THINSPIRATION

Thinspiration: Self-Improvement Versus Self-Evaluation

Social Comparisons with Thin-Ideal Media Portrayals

Abstract

Much research has demonstrated negative impacts of idealized-body imagery exposure on body satisfaction. Yet, paradoxically, media with such imagery attract mass audiences. Only few studies showed women’s body satisfaction increased due to thin-ideal exposure. The kind of social comparison women engage in (self-evaluation vs. self-improvement) may explain these inconsistent findings and the paradoxical attraction to thin-ideal messages. Across five days, thin-ideal messages were presented to 51 women; self-evaluation and self-improvement comparisons as well as body satisfaction were measured each day. A linear positive change in body satisfaction emerged. Greater self-improvement comparisons increased this change, whereas greater self-evaluation comparisons reduced it. Extent of both social comparison types changed during the prolonged exposure. A greater tendency to compare one’s body with others’ improved body satisfaction through self-improvement comparisons and fostered weight loss behaviors through self-evaluation comparisons.

Keywords: body satisfaction, social comparison, self-improvement, weight loss behavior, thin ideal
Thinspiration: Self-Improvement versus Self-Evaluation during Social Comparisons with Thin-Ideal Media Portrayals

Body dissatisfaction is near universal among women who are overweight but also among normal weight and underweight women (Paeratakul, White, Williamson, Ryan, & Bray, 2002): Most women (75%) report that body shape and weight concerns interfere with their happiness (Reba-Harrelson et al., 2009). Women further indicate body weight as the aspect of their life they are least satisfied with by far (Authors, 2012a). This wide-spread body psychological distress has severe consequences for women’s physical health: Body dissatisfaction is known to result in very unhealthy weight control behaviors, binge eating, and to reduce physical activity and fruit and vegetable intake (Neumark-Sztainer, Paxton, Hannon, Haines, & Story, 2006) and is associated with disordered eating symptomology (Harrison & Cantor, 1997). Thus a better understanding of causes of body satisfaction is crucial for the development of more effective interventions to prevent eating disorders, obesity, and other health problems (Stice, Mazotti, Weibel, & Agras, 2000; Yamamiya, Cash, Melnyk, Posavac, & Posavac, 2005).

Hundreds of studies (Grabe, Ward, & Hyde, 2008) yielded that viewing idealized body imagery in the media leads to body dissatisfaction. Why do women nonetheless attend to media saturated with this imagery, such as most women’s magazines? This investigation examines this paradox by differentiating motivations for social comparisons that women may engage in during exposure to idealized body messages. The assumption that guides the present research is that thin-ideal media messages can serve as a form of ‘thinspiration’ (Authors, 2012). The term ‘thinspiration’ blends the words ‘thin’ and ‘inspiration’ and is sometimes further abbreviated with ‘thinspo.’ It has been defined as follows: “Thinspiration, or thinspo, is a term for pictures,
videos, quotes, songs, or other forms of media that ‘inspire’ girls who are trying to lose large amounts of weight or maintain an anorexic or bulimic lifestyle” (Internet Safety Project, n.d.).

To complement existing related research, in which social comparison motivations were experimentally manipulated (Halliwell & Dittmar, 2005; Martin & Gentry, 1997; Tiggemann, Polivy, & Hargreaves, 2009), the present work captures these motivations in a longitudinal, correlational research design. In contrast to a vast majority of related studies with image-only stimuli, the present study utilizes natural, unaltered full-page magazine stimuli. Further, the present work is one of the few studies on thin-ideal exposure effects with delayed measurement (see for an exception, Hausenblas, Janelle, Gardner, & Focht, 2004) and based on the first prolonged exposure experiment in this realm. As existing work has rarely examined impacts on eating behavior, this aspect will be analyzed as well.

In the following, prior work on thin-ideal exposure effects will be discussed with emphasis on extent and verbal context of exposure. Social comparison theory and related motivations will serve to derive hypotheses and research questions to be tested with a prolonged exposure study. The present findings are based on a secondary data analysis (see Authors, 2012a; the original publication did not utilize the variables which serve to test the present hypotheses).

**Idealized Body Images and their Impacts: A Matter of Extent?**

Media are saturated with imagery of women with thin, idealized body shapes. Content analyses of magazines (Sypeck, Gray, & Ahrens, 2004; Sypeck et al., 2006; Wasylkiw, Emms, Meuse, & Poirier, 2009) revealed that female models who are thin and conform to cultural standards of beauty dominate media portrayals. Female models have become increasingly thinner (Silverstein, Perdue, Peterson, & Kelly, 1986), although the average body size of women in general has increased simultaneously (Flegal, Carroll, Kit, & Ogden, 2012). The increase in
THINSPIRATION

Obesity might in part result from wide-spread body dissatisfaction, which triggers ineffective weight control behaviors (Neumark-Sztainer et al., 2006).

Much research yielded that idealized body imagery exposure leads to negative effects among women, i.e., decreased body satisfaction and disordered eating (Grabe et al., 2008). Yet a handful of studies found positive effects of such exposure (Henderson-King & Henderson-King, 1997; Mills, Polivy, Herman, & Tiggemann, 2002, Study 1; Myers & Biocca, 1992; Wilcox & Laird, 2000). Possibly, the extent of exposure is an important factor that has led to inconsistencies in the existing research, which mostly focused on brief-exposure effects (see meta-analysis by Grabe et al., 2008). A meta-analysis by Groesz, Levine, and Murnen (2002) found that, surprisingly, detrimental exposure effects on women’s body satisfaction significantly weakened when the numbers of stimuli increased. A conclusion from another meta-analysis (Holstrom, 2004) was similarly surprising: Increased exposure times to idealized images led to significant increases in body satisfaction. Yet meta-analyses by Want (2009) and Hausenblas et al. (2013) did not detect a moderating effect of length or frequency of exposure.

Hence, the observation that thin-ideal exposure has mostly undermined body satisfaction but sometimes, to the contrary, enhanced body satisfaction may result from differing exposure extents in the related studies. The present study will use a prolonged thin-ideal exposure design to mimic the commonly extensive encounters with such messages more closely than brief-exposure experiments. This prolonged exposure design will allow for examining how responses to thin-ideal messages change with extent of exposure. Such change could pertain to greater desire to attain the thinness ideal and ‘improve’ one’s own body shape, which would align with the notion that media messages may serve as ‘thinspiration.’

Idealized Body Images and their Impacts: A Matter of Words?
THINSPIRATION

Want’s (2009) meta-analysis led to the conclusion that the context of idealized body imagery is relevant. Related experimental research typically used ‘plain,’ isolated images outside of everyday media contexts. Studies which use more ‘natural’ stimuli, such as entire magazine pages, may produce differential effects because magazines frequently feature thin models while verbally emphasizing thinness attainability through dieting plans and workout tips (Authors, 2012b/c). In fact, when browsing through a women’s health and fitness magazine, the reader encounters body shape ‘improvement’ messages on 86 pages on average—47.5% of all pages (ibid.). For example, the cover of ‘Health’ Magazine (Jan./Feb. 2011) featured headlines such as “Drop 15 lbs fast! —Lose your first pound today; Burn 600 calories without trying; Flat belly foods—These carbs melt fat; Stop that binge—Quick fix” that all suggest to readers that thinness is easily attainable. In fact, readers of fashion and beauty magazines frequently cited desires to lose weight and improve their looks as motivation for attending to these outlets (Thomsen, McCoy, Gustafson, & Williams, 2002). The perceived attainability of a displayed achievement (Buunk, Collins, Taylor, VanYperen, & Dakof, 1990; Lockwood & Kunda, 1997) is thought to determine whether exposure to others’ success has a self-deflating or inspiring effect on onlookers—if success seems attainable, the exposure is inspiring. Thus the verbal context about thinness attainability surrounding idealized images may help explain why some studies have yielded positive exposure effects and what draws readers to fashion and beauty magazines, as these outlets often encourage women to believe that they can quickly and easily change toward the ideal.

A related study by Knobloch-Westerwick and Romero (2011) presented regular magazine pages, in contrast to the typical use of ‘thin-ideal imagery only’ research stimuli without any verbal context. Their experiment manipulated the editorial context of full-page ads by presenting
either editorial pages with body-improvement articles or body-unrelated articles. The results showed that recipients assigned to the body-improvement condition spent more time viewing ads with ideal body images than the control group. This pattern suggests that presenting more ‘natural’ stimuli, which include images and texts, may alter the response pattern to thin-ideal imagery that has commonly been found (Grabe et al., 2008). In light of these considerations, the present study utilizes natural, unaltered full-page magazine stimuli, which presents an important difference to the vast majority of studies on media exposure effects on body dissatisfaction with image-only stimuli. Thin-ideal images and verbal ‘quick fix’ weight loss messages surrounding them (Authors, in press; Authors, 2012) could lead to positive effects on body satisfaction, as well as a sense of inspiration to pursue the thinness ideal. This potential ‘thinspiration’ effect relates to how media users compare themselves to the featured models, further addressed in the next section.

Idealized Body Images and their Impacts: A Matter of Motivation?

Research on women’s media exposure and subsequent body dissatisfaction has primarily been guided by social comparison theory Festinger (1954). The theory postulates that individuals have a desire for accurate, stable self-appraisals, which motivates them to evaluate their opinions and abilities by comparing themselves to others. Thus Festinger (1957) highlighted the self-evaluation comparison motivation in his original theory. Social comparisons can also occur with people with whom one has only indirect contact, such as celebrities or models (Wood, 1996). Social comparisons have consistently been found to drive effects of media exposure on body dissatisfaction (see meta-analyses by Myers & Crowther, 2009; Want, 2009). Traits affect this phenomenon because individuals differ in the extent to which they habitually engage in such comparisons in general (e.g., Gibbons & Buunk, 1999) as well as specifically in body-related
comparisons (e.g., Thompson, Heinberg, & Tantleff-Dunn, 1991; Trampe, Stapel, & Siero, 2007). Moreover, a greater tendency to compare one’s own body with others represents a pre-existing appearance concern, which is known to heighten thin-ideal exposure effects (Want, 2009). Accordingly, the first hypothesis postulates that social comparison habit influences both situational social comparisons and, in turn, body satisfaction.

H1: A greater tendency to engage in body-related social comparisons fosters social comparisons during exposure to thin-ideal messages and subsequently affects body satisfaction.

Although the original proposition of social comparison theory (Festinger, 1954) focused on the self-evaluation comparison motivation mentioned above, a number of additional motivations have been identified since then. Specifically, individuals with a self-improvement comparison motivation may engage in upward comparison with others who fare better than themselves, if such others are perceived as more knowledgeable or relevant regarding the evaluative dimension (Hegelson & Mickelson, 1995; Heinberg & Thompson, 1992; Lockwood & Kunda, 1997). If interested in losing weight, a woman with an average body mass index (i.e., for 2009-2010 in the United States, the age-adjusted mean BMI among women was 28.7; Flegal et al., 2012) or even a woman with a healthy body mass index between 18.5 and 24.9 (NIH, 1998) may thus choose to compare herself with thinner women, including media models. Professional models are often underweight with a body mass index under 18.5 and are thought to promote unhealthy weight ideals (e.g., Smith & Binkley, 2013).

Related to the self-improvement comparison motivation, Myers and Biocca (1992) proposed that women engage in a “fantasy of thinness” when viewing idealized images. These authors aimed to explain positive impacts of thin-ideal exposure (Henderson-King & Henderson-King, 1997; Mills et al., 2002, Study 1; Wilcox & Laird, 2000) with this approach. They
THINSPIRATION suggested that this “fantasy of thinness” could trigger a favorable comparison between women’s fantasized self and the idealized model presented; but their notion remained relatively vague. A few experimental studies examined types of social comparisons more specifically to shed light on why exposure to idealized body imagery may induce positive affect and will be described in the following.

Martin and Gentry (1997) asked 268 young adolescent girls to envision themselves as another girl who looks at a magazine ad and compares herself with the ad model. Then the participants were presented with three ads, in which headlines were manipulated to induce different social comparison motivations. Their results showed that girls who viewed thin models with a self-evaluation motivation scored higher in self-perception of physical attractiveness than those who viewed with a self-improvement motivation.

Halliwell and Dittmar (2005) used a sample of 98 women with high internalization of appearance norms and manipulated the motivation for social comparison through written instructions. In the self-evaluation condition, participants read “please evaluate aspects of this advert in relation to yourself” (ibid., p. 254). To induce a self-improvement motivation, participants read “please consider aspects of the ad in relation to how you could become more like the person you would ideally like to be” (ibid., p. 254). Then participants viewed three ads featuring thin ideal imagery. Halliwell and Dittmar’s (2005) findings showed that women who looked at thin-ideal images with a self-evaluation motivation expressed more body-focused anxiety, while those who looked with a self-improvement motivation did not express such anxiety.

More recently, Tiggemann et al. (2009) asked 144 female college students to view 15 magazine ads and induced different approaches to the ads by interspersing different questions. In
the ‘social comparison’ condition, participants rated statements “I would like my body to look like this woman’s body/This woman is thinner than me/In a busy clothes shop, I would not try on clothes in the same change-room as this woman” (ibid., p. 78), whereas in the ‘fantasy condition,’ participants rated the statements “This woman has an exciting life/It would be great fun to be this woman/I can imagine myself in this woman’s place” (ibid., p. 78), which do not directly pertain to body-related social comparisons. The ‘social comparison condition’ led to more body dissatisfaction than the fantasy condition, but the latter condition cannot shed light on how body-related social comparisons affect responses to thin ideal exposure. In a similar setup, Tiggemann and Polivy (2010) induced appearance-focused comparisons versus intelligence-focused comparisons and found that the treatment did not influence body dissatisfaction, but actual levels of appearance focus fostered body dissatisfaction while actual levels of intelligence focus lowered it. Both these studies by Tiggemann and collaborators did not examine self-improvement comparisons specifically.

In brief, the few related studies on different ways of comparing oneself to thin-ideal imagery all used experimental designs, measured short-term effects, and used magazine ads as stimuli. They all found that the approach with which onlookers view thin ideal imagery matters much for how they are affected by the exposure. Hence, the predominant type of social comparisons that women engage in may determine the effect on subsequent body satisfaction. Those who engage primarily in self-improvement comparisons may feel motivated and inspired (Fitzsimmons-Craft, 2011; Myers & Biocca, 1992). But those who engage mostly in self-evaluation comparison—simply by judging whether or not their own bodies resemble those in the idealized images—may feel inadequate after exposure.

Accordingly, self-improvement comparisons and self-evaluation comparisons with thin-
THINSPIRATION

ideal images in actual magazine pages likely have opposite effects on body satisfaction, as specified in the following two hypotheses.

H2: Self-improvement comparisons during exposure to magazine pages featuring thin-ideal images increase body satisfaction.

H3: Self-evaluation comparisons during exposure to magazine pages featuring thin-ideal images decrease body satisfaction.

Given Groesz et al.’s (2002) and Holstrom’s (2004) meta-analyses findings that greater exposure to thin-ideal messages produces weaker body dissatisfaction decrease, two research questions address whether types of social comparison change across accumulated exposure.

RQ1: How do (a) self-improvement comparisons and (b) self-evaluation comparisons evolve across prolonged exposure to magazine pages featuring thin-ideal images?

Finally, as research on idealized body messages’ effects on eating behavior is scarce (Harrison, Taylor, & Marske, 2006), the last research question will address whether these body-related social comparison motivations affect actual weight loss behaviors.

RQ2: Do (a) self-improvement comparisons and (b) self-evaluation comparisons during exposure to magazine pages featuring thin-ideal images foster weight loss behaviors?

The present study employs a longitudinal design across the span of one week, which complements the research on the immediate effects of media exposure as well as the few longitudinal studies. More specifically, the present work adds to the existing research on impacts of self-evaluation and self-improvement comparison motivations on responses to body imagery by Halliwell and Dittmer (2005) and Martin and Gentry (1997), which both used experimental designs and relied on only three magazine advertisements. In contrast, participants in the present study viewed both magazine articles and advertisements with thin-ideal images,
with daily exposure, for five days in a row, to 80 magazine pages in total. Another important difference to prior related work is that the social comparison motivations were not experimentally manipulated; instead, they were measured. This approach is based on two assumptions: (a) social comparisons are ubiquitous in women’s processing of women’s magazines and (b) the self-evaluation and self-improvement comparison motivations often co-occur. It is important to note that ‘delayed’ body satisfaction measures were collected daily before the stimuli exposure and thus they do not capture merely short-term impacts. This analysis will be the first to examine body satisfaction changes as a result of social comparisons during prolonged exposure to thin-ideal messages. Given that analyses of how social comparisons during exposure to thin ideal messages affects eating behavior are rare (Harrison et al., 2006), the reported weight loss behaviors will further serve as dependent variable.

Method

Overview

A sub-sample from a larger investigation (Authors, 2012a) served for a secondary data analysis to address the hypotheses, utilizing variables that had not been analyzed before. Fifty-one female college students (average age 20.18 years, \( SD = 1.67 \)) at a large Midwestern university participated in an online study ostensibly about magazine article and advertisement evaluations.\(^5\) The entire study was conducted online; participants logged in at a website designed specifically for the study. This website allowed access to the stimuli and questions assigned for the specific day and also collected data on participants’ progress with the study and how much time was spent for a session, to ensure the integrity of the data. After completing baseline measures (described below) on a Friday, participants completed five daily exposure sessions in the following weekdays, as well as a post-test questionnaire on the following Monday.
Participants were exposed to pages from popular fashion and fitness magazines, which featured thin-ideal female body images. After each page, they provided evaluations, in which measures of social comparison motivations were embedded. During each of the daily sessions, 16 pages were shown, with article and ad pages alternating, totaling 80 pages during the entire study. Each daily session took a maximum of 30 minutes to complete; the total participation time took approximately 3-4 hours, including baseline and post-test questionnaires. Participants were compensated with $50.

**Stimuli**

The stimuli pages featuring the thin ideal were collected from magazines that ranked within the top 100 most popular magazines of 2005 (according to magazine.org, sponsored by the Magazine Publishers of America). The pages were amassed from the October/November issues of *Allure, Women’s Health, Shape, Cosmopolitan,* and *Self.* The thin-ideal articles were not selected for content, but for inclusion of a picture of women with an idealized body as the dominant graphic element on the page. Appendix 1 shows three ads and three articles as examples from the stimuli set. A stimuli test of 12.5% of the utilized pages asked 33 females, drawn from the same population, “How ideal is the model’s body shape?” for each of the 10 pages. The mean “ideal” rating was 7.69 (*SD* = 1.59).

**Baseline Measurements**

**Magazine reading.** Embedded in other media use questions, participants indicated how many times they had read fashion magazines in the past seven days (*M* = 1.41, *SD* = 1.64) and fitness magazines (*M* = .55, *SD* = 1.10).

**Body mass index.** Participants were asked to answer various demographic questions, such as age, ethnicity, and type of Internet connection as well as whether they owned a car and
others. Embedded in these distractors, they reported height and weight, which served to calculate Body Mass Index (BMI) ($M = 22.79$, $SD = 3.14$).

**Body satisfaction levels.** Participants completed a questionnaire about current satisfaction in 24 different life domains, such as health, family, education, finances, etc. Embedded were questions about satisfaction with body shape, weight, and appearance. A visual analog scale (VAS) was used to collect responses. This format employs semantic anchors (i.e., very satisfied/very dissatisfied) along a straight line that represents a 400 point scale. Participants could click anywhere on the line to respond and change by dragging the mark along the line. The VAS is sensitive to small changes (Agliata & Tantleff-Dunn, 2004) and, lacking numbers and reference points, makes it more difficult for participants to remember previous answers.

Of various life domains, participants were least satisfied with their weight ($M = 217.08$, $SD = 117.95$) and body shape ($M = 221.65$, $SD = 108.16$). Only the question “amount of worries in your life” yielded worse ratings ($M = 196.04$, $SD = 88.98$). The remaining other 21 items on life domains including physical appearance ($M = 258.16$, $SD = 89.36$), finances, romance, family, coursework, and job all produced better ratings. The two items pertaining to body satisfaction (weight, shape) were highly correlated ($r = .88$, $p < .001$) and were thus collapsed into one overall measure of baseline body satisfaction ($M = 219.36$, $SD = 109.64$).

**Body-related social comparison tendency.** The Physical Appearance Comparison Scale (Thompson, Heinberg, & Tantleff-Dunn, 1991) served to measure body-related comparison tendency ($M = 3.16$, $SD = 0.79$). To veil the study’s purpose, its five items were interspersed in eleven items from the Iowa-Netherlands Comparison Orientation Measure (Gibbons & Buunk, 1999).

**Daily Sessions**
**THINSPIRATION**

**Body satisfaction.** A cover story embedded in daily instructions veiled the true purpose of the questions involving body satisfaction: “Today, you will look at 16 magazine pages. […] Before we get to this part, we ask you to indicate how satisfied you are TODAY with various aspect of your life […] because personal outlooks on one’s own life have been shown to influence evaluations.” Using the VAS, participants then completed an abbreviated version of the life domain satisfaction questionnaire which included 15 out of the 24 total items; satisfaction with body shape and weight were embedded in these questions.

**Social comparison motivation (SISC and SESC).** Next in each daily session, participants viewed the 16 magazine pages that contained images of women representing the thin ideal. After viewing each page, participants responded to the following questions, adopted from Tiggemann and McGill (2004), based on a five-point scale ranging from “strongly disagree” to “strongly agree”: “I would like my body to look like this woman’s body/women’s bodies” to capture self-improvement social comparison and “This woman is thinner than me/these women are thinner than me” to measure self-evaluation social comparison. Further, to strengthen the cover story that the research pertained to magazine evaluations, two items were always presented before and after these two target items: “I like the layout of this ad/article” was always listed first, while “This ad is effective at promoting its product/The text is effective at explaining the issue(s)” was always shown as last item. As the items on self-improvement and self-evaluation comparisons were both presented for each of the stimuli pages across the daily sessions, the corresponding ratings were averaged to represent the two comparison dimensions. For both the self-evaluation comparison ratings ($M = 3.90, SD = .83$) and the self-improvement comparison ratings ($M = 3.59, SD = .83$), the individuals’ responses were very consistent (Cronbach’s alpha $= .98$ for both).
THINSPIRATION

Post-Measure Session Questionnaires

**Body satisfaction.** Once more, participants completed the life domain satisfaction questionnaire, with all 24 items and body satisfaction questions embedded among them. As with the baseline satisfaction scores, responses for satisfaction with body shape, weight, and appearance were averaged into one overall score for body satisfaction.

**Weight loss behavior.** Participants indicated dieting behaviors they had engaged in over the course of the study. Participants reported how many times they had performed the following behaviors in the last seven days: ate smaller portions, reduced their intake of carbohydrates, and skipped meals. To account for other methods of weight loss/control, participants were also plainly asked whether they had dieted or purposefully lost weight. Responses for each question were coded 1 if participants had performed the activity and 0 if they had not. Scores for these behaviors were averaged together to create a composite score of dieting behavior, with scores ranging from 0-5 ($M = 1.42$, $SD = 1.44$). Participants also reported how many times they had exercised over the course of the study, with scores ranging from 0-10 ($M = 2.77$, $SD = 2.35$).

**Results**

**Preliminary Analyses of Body Satisfaction Changes**

To capture changes that occurred each day in body satisfaction during prolonged exposure, body satisfaction scores for each session were computed by averaging the scores for the two items on body weight and shape satisfaction, with day 1 (see Figure 1) reflecting the first daily session *before* the first stimuli exposure. A repeated-measures ANOVA was performed on these daily body satisfaction scores while controlling for the score from the baseline session. The analysis yielded a significant effect of the within-group factor of time ($F(5, 215) = 19.96, p < .001$, $\eta^2 = .317$) and a significant linear trend ($F(1, 43) = 7.84, p < .001$, $\eta^2 = .418$. As
Figure 1 illustrates, positive changes in body satisfaction occurred for almost all daily measures.

**Impacts of Social Comparison Processes on Body Satisfaction Change (H1-3)**

To address all three hypotheses simultaneously, a multiple mediation analysis was conducted using an SPSS macro by Preacher and Hayes (2008). This macro estimates path coefficients in a multi-mediator model and produces bootstrap confidence intervals for total and specific indirect effects. Body-related social comparison tendency served as the independent variable and the final post-test change in body satisfaction served as the dependent variable. SISC and SESC served as the two mediators (see Figure 2). Baseline body satisfaction, BMI, and weight loss behaviors were included as covariates in the model.

Neither the total \( (p = .18) \) nor the direct effect \( (p = .79) \) of body-related social comparison tendency on body satisfaction change was significant. The body-related social comparison tendency increased SISC (coefficient = .49, \( SE = .12, p = .0003 \)). SISC, in turn, increased body satisfaction change (coefficient = 50.79, \( SE = 23.30, p = .035 \)), which supports H2. This analysis further revealed, with 95% confidence, that the indirect effect of body-related social comparison tendency on body satisfaction change through SISC was significant, with 24.89 as point estimate \( (SE = 13.43) \) and a 95% BCa (bias-corrected and accelerated) bootstrap confidence interval of 5.82 to 63.14, which excludes the value zero. This finding supports H1 for an indirect effect through SISC.

The effect of body-related social comparison tendency on SESC was not significant (coefficient = .16, \( SE = .12, p = .17 \)). However, SESC lowered body satisfaction (coefficient = -53.25, \( SE = 24.59, p = .036 \)), supporting H3. This analysis revealed, with 95% confidence, that the indirect effect of body-related social comparison tendency on body satisfaction change through SESC was not significant, with a 95% BCa (bias-corrected and accelerated) bootstrap
THINSPIRATION

confidence interval of -37.13 to .29. Thus the pattern expected per H1 fell short of significance for an indirect effect through SESC.

Evolvement of Social Comparisons During Prolonged Exposure (RQ1)

To address RQ1a, an ANOVA with repeated measures of the self-improvement comparison measures was conducted. Days and stimuli pages served as within-group factors. This analysis yielded that the days differed significantly in level of self-improvement comparison ($F(4, 180) = 6.45$, GG-correction, $p = .001$, $\eta^2_{\text{partial}} = .125$), which accounted for most of the variance. As Figure 3 illustrates, self-improvement comparisons increased across days, though not in linear fashion. Further, the interaction between days and stimuli pages was significant ($F(60, 2700) = 1.88$, GG-correction, $p = .008$, $\eta^2_{\text{partial}} = .040$) while stimuli pages did not produce a significant impact by themselves. Self-improvement comparisons changed across the exposure days, but also how they developed in a daily session changed. As Figure 4 shows, self-improvement comparisons were generally lower and trended downward during the first two exposure days, but were relatively high and trended upward during days 3, 4, and 5.

To address RQ1b, an ANOVA with repeated measures of the self-evaluation comparison measures was conducted. Again, days and stimuli pages served as within-group factors. This analysis yielded that the days differed significantly in level of self-evaluation comparison ($F(4, 180) = 7.65$, GG-correction, $p < .001$, $\eta^2_{\text{partial}} = .144$). As shown in Figure 3, women showed lower levels of self-evaluation comparisons on the first day than on days 2-4. Further, the interaction between days and stimuli pages was significant ($F(60, 2700) = 2.53$, GG-correction, $p < .001$, $\eta^2_{\text{partial}} = .053$) while stimuli pages did not produce a significant impact by themselves. As Figure 5 shows, self-evaluation comparisons were lower and trended downward on the first exposure day, but were relatively high and stable on later exposure days.
THINSPIRATION

Impacts of Social Comparison Processes on Weight Loss Behavior (RQ1)

To address RQ2, which pertains to possible impacts of social comparison motivation on weight loss behavior, another mediation analysis was conducted. Again, body-related social comparison tendency served as the independent variable, but weight loss behavior as dependent measure. SISC and SESC served as two mediators (see Figure 6). Only BMI was included as covariate in the model, so that body satisfaction would not be considered in this model.

Neither the total ($p = .47$) nor the direct effect ($p = .91$) of body-related social comparison tendency on weight loss behaviors was significant. As in the analysis reported above, the body-related social comparison tendency increased SISC (coefficient = .52, $SE = .11$, $p < .0001$). However, SISC, did not influence weight loss behaviors ($p = .94$), which speaks to RQ2a. This analysis revealed, with 95% confidence, that the indirect effect of body-related social comparison tendency on body satisfaction change through SISC was not significant, with a 95% BCa (bias-corrected and accelerated) bootstrap confidence interval of -.40 to .37.

Further, the effect of body-related social comparison tendency on SESC was now significant (coefficient = .27, $SE = .12$, $p = .028$). Greater SESC led to more weight loss behaviors (coefficient = .80, $SE = .39$, $p = .047$), which speaks to RQ2b. This analysis further revealed, with 95% confidence, that the indirect effect of body-related social comparison tendency on body satisfaction change through SESC was significant, with .21 as point estimate ($SE = .11$) and a 95% BCa (bias-corrected and accelerated) bootstrap confidence interval of .06 to .56, which excludes the value zero.

Discussion

Mass media are dominated by imagery of women that represent the thin ideal. Frequent related exposure is thought to cause long-lasting negative effects on women (Thompson & Stice,
2001). Yet, a few studies yielded positive effects for women after exposure to thin-ideal messages, and meta-analyses provide some inconsistent results as to whether prolonged exposure will harm or help women’s body satisfaction.

The present study investigated whether prolonged exposure to thin-ideal messages leads to increased self-improvement comparisons (RQ1a), and whether this type of comparison would in turn lead to increased body satisfaction. Indeed, our findings corroborated this pattern (supporting H2), which aligns with the few studies that found a positive effect of increased exposure on body image (e.g., Holstrom, 2004). This impact was fostered by greater body-related social comparison tendency because it heightened self-improvement comparisons, supporting H1. Self-evaluation comparisons, on the other hand, indeed undermined body satisfaction in line with H3, but this impact was more than compensated for by the effects of self-improvement comparisons.

The present findings further revealed that social comparisons change across time, with accumulated thin-ideal message exposure, which sheds light on how body satisfaction may actually improve from viewing these messages. For a rough description (see details in Figures 3 and 4), participants engaged in more self-evaluation comparisons after the first day (RQ1b), but their self-improvement comparisons both raised to higher levels and changed to upward trending within an exposure session after day 2 (RQ1a). These results highlight the importance of examining thin-ideal exposure effects not merely with short-term, single-exposure experiments, as this design cannot capture important responses patterns as they occur when women engage in repeated exposure across several days. The change toward more self-improvement comparisons over time likely contributes to the improved body satisfaction observed in the present study.

In addition, impacts of social comparison motivation on weight loss behaviors were
examined. Level of the self-improvement comparisons did not influence these behaviors (no effect as suggested in RQ2a), but level of self-evaluation comparisons fostered weight loss behaviors significantly (as suggested in RQ2b). Social comparison tendency affected weight loss behaviors through self-evaluation comparisons: women who generally compare their body to others’ more frequently thought to a greater extent that the women depicted on the magazine pages were thinner than themselves (although BMI was controlled for) and thus engaged in more weight loss behaviors.

The findings indicate that different comparison motivations during prolonged exposure to idealized images have opposite effects on body satisfaction. Because self-improvement comparisons reflect a desire to improve some aspect of the self, perhaps those who engaged in greater levels of self-improvement comparisons believed that the idealized bodies of the women in the images were attainable. A belief that the idealized bodies in the images are attainable has been shown to increase body satisfaction (Mills et al., 2002). Hence, self-improvement comparisons with thin-ideal models through repeated exposure may increase perceptions that the ideal is attainable, which in turn leads to increased body satisfaction. As these patterns did not foster actual weight loss behavior, the notion of a ‘thinness fantasy’ (Myers & Biocca, 1992) induced by magazines is the most plausible interpretation.

Yet the ‘thinness fantasy’ notion needs to be specified further, and theorizing on when social comparisons can affect self-regard in opposite ways may serve this purpose (Brewer & Weber, 1994). Possibly, the prolonged exposure to thin models’ depictions leads onlookers to feel closer and more similar to them, resulting in greater assimilation and less contrasting in social comparisons. The self may assimilate toward a given standard, so that more positive self-views result from comparisons with high standards (Mussweiler, Rüter, & Epstude, 2004, p.
THINSPIRATION

Whether such assimilation occurs, is said to depend on perceived attainability of the high standard and the perceived similarity and closeness of social comparison targets. However, social comparisons can have the opposite effect of contrast, so that more negative self-views result from comparison with a high standard (ibid.). It may well be that the brief thin-ideal exposure that is commonly applied in body image research does not allow participants to relate much to the models; thus they engage in such contrasting, which lowers their body satisfaction. On the other hand, when viewing these models on a daily basis in the context of attainability messages, media users may come to feel closer to the models and that the featured thinness is attainable for them as well, resulting in enhanced body satisfaction.

Future research should assess this interpretation regarding assimilation and contrast by measuring perceived thinness attainability and perceived closeness to featured models across time. Further experimental clarification of the role of attainability messages, in addition to Knobloch-Westerwick and Romero’s (2011) work, would help disentangle when negative versus positive effects result from social comparisons. Given that messages on thinness attainability often promise effortless and instant weight loss (Authors, 2012c), which many recipients would likely find unconvincing upon critical inspection, it is furthermore of interest how this information is processed—‘thinness fantasies’ likely go hand in hand with peripheral and/or heuristic processing. Finally, self-enhancement comparison was not examined in the present research, even though some studies have shown that the dimension on which onlookers compare with target individuals (e.g., academic performance versus physical appearance) has crucial impact on the resulting changes in self-evaluation.

The current research has several limitations. First, by measuring social comparison processes, the natural media use situation was altered and probably induced greater salience of
social comparison processes than usual. Second, the data used one-item measures of self-improvement and self-evaluation comparisons; a greater number of items for social comparison induction would engender greater confidence in the measure. However, presenting more items would have sensitized participants, which we tried to avoid by using the same amount of distracter items for each magazine page. Third, the correlational design cannot rule out that spurious influences were the underlying cause for the links between self-improvement comparisons and self-evaluation comparisons, respectively, and body satisfaction change. Fourth, the use of self-reports generally involves issues related to social desirability, for instance, when it comes to reporting one’s body weight. Finally, characteristics of the present sample may have affected the results. Body image emerged as very salient among college women and may not be as important for younger (pre-teen) adolescents or older women. More diverse samples are needed to determine if the observed effects hold across age groups. Future research should also specifically disentangle the interplay of thin-ideal imagery and verbal messages in effects on recipients.

The current research demonstrates that social comparison motivation plays a crucial role in prolonged exposure to idealized images of women on females’ body satisfaction. Moreover, it demonstrates that self-improvement comparison acts as mediator through which body image satisfaction is positively affected, at least short term. Interestingly, such ‘thinspiration’ does not truly trigger weight loss behaviors, according to the present findings, but may instead induce a sense of assimilation with the featured models that represent the thin ideal. The findings illuminate inconsistencies of research into image exposure and body satisfaction. Encouraging wishful self-improvement comparisons appears to be the recipe through which magazines featuring idealized images of women continue to attract a mass audience, despite an objectively
large discrepancy between most readers’ body shape and the presented unrealistically thin models.

The present findings highlight the importance of disentangling different social comparison motives in theoretical frameworks for media effects on body satisfaction and subsequent weight loss behavior. Related work on weight management messages has found that implementing efficacy as a message feature can help to induce better weight management (Sarge & Knobloch-Westerwick, 2013). In other words, the persuasive strategies that magazines utilize with detrimental effects on body satisfaction and eating and exercise behaviors (Neumark-Sztainer et al., 2006) could potentially be used for healthful behavior change—encouraging message recipients to engage in self-improvement social comparisons while providing them with realistic goals and information on healthful weight management appears to be a promising route for designing effective public health campaign messages. Further, the present insights are helpful for designing media literacy interventions that illuminate the misguided inspirational messages on body ideals in magazines. Recipients might be better armed to fight off harmful media impacts on their body dissatisfaction if they understand that media messages may often induce an illusion regarding attainability of unrealistic and even unhealthy ideals.
References


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THINSPIRATION


THINSPIRATION


Figure 1: Body Satisfaction Changes During Prolonged Thin-Ideal Exposure

Note. Delayed measures for the 2nd to 5th measurement points were collected a day after stimuli exposure. Means with different letters differ at $p < .05$ in multiple comparisons with Sidak correction.
Figure 2: Indirect Effects of Body-Related Social Comparison Tendency on Body Satisfaction Change via Social Comparisons During Thin-Ideal Exposure.

Note. Statistical model controls for baseline body satisfaction, BMI, and weight loss behavior.

Estimates and BCa confidence intervals for indirect effects created with 1000 bootstrap resamples. Standard error in parentheses. *p < .05. **p < .01. ***p < .001.
Figure 3: Social Comparison Motives During Prolonged Thin-Ideal Exposure Across Days

Note. Means with different letters differ at $p < .05$ in multiple comparisons with Sidak correction.
Figure 4: Self-Improvement Social Comparisons During Prolonged Thin-Ideal Exposure Across Individual Sessions
Figure 5: Self-Evaluation Social Comparisons During Prolonged Thin-Ideal Exposure Across Individual Sessions
Figure 6: Indirect Effects of Body-Related Social Comparison Tendency on Weight Loss Behaviors via Social Comparisons during Thin-Ideal Exposure.

Note. Statistical model controls for BMI. Estimates and BCa confidence intervals for indirect effects created with 1000 bootstrap resamples. Standard error in parentheses. *p < .05. **p < .01. ***p < .001.
Appendix 1: Stimuli Examples (Ads in first row, articles in second row)
The labeling of the present work as ‘longitudinal’ deserves elaboration: Other work on media effects in the body image context that used more than one data collection session did not specifically expose participants to stimuli and instead used survey measures. An interesting exception is a study by Stice, Spangler, and Agras, (2001), which utilized a 15-month subscription to a fashion magazine with adolescent American girls—actual exposure, however, was self-reported. Research on social comparison with idealized body shapes in the media has generally worked with single-session designs and much fewer stimuli: According to Want’s (2009) meta-analysis of 47 studies, the use of about 10 images or 5 minutes of exposure are typical in this research domain. Another meta-analysis (Hausenblas et al., 2013) that did not have a social comparison focus showed that studies with more than 25 stimuli are very rare—only three unpublished works with 28, 30, or 60 stimuli were identified among 33 experimental studies. In contrast, the present study used five actual media stimuli exposure sessions, which entailed viewing 80 magazine pages.

Only a handful of studies, which all used participants in the child to adolescent age range, examined long-term effects of exposure to idealized images or media exposure in general (Dohnt & Tiggemann, 2006; Harrison & Hefner, 2006; Schooler, & Trinh, 2011; Stice, Spangler, & Agras, 2001; Tiggemann, 2006), with inconsistent and conflicting results. Further, Hargreaves and Tiggemann (2003a/b) examined the role of responsiveness for exposure effects across a 2-year time span as well as appearance-schema activation with adolescent samples. A study with adult women on delayed effects of ideal imagery exposure was done by Hausenblas, Janelle, and Gardner (2004): Their sample of 30 college-aged women viewed full-body pictures slides, which either depicted the individual participants themselves (eight ‘self slides’ with different-angle shots) or a model representing the thin ideal (with BMI at 19.75, 16.7% body fat), eight ‘model’ slides with different-angle shots. However, this exposure context presents a stark contrast to everyday encounters with thin ideal messages in the media.

Groesz et al. (2002, p. 7/) had “expected larger doses of exposure (e.g., 25 thin media images) to have a more negative effect than smaller amounts of stimuli presented (e.g., five images)” but found a significant effect that contradicted this hypothesis: “as the number of stimuli presented expands, participants are less affected by the presentation of thin media images.”

Holmstrom (2004, p. 209) specified this pattern as follows: “For experimental studies—in which ‘length of time’ denotes the amount of time participants are exposed to images during experimental procedures (in this case, from 45 seconds to 26 minutes)—the relationship between effect size and length of exposure is similar to the overall correlation between these variables ($r = -.07$). For surveys—in which ‘length of time’ refers to the participants' reports of weekly media exposure in hours—the correlation between effect size and length of exposure is negative but much larger ($r = -.39$). This correlation suggests that the more time participants report viewing media, the better they feel about their bodies.”

Additional six participants did not complete the study and were not included in analyses.