

Internalization of the Ultra-Thin Ideal: Positive Implicit Associations with Underweight Fashion Models are Associated with Drive for Thinness in Young Women

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This study examined whether young women who make implicit associations between underweight models and positive attributes report elevated eating disorder symptoms. Ninety nine female undergraduates completed a weight based implicit association test (IAT) and self report measures of body dissatisfaction, thin-ideal internalization and eating disorder symptoms. IAT scores were associated with drive for thinness ($r = -0.26$, $p < 0.05$). This relationship was moderated by attitude importance. The relationship between drive for thinness and IAT scores was stronger ($r = 0.34$; $p < 0.02$) in participants who report that the media is an important source of information about fashion and being attractive. The IAT used in the current study is sensitive enough to discriminate between participants on drive for thinness. Women who have developed cognitive schemas that associate being underweight with positive attributes report higher eating disorder symptoms. Attitude importance is highlighted as a key construct in thin ideal internalization.

Societal pressure to be thin is thought to be a major contributor to the high levels of body dissatisfaction and eating disturbance in young women

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(Striegel-Moore, McAvay, & Rodin, 1986; Stice, 2002). This relationship is mediated by internalization of the thin ideal (Stice, Schupak-Neuberg, Shaw, & Stein, 1994). Thin-ideal internalization is the extent to which an individual “buys into” socially defined ideals of attractiveness and engages in behaviors designed to approximate these ideals (Thompson & Stice, 2001). Those who have internalised the thin ideal have developed a cognitive schema that associates thinness with positive attributes such as happiness, desirability and status (Tiggemann, 2002).

Weight and appearance schemas are cognitive structures that code information about the meaning of being fat and thin (Vitousek & Hollon, 1990). Research into appearance schemas has relied largely on self-report data to measure explicit attitudes to weight and shape. This overlooks the automatic nature of schema activation (Tiggemann, Hargreaves, Polivy, & McFarlane, 2004) and recent evidence that self report measures are not always an accurate reflection of attitudes and behavior (Stice, Fisher, & Lowe, 2004). It is, therefore, also important to assess attitudes over which participants cannot easily exert cognitive control. Implicit attitude measures such as the Implicit Association Test (IAT), (Greenwald, McGhee, & Schwartz, 1998) and the Extrinsic Affective Simon Task (De Houwer, 2003) are used to access attitudes and knowledge structures outside of conscious awareness and supplement our knowledge of explicit attitudes. An individual can hold differing implicit and explicit attitudes (Wilson, Lindsey, & Schooler, 2000) and it has been demonstrated that implicit attitudes can predict behavior both independently of, and synergistically with, explicit attitudes (Perugini, 2005). To fully understand thin-ideal internalization, associated cognitive structures, and its impact on body image and eating disturbance it is necessary to examine both implicit and explicit components.

Studies using the Implicit Association Test (Greenwald et al., 1998) have revealed a strong cognitive bias towards positive associations with thinness, but have shown that this test cannot differentiate between participants in terms of actual body mass index (Wang, Brownell, & Wadden, 2004) or on measures of restraint, body dissatisfaction and drive for thinness (Ahern & Hetherington, 2006; Vartanian, Herman, & Polivy, 2005). However, all these studies have measured attitudes towards thinness relative to overweight using terminology which can be considered pejorative (Vartanian et al., 2005; Wang et al., 2004) or images of very overweight women (Ahern & Hetherington, 2006). It is possible that these tests tap into a negative stereotype of overweight rather than an idealization of thinness. It is likely that this stereotype is so widely held that these tests are not sensitive enough to discriminate between participants.

The thin-ideal promoted by the media is often an unhealthy level of thinness, with images of women who are not just slim but visibly underweight. Spitzer et al. (Spitzer, Henderson, & Zivian, 1999) found that 99% of Playboy centerfolds (1980–1996) and 100% of Miss America pageant winners (1953–1985) were underweight according to Canadian Weight guidelines,

with 29% of centerfolds and 17% of pageant winners having a body mass index (BMI) of less than 17.5 (a criterion for anorexia nervosa (Hebebrand, Himmelmann, Hesecker, Schafer, & Remschmidt, 1996)). However, *Playboy* is a magazine aimed at men, whereas women get much of their information about appearance standards from fashion magazines. Sypeck, Gray and Ahrens (2004) examined the covers of four popular fashion magazines from 1959 to 1999 and found that there was a significant decrease in the body size of models during the 1980s and 1990s, and that this was coupled with an increasing focus on the body rather than the face. Preference for ultra thinness is characteristic of eating disorders, particularly anorexia nervosa (Vitousek & Hollon, 1990). However, research has revealed individual differences in concepts of the thin ideal in non-clinical populations. For example, in one qualitative study, while the majority of participants stated a preference for curvaceous images and made negative comments about the ultra-thin models and celebrities, others admired images that were visibly underweight (Ahern, Kelly & Hetherington, 2004).

The current trend for “size zero” and the rising profile and popularity of visibly underweight models and celebrities suggests that there may be individual differences in the level of thinness idealized in non-clinical populations. Recent debate over calls to ban underweight models from the catwalk raises the question of whether underweight models are extreme expressions of the thin ideal both in terms of the health risks for the models and the example they set to young women. The purpose of this study was to examine attitudes to this ultra-thin ideal in a non-clinical population. Specifically it investigated whether implicit associations between positive attributes and very underweight models (relative to normal weight models) were related to eating disorder symptoms in young women. An IAT was developed to examine implicit associations between positive and negative attributes with underweight and normal weight fashion models. It was predicted that this measure would demonstrate greater discriminative power and that positive implicit associations with underweight models would be associated with elevated scores on self report measures of idealization of thinness and body image investment.

Research has identified a number of moderators of the relationship between implicit and explicit attitudes. Karpinski, Steinman and Hilton (2005) focussed on attitude importance, defined as the extent to which a person is concerned about, and attaches significance to, an attitude. When a person attaches importance to an attitude, it biases the frequency and intensity with which they process related information, such that these attitudes become more stable and easily accessible. This makes important attitudes more likely to be activated under conditions that allow limited deliberation, such as the IAT. Karpinski et al. (2005) found that attitude importance moderates the relationship between implicit and explicit attitude measures, with stronger correlations for participants for whom the attitude is important. This study tested this hypothesis by examining the role of attitude importance in

moderating the relationship between IAT performance and self reported thin ideal internalization and eating disorder symptoms. It was predicted that IAT scores would be more closely related to explicit attitude measures in participants who consider the media to be an important source of information about appearance standards.

The implicit association test was used to examine attitudes to underweight models, relative to normal weight models, and examined the relationship between these implicit attitudes, an explicit measure of thin-ideal internalization, and self reported body dissatisfaction, drive for thinness and restraint. The hypotheses of this study were: a) that participants would demonstrate a negative implicit attitude towards underweight models; b) that those who indicated a preference for ultra thinness would demonstrate higher levels of thin-ideal internalization, body dissatisfaction, drive for thinness and restraint; and c) that this relationship would be moderated by attitude importance.

METHOD

Participants

One hundred and five females aged 16–24 (mean = 18.01 ± .15 yr) participated in the study. Participants were either students from the University of Liverpool or sixth form students from a school in the north of England, who responded to recruitment posters placed around the school and university campus. One participant's results were deleted because of incomplete data and a further five participants were deleted for error rates on critical trials in excess of 20%. The reported analyses were conducted on the remaining sample of 99 participants. Participant demographics are reported in Table 1.

Measures

THE IMPLICIT ASSOCIATION TEST

Piloting of Stimuli. An initial pool of 22 images [11 underweight (BMI < 18.5) and 11 normal weight (18.5–25)] were selected from a modelling

TABLE 1 Range and Mean (±SEM) for Age and Body Mass Index for Each Weight Category (WHO, 2002)

		Underweight	Normal weight	Overweight	Total
N		8	68	13	99
Age	Range	16.15–19.30	16.04–23.68	16.46–19.73	16.04–25.00
	Mean (± SEM)	17.67 (0.28)	18.07 (0.17)	18.20 (0.35)	18.01 (0.15)
BMI	Range	15.90–18.49	18.61–24.89	25.11–29.85	15.90–29.85
	Mean (± SEM)	17.15 (0.34)	21.60 (0.20)	26.89 (0.42)	22.02 (0.30)

website, which gives height and weight measurements for all models (<http://www.musecube.com/search/model.htm>). In a preliminary study, a sample of 20 young women from the same population as those involved in the study were asked to label the images as underweight, normal weight, overweight or ambiguous. They were then asked to group together the underweight images and the normal weight images and write down three words that described these two groups.

Participants labelled many of the underweight images as “normal weight”. This supports the idea that women’s concept of normal weight has shifted so that they accept increasingly thin ideals as representing the norm. This is further confirmed by the observation that two of the images of normal weight women were consistently labelled as “overweight.” However, there was consensus (over 85%) on 5 of the underweight women. These were chosen as stimuli for the IAT. These women all had a body mass index less than 17.5, representing a level of thinness bordering on anorexic (Hebebrand et al., 1996). Five images were chosen from those correctly identified (by all women) as normal weight, which matched the underweight images closely on age, pose, clothing, lighting and facial expression. To ensure that participants could distinguish between the two groups on the basis of clear differences in BMI, the models selected for normal weight images had a body mass index between 20 and 23.

The descriptions of the two groups revealed a consistent negative attitude towards the underweight women. They were described as “gaunt” and “skeletal.” In contrast, the normal weight women were described as “healthy,” “curvy” and “womanly.” This strengthened the hypothesis that participants would show a negative implicit attitude to underweight images.

Test Development. An Implicit Association Test was developed using Q-Builder questionnaire design software V1.0 (Fehily & Johns, 2002) and run on a Toshiba Tecra A2 Laptop (Intel Pentium M 725 1.6 GHz, 256MB, 40 GB) with a 15" XGA TFT screen (Resolution 1024 × 768; 16.7 million colors internal support). The IAT asks participants to categorize items as they appear on the computer screen. The target categories underweight and normal weight included images of models of known body mass index. The attribute categories “positive” and “negative” included words as stimuli. In critical trials two categories are paired to the same response key. The more closely associated the two categories are, the easier it is to respond to them as a single unit. So if women make positive associations with being underweight, responses should be faster when these categories share a response key. The structure of IAT trials is shown in Table 2. The order of underweight-positive (UWTPOS) and normal-weight-positive (NWTPOS) trials was counter balanced. The number of image only categorization trials after the task switch was increased from 20 to 40 to minimize any order effects (Nosek, Greenwald, & Banaji, 2005).

TABLE 2 Underweight / Normal weight IAT

Block	No. of trials	Items assigned to left key	Items assigned to right key
Version 1			
1	20	Underweight images	Normal weight images
2	20	Positive attributes	Negative attributes
3	20	Underweight images+Positive attributes	Normal weight images+Negative attributes
4	40	Underweight images+Positive attributes	Normal weight images+Negative attributes
5	40	Normal weight images	Underweight images
6	20	Normal weight images+Positive attributes	Underweight images+Negative attributes
7	40	Normal weight images+Positive attributes	Underweight images+Negative attributes
Version 2			
1	20	Normal weight images	Underweight images
2	20	Positive attributes	Negative attributes
3	20	Normal weight images+Positive attributes	Underweight images+Negative attributes
4	40	Normal weight images+Positive attributes	Underweight images+Negative attributes
5	40	Underweight images	Normal weight images
6	20	Underweight images+Positive attributes	Normal weight images+Negative attributes
7	40	Underweight images+Positive attributes	Normal weight images+Negative attributes

Note: The IAT version which was used was counterbalanced across participants. Additionally on half the tests for each version underweight images belonged to category A and normal weight images belonged to category B. Category membership was reversed for the other half on the tests.

Critics of the IAT have suggested that categorization is biased by category labels. In the present study category labels were replaced with the letters A and B. Replacing category labels with letters and symbols still elicits an IAT effect as long as they are made meaningful (Nosek, Greenwald, & Banaji, 2007). Participants in this study were shown which pictures belonged to which category, and told that they were divided according to weight status. This also helped overcome the problem of participants correctly categorizing the underweight images. The category labels (A and B) were reversed for half the participants, to ensure that they did not influence categorization.

Response latencies (in milliseconds) and errors were recorded. The thin-ideal IAT was scored according to the improved scoring algorithm for the Implicit Association Test (Greenwald, Nosek, & Banaji, 2003). This algorithm uses all trials on which categories were paired, but trials with latencies less than 300 ms or over 10000 ms were discarded. Errors were

penalized and recoded as the mean of correct latencies+2SD (for that individual in that block). The IAT score was calculated as the mean of the difference between UWTPOS and NWTPOS practice trials divided by the pooled SD, and the difference between UWTPOS and NWTPOS test trials divided by the pooled SD.

THE SOCIOCULTURAL ATTITUDES TOWARDS APPEARANCE QUESTIONNAIRE (SATAQ-3)

The SATAQ-3 (Thompson, van den Berg, Roehrig, Guarda, & Heinberg, 2004) is a 30 item questionnaire that assesses attitudes towards societal ideals. Cronbach's alpha was 0.93 for the total score and above 0.76 for all subscales.

THE EATING DISORDERS INVENTORY-2

All EDI subscales correlate significantly with physician's ratings of eating disorder symptoms and can discriminate between eating disordered and non-patient samples (Garner, Olmstead, & Polivy, 1983). The Body Dissatisfaction subscale of the EDI-2 (Garner, 1991) measures satisfaction with various weight-related parts of the body. In this sample Cronbach's alpha was 0.87. The Drive for Thinness subscale examines investment in thinness and excessive concern with dieting. Internal reliability was 0.91 for this sample.

THE DUTCH EATING BEHAVIOR QUESTIONNAIRE RESTRAINT SCALE

The Restraint Scale of the Dutch Eating Behavior Questionnaire (DEBQ-R) (Van Strien, Frijters, Bergers, & Defares, 1986) consists of 10 items specifically relating to deliberate, planned weight control, and is answered on a five point scale. Internal consistency in this sample was 0.92. The DEBQ-R is considered the purest measure of restrained eating (Gorman & Allison, 1995).

THE CONTOUR DRAWING RATING SCALE

The Contour Drawing Rating Scale (CDRS; Thompson & Gray, 1995) is a series of 9 male and 9 female schematic figures of varying sizes from underweight to overweight. It was designed so that adjacent figures had similar differences in actual size. Only the female scale was used in this study. Participants were asked to choose figures to represent the following categories: what they thought they looked like; how they felt; their ideal figure; other women's ideal; what men would consider the ideal. Test retest reliability in the original sample of male and female undergraduates was 0.79 after one week.

Procedure

The study was conducted in a quiet, private room in either the university or the school. Participants read written instructions, which were reiterated verbally, before giving signed consent. Each participant completed all the measures and the order of test completion was counterbalanced. At the end of the test the researcher measured the height and weight of each participant and debriefed them.

Data Analysis

To examine whether this sample had a more positive attitude towards underweight or normal weight images, paired samples *t* tests were conducted on response latencies and error rates for the two categorization tasks. Pearson's correlation was used to examine the relationships between IAT scores and explicit measures of body image investment. In addition, IAT scores were divided into tertiles, and the participants with the highest and lowest scores were compared on these same measures.

Any moderating effect of attitude importance was investigated using a series of stepwise regressions (for details see Baron & Kenny, 1986). Participants were then divided into high and low attitude importance using a median split, and the correlation between IAT score and the body image investment measures was calculated separately for each group. All data are presented as mean \pm SEM unless otherwise stated.

RESULTS

The mean response latency was significantly longer when underweight images and positive attributes shared a response key (UWTPOS) than when normal weight images and positive attributes were paired (NWTPOS) (Figure 1). Participants found it easier to make implicit associations between normal weight and positive attributes, and underweight models and negative attributes.

There was a significant correlation between IAT scores and drive for thinness ($r = -0.26$; $p < 0.05$). Participants who made relatively more positive associations with underweight models had higher drive for thinness scores. IAT scores were not related to body dissatisfaction or thin-ideal internalization. SATAQ-3 scores (the explicit attitude measure) were correlated with drive for thinness ($r = 0.54$; $p < 0.001$), body dissatisfaction ($r = 0.45$; $p < 0.01$) and dietary restraint ($r = 0.57$; $p < 0.001$), as were scores on all SATAQ subscales.

When IAT scores were compared in tertiles, the only significant difference between participants who had the lowest IAT scores (therefore,

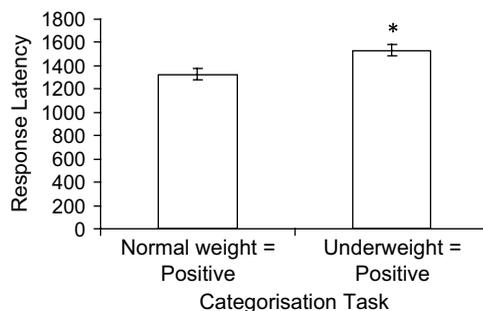


FIGURE 1 Mean (\pm SEM) latencies (in milliseconds) for each categorisation task.

* $p < 0.001$ indicates a significantly longer mean latency when *underweight* was paired with *positive* than when *normal weight* images was paired with *positive*

endorsing underweight as positive) compared to those with the highest IAT scores, was on the ideal body size on the CDRS [$F(1,61) = 4.323$; $p = 0.04$]. Thus those who endorsed underweight as positive had a significantly lower ideal body size (3.8 ± 0.18) than those who did not (4.4 ± 0.18), but they did not differ in actual BMI. Thus this implicit measure corresponded to an explicit desire for a thinner body size.

Using attitude importance as a moderating variable between IAT scores and drive for thinness, the regression model revealed a significant effect of this variable. Attitude importance moderated the relationship between drive for thinness and implicit attitudes as measured by the IAT score. A stepwise regression revealed that the IAT score \times attitude importance interaction was a significant predictor of drive for thinness when controlling for IAT score and attitude importance ($p < 0.02$). When participants were divided, using a median split, the high attitude importance group had a significant correlation between IAT score and drive for thinness ($r = 0.34$; $p < 0.02$; $N = 49$) but the low attitude importance group did not (Figure 2). Therefore, amongst participants who consider media images (such as those used in this experiment) an important source of appearance standards, greater endorsement of underweight as positive corresponded with higher drive for thinness.

DISCUSSION

The hypothesis that participants would make negative implicit associations with underweight models was supported by the finding that corrected response latencies were longer for pairing underweight images with positive attributes, relative to latencies for pairing normal weight images with positive attributes. The hypothesis that participants who made positive implicit associations with underweight fashion models would report higher levels of eating disorder symptoms was partially supported. IAT scores were

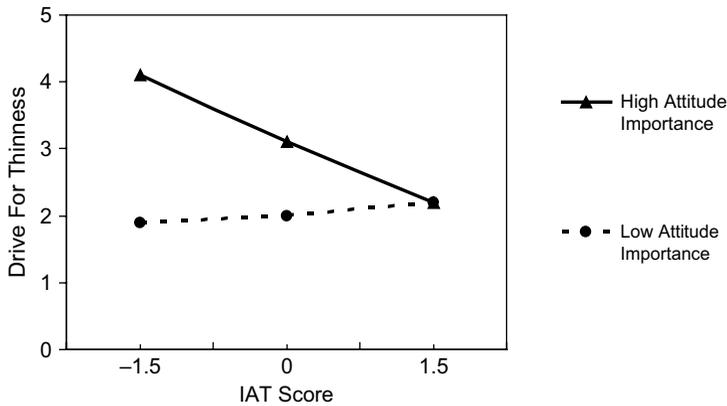


FIGURE 2 The relationship between Implicit Association Test scores and self-reported drive for thinness, for participants reporting high and low attitude importance.

related to drive for thinness, with lower IAT scores (reflecting relatively positive implicit associations with underweight images) associated with elevated drive for thinness. Drive for thinness is a core construct in eating disorders, and these findings suggest an association between endorsement of the ultra-thin ideal and eating disorder symptoms. However, lack of association between IAT scores and body dissatisfaction, another core symptom, suggests that a positive implicit attitude toward underweight models is neither necessary nor sufficient to predict eating disorder risk.

Those who made positive associations with ultra thinness also selected a lower ideal body size on the explicit measure (CDRS; Thompson & Gray, 1995) than those who made more positive associations with normal weight models, demonstrating some agreement between implicit and explicit preference for low body weight. This study demonstrates that implicit attitude measures can discriminate between participants on attitudes to weight and shape if they are sensitive enough, and can predict weight investment in young women. Importantly, IAT scores correlated most strongly with personal ideals, rather than those participants thought others would admire. This suggests that IAT scores reflect a personal endorsement, rather than an awareness of cultural values.

Consistent with previous research, (Ahern & Hetherington, 2006; Thompson et al., 2004; Vartanian, et al., 2005) the explicit measures of thin-ideal internalization (the SATAQ; Thompson et al., 2004) significantly correlated with body dissatisfaction, drive for thinness and restrained eating. IAT scores were not associated with thin ideal internalization, body dissatisfaction and restraint, suggesting that the SATAQ is better than the IAT at predicting self reported body image investment and dietary restraint. Explicit attitude measures are generally more closely related to each other than implicit/explicit attitude associations. This is particularly likely with measures such

as those used in the current study, where items in the scales being compared appear to assess similar constructs. The SATAQ-3 does not just measure preference for low body size, but also the desire to emulate this ideal. Implicit attitude measures are sometimes better predictors of spontaneous behavior or other unobtrusive measures (Perugini, 2005). Performance on the IAT might be more closely related to behavior rather than self report, and examining this hypothesis using other unobtrusive measures is a potentially interesting area for future research.

Consistent with evidence that implicit/explicit attitude relationships are stronger for those for whom the attitude is important (Karpinski et al., 2005), the current study found that attitude importance moderated the relationship between IAT scores and drive for thinness. IAT scores correlated significantly with drive for thinness in participants who considered the media to be an important source of information about appearance standards, as measured by the information subscale of the SATAQ-3 (Thompson et al., 2004). These findings further support the role of attitude importance as a key factor in thin-ideal internalization and suggest that future research should consider the role of attitude importance both as a moderating variable and further examine its role in the structure of appearance schemas. In terms of appearance schemas “attitude importance” must be considered a multifaceted factor. The information subscale of the SATAQ-3 measures the importance of the media to personal attitudes. This construct is distinct from other constructs such as the importance of the appearance to the self, which plays a key role in appearance schemas. The findings of this study suggest that the credence given to media sources may be a significant aspect of attitude importance and central to studies of media influence on body dissatisfaction and disordered eating. Studies in this field would also benefit from including other measures of attitude importance, such as the importance of appearance to the self concept, as moderators of the relationship between implicit and explicit attitudes. It will be necessary to consider which other variables moderate the relationship between implicit associations with weight and shape and explicit measures of body image investment. This will elucidate the structure of weight and appearance schemas and how these cognitive processes work.

Limitations of the Study

This study was limited by a small number of participants and relatively homogenous sample. For example, although body mass index did not moderate the relationship between implicit and explicit attitude measures in this study, the current sample was biased toward normal weight. Results may have been different if the sample had included more underweight and overweight participants. This study also adopted a correlational design, which precludes inferring causality. Study of implicit attitudes is still in its relative infancy. As such current research is generally concerned with developing

implicit measures as valid research tools. As these measures are refined more ambitious research projects can be undertaken, for example, examining the temporal development of associations.

Future research might also consider using alternative implicit measures. While the IAT is the most popular and thoroughly tested implicit attitude measure, many others have been developed in the past decade. A number of these have some advantages over the IAT. For example, the IAT relies on categorization judgements. There is potential for categorization to bias items toward positive or negative associations. Although we attempted to overcome this by using letters to represent the different categories, it was still necessary to tell participants what these labels represented to enable them to complete the task. This also raises another problem, namely that the IAT depends on the ability of the participant to categorize stimuli accurately. Pilot data for this study suggests that women find it difficult to distinguish between underweight and normal weight women, which limited the stimuli that could be used in this study. Other implicit measures, such as the Extrinsic Affective Simon Task (De Houwer, 2003) do not require participants to categorize target stimuli according to the target variable. For example, in the EAST target variables are given blue or green filters and participants are asked to respond to these stimuli according to their colour.

Conclusions and Implications for Future Research

The current study developed an underweight/normal weight IAT with the potential to discriminate between participants on implicit associations with weight and shape. The results of this study demonstrate that making positive associations with underweight models is associated with elevated drive for thinness, a cardinal symptom in eating disorders. This highlights the potential dangers associated with the current trend for ultra-thinness. This study further confirms the key role of attitude importance within idealization of thinness and suggests ways in which attitude importance should be re-examined in terms of its multifaceted structure. Specifically it is argued that the influence of the media on the individual's attitudes is distinct from the importance of appearance to the individual and as such these two constructs may be differentially related to idealization of thinness and body image investment.

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