identified fear of weight gain, relative to several other common BN symptoms including a desire to lose weight, as the central symptom in BN psychopathology (Levinson et al. 2017). It is possible that women are initially predominantly motivated by the desire to become thin but that after losing some weight and/or becoming more preoccupied with eating, shape, and weight, their predominant motivation evolves to a fear of (re) gaining weight. Thus, it may be postulated that the primary motivating factor in eating disorder symptomatology is a

drive for thinness for women in the community and a fear of fat for women with a clinically diagnosed eating disorder. This interpretation warrants further investigation in the form of research extending the SRC task to clinical samples. Also worthy of future research is evaluating whether approach-avoidance tendencies towards body shapes can be modified and whether this may in turn serve to promote positive body image.

There are several limitations of the present study that should be considered when interpreting the findings. One possible limitation is that participants may not have identified with the manikin, and therefore the SRC task did not fully capture their approach/avoidance behaviour. In order to improve the assessment of motivational orientation, in terms of reference to the self, it might be helpful to include the participant's name alongside the manikin figure. Additionally, the stimuli employed in the current study were not rated on perceptions of thinness and fatness. However, given the high overall accuracy on the SRC task (> 80%), we can be confident that participants found it relatively easy to identify whether the bodies were thin or non-thin. Further, although an implicit fear of fat was captured using the current stimuli, this motivational construct did not show an association with eating disorder-related constructs. This could be due to the fact that the implicit fear of fat was not substantial enough, especially given the images were representative of the overweight and mild obesity weight range. An additional consideration arises from the fact that non-body stimuli were not included. As such, it is possible that a greater approach bias for positively-valenced images in general (and not just for thin images) is associated with greater eating disorder pathology. This is consistent with the possibility that individuals with a predominant approach temperament are more sensitive to the rewards of thinness (Dalley 2016; Elliot and Thrash 2010). Future research would therefore benefit from the inclusion of non-body images that are positively and negatively valenced. Finally, the current study considered only two potential motivational factors and only for women. However, there is an increasing research focus on drive for muscularity as a risk factor for eating disorder symptomatology in both men and women (Lavender et al. 2017; Pritchard et al. 2011; Rodgers et al. 2012). Thus, future researchers are encouraged to explore the role of additional important motivational constructs, such as drive for muscularity, in both men and women.

## Conclusions

In conclusion, the current findings are novel in demonstrating an implicit drive for thinness and fear of fat, based on an approach bias towards thin-ideal bodies and an avoidance bias away from non-thin bodies, respectively, in female

undergraduates. Furthermore, the current study demonstrated that only approach biases towards thin-ideal bodies, but not avoidance biases away from non-thin bodies, were associated with eating disorder-related constructs. Thus, drive for thinness is implicated as a particularly important motivational construct and potential risk factor for eating disorder symptomatology in women.

## Compliance with Ethical Standards

**Conflict of Interest** Laura Dondzilo, Elizabeth Rieger, Nishani Jayawardena and Jason Bell declare that they have no conflict of interest.

**Ethical Approval** Ethics approval to conduct this study was provided by the University of Western Australia Human Research Ethics Committee. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

**Informed Consent** Informed consent was obtained from all individual participants included in the study.

**Animal Rights** This article does not contain any studies with animals performed by any of the authors.

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