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The Effect of Mindset on
Assimilative and Contrastive Social Comparison Outcomes and Body Image

A dissertation submitted in partial satisfaction of the requirements for the degree Doctor of Philosophy

in

Psychology

by

Rebekah Amelie Wanic

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2011
The Dissertation of Rebekah Amelie Wanic is approved, and it is acceptable in quality and form for publication on microfilm and electronically.

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Chair

University of California, San Diego

2011
DEDICATION

In recognition of the unending support and guidance he has given me throughout my graduate education at UCSD, this manuscript is dedicated to Jim.

I would also like to acknowledge the support I have received in my life and work from Dr. Laura Mickes, Liz Wanic and Justin Gruber.
EPIGRAPH

Sometimes our light goes out but is blown into flame by another human being.
Each of us owes our deepest thanks to those who have rekindled this light.
- Albert Schweitzer
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ABSTRACT OF THE DISSERTATION

The Effect of Mindset on
Assimilative and Contrastive Social Comparison Outcomes and Body Image

by

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Doctor of Philosophy in Psychology

University of California, San Diego, 2011

Professor James A. Kulik, Chair

Social comparisons can alter self-evaluations in multiple ways. Recent research highlights the role of an individual’s mindset in moderating these comparison outcomes. Mussweiler’s (2003) selective accessibility model (SAM) predicts that initial perceptions of either similarity or dissimilarity with the comparison target will lead to differential outcomes. A similarity mindset is predicted to move self-evaluations in the direction of the comparison target and promote assimilation whereas a dissimilarity mindset is predicted to move self-evaluations away from the comparison target and promote contrast. Additionally, Blanton’s (2001) three-selves model predicts that the activation of a particular self-representation will moderate comparison outcomes. Activation of a
possible-self by focusing one of who they can become is predicted to foster movement
toward the target and promote assimilation, whereas activation of a personal-self mindset,
 focusing on who one is at present, is predicted to foster movement away from the target
and promote contrast. The current research extends these social comparison models to
the domain of body image, where ample research suggests that exposure to idealized
media target produce decrements in body and self-satisfaction for women. Thus, most
women demonstrate contrast in their self-evaluations following comparisons with media
targets. Both SAM and the three-selves model predict that women adopting certain
mindsets, specifically either a similarity or possible-self mindset, should report
assimilation, increased self-ratings, instead. Results of 5 studies demonstrate that
perceptions of similarity and activation of a particular self-representation moderate social
comparison outcomes in the predicted manner. Furthermore, the final study explores the
effect of multiple mindsets on comparison outcomes by combining both a self-activation
and similarity mindset, with unexpected results. The implications of these findings for
social comparison theory and body-image research are discussed.
Introduction

Evaluating where we stand on any given dimension can be accomplished via many different methods. For example, if someone wanted to know whether he or she was a fast runner, they could measure the amount of time it takes to run a specific distance. But how do they really know if this time is fast or slow? To make that distinction requires information regarding others' performances on this same task. Did it take more or less time to cover the same distance? Determining whether you are fast or slow is heavily dependent on comparing your speed with other people. Many of our evaluations depend on such comparisons.

Social Comparison Theory. According to Festinger’s (1954) social comparison theory, it is adaptive to know one’s capabilities and whether one’s attitudes are “good.” Individuals therefore are driven to evaluate their own abilities and attitudes, and in the event that objective information on which to base this evaluation is not available, they will look to self-evaluate by comparing with other people. Subsequent research has shown these social comparisons with others will be sought even in the presence of objective standards (Klein, 1997; Wood 1989). This suggests, and research has demonstrated (Wilson & Ross, 2000), that our comparisons with others are considered to be a useful source of information with which to evaluate our opinions and abilities.

As a result of this tendency, where we fall on a given dimension (e.g. intelligence, athleticism, friendliness) is often defined relative to the position of those with whom we compare. Depending on the available comparison target(s), we may find ourselves to be better off, similar to, or worse off on any given dimension relative to this target. In cases
where there is a disparity between self and other, an upward comparison is said to occur when the target is better off on the comparison dimension than oneself, and a downward comparison occurs when the target is worse off on the comparison dimension than oneself.

According to Blanton’s (2001) analysis of the social comparison literature, Festinger’s initial hypothesis actually incorporates two related theories, one describing the factors that influence what type of comparison information people seek, and the other describing the effects on self-judgments of a comparison, whether sought or incidental. Researchers have identified numerous variables that influence with whom one compares. For example, studies demonstrate that the more similar one is to a potential comparison target, the more likely a comparison is to occur and alter self-evaluations (Festinger, 1954; Mussweiler, 2003). Additional variables such as psychological closeness to the target (Tesser, 1988), extremity of the target (Mussweiler, Ruter, & Epstude, 2004; Stapel & Blanton, 2004), and attainability of the target’s attributes (Lockwood & Kunda, 1997) have also been shown to influence the occurrence and effects of a social comparison.

The general influence of social comparisons on self-evaluations has more recently been characterized as representing either assimilation or contrast (e.g., Mussweiler & Strack, 2000). Assimilation refers to the process whereby an individual’s self-evaluation is displaced in the direction of the comparison target – more favorable self-evaluations following an upward comparison and less favorable self-ratings following a downward comparison. Contrast on the other hand is said to occur when an individual’s self-evaluation is displaced away from the comparison target, leading to less positive ratings.
following an upward comparison and more positive ratings following a downward comparison.

Blanton (2001) asserts that much of the social comparison literature to date has found evidence for a contrast effect following the comparison process. That is, being confronted with someone who is better off on the comparison dimension than oneself (i.e., an upward comparison) tends to lead to decrements in self-evaluation (Gilbert, Kiesler, & Morris, 1995; Lockwood & Kunda, 1997; Morse & Gergen, 1970), whereas engaging in a downward social comparison with someone who is worse off on the comparison dimension than oneself tends to highlight one’s assets and foster positive feelings about the self.

**Selective Accessibility Model.** Although there is ample evidence for contrastive outcomes following social comparisons (see Blanton, 2001 for a review), research has also demonstrated that aspects of the situation in which the comparison occurs, as well as perceiver and target characteristics, can sometimes lead to assimilation effects (cf., Stapel and Koomen, 2000). Thus, there are times when an upward comparison may serve to bolster self-evaluations rather than reduce them. For example, according to Mussweiler’s (2003) selective accessibility model (SAM), the perception of similarity between observer and target moderates the effects of comparisons. This model predicts that individuals who perceive themselves to be similar to a comparison target are likely to show a pattern of assimilation in their subsequent self-evaluations, whereas individuals who perceive themselves to be dissimilar to a comparison target are likely to show a pattern of contrast. Based on this model, upward social comparisons therefore should result in *increased* self-evaluations and downward social comparisons in *decreased* self-
evaluations under conditions of perceived similarity and the opposite pattern of effects when comparing to dissimilar targets.

SAM proposes that such comparison effects arise due to the differential accessibility of information relating the observer to the target (Mussweiler, 2003). Perceived similarity between an observer and comparison target theoretically fosters a similarity focus, increasing cognitive access to target-consistent information. That is, individuals exposed to someone they believe to be fairly similar to themselves should selectively access information that demonstrates their similarity with the target, leading to assimilation in subsequent self-evaluations. Conversely, perceived dissimilarity between an individual and a comparison target theoretically activates a dissimilarity focus, selectively increasing cognitive access to target-inconsistent information, leading to contrast in subsequent self-evaluations. SAM thus predicts that one’s initial assessment of similarity or dissimilarity with the comparison target determines the nature of one’s selective activation and, ultimately, the social comparison outcome.

Previous research has shown that aspects of the comparison target can alter perceptions of similarity. For example, the more extreme the position of the target on the comparison dimension, the less similar they are generally perceived to be and the more likely it is that self-evaluations will result in contrast. In testing this hypothesis, Mussweiler, Ruter and Epstude (2004) found that comparisons with a moderately athletic target (a race-car driver) or moderately unathletic target (former President Clinton) resulted in assimilation with the target on self-rated athletic ability – lower ratings of athleticism with an unathletic target and higher ratings of athleticism with an athletic target. However, when comparisons were made with an extremely athletic target
(Michael Jordan) or extremely unathletic target (Pope John Paul), observers' self-rated athletic ability contrasted with the status of the target, such that they reported higher athletic ability when comparing with the extremely unathletic target and lower athletic ability when comparing with the extremely athletic target.

A sense of similarity with the self can also be manipulated by altering a perceiver’s informational focus at the time of the comparison. For example, research shows that inducing a general similarity or dissimilarity focus prior to a comparison task via priming procedures results in assimilation or contrast in self-evaluations, respectively. Mussweiler (2001), for example, induced a general similarity or dissimilarity focus by instructing participants to view two images and to list (depending on condition) as many similarities or dissimilarities between the two as they could find. Participants primed with the similarity-focus exhibited assimilation to a comparison other in their subsequent self-ratings, whereas those primed with the dissimilarity-focus exhibited contrast. This suggests that the current mindset of the individual engaging in a social comparison also can influence comparison outcomes.

One might also predict that directly manipulating perceptions of similarity or dissimilarity to the target should lead to differential comparison outcomes, even as the comparison target is held constant. Thus, assimilation should occur under conditions that foster a sense of subjective similarity to the target, and contrast should occur under conditions that foster subjective dissimilarity. As a direct test of this hypothesis, Brown and colleagues (1992) manipulated perceived similarity by leading participants to believe either that a comparison target did or did not share their attitudes and preferences. Participants who were led to believe that they were similar to the target showed a pattern
of assimilation, whereas contrast was found when participants believed themselves to be different from the target. Other researchers have noted that additional characteristics, like sharing a birthday or an academic major, can foster perceptions of similarity and result in assimilative social comparison outcomes as well (Brown et al., 1992; Lockwood & Kunda, 1997). Thus, there appears to be substantial support for Mussweiler’s SAM and its predictions regarding when a social comparison will result in either assimilation or contrast.

**Three Selves Model.** In addition to Mussweiler’s (2003) emphasis on similarity or dissimilarity with the comparison target, Blanton's (2001) ‘three-selves’ model proposes additional aspects of a perceiver’s mindset that may alter comparison outcomes. Blanton’s three-selves model proposes that individuals at various times are in a personal-self, possible-self, or collective-self mindset, and that these mindsets lead to differential impacts of a given social comparison. Blanton describes the personal-self mindset as an individual’s representation of her current traits and attributes, an assessment of who she is at the present point in time. In contrast, one’s possible-self mindset encompasses who an individual might become at some point in the future, and the collective-self mindset derives from attributes associated with various group memberships. For example, an undergraduate’s personal-self representation may be a hard-working student, her possible-self a successful businesswoman someday, and her collective-self an African American woman and a feminist.

These different mindsets are hypothesized to influence the extent to which one defines the self as static or mutable and, consequently, whether there is room in one’s self-concept to incorporate comparison information. For example, the personal-self
described by Blanton (2001) is a static representation of the self, a depiction of who one is presently, with clearly defined attributes and boundaries. As such, social comparison information that is received when this self-concept is activated theoretically should function as an external standard against which the (static) individual compares and result in contrastive comparison outcomes. On the other hand, since the possible-self mindset by definition is a representation of whom one might eventually become, and is therefore mutable, there is room theoretically for attributes of others to be included in representations of the self. As a result, when the possible-self mindset is activated, such inclusions theoretically should lead to assimilative comparison outcomes (Blanton & Stapel, 2008).

In support of these claims, research has shown that directly manipulating the activation of a particular self-representation mindset, either explicitly or implicitly via priming procedures, prior to engaging in a social comparison results in the predicted outcomes. For example, Blanton and Stapel (2008) found that activation of a personal-self mindset, induced by having participants write a short essay describing their current traits and attributes, led to less positive self-ratings after exposure to an intelligent target (contrast) and increased positive self-ratings after exposure to an unintelligent target (contrast). Furthermore, activating a possible-self mindset via an essay task in which participants described the traits and attributes they might have in the future resulted in assimilation, as indicated by more positive self-ratings after exposure to an intelligent target and less positive self-ratings after exposure to an unintelligent target. In addition, these researchers have demonstrated that individual differences in beliefs about the stability of traits across time, as assessed by categorization of participants as either
"entity" or "incremental" theorists, influenced comparison outcomes as well. Individuals who believed that intelligence is fixed (entity theorists) showed a general pattern of contrast, whereas those who believed that intelligence is malleable (incremental theorists) showed a general pattern of assimilation when comparing themselves to either an intelligent or unintelligent target (Blanton and Stapel, 2008).

In summary, there is growing evidence that one’s mindset prior to and during a comparison task can alter the effects of social comparisons on self-evaluations. Two important factors that moderate comparison outcomes are suggested by Mussweiler’s SAM, which highlights the importance of the accessibility of similarity or dissimilarity information about the comparison other, and by Blanton’s three-selves model, which identifies the influence of activation of particular self-representations (see Gibbons & Buunk, 1999, for a review of additional factors that can influence acute mindset and social comparison effects).

Social Comparison Effects on Body Image

The studies reviewed above have looked at a variety of self-evaluative dimensions, such as intelligence, athleticism, and attractiveness. Of interest for the present research is how such findings can be integrated with the large body of research assessing social comparison effects on body image. Much of the work in this area has focused on comparisons made with media images. A content analysis of both women’s magazines and popular television programs indicates the media depict the ideal female form as young, tall, long-legged, large-breasted, and extremely thin (Fouts & Burggraf, 1999, 2000). Related studies show that underweight individuals have been grossly overrepresented in the media in the past and present day (e.g., Greenberg et al., 2003;
Kaufmann, 1980). A recent study of television characters, for example, found that 31% of female characters on popular TV programs were underweight compared to roughly 5% of the general population, and while only 13% of the characters were overweight or obese, roughly 50% of the general population falls into one of these two categories (Greenberg et al., 2003). Additionally, the underweight female characters were depicted more positively than their overweight or obese counterparts, being rated as more attractive and more likely to be involved in a romantic relationship (Greenberg et al., 2003). Heavier female characters were also more likely to receive negative attention from male characters (Fouts & Burggraf, 2000). On the whole, the evidence suggests that a strong media message conveyed to women is the association between thinness and a variety of positive characteristics and social success.

Given the pervasiveness of this “thin ideal” body type in the media and the disparity in its prevalence when compared to the general population, many if not most women are likely to be frequently confronted with unattainable, upward comparison targets in the media. Considerable research indicates that exposure to attractive, idealized women in the media leads to negative self-evaluations (i.e., contrast) that manifest as reduced self-esteem and body satisfaction (e.g., Irving, 1991, Stice & Shaw, 1994; Thompson & Heinberg, 1993; Tiggemann & Pickering, 1996; Wilson & Eldredge, 1992; see Groez, Levine, & Murnen, 2002, for a meta-analytic review). Some have suggested such comparisons with media images have played important roles in the growing prevalence of body dissatisfaction (Rodin, Silberstein, & Striegel-Moore, 1985), and eating disorders (Hargreaves & Tiggemann, 2003; Levine & Smolak 1996; Rodin et al., 1985; Stice, Schupak-Neuberg, Shaw, & Stein, 1994; Stice & Shaw, 1994) in women.
Members of the media are not our only source of body image comparison information, however, and as discussed, they are not the individuals we are likely to encounter personally on a daily basis. The people with whom we regularly interact, our peers, can also serve as comparison targets and, given that they are likely to be less “idealized” than media targets, one might hope that comparisons with peers serve to counteract the negative effects of media exposure. This does not appear to be the case, however, in that research using peers instead of media models as comparison targets has found similar decreases in self- and body-satisfaction following exposure to a fit target (e.g., Lin & Kulik, 2002; Trampe et al., 2007; Waselinko, Kulik, & Wanic, 2007).

Thus, the decrements in self-regard and body satisfaction following exposure to thin others, be they media images or peers, have been well documented. Because of the relative absence of overweight and obese characters in the media, much of the body image research has focused primarily on comparisons made with thin figures. Based on the population evidence, however, it appears that peer comparisons are more likely to occur with overweight or obese individuals, who may serve as downward comparison targets. If upward body image comparisons with fit targets result in decreased body-satisfaction, then perhaps downward body image comparisons with unfit targets exert a compensatory, positive influence on self-ratings. While not studied as frequently, research suggests that comparisons with unfit others do not necessarily provide a boost in self-evaluations. For example, Lin & Kulik (2002) found that female college students who were exposed to pictures of peers in the context of a dating game showed decreases in body satisfaction when viewing a thin peer but no improvement when exposed to a heavy peer, relative to controls (see also Waselinko et al., 2007).
The Selective Accessibility Model (SAM) and the Thin Ideal

Viewed from the perspective of SAM, the ideal female body standard typically studied is difficult if not impossible to achieve for the majority of women, and likely represents a dissimilar and extreme comparison standard for most women; as such, the ideal standard should activate a dissimilarity focus and thereby lead to contrast in comparison outcomes. Thus SAM appears to account for the large body of work showing that women generally report lower self-satisfaction ratings after exposure to attractive media images.

However, there is also evidence that cognitive moderators may operate to alter body-image comparison outcomes even while the physique of the comparison target remains constant. For example, Trampe, Stapel, and Siero (2007) found that labeling or not labeling the comparison target as a professional model differentially influenced comparison outcomes; women exposed to a slender or overweight non-model showed significant contrast, evidenced by lower self-satisfaction ratings in the slender non-model compared to the overweight non-model condition. However, women exposed to the same slender or overweight targets that were believed to be professional models did not differ in their reported self-evaluations.

Trampe and colleagues (2007) explain their results in terms of "dimension relevance." They argue that a professional model is less relevant as a comparison standard (cf. Festinger, 1954) and therefore is less likely to influence comparison outcomes. As perhaps further support for the general influence of personal relevance, pre-exposure (baseline) body satisfaction also was shown to moderate subsequent comparison outcomes. Body-dissatisfied women exhibited contrast in their self-
evaluations in response both to professional model and non-model targets, whereas body-satisfied women likewise exhibited contrast in the non-model condition but were unaffected in the two professional model conditions.

Trampe et al.’s (2007) results are in opposition to the predictions of SAM, however, since professional models represented both extreme and dissimilar comparison standards relative to non-models for the experimental participants. As such, SAM would predict relatively more contrast in the model conditions compared to the non-model conditions – the exact opposite of what was found. One might argue that in both the model and non-model conditions, the actual targets of comparison represented extreme standards of physique, since the images remained the same regardless of the model label; therefore it is not inconsistent to get a pattern of contrast in the non-model condition. However, based on this reasoning, SAM would still predict, at a minimum, equivalent levels of contrast in the model condition, which was not found. And given that the majority of the extant literature shows that women do experience a decrease in self-evaluated body image when comparing with an attractive media target (see Groez et al., 2002, for a review), it is of interest to explore which, if any, mindset variables might influence these effects.

**Current Research.** As discussed above, there appears to be strong evidence that an individual’s mindset can moderate social comparison outcomes. The purpose of the studies presented here is to further explore the impact of acute mindsets on body-image related comparisons. Such research is important because of the pervasiveness of the thin ideal in the media and the established connection between exposure to this thin ideal and negative psychological consequences, such as body dissatisfaction in addition to eating
disorder pathology. The present research will first revisit the Trampe et al. (2007) study. Because these researchers only compared exposure to a slender or an overweight target, without including a control condition, we do not know whether self-ratings in the slender condition became lower, the ratings in the overweight condition became higher, or if both groups differed significantly from baseline. This is particularly important since there is evidence in the social comparison literature to suggest that while upward comparisons are likely to produce decreases in self-evaluations, individuals do not always show a symmetrical increase in self-evaluations following a downward comparison (Lin & Kulik, 2002; Wasilenko et al., 2007). Additionally, the experimental images used by Trampe et al. (2007) appear to have confounded facial attractiveness with body size, making it difficult to conclude whether it was facial attractiveness, body physique, or both that influenced their comparison results.

Therefore, Study 1 will seek to replicate and extend the Trampe et al. (2007) experiment by including a control condition and by manipulating body physique while keeping facial attractiveness constant to gain a more accurate assessment of the comparison effects. Following this, Studies 2 – 4 are designed to explore more systematically the effects of the mindset variables of perceived similarity and current self-representation, respectively, as they pertain to body image related comparisons.
Study 1

Method

Participants. A total of 150 female undergraduates from University of California, San Diego, participated in this study. Students were recruited via an online experiment posting and completed the experiment for course or extra credit. The mean age was 18.73 (SD = 4.12). The racial distribution was 82% Asian, 9% Caucasian, 5% Hispanic, and 4% other.

Procedure. Participants arrived for the experimental session either alone or in pairs. Upon arrival, they were invited into the lab and seated at one of two tables separated by a partition that served to block each participant from seeing the other. After signing the consent form, the experimenter introduced the experiment as a study "on perception and evaluation" and explained that they would view an image and be asked to evaluate it as well as answer a variety of other questions. The experimenter then presented each participant with an image sheet and a questionnaire packet. The image page was placed faced down in front of the participants so that the experimental instructions could be provided before participants were exposed to the comparison information. The experimenter instructed participants to thoroughly view the image for a minimum of 10 s, after which they should set it aside and complete the questionnaire. To try to disguise the true nature of the experiment, participants were asked not to look back at the image, purportedly because their memory for the image would be tested as well. This was also done to increase the attention with which the image was evaluated. After
viewing the image and completing the questionnaire, participants were debriefed and dismissed.

**Stimulus Materials.** Each participant was presented with an image page that contained a 5” x 7” full body image of a female with a brief description taken directly from Trampe et al. (2007; name, hobbies, favorite animal, etc.) of the individual pictured. This description allowed for the manipulation of the target’s occupation as a professional model. There was no reference to the target’s occupation in the non-model condition. The image consisted of a full body shot of a fit, an average fitness, or an unfit college-aged woman. Photoshop was used so to crop the same face on all images to control for facial attractiveness.

**Self-Evaluations.** Immediately following exposure to the image, participants completed the main dependent measures to assess body and self-satisfaction. Specifically, participants rated how attractive they found themselves, how satisfied they were with their appearance, and how satisfied they were with themselves on separate scales of 1 to 7, with higher scores indicating greater satisfaction. These items were identical to those used in the Trampe et al. (2007) study. In addition, participants completed a) the Body Parts Satisfaction Scale (BPSS; Cash, Winstead, & Janda, 1986), which has been shown to have good test-retest reliability and high construct and discriminate validity (Cash & Green, 1986; Cash et al., 1986; Noles et al., 1985) and b) additional measures asking them to assess their standing relative to the average UCSD undergraduate for physical appearance of face, physical appearance of body, and physical fitness, respectively (1 = well below average to 10 = well above average).
A factor analysis performed on the foregoing appearance and self-satisfaction ratings indicated that they were highly intercorrelated (alpha = 0.93) and loaded on a single factor at 0.65 or higher. These ratings therefore were z-scored and combined to create a self-satisfaction index, where higher numbers indicate more positive feelings about the self. This composite was used as the primary self-evaluation dependent variable in further analyses.

Participants also were asked how similar to the target they believed themselves to be (1 = not at all similar; 7 = completely similar) in order to assess perceived similarity. Interestingly, but not surprising given that most research finds a self-enhancement bias in self-ratings (e.g., Beauregard & Dunning, 1997), participants rated themselves as more similar to the fit and average target than to the unfit target, $F(2, 138) = 8.039, p < .001$; $M_{s} = 2.5$ ($SD = 1.29$), $3.34$ ($SD = 1.33$), and $3.57$ ($SD = 1.54$) for unfit, average and fit respectively.

**Manipulations Checks.** Lastly, we included several manipulation checks to assess the effectiveness of our occupation and fitness manipulations. To check on the occupation manipulation, participants were asked to answer, “what was the occupation of the person in the photo?” by circling one of three options: a model, an administrative assistant, or occupation not given, respectively. To check on the effectiveness of the fitness manipulation, following the completion of the dependent measures participants also were asked to rate the target’s “physical fitness compared to the average UCSD student of the same gender” (1 = well below average to 10 = well above average) and to estimate the height and weight of the comparison target to enable the computation of an estimated body mass index (BMI; $\frac{\text{weight (kg)}}{\text{height (m)}^2}$).
Results

Manipulation Checks. The experimental manipulations appear to have been successful. First, participants were quite accurate in their perceptions of the target's occupation, with 100% in the model condition indicating the target was a model and 98% in the non-model (occupation not indicated) condition indicating occupation was not indicated, $\chi^2(2, N = 103) = 50.00, p < .001$.

Perceptions of target fitness were also as intended, with an Occupation x Target Fitness ANOVA indicating a significant main effect of fitness on ratings of the target compared to the average UCSD student, $M_s = 3.81$ ($SD = 1.01$), 6.32 ($SD = 1.6$), and 7.33 ($SD = 1.07$) for the unfit, average, and fit conditions, respectively, $F(2, 141) = 97.52, p < .001$. The results of subsequent Fisher’s LSD tests revealed that the unfit target was rated as significantly less fit than both the average and fit conditions ($ps < .001$), with the fit condition marginally more fit than the average condition ($p = 0.08$). Next, participants' estimates of the target’s height and weight were used to compute an estimate of the targets’ BMI. These results were also consistent with the intended manipulation, $M_s = 26.61$ ($SD = 3.2$), 21.64 ($SD = 1.85$), and 19.90 ($SD = 1.34$), $F(2, 141) = 130.36, p < .001$, for the unfit, average, and fit conditions, respectively. Follow-up paired comparisons revealed that the estimated BMI for all targets were significantly different from each other ($ps < .001$).

Primary Analyses. Since women with higher BMIs report higher levels of body dissatisfaction (Pingitore, Spring, & Garfield, 1997), we first assessed whether our participants’ BMI was distributed evenly across our groups. Each participant reported her own height and weight which was used to calculate her BMI score. The results of an
Occupation by Target Fitness ANOVA using participants’ BMI as the dependent variable revealed no significant main effects or interactions, $F s \leq 1.7, ns$. Furthermore, when we entered participants’ BMI as a covariate in the main analysis, it was a significant predictor of self-satisfaction, $F(1, 137) = 33.89, p < .001$, but did not eliminate or reduce the significance of the main factors. Finally, using a median split of participants’ BMI to create an additional factor in a 2 (Occupation: model/non-model) x 3 (Target Fitness: fit, average, unfit) x 2 (BMI: high/low) ANOVA produced an expected main effect of BMI, $F(1, 138) = 9.71, p = 0.002$, but no interactions, $F s < 1, ns$. Participant BMI therefore was not included in the main analyses.

A 2 (Occupation) by 3 (Target Fitness) ANOVA on our main self-evaluation index, unlike the results in Trampe et al. (2007), revealed no main effect of the model/non-model factor on reported self-evaluations, $F(1, 138) < 1, ns$. However, there was a main effect of target fitness, $F(2, 141) = 5.65, p = .004$, which showed, as expected, that exposure to the fit target decreased self-evaluations ($M = -0.53, SD = 4.9$) relative to the average (control) target ($M = 1.79, SD = 3.25$), but, unexpectedly, so too did exposure to the unfit target ($M = -0.73, SD = 4.12$). Subsequent paired comparison tests revealed that participants exposed to either the fit or unfit target rated themselves significantly lower in self-satisfaction than controls ($ps < .003$) and did not differ significantly from each other.

**Similarity Analyses.** Mussweiler’s SAM holds that similarity to the comparison target should moderate comparison outcomes. To explore whether perceptions of similarity moderated self-evaluations, we used a median split of participants’ scores on perceived similarity to create two groups, those with high perceived similarity to the
target and those with low perceived similarity. The results of an ANOVA using Target Fitness and Perceived Similarity as factors showed main effects for fitness \((p < .003)\) and perceived similarity \((p < .017)\), which were qualified by a highly significant interaction of fitness and similarity, \(F(2, 138) = 3.90, p < .005\), see Figure 1. Analysis of the means revealed that participants who believed themselves to be dissimilar to the fit comparison target rated themselves significantly lower than all other groups, \(M = -3.99 (SD = 5.84)\), \(ps < .014\). Additionally, participants who reported being similar to the unfit target showed significantly lower self-ratings when compared to the fit/similar and average/similar conditions, \(M = -1.02 (SD = 4.62)\), \(ps < .03\).

Based on the predictions of the SAM, perceived similarity between self and target should lead to assimilation, evidenced as more favorable self-evaluations when making an upward comparison and less positive self-evaluations when making a downward comparison. On the other hand, perceived dissimilarity between self and target should lead to contrast, seen as increased self-evaluations when making a downward comparison and decreased self-evaluations when making an upward comparison. Therefore, the similar/fit and dissimilar/unfit conditions are hypothesized to produce self-ratings that are more positive than the dissimilar/fit and similar/unfit conditions. To specifically test this prediction, we conducted a planned contrast to compare this set of means, the results of which were highly significant, \(F(1, 97) = 10.07, p = .002\).
Figure 1.1. Study 1 - Self-Satisfaction Rating Index by Target Fitness and Perceived Similarity
**Brief Discussion**

Study 1 did not find an effect of the model/non-model manipulation on participants’ self-ratings. Based on analysis of our manipulation checks, this failure to replicate does not appear to be due to an ineffective occupation manipulation. It is unclear why this factor did not influence participants’ self-ratings in our study but did so significantly in the previous one (Trampe et al., 2007). It is possible that separating the two factors of facial attractiveness and body physique in the present study contributed to this disparity.

As expected, self-evaluations were less positive in the fit condition compared to the control (average fitness) condition, but unexpectedly, also were less positive in response to an unfit target. Previous work has shown unfit others do not increase self-evaluations relative to controls but no prior work has shown they can actually decrease self-evaluations. Future work would be needed to determine if this is replicable, particularly given that there appears to be no obvious theoretical explanation for this finding.

According to the SAM, participants’ perceptions of similarity or dissimilarity with the comparison target should influence the subsequent comparison outcome, producing movement toward the target and assimilation under conditions of similarity and movement away from the target and contrast under conditions of dissimilarity. In support of these predictions, self-satisfaction ratings were indeed influenced by perceptions of similarity with the comparison target. Participants who perceived themselves to be dissimilar to the fit target showed contrast and reported low self-ratings.
Additionally, participants who perceived themselves to be similar to the unfit target showed assimilation, also evidenced by lower self-ratings.
Study 2

The results of Study 1 suggest that perceived similarity may operate as a moderator of the effect of social comparisons on self and body satisfaction. However, because this factor was not experimentally manipulated, causality cannot be inferred. As such, the next set of studies was designed to explore perceived similarity more systematically. Specifically, in Studies 2A and 2B we intended to induce a similarity or dissimilarity mindset during exposure to the comparison target in two ways; specifically, participants were asked to think about (Study 2A) or write down (Study 2B) the ways in which they were similar or dissimilar to the comparison target prior to completing the self-evaluation questionnaire.

Study 2A

Method

Participants. A total of 172 female undergraduates from University of California, San Diego, participated in this study. Students were recruited via an online experiment posting and completed the experiment for course or extra credit. The mean age was 18.96 ($SD = 4.89$). The racial distribution was 86% Asian, 8% Caucasian, and 4% other.

Procedure. Participants arrived for the experimental session either alone or in pairs, were greeted, and seated at one of two tables separated by a partition. The experimenter again introduced the study as involving "perception and evaluation" and told participants they would be asked to view and evaluate an image in addition to completing a questionnaire. The manipulation of the similarity/dissimilarity mindset was adapted from Mussweiler (2001) and was accomplished by asking participants to view
the image while making note of the ways that they were similar or dissimilar to the target, depending on condition. In the control condition, participants were asked to form an impression of the individual depicted without any mention of a comparative mindset.

The images, which varied in physical fitness, were the same as in Study 1. This combination of factors resulted in a 3 (Target Fitness: fit, average, unfit) x 3 (Comparison Mindset: similarity-focus, dissimilarity-focus, and control) between subjects design.

The experimenter presented each participant with an image sheet face down and instructed the participants to spend two minutes on the comparison (evaluation) task. The experimenter then left participants to complete this portion and returned after two minutes, removed the image page, and presented participants with the questionnaire packet containing the dependent measures. After completing the questionnaire, participants were debriefed and dismissed.

**Stimulus Materials.** Each participant was presented with an image page identical to those in Study 1 expect for the absence of any personal or occupational information. Therefore, depending on condition, participants were presented with an image page that contained a 5” x 7” full body image of a female with a fit, average, or unfit body with the face held constant. Manipulation checks following completion of the dependent measures revealed that ratings of the target’s “physical fitness compared to the average UCSD student of the same gender” (1 = well below average to 10 = well above average) were consistent with the intended manipulation, $M_s = 4.07$ ($SD = 1.46$), 5.719 ($SD = 1.37$), and 7.034 ($SD = 1.16$) for the unfit, average, and fit conditions, respectively, $F(2, 171) = 74.616, p < .001$. Follow-up comparisons using Fisher’s LSD revealed that each mean differed significantly from the others, $ps < .001$. 
**Self-Evaluations.** Immediately following exposure to the image, participants responded to the same set of questions as in Study I to assess body and self satisfaction. A factor analysis of the 7 appearance and self-satisfaction ratings found that they loaded on a single factor at 0.65 or higher and were highly intercorrelated (alpha = 0.89). Therefore, these ratings were z-scored and combined to create a self-satisfaction index, where higher numbers indicated more positive feelings about the self.

**Manipulation Checks.** To assess the effectiveness of the thought manipulation to differentially affect perceived similarity, participants were asked to indicate how similar they believed themselves to be to the target (1 = not at all similar; 7 = completely similar).

**Results**

**Manipulation Check.** Analysis of our similarity mindset manipulation revealed that participants did not differ by assigned condition in their perceptions of similarity to the comparison target, $F(2, 171) < 1$, ns; $Ms$ Similar = 3.45 ($SD = 0.17$); Control = 3.29 ($SD = 0.18$); Dissimilar = 3.38 ($SD = 0.17$).

**Primary Analyses.** As in Study 1, we first assessed whether participants’ BMI scores were distributed evenly across conditions. The results of a Similarity-Mindset by Target Fitness ANOVA using participants’ BMI as the dependent variable revealed no significant main effects or interactions, $Fs \leq 1.26$, $ns$. As in Study 1, when we entered participants’ BMI as a covariate in the main analysis, it was a marginally significant predictor of self-satisfaction, $F(1, 164) = 3.82$, $p = 0.052$, but did not eliminate or reduce the significance of the main factors. Finally, using a median split of participants’ BMI to create an additional factor in a 3 (Similarity-Mindset: similar, dissimilar, control) x 3
(Target Fitness: fit, average, unfit) x 2 (BMI: high/low) ANOVA produced an expected main effect of BMI, $F(1, 155) = 7.07, p = .009$, but no interactions, $Fs \leq 1.33, ns$. Participant BMI therefore was excluded as a factor in the main analyses.

An ANOVA using Similarity-Mindset and Target Fitness as factors with the self-satisfaction index as the dependent variable revealed a marginally significant main effect of fitness, $F(2, 165) = 2.972, p = .054$. Follow-up analyses of the means revealed that participants who were exposed to the fit target rated themselves significantly less self-satisfied ($p = .042$) than those exposed to the average or unfit target, which did not differ from each other, $Ms$ Fit = -1.02 ($SD = 1.2$); Average = 0.29 ($SD = 1.42$); Unfit = 0.78 ($SD = 1.88$). Neither the main effect of similarity-mindset nor the interaction were significant, $Fs < 1, ns$.

**Similarity Analyses.** Because the experimental manipulation did not have the intended effect on perceptions of target similarity, we next used a median split of participants' perceived similarity ratings to create two groups, high similarity and low similarity. A subsequent 2 (Perceived Similarity: high or low) X 3 (Target Fitness: fit, unfit, or average) ANOVA performed on the self-evaluation index replicated the Target Fitness x Perceived Similarity interaction found in Study 1, $F(2, 156) = 7.51, p < .001$; see Figure 2.1. Analysis of the means revealed that, as in Study 1, participants who believed themselves to be dissimilar to the fit target ($M = -3.41; SD = 4.2$) and those who reported being similar to the unfit target ($M = -1.97; SD = 3.07$) gave themselves significantly lower self-evaluations than did participants in the other comparison groups ($ps \leq .013$). Furthermore, participants who perceived themselves to be dissimilar to the unfit comparison target were more self-satisfied ($M = 2.55; SD = 2.95$) than all other
groups, ps ≤ .034. This is of note, because there is little in the social comparison and body image literature suggesting that bolstered self-ratings result from downward comparisons.

Based on the predictions of SAM, feeling similar to the fit target and dissimilar to the unfit target should result in more positive self-evaluations when compared to the similar/unfit and dissimilar/fit target conditions. Consistent with Study 1, the results of a planned contrast testing this prediction yielded a highly significant result, $F(1, 168) = 11.47, p < .001$. 
Figure 2.1. Study 2A – Self-Satisfaction Index by Target Fitness and Perceived Similarity
**Brief Discussion**

Our similarity manipulation unfortunately did not appear to be successful. Because we were concerned that having participants focus on their own similarity or dissimilarity with the comparison target might make the experimental hypothesis more apparent to participants or generate reactance, we chose to have them do the task mentally. Others using a similar procedure have asked participants to write down the similarities or differences they identified (Haddock, Macrae, & Fleck, 2002; Mussweiler, 2001). Because participants did not record their thoughts, we were unable to assess whether or not they engaged in the comparison as instructed or at all. Therefore, in Study 2B we used a listing procedure to manipulate a similar or dissimilar mindset instead of only asking participants’ to generate thoughts.

Study 2A did replicate the results of Study 1 using the perceived similarity variable, however. Our analysis revealed a significant interaction between perceived similarity and model fitness in a manner consistent with predictions of SAM. Participants who perceived themselves to be dissimilar to the comparison target demonstrated contrast, reporting decreased self-satisfaction when the target was fit and increased self-satisfaction when the target was unfit. Additionally, participants who perceived themselves to be similar to the comparison target demonstrated assimilation, reporting decreased self-satisfaction when the target was unfit and increased self-satisfaction when the target was fit.

**Study 2B**

The procedure and goals for Study 2B were the same as in Study 2A with one modification. Because the similarity mindset manipulation in Study 2A was not
successful, we attempted to strengthen the manipulation in Study 2B by having participants note concretely, and in writing, their similarities or dissimilarities to the target instead of just thinking about them. Therefore, when presented with the image, participants were asked to write down the ways in which they were either similar or dissimilar to the target, depending on condition. In the control condition, participants were asked simply to write a brief evaluation (their general impression) of the person depicted. After two minutes, the experimenter collected the image and evaluation sheet and presented each participant with a questionnaire packet containing the dependent measures. Following completion of the questionnaire, participants were debriefed and dismissed.

Method

Participants. A total of 135 female undergraduates from University of California, San Diego, participated in this study. Students were recruited via an online experiment posting and completed the experiment for course or extra credit. The mean age was 20.33 (SD = 6.32). The racial distribution was 79% Asian, 11% Caucasian, 6% Hispanic, and 4% other.

Procedure. The procedure for this study was identical to that of Study 2A except for the similarity manipulation, as described above.

Stimulus Materials. The image pages used for this study were identical to those used in Study 2A.

Self-Evaluations. Immediately following exposure to the image, participants completed the same items used in Study 1 and 2A to assess body and self-satisfaction. A factor analysis of the 7 appearance and self-satisfaction ratings found that they loaded on
a single factor at 0.72 or higher and were highly intercorrelated (alpha = 0.87). These ratings therefore were again z-scored and combined to create a self-satisfaction index, where higher numbers indicated more positive feelings about the self.

**Manipulation Check.** As a manipulation check, participants were asked to indicate their perceived similarity to the comparison target following collection of these measures on a 7-point scale (1 = not at all similar; 7 = completely similar)

**Results**

**Manipulation Check.** Our manipulation check revealed that participants’ perceptions of similarity to the target were influenced by the similarity mindset manipulation, but not quite in the predicted manner, $F(2, 132) = 4.02, p = .016$; see Table 2.1. Follow-up analysis of the means revealed that while listing similarities increased perceived similarity of the target relative to controls as intended, so too did the listing of dissimilarities ($ps \leq .02$), and that the similarity and dissimilarity groups did not differ from each other.

**Self-Evaluations.** An assessment of participants’ BMI scores using a Similarity Mindset by Target Fitness ANOVA revealed no significant main effects or interactions, $Fs \leq 1.12, ns$. Similarly, while participants’ BMI was a significant predictor of self-satisfaction, $F(1, 131) = 4.31, p = .037$, it did not significantly alter the results of the main analysis. Finally, using a median split of participants’ BMI to create an additional factor in a 3 (Similarity Mindset: similar, dissimilar, control) x 3 (Target Fitness: fit, average, unfit) x 2 (BMI: high/low) ANOVA produced an expected main effect of BMI, $F(1, 122) = 4.68, p = .033$ but no interactions, $Fs < 1, ns$. Participant BMI therefore was not an included factor to the main analyses.
A Similarity Mindset by Target Fitness ANOVA using the self-satisfaction index as the dependent variable revealed a marginally significant main effect of Target Fitness, $F(2, 165) = 2.97, p = .054$. Follow-up analyses of the means revealed that participants who were exposed to the fit target rated their self-satisfaction significantly lower ($p = .042$) than those exposed to the average or unfit target, which did not differ from each other, $M_{fit} = -1.021 (SD = 1.2)$; $Average = 0.289 (SD = 1.42)$; $Unfit = 0.782 (SD = 1.88)$. Neither the main effect of Similarity Mindset nor the interaction were significant, $Fs < 1$, ns.
Table 2.1

*Study 2B – Means (SD) of Perceived Similarity by Similarity Mindset Condition and Target Fitness*

<table>
<thead>
<tr>
<th>Similarity Mindset</th>
<th>Target Fitness</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fit</td>
<td>Control</td>
<td>Unfit</td>
<td>Total</td>
</tr>
<tr>
<td>Similar</td>
<td>3.47 (1.18)</td>
<td>3.59 (1.37)</td>
<td>3.60 (1.29)</td>
<td>3.55 (1.27)</td>
</tr>
<tr>
<td>Control</td>
<td>2.93 (1.33)</td>
<td>2.94 (1.24)</td>
<td>2.64 (1.28)</td>
<td>2.84 (1.26)</td>
</tr>
<tr>
<td>Dissimilar</td>
<td>3.89 (1.32)</td>
<td>3.76 (1.52)</td>
<td>2.86 (1.51)</td>
<td>3.55 (1.49)</td>
</tr>
</tbody>
</table>

*Note.* Scale ranges from 1 (not at all similar) to 7 (extremely similar).
**Similarity Analysis.** As in Study 2A, we next analyzed self-evaluations with a 3 (Target Fitness: (fit/average/ unfit) x 2 (Perceived Similarity; high/low based on median split) ANOVA and found a marginally significant interaction, $F(2, 135) = 2.15, p = .10$, see Figure 2.2. The pattern of means was similar to those present in Study 1 and Study 2A, in that participants who perceived themselves as dissimilar to the fit target reported the lowest self-satisfaction ($M = -1.63; SD = 4.63$) when compared to all other groups, $ps < .001$. Additionally, participants who perceived themselves to be dissimilar to the unfit target reported the highest self-satisfaction ($M = 1.38; SD = 4.64$) when compared to all other groups, $ps < .001$. Again, this is of note because there is little evidence in the social comparison and body image literature demonstrating bolstered self-ratings following downward comparisons. Finally, the results of a planned comparison involving the four means of primary interest yielded a significant result as well, $F(1, 135) = 4.19, p = .043$; feeling similar to the fit target or dissimilar to the unfit target produced self-satisfaction levels that were higher compared to feeling similar to the unfit target or dissimilar to the fit target.
Figure 2.2. Study 2B – Self-Satisfaction Index by Target Fitness and Perceived Similarity
Brief Discussion

Our similarity mindset manipulation unfortunately again did not appear to be successful. In that it was used successfully by Haddock and colleagues (2002), we have no ready explanation for its comparative lack of impact. The participants’ lists of similarities or dissimilarities to the comparison target were analyzed for possible explanations. A coder, blind to the hypothesis and unaware of the similarity mindset condition, counted the number of items listed by each participant in addition to coding whether or not an item listed a similarity or a difference. A Similarity Mindset by Target Fitness ANOVA revealed a marginally significant main effect of Similarity Mindset on the number of items listed, $F(2, 132) = 2.25, p = .10$; $Ms$ Similar = 4.62 ($SD = 2.03$); Control = 3.87 ($SD = 1.50$); Dissimilar = 4.13 ($SD = 1.51$). There were no other main effects or interactions $Fs < 1$, $ns$. Follow-up analysis of the means revealed no significant difference between the similarity mindset and dissimilarity mindset groups ($p = .17$). We then assessed the content of the lists by subtracting the number of dissimilar items from the number of similar items listed for each participant so a positive score would indicate more similarities than differences and a negative score the reverse. A Similarity Mindset by Target Fitness ANOVA on this score surprisingly revealed no main effects or interaction, $Fs \leq 1.92$, $ns$. Analysis of the means indicated that participants in both the similarity mindset and dissimilarity mindset conditions had recorded mostly similarities, $Ms$ Similar = 3.89 ($SD = 1.66$); Dissimilar = 3.21 ($SD = 1.54$). Researchers have reported that comparisons with a focus on similarity occur faster than comparisons with a focus on dissimilarity, making similarity-focus the more efficient comparative style (Cocoran et
al., 2011). As such, it may be that similarities between self and target were easier to generate than dissimilarities for our participants.

Across the first three studies, participants demonstrated a consistent pattern of assimilation when they perceived themselves to be similar to a comparison target and contrast when they perceived themselves to be dissimilar to a comparison target. Analysis of participants’ self-ratings indicated that perceived similarity interacted with target fitness, such that feeling dissimilar to the fit target and similar to the unfit target resulted in decreased self-satisfaction. Furthermore, the results of Study 2A and Study 2B provide some evidence for a self-enhancement effect in that feeling similar to a fit target and dissimilar to an unfit target may result in a boost in self-rating for some women. However, since our attempts to experimentally induce a similarity mindset were unsuccessful, we are still unable to infer whether perceptions of similarity are a causal factor in moderating these social comparison outcomes. This will be re-visited in Study 4.
Study 3

In Study 3 we sought to explore a different mindset manipulation. As discussed above, Blanton’s (2001) three-selves model holds that thinking about the type of person one is presently leads to different comparison outcomes than thinking about the person one could be in the future. A "personal-self" mindset (who I am) theoretically should focus individuals on static characteristics and foster contrast, whereas a "possible-self" mindset (who I could be) should focus individuals on what they may become, thus leaving the self concept more mutable and open to assimilation. Extending this model to the domain of body image, we would predict that activation of the personal-self should produce lower self-satisfaction ratings when exposed to the fit peer and higher self-satisfaction ratings when exposed to the unfit peer. In contrast, activation of the possible-self should produce higher self-satisfaction ratings when exposed to the fit peer and lower self-satisfaction ratings when exposed to the unfit peer.

Method

Participants. A total of 115 female undergraduates from University of California, San Diego, participated in this study. Students were recruited via an online experiment posting and completed the experiment for course or extra credit. The mean age was 19.48 (SD = 3.45). The racial distribution was 81% Asian, 12% Caucasian, and 7% other.

Procedure. Participants arrived at the lab individually, were greeted by the experimenter, and were seated at a desk. The experimenter introduced the study as one on "perception and evaluation" and told participants they would be asked to view and evaluate an image in addition to completing a questionnaire. Following the procedure
used by Blanton and Stapel (Study 2, 2008), participants in Study 3 were instructed to write a short essay describing (depending on condition) the type of person that they were currently (personal-self) or the type of person that they could become at some point in the future (possible-self). After completing the mindset manipulation, participants were asked to view an image of a female peer who varied in apparent fitness and then completed the same self-evaluative measures as in the previous studies. This resulted in a 2 (Self-Activation: personal-self or possible-self) x 3 (Target Fitness: fit, average, or unfit) between subjects design.

Unlike the previous studies, Study 3 (and later, Study 4) was conducted on a PC using E-prime to present the comparison image and questionnaire. This allowed for more control over the time the image was available to the participants and also allowed the experimenter to give the participant experimental instructions at the beginning of the session and leave them relatively uninterrupted for the duration of the procedure.

The experimenter presented each participant with an essay sheet and introduced the mindset manipulation by either instructing them to write a brief essay about “who you are” or “who you might be someday.” Participants were given 5 minutes to complete this task, during which time the experimenter left the participant to complete the tasks in private. After the allotted time, the experimenter returned, collected the essay sheet, and introduced the computer portion of the experiment. Participants were instructed that they would see an image of a college-aged individual and (as in Study 1) were asked to take a moment to look over the image and form an impression of the person depicted. Participants were told that they should look at the image thoroughly before pressing the
computer key to start the questionnaire. After completing the questionnaire, participants were debriefed and dismissed.

**Stimulus Materials.** Depending on condition, participants were presented with a computer image identical to the previous studies that showed a full body image of a female varying only in her level of fitness with facial attractiveness held constant. Participants in the control condition were not presented with a comparison image and preceded directly from the self-activation task to completion of the dependent measures.

**Self-Evaluations.** As in the previous studies, immediately following exposure to the image, participants responded to the main dependent measures assessing body and self-satisfaction, which we later combined for analyses into a self-satisfaction index by z-scoring and summing the various dependent measures (alpha = 0.89). Again, higher numbers indicated more satisfaction and positive feelings about the self.

Because we had found in the previous studies that perceived similarity was a potential moderator of comparison outcomes, we also asked participants how similar they believed themselves to be with the comparison target (1 = not at all similar; 7 = completely similar).

**Manipulation Check.** As a check of our self-activation manipulation, we included an ad hoc one-item measure to assess participants’ beliefs in their own self-mutability. Specifically, we asked them “to what extent do you believe that who you are is something that can change?” (1 = not at all; 7 = very much so).

**Results**

**Manipulation Check.** To determine whether the mindset manipulation was effective, we performed a 2 (Self-Activation) x 3 (Target Fitness) ANOVA on our self-
mutability measure. The results revealed a marginally significant main effect, with those in the personal-self conditions reporting the self to be less changeable than those in the possible-self conditions, $F(1, 112) = 2.96, p = .06; M_{\text{personal}} = 3.64 (SD = 1.24); M_{\text{possible}} = 4.48 (SD = 1.17)$.

We also performed a Self-Activation x Target Fitness ANOVA on participants' perceptions of similarity to the target. Results revealed a main effect of self-activation such that, consistent with Blanton’s three-selves model, participants in the possible-self conditions perceived themselves to be more similar to the targets, regardless of fitness, than those in the personal-self conditions, $F(2,112) = 3.35, p = .038; M_{\text{possible}} = 4.20 (SD = 3.54), M_{\text{personal}} = 3.78 (SD = 3.23)$.

**Self-Evaluations.** A 2 (Self-Activation: personal-self/possible-self) x 3 (Target Fitness: fit/no image/unfit) ANOVA performed on the self-evaluation index resulted in a marginally significant main effect of fitness, $F(2,112) = 2.44, p = .09$, and a significant Self-Activation x Target Fitness interaction, $F(2, 112) = 3.35, p < .04$; see Figure 3.1. Analysis of the means revealed that participants who had written about who they were currently, activating a personal-self mindset, showed significant contrast in their self-ratings; specifically, those in a personal-self mindset who were exposed to the fit target rated themselves significantly less self-satisfied ($p < .008$), whereas those exposed to the unfit target reported significantly higher self-satisfaction ratings ($p < .014$) compared to controls.

Participants who wrote about who they could be, activating the possible-self mindset, tended to demonstrate assimilation in their self-evaluations, with greater self-satisfaction in the fit condition and lower self-satisfaction in the unfit condition, although
these differences did not reach significance. According to the three-selves model, comparing oneself with the fit target when the personal-self is activated, or comparing oneself with the unfit target in a possible-self mindset, should lead to lower self-ratings than comparisons made with the fit target when the possible-self is activated or when comparing oneself with the unfit target while in a personal-self mindset. The results of a planned contrast testing this predicted pattern was highly significant, $F(1, 106) = 4.28, p = .008$. 
Figure 3.1. Study 3 – Self-Satisfaction Index by Target Fitness and Self-Activation
Brief Discussion

On the whole, Study 3 provides additional support for the hypothesis that an individual’s mindset can alter the effects on self-regard of social comparison processes. As discussed above, Blanton’s (2001) three-selves model suggests that the particular self mindset activated at the time of the comparison should determine whether a social comparison results in assimilation or contrast and thereby a self-enhancing or self-deprecating effect. Since the personal-self mindset evokes a relatively stable view of who one is, there is little room for incorporating others’ attributes into evaluation of the self, making contrastive comparison outcomes more likely. Consistent with this prediction, participants who were asked to write about who they currently were reported contrast following a social comparison; that is, they increased self-satisfaction in response to exposure to an unfit peer and decreased self-satisfaction when exposed to a fit peer.

In contrast, a possible-self mindset evokes a relatively mutable self-view, since it focuses on who one might be in the future, and therefore allows for incorporation of others’ attributes into evaluations of the self. Activation of the possible-self should therefore make assimilation following social comparison more likely. Participants who wrote about who they could be did report assimilation in their self-ratings following exposure to a peer – higher self-ratings in response to the fit and lower self-ratings in response to the unfit peer, although for these conditions the difference did not reach significance.
Study 4

The results of the previous studies indicate that perceptions of similarity, although not experimentally manipulated, (Study 1, 2A, and 2B) and activation of personal versus possible-self mindsets (Study 3) can influence how women feel about their bodies in response to social comparisons. Interestingly, the foregoing studies, despite examining different aspects of mindset, both produced a similar cross-over pattern. In Studies 1, 2A, and 2B, perceptions of similarity with the comparison target were associated with assimilation (increased self-ratings when comparing with the fit target and decreased self-ratings when comparing with the unfit target), while perceptions of dissimilarity were associated with contrast (decreased self-ratings in the fit and increased self-ratings in the unfit condition). In Study 3, activation of the possible-self produced assimilation (increased self-satisfaction in the fit and decreased self-satisfaction in the unfit conditions), whereas activation of the personal-self produced contrast (decreased self-satisfaction in the fit condition and increased self-satisfaction in the unfit condition).

Consequently, it was of interest to see if and how perceived similarity and self-activation might combine to influence self-evaluations. Specifically, we were interested to see if there was an additive effect in combining two assimilation-promoting (possible-self activation, similarity mindset) or contrast-promoting (personal-self activation, dissimilarity mindset) manipulations; for example, would individuals with a personal-self mindset who are also induced to focus on dissimilarity with the comparison target show greater contrast than those individuals exposed to only personal-self or dissimilarity mindset manipulations. Additionally, we were interested in whether the combination of an assimilation-promoting and a contrast-promoting manipulation might reduce the effect
of either or both and produce little change in self-evaluation. A final goal was to assess
the causal role of similarity as a moderating factor.

Therefore, in Study 4 we combined the two manipulations, inducing participants
to activate a personal-self or possible-self mindset via the essay task used in Study 3
before being exposed to the similarity mindset manipulation used in Study 2B. Because
the introduction of another factor created an excessively large number of groups and most
of the body image research has focused on the harmful effects of comparisons with fit
individuals, we examined reactions to a fit comparison target only for this study.

Method

Participants. A total of 121 female undergraduates from University of California,
San Diego, participated in this study. Students were recruited via an online experiment
posting and completed the experiment for course or extra credit. The mean age was
19.52 (SD = 2.23). The racial distribution was 85% Asian, 9% Caucasian, and 6%
Hispanic.

Procedure. Participants went through personal-self versus possible-self mindset
manipulation prior to viewing the comparison target and the similarity/dissimilarity
mindset manipulation while viewing the target. Because the similarity/dissimilarity
mindset manipulation required participants to compare themselves with the target while
the personal/possible-self manipulation did not, we chose not to counterbalance the order
of the two mindset manipulations. For additional clarification, we included several
control conditions in which participants completed only the personal/possible-self
mindset manipulation, completed only the similarity/dissimilarity mindset manipulation,
or completed neither. Therefore, Study 4 utilized a 3 (Self Mindset:
personal/possible/control) x 3 (Similarity Mindset: similar/dissimilar/control) between subjects design to assess women's reactions to comparisons with a fit peer.

Because the primary questionnaire consisted of several self-assessment items, this study also examined whether completing the questionnaire itself might serve to activate a personal-self mindset. To assess this, half of the participants completed a self-activation manipulation check immediately following the personal/possible-self mindset manipulation and prior to engaging in the similarity/dissimilarity mindset manipulation (Time 1), and all participants completed the same manipulation check after responding to the main dependent measures (Time 2). This enabled us to determine the success of our personal/possible-self mindset manipulation without contamination (Time 1) as well as whether or not completion of the dependent measures altered one’s self-focus by comparing their pre-dependent measure (Time 1) scores on the self-activation manipulation check with their scores on the same scale reported after collection of the dependent measures (Time 2; see Figure 4.1).

Additionally, instead of using our single item measure from Study 3 (“to what extent do you believe who you are is something you can change?”), we used relevant items taken from two scales developed by Dweck and colleagues (Levy, Stroessner, & Dweck, 1998) to assess an individual’s beliefs about the stability of traits across time. According to Dweck and Leggett (1988), individuals can be classified as entity theorists or incremental theorists based on their general beliefs about how malleable individual characteristics are over time, with entity theorists seeing traits as stable and incremental theorists seeing traits as malleable. Thus, entity theorists would be similar conceptually to those with a personal-self mindset activated, in that the self is
<table>
<thead>
<tr>
<th>Per/Pos Mindset Manipulation</th>
<th>Time 1</th>
<th>Sim/Diss Mindset Manipulation</th>
<th>General Dependent Measures</th>
<th>Time 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Self-mutability scale completed</td>
<td></td>
<td></td>
<td>Self-mutability scale completed</td>
</tr>
</tbody>
</table>

Figure 4.1. Timeline for Study 4 participants reporting self-mutability at both Time 1 and Time 2.
seen as concrete and stable, whereas incremental theorist theoretically would be similar to those with a possible-self mindset activated, since the self is seen as mutable in both these instances (Blanton & Stapel, 2008). Our adapted scale consisted of 3 entity items and 3 incremental items taken from Levy et al. (1998). Participants were asked to indicate on separate 7-point scales (1 = strongly disagree; 7 = strongly agree) the extent to which they agreed or disagreed with each statement (alpha = 0.95; see Appendix A for specific items).

**Self-Evaluations.** As in the previous studies, immediately following exposure to the image, participants responded to the main dependent measures assessing body and self-satisfaction, which we later combined for analyses into a self-satisfaction index by z-scoring and summing the various dependent measures (alpha = 0.83).

**Manipulation Check.** To check the effectiveness of the similarity/dissimilarity mindset manipulation, participants were asked to indicate how similar they believed themselves to be to the comparison target immediately following the comparison and prior to answering any of the dependent measures (1 = not at all similar; 7 = completely similar).

To check the effectiveness of the personal/possible-self manipulation, as noted above, perceived self-mutability was assessed using an adaptation of Dweck’s (1988) implicit personality theory measure. Half of the participants responded to this scale immediately following the self-activation manipulation (Time 1 score), and all the participants completed this scale after responding to the main dependent measures (Time 2 score).
Results

**Manipulation Checks.** Participants' scores on the self-mutability index at Time 1 and Time 2 were highly correlated \( r = 0.74, n = 51, p < .001 \) and a Personal/Possible-Self Mindset by Similarity/Dissimilarity Mindset ANOVA on participants’ self-mutability change scores (Time 2 scores minus Time 1 scores) revealed no significant main effects or interaction \( (Fs \leq 1.15, ns) \), suggesting that completion of the main questionnaire did not substantially influence personal/possible-self activation. Therefore, for simplicity, analyses were performed on the Time 2 scores collected from all participants.

To determine the effectiveness of our personal/possible-self manipulation, we conducted a two-way ANOVA using personal/possible-self mindset and similarity/dissimilarity mindset as factors on our composite self-mutability index. The results revealed a main effect of personal/possible-self activation, \( F(2, 109) = 3.21, p = .044 \), with participants in the personal-self conditions rating themselves as more static, \( M = 3.73 \ (SD = 0.96) \), than those in the possible-self conditions, \( M = 3.39 \ (SD = 0.86) \). There was no significant main effect of the similarity/dissimilarity factor or interaction. Thus the personal/possible-self manipulation appears to have been successful.

A 3 (Self-Activation: personal self/possible self/control) x 3 (Similarity Mindset: similar/dissimilar/control) ANOVA performed on perceived similarity to the target revealed, as in Study 3, that participants in the possible-self condition tended to perceive greater similarity to the target than did those in the personal-self condition, \( F(2, 71) = 3.04, p = .056 \); however this effect was qualified by a significant Personal/Possible-self Mindset x Similarity Mindset effect, \( F(2,71) = 4.27, p < .02 \). Analysis of the means
showed that only in the personal-self conditions did ratings of similarity differ significantly by condition in the expected manner, with greater reported similarity in the similar-mindset condition compared to the dissimilar-mindset condition (see Table 4.1). Additionally, there was a main effect of Similarity Mindset \( F(1,71) = 3.86, p = .05 \) such that participants reported greater perceived similarity in the similar mindset condition \( (M = 4.29 \ (SD = 0.78)) \) compared to the dissimilar mindset condition, \( M = 3.92 \ (SD = 0.83) \).
Table 4.1

*Study 4 – Means (SD) of Perceived Similarity by Self-Activation and Similarity Mindsets*

<table>
<thead>
<tr>
<th>Self-Activation Condition</th>
<th>Similarity Mindset</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Similar</td>
</tr>
<tr>
<td>Personal-Self</td>
<td>4.33 (1.07)</td>
</tr>
<tr>
<td>Possible-Self</td>
<td>4.20 (0.79)</td>
</tr>
<tr>
<td>Control</td>
<td>4.21 (1.31)</td>
</tr>
</tbody>
</table>

*Note.* Scale ranges from 1 (not at all similar) to 7 (extremely similar).
**Self-Evaluations.** A 3 (Self-Activation: personal-self, possible-self, control) x 3 (Similarity Mindset: similar, dissimilar, control) ANOVA performed on the self-evaluative index revealed no significant main effects but a highly significant interaction, $F(4, 109) = 5.95, p < .001$; see Figure 4.2. Analysis of the means replicated some results from the previous studies. Specifically, as in Study 3, participants who only completed the self-activation manipulation showed contrast in the personal-self condition, evidenced by decreased self-satisfaction ratings in response to the fit peer, but assimilation in response to the same fit peer when in the possible-self condition, evidenced by increased self-satisfaction ratings, compared to controls, $F(2, 38) = 3.63, p < .04$; see Figure 4.3. Separately, compared to no personal/possible-self controls, participants exposed only to the similarity mindset manipulation showed contrast in the dissimilarity-focus condition, seen in decreased self-satisfaction in response to the fit peer, whereas they showed assimilation in the similarity-focus condition, seen in increased self-satisfaction in response to a fit peer, $F(2, 39) = 9.01, p < .001$; see Figure 4.4.

Interestingly, the effect of the personal/possible-self mindset was quite different when combined with (followed by) the similarity mindset manipulation. Specifically, while (as noted previously) participants who only completed the personal-self mindset manipulation before viewing the fit peer exhibited contrast (decreased self-satisfaction ratings), those who completed the personal-self mindset manipulation followed by the similarity mindset manipulation exhibited assimilation (increased self-satisfaction), regardless of whether their focus was directed to similarity or dissimilarity to the fit peer (see Figure 4.5); in contrast, participants who completed only the possible-self mindset manipulation before viewing the fit peer showed assimilation (higher self-satisfaction
ratings), as expected, whereas those who completed the possible-self manipulation followed by the similarity mindset manipulation exhibited contrast (lower self-satisfaction), again regardless of whether focus was on their similarity or dissimilarity to the fit peer.
Figure 4.2: Study 4 – Self-Satisfaction Index by Self-Activation and Similarity Mindset
Figure 4.3. Study 4 – Self-Satisfaction Index for the Self-Activation Only Groups
Figure 4.4. Study 4 – Self-Satisfaction Index for Similarity Mindset Only Groups
Figure 4.5. Study 4 – Self-Satisfaction Index by Self-Activation (no controls) and Similarity Mindset
The overall effect of combining the two assimilation-promoting and two contrast-promoting manipulations was unanticipated. Although each manipulation was successful separately in the manner predicted (similarity and possible-self mindsets each led to increased self-satisfaction in response to a fit peer, whereas dissimilarity and personal-self mindsets each led to decreased self-satisfaction relative to no-mindset controls), the combination of the two mindset manipulations produced no additive effect and instead "reversed" women's responses to the fit peer. When a personal-self mindset was first activated, participants who also completed either the similarity or dissimilarity-mindset task now instead reported increased self-satisfaction. This same reverse pattern was seen when a possible-self mindset was first activated and followed by the similarity/dissimilarity mindset task; unlike the self-enhancing effect of the possible-self mindset alone, participants who also explicitly considered either their similarity or dissimilarity experienced lower self-satisfaction.

**Follow-up Study.** Because this finding was unexpected, we conducted a small follow-up study involving only the four anomalous conditions, personal-self or possible-self mindset followed by similarity or dissimilarity mindset. The data from these participants (N = 35) paralleled closely the relevant conditions in Figure 4.4, which suggests that this pattern, at least within this context, is reliable.

**Brief Discussion**

In sum, Study 4 produced results that were consistent with our prior studies when either mindset manipulation (personal/possible-self or similarity/dissimilarity) was presented alone. Study 4 replicated Study 3 in that those in the personal-self only condition reported contrast (decreased self-ratings) while those in the possible-self only
condition reported assimilation (increased self-ratings), respectively. Additionally, Study 4 paralleled Studies 1, 2A and 2B in that perceived similarity to the comparison target moderated the social comparison outcomes. Specifically, participants who listed their similarities with the fit target reported assimilation (increased self-ratings) and those who listed their dissimilarities with the fit target reported contrast (decreased self-ratings). In addition, it is notable that the similarity mindset manipulation in Study 4 was successful, allowing for a stronger argument that the observed relationship is causal between perceived similarity and the comparison outcomes.

However, when the personal/possible-self mindset manipulation was followed by the similarity/dissimilarity mindset manipulation, a wholly unexpected pattern of effects emerged. When the personal-self mindset was followed by either the similarity or dissimilarity mindset manipulation, participants reported assimilation (higher self-ratings) whereas the personal-self manipulation alone produced contrast (decreased self-ratings). Similarly, when the possible-self mindset was followed by either the similarity or dissimilarity mindset manipulations, participants reported contrast (decreased self-ratings), while those in the possible-self mindset alone reported assimilation (increased self-ratings). Possible explanations for this unexpected pattern will be deferred to the general discussion to follow.
Main Discussion

Social comparison theory proposes that individuals are driven to evaluate their attitudes and abilities and when an objective standard is not available, that they will look to compare with others to do so (Festinger, 1954). These predictions have been supported by research showing that social comparisons are an important source of information when evaluating ourselves (Klein, 1997; Wilson & Ross, 2000; Wood, 1989). Although similar others may offer the most accurate evaluative information, there is evidence that we are likely to encounter, and sometimes even seek, comparison targets who may be better or worse off than we are on a given evaluative dimension (Klein, 1997; Wood, 1989). And, while research suggests that social comparison processes are ubiquitous, the effects of these comparisons on our self-evaluations are quite varied (e.g., Stapel & Blanton, 2000). For example, it has been hypothesized that comparing with a target who is worse off than us (making a downward comparison) might serve as an example of the depths to which we might fall or make us feel better about our status given that we are better than someone else (e.g., Buunk, Oldersma, & de Dreu, 2001; Lockwood, 2002; Wills, 1981). Similarly, there are opposing predictions regarding the outcome of a comparison with someone who is better off (an upward comparison) than we are. Such a target could offer inspiration by showing the heights we may achieve while on the other hand serve to highlight our shortcomings or failure to excel (e.g., Gilbert et al., 1995; Kemmelmeier & Oyserman, 2001; Pinkus et al., 2008).

Consequently, social comparisons can result in either heightened or lowered feelings about the self. Assimilation describes the process by which an individual’s self-
evaluation is displaced toward a comparison target, seen as self-enhanced ratings following an upward comparison and more negative self-ratings following a downward comparison. Alternatively, one’s self-evaluation may be displaced away from the comparison target, yielding contrast. Contrast following comparison with an upward target would result in more negative self-ratings, whereas contrast following comparison with a downward comparison target would result in more positive self-ratings.

Researchers have looked at various factors that might influence how one is affected by a particular social comparison. For example, when the situation in which the comparison occurs is competitive, or the dimension of comparison is particularly important to an individual, upward comparisons often become more threatening and downward comparisons more comforting, making contrastive outcomes more likely (Stapel & Koomen, 2005; Tesser, 1980). Thus, the predicted result of a social comparison with a downward target in a competitive situation would be increased self-ratings but decreased self-ratings when comparing to an upward target in the same situation.

In addition to identifying situational moderators, more recent research has suggested that acute differences in an individual’s mindset while engaging in the comparison process might alter comparison outcomes as well. For example, perceptions of one’s similarity with the comparison target or an individual’s beliefs about whether aspects of the self are static or malleable can change a comparison outcome from assimilation to contrast, even as the comparison target remains constant (Blanton, 2001; Mussweiler, 2003). In his selective accessibility model (SAM), for example, Mussweiler (2003) proposes that an individual’s comparative mindset while engaging in a social
comparison is an important moderator of comparison outcomes. An initial assessment of similarity between self and target is hypothesized to increase cognitive access to information establishing the general similarities between perceiver and target and result in assimilative (movement toward the target) social comparison outcomes. Thus, perceived similarity with a downward comparison target should result in less favorable self-ratings and similarity with an upward comparison target should result in improved self-ratings. Conversely, an initial assessment of dissimilarity between self and target is proposed to selectively activate a focus on information showing the self and target to be inconsistent. Activation of a dissimilarity-focused mindset should then result in contrastive social comparison outcomes, that is, more positive self-ratings when comparing with a downward target and more negative self-ratings when comparing with an upward target.

Research testing the predictions of the SAM has supported these hypotheses. For example, Mussweiler and colleagues (2001) have shown that activating a similarity-focused mindset in participants prior to engaging in a social comparison results in assimilation while activation of a dissimilarity-focused mindset results in contrast. Additionally, researchers have shown that following an assimilative comparison outcome, participants demonstrate a general focus on similarity and, likewise, that when contrastive comparison outcomes occur, a general focus on dissimilarity is activated (Mussweiler, 2003). Thus, perceptions of the self in relation to the comparison target can moderate comparison outcomes by altering one’s general informational focus and comparative mindset.
There is also evidence that beliefs about the self more generally, irrespective of the comparison target, can moderate social comparison outcomes. Blanton’s (2001) three-selves model holds that there are three primary self-views that can be differentially activated. One’s personal-self incorporates who she is at the present, one’s possible-self includes who she might be in the future, and one’s collective-self represents who she is based on the groups to which she belongs. Activation of one of these self-views can alter perceptions of how malleable one’s characteristics and attributes might be. For example, the personal-self is a relatively static representation of whom one is at a given point in time, whereas one’s possible-self, because it incorporates potential changes that may take place in the future, is a more malleable self-representation.

Like the SAM, the three-selves model predicts that social comparisons will result in assimilation or contrast, depending on which self-view is activated. With the personal-self activated, one’s self-boundaries are relatively defined, making it more likely that a comparison target would serve as a standard against which one could compare, leading to contrast. Thus, individuals with a personal-self view activated would be predicted to show more positive self-ratings following a downward comparison and less positive self-ratings following an upward comparison. On the other hand, because the possible-self theoretically is open to change, the attributes of a social comparison target are more likely to be seen as potential future characteristics of the self, fostering assimilation. As such, individuals with a possible-self view activated should report more positive self-evaluations following an upward comparison and more negative self-evaluations following a downward comparison. Direct tests of these hypotheses, using both manipulated self-views and individual differences in perceptions of self-mutability, have
supported these predictions (Blanton & Stapel, 2008). For example, prompting individuals to think about who they are, activating a personal-self view, or to think about who they might become, activating a possible-self view, has been shown to result in contrast and assimilation following social comparisons, respectively.

With these two models in mind, the present set of studies was designed to explore how women's mindsets might moderate the effects of appearance-related social comparisons on their feelings of self- and body-satisfaction. There is mounting evidence that exposure to media images of idealized female figures can lead to decreased body satisfaction and self-esteem (e.g., Hargreaves & Tiggeman, 2003; Rodin, Silberstein, & Steigle-Moore, 1985), and that such outcomes likely exacerbate unhealthy eating behaviors (e.g., Stice, et al., 1994; Stice & Shaw, 1994). Recent research has shown, however, that not all women exposed to attractive female targets report decrements in their self evaluations (Heinberg & Thompson, 1995; Posavac et al, 1998; Trampe et al., 2007), suggesting that there may be situational and/or individual difference characteristics that influence comparison outcomes. Given the negative psychological and behavioral consequences of exposure to these images, it is important to understand how a woman's state of mind while making such comparisons can influence her self-evaluations.

**Effects of Perceived Similarity.** The SAM in this context predicts that similarity with the target will result in assimilative comparison outcomes, that is, increased (more favorable) self-ratings when comparing with a slender, fit target and decreased (less favorable) self-ratings when comparing with a heavy or unfit other. Conversely, the SAM also predicts that dissimilarity with the target will result in contrastive comparison
outcomes – more negative self-evaluations when comparing with a slender target and more positive self-evaluations when comparing with someone who appears heavy or unfit.

The results of Study 1, 2A, and 2B, suggest that perceived similarity can moderate self-evaluations in the predicted manner. Although the manipulation of the target’s occupation in Study 1 did not influence reported similarity or comparison outcomes, participants who believed themselves to be similar to the fit target and dissimilar to the unfit target showed higher self-satisfaction ratings when compared with those women who reported feeling similar to the unfit target or dissimilar to the fit target. The results of Study 2A and 2B provide additional support for perceived similarity as a moderating factor. Although our attempts to acutely manipulate participants’ views of the similarity of the target were unsuccessful, individual differences in perceptions of similarity or dissimilarity to the target produced a pattern of self-ratings that mimicked those of Study 1: higher self-evaluations when feeling similar to the fit target or dissimilar to the unfit target and lower self-evaluations when feeling dissimilar to the fit target or similar to the unfit target. Taken together, these results suggest that perceived similarity may moderate the outcomes of appearance-related social comparisons, though the inability to experimentally manipulate perceived similarity prohibits conclusions of causality.

In Study 4, however, our manipulation was successful in creating experimental differences in perceived similarity to the comparison target, and these results bolstered the argument that perceived similarity plays a causal role in moderating the effects of body comparisons on women’s subsequent body satisfaction; those participants who completed only the similarity mindset manipulation reported self-evaluations that
paralleled those of Study 1, 2A, and 2B. Specifically, women who were induced to perceive themselves to be similar to the fit target reported assimilation (higher self-satisfaction ratings), whereas women induced to perceive themselves to be dissimilar to the fit target reported contrast (reduced self-satisfaction ratings).

In sum, these four studies support application of the SAM within the domain of body-satisfaction and suggest that perceptions of similarity may operate to alter body-image related social comparison outcomes in women. Specifically, in all four studies, women who perceived themselves to be dissimilar to the fit comparison target (as is likely the case for most women exposed to idealized media targets) reported contrast or lowered self-evaluations and satisfaction. This pattern is consistent with other research. However, these studies also suggest that women who perceive themselves to be similar to ‘idealized’ media figures, for whatever reason, may be protected from the decrements in body-satisfaction reported by women in general and in some cases may even bolster their self-evaluations through such exposures.

Numerous studies have reported increasing levels of body dissatisfaction in women, and even more recently in men, who consume or are exposed to media images (e.g., Halliwell, Ditmar, & Usborn, 2007; Stice & Whitenton, 2002). Because negative body image has been associated with various psychological and behavioral pathology (Atties & Brooks-Gunn, 1989; Killen et al., 1996; Ohring, Graber, & Brooks-Gunn, 2002; Stice, Presnell, & Spangler, 2002), an intervention designed to increase perceptions of similarity with media targets may help to reduce these effects. We attempted to acutely manipulate women’s perceptions of similarity or dissimilarity to a comparison target either by having them think or write about their common or uncommon
characteristics with only moderate success. This suggests that although similarity with a target does appear to reduce the negative effects of body-image related social comparisons, it may prove difficult as an intervention strategy.

Analysis of participants’ lists in Study 2B indicated that when they were asked to write down either their similarities or dissimilarities with the comparison target, most identified some of each. However, others have shown that activating a general similarity-focused mindset (e.g., finding the similarities between two images prior to the comparison task) leads to assimilative comparison outcomes (Mussweiler, 2003). Because such general manipulations are not dependent on a particular comparison target (given that they are induced prior to exposure to the target), they may prove more successful than those used here, which highlight the comparison target. In any event, whether the similarity or dissimilarity mindset is induced as a general focus or specific to a particular target, the duration of mitigation has yet to be determined.

Effects of Personal versus Possible Self-Activation. Blanton’s three-selves model predicts that contrast is the likely outcome when a personal-self view is activated, such that individuals who are focused on who they are at present are predicted to report decreased self-regard following an upward comparison and increased self-regard following a downward comparison. Conversely, the three-selves model predicts that assimilation is more likely when a possible-self view is activated. Thus, individuals who are induced to actively think about who they might someday become would be expected to report enhanced self-evaluations following an upward comparison and decreased self-evaluations following a downward comparison.
The results of Studies 3 and 4 offer the first support for these predictions in the domain of body image. Specifically, in Study 3 participants with a personal-self mindset exhibited contrast; after exposure to the fit target, personal-mindset participants reported reduced self-satisfaction, while those exposed to the unfit target reported increased feelings of self-satisfaction by comparison. Furthermore, although not as pronounced, individuals with an activated possible-self mindset demonstrated assimilation, reporting increased self-satisfaction when exposed to the fit target and decreased self-satisfaction when exposed to the unfit target.

Study 4, which studied reactions specifically to the fit comparison target, replicated these results. Among participants who only completed the personal/possible-self mindset manipulation, activation of the personal-self resulted in contrast (decreased self-satisfaction ratings), while activation of the possible-self resulted in assimilation (increased self-satisfaction ratings). Using the paradigm established by Blanton and Stapel (2008), we were able to successfully manipulate which self-mindset was activated and consequently alter women's reactions to fit peers. Extending this beyond the lab, encouraging women who are negatively affected by comparisons with highly fit media targets (or peers) to focus on their ability to change, or to think about who they can become, might help reduce the generally negative effects of such exposures.

In order to more fully understand the effects of activating a particular mindset prior to the comparison task, we included conditions that are unlikely to occur during media consumption; specifically, comparison with an unfit target. Such figures are relatively absent in the media, but this does not mean that a successful intervention for women with low body satisfaction could not include activating a personal-self mindset
while exposing them to an unfit target. The results of Study 3, wherein women with a personal-self mindset reported increased self-ratings following comparison with the unfit target, suggest that such circumstances may serve to heighten self-ratings for some women and may offer inspiration to keep themselves healthy. The results of Study 3 also suggest that an intervention activating a possible-self view prior to or during exposure to fit others may serve to potentially buffer against negative media effects.

It may seem somewhat puzzling that women continue to buy popular magazines featuring idealized figures if they feel bad following such exposure. The results of the previous studies suggest that perhaps when selecting and initially viewing these images, women are in a more possible-self than personal-self mindset and may be looking for inspiration and body improvement tips. In fact, a recent study (Knobloch-Westerwick & Romero, 2011) found that body-dissatisfied women spent time looking at ideal bodies when they were accompanied by articles about exercise or dieting but tended to avoid looking at these images when the accompanying article was unrelated to the body. Presenting an ideal body along with suggestions for how to achieve such a figure might serve to focus women on their potential to change and as such, to activate or reinforce a possible-self mindset as well. Additionally, it may be that women are more vulnerable to imposed exposure to idealized media figures or peers (as occurs in most body image research), rather than sought comparisons, because they may not be focused on self-change, thus making such exposure more damaging.

**Multiple Mindsets.** In the final study, we assessed how the different mindsets from the four previous studies (similarity/dissimilarity mindset or personal/possible-self mindset) might influence self-evaluations when presented together. As noted, the results
of Study 4 supported the predictions of each model independently and replicated the pattern of means seen in our previous studies. Participants with the personal-self activated reported contrast (decreased self-ratings) while those with the possible-self activated reported assimilation (increased self-ratings) when presented with a fit comparison target. Additionally, when participants were asked explicitly to assess their similarity or dissimilarity with the fit comparison target, they reported assimilation (increased self-ratings) and contrast (decreased self-ratings) respectively.

When presented together by activating a personal/possible-self mindset followed by a similarity/dissimilarity mindset, the result was more complicated. Specifically, participants who first wrote about who they were (activating a personal-self mindset) and then assessed their own similarities or dissimilarities with a fit comparison target, reported assimilation (increased self-ratings) in opposition to the personal-self mindset manipulation alone, which produced contrast (decreased self-ratings). In contrast, participants first put in a possible-self mindset who then also assessed their similarity or dissimilarity with the fit target demonstrated contrast (decreased self-ratings), unlike those in possible-self mindset alone condition, who exhibited assimilation (increased self-ratings).

**Implications for Social Comparison Theory.** The effects of social comparison processes on individual self-evaluations and behavior clearly are variable. However, studies of the social comparison effects of exposure to idealized female media figures consistently demonstrate that the outcome of comparisons with these attractive targets is a reduction in women’s body satisfaction (e.g., Irving, 1991, Stice & Shaw, 1994; Thompson & Heinberg, 1993; Tiggemann & Pickering, 1996; Wilson & Eldredge, 1992;
see Groez, Levine, & Murnen, 2002, for a meta-analytic review). As with other comparative dimensions, researchers have begun to identify individual differences that may act to moderate comparison outcomes. For example, several researchers have found that women who come into an appearance-related comparison situation with an a priori sense of dissatisfaction with their appearance are more likely to report decreased self-esteem and satisfaction following exposure to a fit or attractive target (Hargreaves & Tiggeman, 2003; Trampe et al., 2007).

The current research suggests that in addition to comparison-related individual difference variables (like trait body dissatisfaction), other more general perceiver characteristics have important effects on social comparisons as well. Mussweiler’s SAM predicts that similarity and dissimilarity between the perceiver and comparison target operate as one such moderator. In various comparison domains (athletics, intelligence, kindness), similarity between self and target has been shown to foster assimilation (movement toward the target), whereas dissimilarity has been shown to foster contrast (movement away from the target). Studies 1, 2A and 2B further this work by showing that perceptions of similarity and dissimilarity operate in the same manner when body-satisfaction is the dimension of focus.

An additional mindset variable explored in the present set of studies was the type of self-representation that was activated. Studies 3 and 4 offered support for the extension of Blanton’s three-selves model into the domain of body image. For example, women induced to activate a possible-self mindset showed actual increases in body and self-satisfaction following exposure to a fit comparison target.
One possibility is that the mindset factors explored here are related to other individual difference variables, such as trait body-dissatisfaction, that have previously been shown to moderate comparison outcomes. Perhaps it is harder for women who are already dissatisfied with their bodies to adopt a possible-self mindset when exposed to media images because they are less able to imagine themselves becoming like the idealized figures they see. If so, being in a personal-self mindset should lead them to find such images more demoralizing than inspiring. Similarly, body-dissatisfied women might generally view themselves as less similar to attractive media targets compared to those women who are body-satisfied, which would again be predicted to contribute to the greater negative impact of media exposure for the former group.

Understanding how two or more states of mind influence social comparison outcomes requires more work. The serial presentation of mindset manipulations in Study 4 produced unexpected results. When the similarity/dissimilarity mindset was induced after a particular self-view was activated, there was little difference in reported self-ratings between the two groups (both the similarity and dissimilarity groups reported either assimilation or contrast). However, when presented alone, this manipulation produced opposing effects, assimilation with a similarity mindset and contrast with a dissimilarity mindset.

In an effort to explain the results involving combined mindsets, we reviewed several theories regarding moderators of self-evaluation. For example, research has suggested that self-awareness enhances the way we feel and makes us more aware of our bodily states (Scheier & Carver, 1977). Since both mindset manipulations required participants to focus on themselves, it is possible that self-awareness was heightened and
may have altered the experience of the similarity/dissimilarity comparison task. Perhaps an individual who has just thought about the type of person she is (personal-self mindset) becomes acutely self-aware of her static self-concept and consequently becomes less involved in any subsequent comparison task. Such an idea seems consistent with Tesser’s self-esteem maintenance model (1988), which suggests that when comparison others or dimensions are irrelevant, the perceiver is likely to show a pattern of assimilation. In this case, comparing with a somewhat irrelevant fit target, whether seen as similar or dissimilar, resulted in assimilation (higher self-satisfaction).

However, such an interpretation does not readily fit the data from those participants in a possible-self mindset. It is unclear whether self-awareness can be future-oriented (cf. Scheier & Carver, 1982). If it can be, and self-awareness renders comparison targets irrelevant, then we would expect to see assimilation (higher self-ratings) in response to the fit peer among possible-self participants too. However, when a possible-self activation was followed by either the similarity or dissimilarity mindset manipulation, participants reported contrast (lower self-ratings). Furthermore, when directly testing a known self-awareness manipulation in other work (sitting in front of a mirror), we did not find a consistent pattern of assimilation using targets of various fitness levels. In fact, this manipulation produced no significant effect on social comparison outcomes, $F(1, 115) < 1, ns$ (Wanic & Kulik, 2009).

Another possibility is that thinking about the type of person one is not only increases self-awareness but also provides self-affirmation. Self-affirmation refers to the sense of self-worth one feels after assessing one's integrity (Steele, 1988). Research has shown that self-affirmed participants show less defensiveness in response to threatening
comparisons (e.g., Sherman & Cohen, 2002; Sherman, Nelson, & Steele., 2000). Perhaps thinking about who one might be in the future serves as a self-affirming activity. While this could explain the results of the possible-self/dissimilar group, who showed lower self-ratings after comparing with a fit target, it is unclear why self-affirmation would lead to a negative self-assessment following a potentially favorable comparison, as was the case in the possible-self/similar group. Furthermore, the main methods for manipulating self-affirmation focus participants on who they are (for example, thinking about five times when they have acted honestly), rather than on who they might be (e.g., Jacks & O’Brien, 2004). As such, a self-affirmation explanation also appears inconsistent with the fact that the personal-self/dissimilar group showed increased self-ratings (in that feeling dissimilar to a fit target should result in lower self-ratings) and why the results of the personal-self/dissimilar group were similar to those of the personal-self/similar group. Finally, other data from our lab that tested the effect of self-affirmation on reactions to body-image related comparisons produced no significant effect, $F(1, 121) = 1.86, p = 0.83$ (Wanic & Kulik, 2009).

One question raised by the outcome of Study 4 is whether or not it is possible to have two mindsets operating at the same time. Gollwitzer (1990) describes mindsets as a general cognitive tuning, unspecific to a particular task, which remains active beyond the initial task. Recently, researchers have shown that an attempt to switch from one mindset to another uses cognitive resources and reduces one’s self-regulative ability for future tasks (Hamilton et al., 2011). However, unlike the present study which manipulated two unrelated mindsets (personal/possible-self and similar/dissimilar), these studies generally test participants by inducing them to switch between two opposing mindsets (e.g.,
generating solutions to a problem versus making a decision; see Gollwitzer, 1990), limiting their applicability to the current results.

Given that mindsets persist, it is likely that activation of either a personal or possible-self mindset carried over into the subsequent comparison task; the results of Study 3 support this possibility in that participants’ self-evaluations differed significantly by self-activation condition. It is not obvious whether next asking participants to think about their similarity or dissimilarity with the comparison target required a complete change in mindset. If so, then participants who completed the self-activation manipulation prior to the comparison task may have depleted some of their cognitive resources in so doing, with consequences for their subsequent self-evaluation.

There is to date little research assessing the effects of cognitive exhaustion on social comparison outcomes. Within the social comparison literature, researchers have hypothesized and found experimental support for predictions that contrast may be more likely to occur under conditions where participants are cognitively busy (e.g., Martin, 1986; Pelham & Wachsmuth, 1995; Stapel & Suls, 2004). For example, Gilbert and colleagues (1995) showed that when participants were made cognitively busy (by asking them to rehearse an 8-digit number), they were more affected by the performance of a confederate in making judgments about themselves compared to when they did not perform the digit memory task. Specifically, participants rated their self-perceived competence highest when they were cognitively busy and exposed to a confederate who had given a poor performance (showing contrast).

Integrating the evidence from these mindset and social comparison models does not offer an obvious explanation for the multiple-mindset results of Study 4. If switching
from a personal/possible-self mindset to a similarity/dissimilarity mindset created cognitive busyness, we would predict contrast following the comparison task. The prediction for Study 4, which used only the fit comparison target, would then be decreased self-ratings from all cognitively busy (dual mindset) groups. While contrast was reported by participants who first activated the possible-self and then completed the similarity or dissimilarity task, participants who activated the personal-self and then completed the similarity or dissimilarity task reported assimilation (higher self-ratings).

Furthermore, participants who underwent only the personal/possible-self mindset manipulation before exposure to the fit peer demonstrated contrast in the personal-self condition (decreased self-ratings) and assimilation in the possible-self condition (increased self-ratings). Completion of the similarity or dissimilarity mindset following the personal/possible-self induction resulted in a reverse pattern of self-ratings for both the personal and possible-self groups. It is unclear how such results can be explained by the mindset and social comparison models reviewed here.

**Implications for Body-Image Research.** Because of the connection between body dissatisfaction and disordered eating behaviors, and evidence of the continued prevalence of the thin ideal, there is interest in developing interventions to counteract the negative body image effects of media figures (Irving, DuPen, & Berel, 1998; Levine, Piran, & Stoddard, 1999; Levine & Smolak, 1998). One popular approach has been creating media literacy programs for children, adolescents, and young adults. Media literacy programs are designed to increase critical analysis of media messages and when applied to body image, they typically involve highlighting the unrealistic nature of the thin ideal (e.g., Levine, Pirane, & Stoddard, 1999). Such programs have shown some
success in reducing body dissatisfaction among participants of various ages but have been criticized because they tend to increase only awareness of the media’s messages regarding attractiveness and not the more important factor of internalization (Irving et al., 1998; Irving & Berel, 2001). For example, teens who completed a 6 week media literacy program showed increases in their ability to identify and distinguish media messages of attractiveness but not a subsequent decrease their beliefs about the importance of meeting this standard (Levine, Smolak, & Schermer, 1996).

In the current studies, perceptions of similarity with a fit comparison target reduced, and for some women reversed, the negative effect such comparisons generally have on body and self-satisfaction. As such, programs that promote women’s beliefs about their own similarity with media figures (rather than focusing on the artificially created dissimilarities as media literacy programs do) may help prevent such undesirable outcomes. As noted earlier, it is unknown how long the results of such an intervention might last. It seems plausible, however, that encouraging women to focus regularly and consistently on their similarities with attractive media targets and peers might lead to a more pervasive benefit.

In the present set of studies, acute manipulation of similarity between oneself and a fit or unfit target proved hard to accomplish. Mussweiler’s (2003) work has shown that inducing a general similarity or dissimilarity focus prior to exposure to a comparison target promotes assimilation or contrast, respectively, and may be easier to induce. At this time it is unclear whether activating either general comparative mindset prior to exposure to attractive media or peer targets would be a successful moderator of comparison outcomes in the short or long term. Given the limited success of the
similarity mindset manipulation used here, induction of the possible-self mindset prior to comparison situations with idealized figures may be a more promising solution.

As a whole, the results of the present set of studies suggest that both the SAM and three-selves model of social comparison can be generalized to the domain of appearance-related comparisons. As predicted by the SAM, participants’ perceptions of their own similarity or dissimilarity with the comparison target influenced comparison outcomes by fostering either increased or decreased self-ratings, depending on the comparison target. Specifically, participants who perceived themselves to be similar to a fit peer reported increased self-rating whereas those who perceived themselves to be dissimilar to the same fit peer reported decreased self-ratings. On the other hand, those who perceived themselves to be similar to an unfit peer reported decreased self-ratings while those who perceived themselves to be dissimilar to the same unfit peer reported increased self-ratings. Furthermore, the activation of a particular self-mindset moderated comparison outcomes in a manner consistent with the three-selves model, fostering contrast when the personal-self was activated and assimilation when the possible-self was activated. Thus participants with the personal-self mindset activated reported higher self-ratings following exposure to an unfit peer and lower self-ratings following exposure to a fit peer. When the possible-self mindset was activated, participants reported higher self-ratings following exposure to a fit peer and lower self-ratings following exposure to an unfit peer. Of particular importance for body image researchers, participants in several conditions showed increased self-ratings following exposure to a fit female target. Hopefully, these findings can be extended to develop successful interventions to decrease
the negative effects of exposure to ‘idealized’ media targets and attractive, fit peers by encouraging women to adopt comparative mindsets that promote body satisfaction.
Appendix A

Please indicate the extent to which you agree or disagree with the following statements by CIRCLING the number that corresponds to your choice.

1. The kind of person someone is is something basic about them and it can’t be changed very much.

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2. People can do things differently, but the important parts of who they are can’t really be changed.

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3. Who people are is influenced largely by their environment.

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4. I believe I will be a different person in the future.

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5. People generally change who they are over time.

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6. It is difficult to change who someone is.

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