Applying Comparison-Induced Distortion Theory to Body-Size Judgments

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Abstract

I propose a comparison-induced distortion theory account of body-size judgments wherein verbal body-size comparisons (e.g., "Kimberly is thinner than Jane," Choplin & Hummel, 2002, 2005) bias judgments of body-sizes. Two experiments tested predictions of this account. Unpredicted by previous models, Experiment 1 demonstrated that verbal comparisons affect body-size judgments even though the distribution of contextual body sizes was held constant. Experiment 2 found that verbal comparisons can sometimes bias judgments toward the values to which they are compared. An extremely thin woman was judged larger if she was compared to someone who was much larger than her than if she was compared to someone who was only slightly larger than her. These results demonstrate that research on body-size judgments cannot ignore the effects of verbal comparisons.

Body-Size Judgments

The goal of this paper is to propose and test a comparison-induced distortion theory (CID theory, Choplin & Hummel, 2002, 2005) account of body-size judgments. The application of CID theory to the problem of body-size judgments was inspired by research investigating the effects of media ideals on body-size judgments (Lavine, Sweeney, & Wagner, 1999; Martin & Kennedy, 1993; Richins, 1991). Contemporary popular media glamorizes unrealistically thin women (Fouts & Burggraf, 2000; Malkin, Wornian, & Chrisler, 1999; Owen & Laurel-Seller, 2000; Spitzer, Henderson, & Zivian, 1999) and this glamorization has negative psychological consequences for women (Bessenoff, 2006; see Groesz, Levine, & Murnen, 2002, for a meta-analysis; Irving, 1990; Stice & Shaw, 1994). In particular, researchers have argued that this glamorization leads to increased body-size dissatisfaction (Garfinkel et al., 1992; Grogan, Williams, & Conner, 1996; Trampe, Stapel, & Siero, 2007), decreased self-esteem (J. K. Thompson & Thompson, 1986), negative mood (Tiggemann & McGill, 2004), feelings of shame (Sanftner, Barlow, Marschall, & Tangney, 1995), depression (Heinberg & Thompson, 1995; J. K. Thompson, 1986), and unhealthy dieting behavior (Garfinkel et al., 1992; Phelps et al., 1993; Stice, Schupak-Neuberg, Shaw, & Stein, 1994; Stice & Shaw, 1994).

Concern over the negative effects of this glamorization has motivated several psychological models of the affective consequences of body-size comparisons. Some have argued that the tendency to compare one's self to glamorized, unrealistically thin media ideals (upward social comparisons, Festinger, 1954) mediates the impact of media exposure on measures such as body dissatisfaction, negative mood, depression (Bessenoff, 2006; Tiggemann & McGill, 2004), as well as disordered eating (Field, Camargo, Taylor, Berkey, & Colditz, 1999). Likewise, Thompson and his colleagues (J. K. Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999; J. K. Thompson & Stice, 2001) have argued

that women internalize media ideals and the discrepancy between their ideal sizes and their actual sizes (Higgins, 1987, 1989) causes negative psychological consequences (Bessenoff, 2006; Harrison, 2001; Strauman, Vookles, Berenstein, Chaiken, & Higgins, 1991). Although the model proposed here is strictly a cognitive model, it might be of use to researchers in further refining models of the affective consequences of media ideals.

The application of CID theory to the problem of body-size judgments was also inspired by the observation that women diagnosed with anorexia nervosa overestimate their body sizes (Bruch, 1962). Prior to Penner, Thompson, and Coovert (1991), many researchers assumed that this overestimation was involved in the etiology of the disorder. However, their research found that all thin women overestimate their body sizes. This finding suggests that overestimation probably does not play a role in the etiology of the disorder, but it does leave us with a mystery. Why should thin women overestimate their body sizes?

The few papers that have tried to propose formal models of body-size judgments, rather than the affective consequences of social body-size comparisons, have invoked Helson's (1964) adaptation-level theory (AL theory, see Choplin & Hummel, 2005; Helson, 1964; Wedell, 1995, for the mathematical implementation of this model) to explain how images in popular media influence body-size judgments (Martin & Kennedy, 1993; Richins, 1991). This theory was originally designed to explain people's judgments of sensory stimuli such as temperatures. AL theory assumes that people judge temperatures relative to the temperature that feels normal or average to them (the adaptation level). Temperatures that are above the adaptation level are judged hot, and temperatures that are below the adaptation level are judged cold. A given temperature such as 50º Fahrenheit (10º Celsius) will feel warmer in winter than in summer because colder temperatures seem normal in winter, making this temperature high relative to the lower norm. Likewise, this theory assumes that people judge body sizes relative to the body sizes they think are normal or average. Body sizes that are larger than what people think of as normal are judged fat, and body sizes that are smaller are judged thin. A 140-lb (63.5-kg) woman will seem fatter if people think smaller sizes are normal. Popular media images of unrealistically thin women might make thinner women seem normal (Martin & Kennedy, 1993; Richins, 1991). If so, then relative to this artificially created norm thin women will be judged closer to average, average women will be judged larger than average, and large women will be judged extremely large.

Choplin and Hummel (2002) proposed an alternative model of attribute evaluation (CID theory, see Choplin & Hummel, 2005, for the mathematical implementation of this

model and a case where the mathematical implementation of CID theory was pitted against the mathematical implementation of AL theory). This model starts with the observation that language-expressible magnitude comparisons suggest quantifiable differences of intermediate sizes (see Rusiecki, 1985). In particular, body-size comparisons are generally not used to describe 1-pound differences. Indeed, it would seem odd—perhaps even violating conversational norms—to describe a person who is 1 pound heavier as "fatter." Likewise, comparisons are rarely used to describe 150-plus-pound differences, because such large differences are rare in the world. Rather, body-size comparisons are most often used to describe intermediate differences (perhaps 15- to 25-pound differences). To test this intuition, a pretest group of 20 women from a university community imagined that one woman, Woman A, was thinner than another woman, Woman B, and indicated the sizes they imagined the two women to be on Thompson and Gray's (1995) scale, shown in Figure 1. These participants also imagined that a third woman, Woman C, was fatter than a fourth woman, Woman D, and indicated imagined sizes for these women as well. Responses were coded by numbering the nine women on Thompson and Gray's (1995) scale such that the smallest woman was assigned a value of 1, and the largest woman was assigned a value of 9. Results suggested that body-size comparisons suggest a difference (Rusiecki, 1985) of approximately 3 or 4 body sizes on Thompson and Gray's (1995) scale.
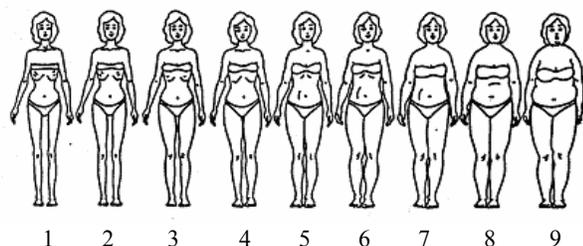

Figure 1. Thompson & Gray's (1995) Contour Drawing Rating Scale for women (reprinted by permission).

CID theory predicts that when the actual difference between two compared body sizes is smaller than the comparison-suggested difference, comparisons will tend to bias body-size judgments apart to better match the larger comparison-suggested difference. For example, assuming that the comparison-suggested difference is 3 or 4 body sizes on Thompson and Gray's (1995) scale, a comparison between a woman who is approximately the size of the fourth woman on Thompson and Gray's (1995) scale and a woman who is approximately the size of the sixth woman on the scale (i.e., a difference of two body sizes) will tend to bias judgments of their body sizes apart (i.e., toward the comparison-suggested difference of 3 or 4 body sizes). The smaller woman will tend to be judged smaller, and the larger woman will tend to be judged larger than would have been the case without the comparison. However, when the actual difference between two compared body sizes is larger than the comparison-suggested difference, CID theory

predicts that comparisons will tend to bias body-size judgments closer together, again to better match the comparison-suggested difference. Assuming once again that the comparison-suggested difference is 3 or 4 body sizes on Thompson and Gray's (1995) scale, a comparison between a woman who is approximately the size of the third woman on the scale and a woman who is approximately the size of the eighth woman on the scale (i.e., a difference of five body sizes) will tend to bias judgments of their body sizes together (i.e., toward the comparison-suggested difference of 3 or 4 body sizes). The smaller woman will tend to be judged larger, and the larger woman will tend to be judged smaller than would have been the case without the comparison.

The words used to make comparisons also suggest specific values (Choplin & Hummel, 2002; Rusiecki, 1985). In particular, the word *fatter* suggests larger body-sizes than the word *thinner* so using the word *fatter* to compare body sizes might lead to larger body-size judgments than using the word *thinner*. Two experiments investigated the effects of language expressible comparisons on body-size judgments. To isolate the effects of language expressible comparisons from other contextual effects (e.g., the mean of contextual values) and discriminate between CID theory and AL theory, Experiment 1 investigated the effects of verbal body-size comparisons on body-size judgments while keeping contextual body-sizes constant (i.e., all participants viewed pictures of the same three women). Experiment 2 compared a smaller-than-average woman either to a woman who was larger than her or to a woman who was much larger than her.

Experiment 1

To investigate the effects of language expressible body-size comparisons while keeping contextual values (i.e., the mean) constant, all participants in Experiment 1 viewed pictures of the same three body sizes. We chose pictures of three women—an overweight woman, an average-size woman, and an underweight woman. To measure evaluated sizes of these three women unbiased by comparisons, 89 female pretest participants viewed one of the three pictures. The picture was then removed, and participants judged the size of the woman in the picture from memory using Thompson and Gray's (1995) scale. Responses were coded by numbering the nine women on the scale such that the smallest woman was assigned a value of 1, and the largest woman was assigned a value of 9. The judged size of the overweight woman was 8.35 ($SD = 0.67$, $N = 20$), the judged size of the average-size woman was 6.17 ($SD = 1.45$, $N = 49$), and the judged size of the underweight woman was 4.68 ($SD = 1.34$, $N = 20$). Participants' task in the experiment proper was to compare the average-size woman to either the overweight woman or the underweight woman from memory using either the comparison word *thinner* or the comparison word *fatter* and then to identify the woman on Thompson and Gray's (1995) scale that most closely resembled the average-sized woman's body size.

Because the difference between the unbiased sizes of the overweight woman and the average-size woman (difference $= 8.35 - 6.17 = 2.18$), as well as the difference between the

unbiased sizes of the average-size woman and the underweight woman (difference = 6.17 - 4.86 = 1.49), were both less than the comparison-suggested difference of 3 or 4 body sizes as roughly estimated in the pretest, CID theory predicts that comparisons ought to bias judgments apart in this experiment. The average-sized woman ought to be judged smaller when compared to the overweight woman than when compared to the underweight woman. Because comparing women's body sizes in English using the comparison word *fatter* implies that their body sizes are large, the average-size woman might be judged larger when she is compared using the word *fatter* than when she is compared using the word *thinner*. AL theory does not predict any effects of language. Indeed, because participants saw all three women, and the mean of the contextual values was thereby held constant, there is no mechanism in AL theory that would change body-size judgments across the conditions in this experiment.

Method
Participants. The experimenter approached prospective participants on campus or in the surrounding university community and asked them if they would like to participate. Two hundred fifteen women agreed to participate after being approached in this manner.

Materials and Procedure. Participants viewed pictures of the three women described above simultaneously. The overweight woman was labeled "Woman A," the average-sized woman was labeled "Woman B," and the underweight woman was labeled "Woman C." The pictures were then removed, and participants verified a true sentence that compared the average-sized woman and the overweight woman using either the word *thinner* (i.e., "Woman B was thinner than Woman A"; $N = 53$) or the word *fatter* (i.e., "Woman A was fatter than Woman B"; $N = 54$), or that compared the average-sized woman to the underweight woman using either the word *thinner* (i.e., "Woman C was thinner than Woman B"; $N = 54$) or the word *fatter* (i.e., "Woman B was fatter than Woman C"; $N = 54$). Finally, participants were asked to recall the average-sized woman's body size and to indicate the size they remembered on Thompson and Gray's (1995) scale.

Results
As in the pretests, responses were coded by numbering the nine women on Thompson and Gray's (1995) scale such that the smallest woman was assigned a value of 1, and the largest woman was assigned a value of 9. A 2 (wording: *thinner* vs. *fatter*) x 2 (comparison woman: overweight woman vs. underweight woman) between-subjects analysis of variance (ANOVA) was performed on judgments of the average-size woman's body size. This analysis found that participants who compared her to the underweight woman judged her to be larger ($M = 7.25$) than did participants who compared her to the overweight woman ($M = 6.89$), $F(1,211) = 7.87$, $p < .01$. This analysis also found that participants who compared the women's body sizes using the word *fatter* judged the average-size woman to be larger ($M = 7.87$) than did participants who compared the women's

body sizes using the word *thinner* ($M = 6.27$), $F(1,211) = 154.9$, $p < .01$. The ANOVA failed to reveal an interaction, $F < 1$.

Discussion of Experiment 1
These results indicate that pairwise, language-expressible comparisons affect judgments of body size even when contextual body sizes are held constant. CID theory predicts that whenever unbiased differences between body sizes are smaller than comparison-suggested differences, comparisons will tend to bias judgments apart so that the target body size in Experiment 1 should have been judged larger after being compared to the smaller body size than after being compared to the larger body size. Thus the results of Experiment 1 were consistent with the predictions of CID theory. By contrast, AL theory has no mechanism whereby language would affect estimation.

Choplin and Hummel (2002) also predicted that the specific words used to make body-size comparisons will affect body-size judgments such that the comparison word *fatter* suggests large body sizes and the comparison word *thinner* suggests small body sizes. The results of Experiment 1 were consistent with this prediction. AL theory has no mechanism that can account for this effect.

Experiment 2
One possible interpretation of Experiment 1 is that more attention might have been given to the compared women than to the ignored woman. If so, than a variation of AL theory (not Helson's, 1964, original formalization) that places greater weight on attended sizes could account for the results of Experiment 1. However, this variation would always predict contrast effects. That is, comparing—and thereby attending—to sizes will always bias evaluations of those sizes apart. CID theory, by contrast, predicts that comparisons will bias size evaluations toward the sizes to which they are compared when the unbiased difference is larger than a comparison-suggested difference.

In Experiment 2 a picture of a smaller-than-average woman (labeled "Kimberly") was used as the target. Kimberly was compared to one of two other women, both labeled "Jane": an average-sized woman (henceforth, "Medium Jane") and an overweight woman (henceforth, "Large Jane"). One hundred fifty four female pretest participants judged the unbiased size of one of the three women using Thompson and Gray's (1995) scale while her picture remained in view. This pretest found that Kimberly's unbiased size was 3.12 ($SD = 1.22$, $N = 50$), Medium Jane's was 7.54 ($SD = 0.79$, $N = 54$), and Large Jane's was 8.42 ($SD = 0.64$, $N = 50$).

Participants in Experiment 2 viewed a picture of Kimberly and a picture of one Jane (either Medium Jane or Large Jane) presented simultaneously. They compared sizes and then identified on Thompson and Gray's (1995) scale the woman that most closely resembled Kimberly and the woman that most closely resembled Jane. The entire experiment was presented on the same piece of paper so that participants could judge body sizes while the pictures remained in view. Because the unbiased difference between Kimberly and Large Jane (difference = 8.42 - 3.12 = 5.3)

differs from the comparison-suggested difference to a greater degree than does the unbiased difference between Kimberly and Medium Jane (difference = 7.54 - 3.12 = 4.42), CID theory predicts that Kimberly will be judged larger when she is compared to Large Jane than when she is compared to Medium Jane. AL theory predicts the opposite. Because Large Jane creates a higher-average context than Medium Jane does, AL theory predicts that Kimberly will be judged smaller in the context created by Large Jane than in the context created by Medium Jane.

Method

Participants. The experimenter approached prospective participants on campus or in the surrounding university community and asked them if they would like to participate. Two hundred seventy-nine women agreed to participate after being approached in this manner. Of these 279 women, 116 compared Kimberly to Large Jane, and 163 compared Kimberly to Medium Jane.

Materials and Procedure. Participants viewed pictures of two women (Kimberly and either of the two Janes) and compared their body sizes—either answering the question "Who is thinner?" or the question "Who is fatter?" by circling the correct name. They then judged Kimberly's body size and Jane's body size using Thompson and Gray's (1995) scale. To test whether the effects of comparisons would be observable while sizes remained in view, the comparison task and the judgment task were presented on the same 8.5"x11" piece of paper so that the pictures of the women remained in view during the judgment task.

Results

Responses were coded as in the pretests and in Experiment 1. When Kimberly was compared to Medium Jane, Kimberly's body size on Thompson and Gray's (1995) scale was judged to be 3.01 (SD = 1.45), which was not significantly different from her size judged alone (M = 3.12, SD = 1.22), $t(211) = 0.58$, $p > .05$, and Medium Jane's body size was judged to be 7.52 (SD = 0.88), which again was not significantly different from her size judged alone (M = 7.54, SD = 0.79), $t(215) = 0.87$, $p > .05$. The difference between these judgments of their body sizes when they were compared (M = 4.51, SD = 1.57) was also not significantly different from the difference between the judgments of their body sizes unbiased by comparisons (M = 4.42), $t(162) = 0.85$, $p > .05$. When Kimberly was compared to Large Jane, however, Kimberly's body size was judged to be 3.71 (SD = 1.37), which was significantly larger than her size judged alone, $t(164) = 2.50$, $p = .01$. Perhaps due to a ceiling effect, Large Jane's body size (M = 8.50, SD = 0.55) was not significantly different from her size judged alone (M = 8.42, SD = 0.64), $t(164) = 0.82$, $p > .05$. The difference between the judgments of their body sizes when they were compared (M = 4.79, SD = 1.49) was significantly smaller than the difference between the judgments of their body sizes when they were judged alone (M = 5.30), $t(115) = 3.48$, $p < .01$.

A 2 (comparison woman: Medium Jane vs. Large Jane) x 2 (wording: *thinner* vs. *fatter*) between-subjects ANOVA was performed on judgments of Kimberly's body size. This analysis revealed that participants who compared her to Large Jane judged her size to be larger than did participants who compared her to Medium Jane, $F(1, 275) = 16.82$, $MSE = 1.97$, $p < .01$. The ANOVA also revealed that participants who compared Kimberly to the other women using the word *fatter* judged her size to be larger (M = 3.60) than did participants who compared her to the other women using the word *thinner* (M = 3.12), $F(1, 275) = 7.70$, $MSE = 1.97$, $p < .01$. The ANOVA failed to reveal an interaction, $F < 1$.

Discussion of Experiment 2

Consistent with the predictions of CID theory and inconsistent with the predictions of AL theory, the difference between judgments of Kimberly's body size and judgments of Large Jane's body size was smaller when the two women were compared than when they were judged alone, and Kimberly was judged larger when she was compared to Large Jane than when she was judged alone or when she was compared to Medium Jane. This study also demonstrates that comparison-induced distortions of body-size judgments occur even when participants are not relying on memory but still have the images to be judged in view.

AL theory made very different predictions than those made by CID theory. Because the presentation of Large Jane created a context with a higher average body size than did the presentation of Medium Jane, AL theory predicted that Kimberly would be judged smaller in the context of Large Jane than in the context of Medium Jane. But, in fact, Kimberly was judged larger in the context of Large Jane than in the context of Medium Jane. The results of this study are therefore inconsistent with AL theory predictions.

Choplin and Hummel (2002) also predicted that Kimberly's body size ought to be judged smaller when she was compared using the comparison word *thinner* than when she was compared using the comparison word *fatter*. The results were consistent with this prediction as well.

General Discussion

Two experiments pitted the predictions of the CID-theory account of body-size misjudgments against the predictions of the AL-theory account of body-size misjudgments. Experiment 1 investigated the effects of language-expressible comparisons while contextual body sizes were held constant. CID theory predicted that language-expressible comparisons would affect body-size judgments. However, because there was no change in the distribution of contextual body sizes (the average body size was the same across all conditions), AL theory has no mechanism by which language-expressible comparisons could affect body-size judgments in this experiment. Thus, consistent with the predictions of CID theory and not predicted by AL theory, language-expressible comparisons affected participants' judgments of body size in Experiment 1.

Experiment 2 investigated the effects of the size of the difference between two compared body sizes on participants' judgments of body size. Because the large difference in this experiment exceeded the comparison-suggested difference to a greater degree than the smaller difference did, CID theory predicted that the woman with the small body size (Kimberly) would be judged larger

when there was a large difference between her and the woman to whom she was compared than when there was a smaller difference. By contrast, because the average contextual body size was larger when there was a large difference than when there was a smaller difference, AL theory predicted that the woman with the small body size (Kimberly) would be judged smaller when there was a large difference than when there was a smaller difference. Consistent with CID theory and inconsistent with AL theory, the smaller woman was judged larger when there was a large difference between her and the woman to whom she was compared than when there was a small difference.

Future Research

The account of body-size misjudgments offered by CID theory might offer key insights into body-size misjudgments that should be pursued in future research. For example, previous research on body-size misjudgments has found that people's susceptibility to body-size misjudgments and dissatisfaction is affected by sex (Grogan et al., 1996), age (Phelps et al., 1993), race (Desmond, Price, Hallinan, & Smith, 1989; Franko & Striegel-Moore, 2002), socioeconomic status (Sobal & Stunkard, 1989), and acculturation into American culture (Hazuda, Haffner, Stern, & Eifler, 1988). CID theory suggests a number of places where future research might look for explanations into these between-group differences. First, some groups might be more likely to compare body sizes than other groups. For example, older men may be less likely to compare body sizes than are younger women. Alternatively, body-size comparisons might be more important to these groups (greater importance of the comparison could be modeled by giving CID theory's weighting parameter, Parameter w, see Choplin & Hummel, 2005, a larger value).

Additionally, some groups might have a tendency to compare themselves to smaller body sizes. European American women, for example, might be more likely to compare themselves to extremely thin white supermodels than African American women might be. Idiosyncratic linguistic norms may also explain some of this pattern of susceptibility. For instance, some groups might use body-size comparisons to describe smaller differences in body size than other groups. Some groups might describe a difference of five pounds as "fatter" while other groups might describe this difference as "approximately the same." Groups that are less likely to describe small body-size differences using words like *fatter* or *thinner* might be less likely to overestimate body-size differences. Future research should investigate these idiosyncratic linguistic norms and possible links between these norms and the etiology of body-size dissatisfaction.

Acknowledgments

References

Bessenoff, G. R. (2006). Can the media affect us? Social comparison, self-discrepancy, and the thin ideal. *Psychology of Women Quarterly, 30*, 239-251.

Bruch, H. (1962). Perceptual and conceptual disturbances in Anorexia Nervosa. *Psychosomatic Medicine, 24*, 187-194.

Choplin, J. M., & Hummel, J. E. (2002). Magnitude comparisons distort mental representations of magnitude. *Journal of Experimental Psychology: General, 131*, 270-286.

Choplin, J. M., & Hummel, J. E. (2005). Comparison-induced decoy effects. *Memory & Cognition, 33*, 332-343.

Desmond, S. M., Price, J. H., Hallinan, C., & Smith, D. (1989). Black and white adolescents' perceptions of their weight. *Journal of School Health, 59*, 353-358.

Festinger, L. (1954). A theory of social comparison processes. *Human Relations, 7*, 117-140.

Field, A. E., Camargo, C. A., Taylor, C. B., Berkey, C. S., & Colditz, G. A. (1999). Relation of peer and media influences to the development of purging behaviors among preadolescent and adolescent girls. *Archives of Pediatric & Adolescent Medicine, 153*, 1184-1189.

Fouts, G., & Burggraf, K. (2000). Television situation comedies: Female weight, male negative comments, and audience reactions. *Sex Roles, 42*, 925-932.

Franko, D. L., & Striegel-Moore, R. H. (2002). The role of body dissatisfaction as a risk factor for depression in adolescent girls: Are the differences Black and White? *Journal of Psychosomatic Research, 53*, 975-983.

Garfinkel, P. E., Goldbloom, D., Davis, R., Olmsted, M. P., Garner, D. M., & Halmi, K. A. (1992). Body dissatisfaction in bulimia nervosa: Relationship to weight and shape concerns and psychological functioning. *International Journal of Eating Disorders, 11*, 151-161.

Groesz, L. M., Levine, M. P., & Murnen, S. K. (2002). The effect of experimental presentation of thin media images on body satisfaction: A meta-analytic review. *International Journal of Eating Disorders, 31*, 1-16.

Grogan, S., Williams, Z., & Conner, M. (1996). The effects of viewing same-gender photographic models on body-esteem. *Psychology of Women Quarterly, 20*, 569-575.

Harrison, K. (2001). Ourselves, our bodies: Thin-ideal media, self-discrepancies, and eating disorder symptomatology in adolescents. *Journal of Social and Clinical Psychology, 20*, 289-323.

Hazuda, H. P., Haffner, S. M., Stern, M. P., & Eifler, C. W. (1988). Effects of acculturation and socio-economic status on obesity and diabetes in Mexican Americans: The San Antonio Heart Study. *American Journal of Epidemiology, 128*, 1289-1301.

Heinberg, L. J., & Thompson, J. K. (1995). Body image and televised images of thinness and attractiveness: A

controlled laboratory investigation. *Journal of Social and Clinical Psychology, 14*, 325-338.

Helson, H. (1964). *Adaptation-level theory*. New York: Harper & Row.

Higgins, E. T. (1987). Self-discrepancy: A theory relating self and affect. *Psychological Review, 94*, 319-340.

Higgins, E. T. (1989). Continuities and discontinuities in self-regulatory and self-evaluative processes: A developmental theory relating self and affect. *Journal of Personality, 57*, 407-444.

Irving, L. M. (1990). Mirror images: Effects of the standard of beauty on self- and body-esteem of women exhibiting varying levels of bulimic symptoms. *Journal of Social and Clinical Psychology, 9*, 242.

Lavine, H., Sweeney, D., & Wagner, S. H. (1999). Depicting women as sex objects in television advertising: Effects on body dissatisfaction. *Personality and Social Psychology Bulletin, 25*, 1049-1058.

Malkin, A. R., Wornian, K., & Chrisler, J. C. (1999). Women and weight: Gendered messages on magazine covers. *Sex Roles, 40*, 647-655.

Martin, M. C., & Kennedy, P. F. (1993). Advertising and social comparison: Consequences for female preadolescents and adolescents. *Psychology & Marketing, 10*, 513-530.

Owen, P. R., & Laurel-Seller, E. (2000). Weight and shape ideals: Thin is dangerously in. *Journal of Applied Social Psychology, 30*, 979-990.

Penner, L. A., Thompson, J. K., & Coovert, D. L. (1991). Size overestimation among anorexics: Much ado about very little? *Journal of Abnormal Psychology, 100*, 90-93.

Phelps, L., Johnston, L. S., Jimenez, D. P., Wilczenski, F. L., Andrea, R. K., & Healy, R. W. (1993). Figure preference, body dissatisfaction, and body distortion in adolescence. *Journal of Adolescent Research, 8*, 297-310.

Richins, M. L. (1991). Social comparison and the idealized images of advertising. *Journal of Consumer Research, 18*, 71-83.

Rusiecki, J. (1985). *Adjectives and Comparison in English*. New York: Longman.

Sanftner, J. L., Barlow, D. H., Marschall, D. E., & Tangney, J. P. (1995). The relation of shame and guilt to eating disorder symptomatology. *Journal of Social and Clinical Psychology, 14*, 315-324.

Sobal, J., & Stunkard, A. J. (1989). Socioeconomic status and obesity: A review of the literature. *Psychological Bulletin, 105*, 260-275.

Spitzer, B. L., Henderson, K. A., & Zivian, M. T. (1999). Gender differences in population versus media body sizes: A comparison over four decades. *Sex Roles, 40*, 545-565.

Stice, E., Schupak-Neuberg, E., Shaw, H. E., & Stein, R. I. (1994). Relation of media exposure to eating disorder sympomatology: An examination of mediating mechanisms. *Journal of Abnormal Psychology, 103*, 836-840.

Stice, E., & Shaw, H. E. (1994). Adverse effects of the media protrayed thin-ideal on women and linkages to bulimic symptomatology. *Journal of Social and Clinical Psychology, 13*, 288-308.

Strauman, T. J., Vookles, J., Berenstein, V., Chaiken, S., & Higgins, E. T. (1991). Self-discrepancies and vulnerability to body dissatisfaction and disordered eating. *Journal of Personality and Social Psychology, 61*, 946-956.

Thompson, J. K. (1986). Larger than life. *Psychology Today, 20*, 38-44.

Thompson, J. K., Heinberg, L. J., Altabe, M. N., & Tantleff-Dunn, S. (1999). *Exacting beauty: Theory, assessment, and treatment of body image disturbance*. Washington, DC: American Psychological Association.

Thompson, J. K., & Stice, E. (2001). Thin-ideal internalization: Mounting evidence for a new risk factor for body-image disturbance and eating pathology. *Current Directions in Psychological Science, 10*, 181-183.

Thompson, J. K., & Thompson, C. M. (1986). Body size distortion and self-esteem in asymptomatic, normal weight males and females. *International Journal of Eating Disorders, 5*, 1061-1068.

Thompson, M. A., & Gray, J. J. (1995). Development and validation of a new body-image assessment scale. *Journal of Personality Assessment, 64*, 258-269.

Tiggemann, M., & McGill, B. (2004). The role of social comparison in the effect of magazine advertisements on women's mood and body dissatisfaction. *Journal of Social and Clinical Psychology, 23*, 23-44.

Trampe, D., Stapel, D. A., & Siero, F. W. (2007). On models and vases: Body dissatisfaction and proneness to social comparison effects. *Journal of Personality and Social Psychology, 92*, 106-118.

Wedell, D. H. (1995). Contrast effects in paired comparisons: Evidence for both stimulus-based and response-based processes. *Journal of Experimental Psychology: Human Perception and Performance, 21*, 1158-1173.