Chapter 3

Counteracting media’s thin body ideal in adolescent girls: Informing is more effective than warning

“Media are a means to spread ideas. You can do everything with that [...] , for example, just make people aware that only 1% of the world population has a model-like body.”

Respondent, girl, 16-years-old
Counteracting media’s thin body ideal in adolescent girls: Informing is more effective than warning

Abstract

The present study investigated whether information or warnings about depictions of the thin-body ideal in mass media are effective in counteracting media-induced negative body perceptions of adolescent girls. Based on counter-advertising and reactance theories, our hypotheses were tested in a 3 (weight labels: information vs. warning vs. no-label) x 2 (media models’ body shape: thin vs. normal weight) x 2 (self-esteem: lower vs. higher) design (N=178). Body dissatisfaction, objectified body consciousness, and body comparison with media models served as dependent variables. Pretested media models were systematically combined with various textual weight labels and presented on a front page of a magazine targeted towards girls. The results indicated that a simple information label that provided the weight status of thin media models induced less negative body perceptions in adolescent girls when compared with the use of warning labels or images only. Especially, girls with lower self-esteem then exhibited lower levels of body dissatisfaction and objectified body consciousness. When compared with exposure to images only, the warning labels had little effect on body perceptions by adolescent girls. Thus, informing is more effective than warning in counteracting the undesired effects of the thin-body ideal promoted by the media.
3.1 Introduction

Media appear to play a dual role with regards to the body images of adolescent girls (Spettigue & Henderson, 2004). Mass media, which are considered the most important source of aesthetic standards among women and young girls, often promote unrealistic ideals of (extremely) thin body shapes (e.g., Field, Cheung, Wolf, Herzog, Gortmaker, & Colditz, 1999; Grabe, Ward, & Hyde, 2008; López-Guimerà, Levine, Sánchez-carracedo, & Fauquet, 2010). Conversely, mass media are ubiquitous and popular venues for providing real-world information and establishing social standards (based on cultivation theory; Gerbner & Gross, 1976). Therefore, the question is raised regarding how these two approaches involving the effects of mass media can be combined to interfere with the unrealistic ideals of thin body shapes.

Many depictions of female bodies in media include unattainable shapes for most women: they are unrealistically thin. Most magazines use airbrush photos and apply computer technology to correct and hide blemishes and flaws in figures (Derenne & Beresin, 2006). Many studies have shown that repeated exposure to thin models in the media may induce negative body perceptions and eating disorders among women and girls, particularly in adolescent girls younger than 19 years of age (e.g., review by López-Guimerà et al., 2010; meta-analysis by Groesz, Levine, & Murnen, 2002). If media can sort such undesired effects, why would they not counteract or redirect the resulting negative effects? To establish an agenda for future research, López-Guimerà et al. (2010, p. 409) highlighted the need for a systematic and empirical approach to address the processes and mechanisms that underlie the risk and protective factors for exposure to media images and the subsequent negative body perceptions. The present study aims to expand existing research regarding media effects by examining how mass media can be used to counteract adolescent girls’ negative body perceptions that are induced by thin media models. Based on counter-advertising and research on textual labels (e.g., Bushman, 1998), we believe that weight labels for media models can be an effective means for counteracting negative body perceptions.

In the following section, we will briefly discuss the main results from previous research on the adverse effects of the thin-body ideal and outline underlying mechanisms, such as internalization. We will then elaborate on the use of information and warning labels as a strategy for health communication and will also present the basis of our hypotheses on counteracting undesired effects of mass media.

3.1.1 Media’s Thin Ideal and Body Perceptions by Adolescent Girls

Many studies have shown that body dissatisfaction is an important psychological consequence that results from exposure to thin-body images combined with the inability of viewers to
attain the thin-body ideal (Field et al., 1999; Groesz et al., 2002; Hargreaves & Tiggemann, 2004; Tiggemann & McGill, 2004). Body dissatisfaction consists of dysfunctional and negative beliefs and feelings about personal weight and shape (Garner, 2002). Research has indicated that body dissatisfaction occurs at a young age and peaks during adolescence (Clay, Vignoles, & Dittmar, 2005). This issue underlines the importance of using adolescent girls as the study group for the present evaluation.

Another consequence that results from exposure to the thin-body ideal is objectified body consciousness (Knauss, Paxton, Alsaker, 2008; Morry & Staska, 2001; Sinclair, 2006). Based on the objectification theory developed by Frederickson and Roberts (1997), exposure to media figures can cause women to observe their bodies from the perspective of an outsider (third-person) and focus on external body attributes such as appearance (Fredrickson & Roberts, 1997). This objectified view is primarily measured by two components: body surveillance and body shame (e.g., Forbes, Jobe, & Revak, 2006; Greenwood, 2009; McKinley & Hide, 1996). Body surveillance is defined as the constant monitoring of outward appearance (Fredrickson & Roberts, 1997), and body shame is the emotion women may experience when they realize that their bodies do not match their internalized body ideals (McKinley & Hide, 1996). Appearance control beliefs are considered a third component of the objectified body consciousness concept and refer to the beliefs about the (in)ability to attain a body that conforms to social standards (McKinley & Hyde, 1996). However, the perceived ability to change the body to meet those ideals is rarely included in objectification studies, especially studies that involve youngsters. Lindberg, Hyde, and McKinley (2006) found irregularities and a low internal consistency for the control beliefs subscale in (pre-)adolescents. An explanation for this finding is that feelings of self-control are not well-developed at this stage of life (Lindberg et al., 2006). Moreover, the feeling to be in control of one’s appearance correlates poorly with experiencing body surveillance and shame (e.g., Forbes et al., 2006, McKinley & Hyde, 1996). Hence, we only used body surveillance and shame for measuring the effects of thin-ideal exposure.

An important underlying mechanism for developing body-related disturbances is the internalization of the thin-body ideal (López-Guilemà et al., 2010; Thompson & Stice, 2001). This internalization results from self-acceptance of thin-body shapes as a realistic and social norm, which functions as a prerequisite for being pretty and successful (Bergstrom & Neighbors, 2006; Fouts & Burggraf, 1999; Thompson & Stice, 2001). Modeling and social comparison processes are relevant here (cf. Bandura, 2001; Festinger, 1954). Specifically, these processes begin automatically upon exposure to attractive, thus thin, media images (Cattarin, Thompson, Thomas, & Williams, 2000). Consequently, women generally acknowledge discrepancies among their own bodies and the body shapes of media models.
Corresponding to the self-discrepancy theory established by Higgins (1987), these self-ideal discrepancies generally evoke a negative self-concept with regards to weight and body shape (e.g., Schutz, Paxton, & Wertheim, 2002; Tiggemann & Polivy, 2010). Thus, including the concept of body comparison with media models is important to our study.

In addition, the consideration of individual differences is important for explaining the impact of media exposure on body image (e.g., López-Guimerà et al., 2010). Research has shown that comparison processes and negative body perceptions are more prominent in girls with lower self-esteem (Ricciardelli & McGabe, 2001; Tiggemann, 2003). In particular, girls and women with low global self-esteem experienced adverse effects from exposure to magazines for girls and (sexually) objectifying media content (Aubrey, 2006; Stice, Spangler, & Agras, 2001). Individuals with higher self-esteem may be motivated to protect their self-esteem from the adverse effects of media exposure, whereas those with lower self-esteem are more susceptible to the negative effects (Aubrey, 2006; Cook-Cottone & Phelps, 2003; López-Guimerà et al., 2010).

Overall, previous research has shown that mass media transmit and reinforce appearance standards that, although desired by many women, are not attainable to them. Many models in mass media are artificially shaped into thin, idealized standards using computer software. Such thin-ideal exposure is likely to result in body dissatisfaction, objectified body consciousness, and body comparison with media models, especially in adolescent girls with lower self-esteem. However, there is limited research regarding methods for counteracting such detrimental effects of media exposure on the psychosocial responses and body perceptions of adolescent girls. In the following section, we argue that adding textual, cost-effective information or warnings about the unrealistic body shapes of media models can prove helpful.

### 3.1.2 Labels to Counteract Negative Body Perception

Research proposes that adolescent girls should be persuaded to think critically about appearance-related media and consider that the portrayals of media models could be edited images with unrealistic body sizes (cf. Sheldon, 2010; Spettigue & Henderson, 2004). Adolescent girls should receive objective information about realistic body images and about the extent to which portrayals are edited.

Several studies have shown that various media literacy interventions have been successful in reducing social comparisons with media models by girls and their concerns with body shape (Irving & Berel, 2001; Posavac, Posavac, & Weigel, 2001; Ridolfi & Vander Wal, 2008). One example of a media literacy intervention that has been evaluated consists of a formal and structured discussion following a video on how female bodies are presented in
advertisements and the detrimental effects of those images on the health of women (Irving & Berel, 2001). Another intervention involved a body image session during Eating Disorders Awareness Week on campus, which provided information on body image, eating disorders, and the portrayal of the female body in the media (Ridolfi & Vander Wal, 2008). These interventions, which targeted female college students, increased skepticism about media images, reduced beliefs that models are realistic, reduced the desire to be as thin as models, and improved body shape concerns (Irving & Berel, 2001; Ridolfi & Vander Wal, 2008).

While such media literacy interventions are valuable, they mostly rely on time-consuming programming that reach relatively small groups. We went beyond these limitations by applying a mass media approach in counteracting undesired mass media effects. Previous research on media effects of media violence, alcohol use and abuse, smoking, and food intake revealed that adding relevant information or warnings can effectively alter behaviors and beliefs (e.g., Bushman, 1998; Gray, Karnon, & Blackwell, 2011). Thus far, information labels have not been applied to the thin-body ideal in media, although counter-advertising strategies have been employed in health settings.

Counter-advertising has been successfully applied in health settings as a means to counteract the pervasiveness of potentially harmful advertising (e.g., smoking and alcohol; Agostinelli & Grube, 2002; Agostinelli & Grube, 2003). In counter-advertising, factual information about the content of products and the risks of certain behaviors or substance use are presented in messages that are aired by the same media that air potentially harmful advertising. In general, counter-advertising uses broadcast and print counter-advertisements, or product warning labels (Agostinelli & Grube, 2002). A general approach in counter-advertising is the use of textual labels. A more detailed inspection of the existing literature on labeling revealed a classification by two types of labels: 1) labels that provide accurate information about product content, which we call information labels in our study, and 2) labels that explicitly warn about the (negative) effects of using the product, which we call warning labels. Next, we elaborate on both types of labels.

3.1.3 Warning Labels

Research on warning labels showed inconsistent results. Some studies implied that warning labels decrease the attractiveness of a given product because it might be harmful (e.g., tainted fruit theory, Christenson, 1992). For example, comprehensive warning labels on cigarette packages induced reactions that were predictive of cessation activity (Borland, Wilson, Fong, Hammond, Cummings, Yong, Hosking, Hastings, Trasher, & McNeill, 2009) and were rated effective by smokers (Hammond, Fong, Borland, Cummings, McNeill, & Driezen, 2007). Similarly, exposure to warning text about the possible damaging effects of visiting a pro-
Informing Versus Warning

anorexia website prevented approximately one-third of the visitors from actually entering the website (Martijn, Smeets, Jansen, Hoeymans, & Schoemaker, 2009). Finally, a front-of-pack label that provided information about the health risks of high-sugar beverages reduced purchases of the product (Gray et al., 2011).

In contrast, other studies demonstrated that an explicit warning can cause reactance, which results in wanting the forbidden item even more. These reactions can be explained by reactance theory, which posits that people want to restore their freedom of behavior when they feel that their freedom has been restricted (Brehm, 1972). Thus, based on reactance theory, it can be expected that a warning label may lead its recipients to reject the message because they feel that the label restricts their freedom of choice (Brehm, 1972; also Bushman, 1998). The label may even increase the attractiveness of a product for some groups, resulting in an opposite effect that is referred to as the forbidden fruit effect (Christenson, 1992). For example, the results of a study by McKinley (2009) on the risk perception of obesity-related health problems suggested that health messages could have opposing results. A higher perceived vulnerability and severity negatively impacted healthy-eating behavior and increased the drive for thinness in female college students (McKinley, 2009). A qualitative study showed that smokers reacted to anti-smoking advertisements in an angry and defensive manner; some of the smokers reported that such messages even served as a cue to start smoking (Wolburg, 2006).

In general, adolescents are considered to exhibit higher reactance than other age-groups because of their developmental stage (Grandpre, Alvaro, Burgoon, Miller, & Hall, 2003; Henriksen, Dauphinee, Wang, & Fortmann, 2006). Accordingly, research on warning and restrictive labels that targeted youngsters revealed that such labeling increased attractiveness in adolescents when the labels were related to television programming (Bushman & Cantor, 2003). Furthermore, a recent study showed that restrictive labels regarding age and violent content increased the attractiveness of violent video games in both preadolescents and adolescents (Nije Bijvank, Konijn, Bushman, & Roelofsma, 2009). Thus, the results of these studies revealed that the effectiveness of warning or restrictive labels may backfire among adolescents (Brehm & Brehm, 1981; Henriksen et al., 2006). Therefore, information labels may be more effective than warning labels for our adolescent target group.

3.1.4 Information Labels

Previous research on factual information labels has generally shown positive results. Adding text labels about the specific and actual content of nutritional products influenced food and beverage intake. For example, information on fat content decreased the willingness to consume full-fat products (Bushman, 1998). Additionally, providing information labels about
portion size stimulated the selection of smaller-sized soft drinks (Vermeer, Steenhuis, Leeuwis, Bos, De Boer, & Seidell, 2010). However, a note of caution must be made with regard to composition of the content information. A review of work by Cowburn and Stockley (2005) revealed that consumers are easily confused by complex nutritional information; however, they are able to retrieve and accurately interpret nutritional labels when these labels contain simple information. Furthermore, a study on nutritional information showed that adolescents strongly engaged in categorical thinking (i.e., foods are either good or bad; Rasnake, Laube, Lewis, & Linscheid, 2005).

Although research has shown that including simple front-of-pack labels versus more detailed front-of-pack labels to guide healthy food choices showed no difference in their impact on consumer appeal, the simpler labels required less evaluation time (Feunekes, Gortemaker, Willems, Lion, & Van den Kommer, 2008). With regard to body image, these research results implicate that the information provided about the body image of a model should be straightforward and focused on the content of ‘the product’ to connect to the adolescent mindset. That is, the information to be provided on labels about media models should simply refer to the ‘underweight’ or ‘normal weight’ status of a model. The labels used in our study contained simple and easily understood information.

As described previously, studies on product content labels have been performed primarily in research fields other than areas related to the thin-body ideal and body perceptions of adolescent girls. However, given its effectiveness, extrapolation of the content label-format by applying short, informative texts about the weight status of media models seemed useful. Therefore, in the current study we investigated whether information labels that accurately represent the weight status of models can be an effective means to lower body dissatisfaction, body consciousness, and body comparison from thin-ideal exposure for adolescent girls when compared with other textual weight label conditions.

Bushman (1998) proposed that a content information label would be more effective than a warning label when a risk is credible and familiar because unlike a warning label, the information label would not cause reactance. Hence, we expected the warning label to be less effective than the information label because the subjects in our study relate to a familiar and credible risk. Furthermore, our target group consists of adolescents who generally exhibit higher reactance than others. Following the research of Cowburn and Stockley (2005) and Bushman (1998), we designed our content information labels to present simple and factual information about the ‘underweight’ status of (extremely) thin media models and the ‘normal weight’ status of normal weight media models. Following the work of Bushman (1998), we designed the warning labels to include a simple warning about the personal risk of exposure.
to thin-ideal images and information about the weight status of models (e.g., “exposure to media models may unconsciously affect your self-image”).

### 3.1.5 Overview of the Present Study and Hypotheses

A three-factorial design examined how girls (ages 12-18 years) responded to various sizes of media models that were systematically combined with textual weight labels. The experiment applied a 3 (weight labels: information vs. warning vs. no-label) x 2 (media models' body shape: thin vs. normal weight) x 2 (self-esteem: lower vs. higher) between-participants design. Based on the literature review, we included information labels and warning labels that contrasted with a no-label control condition. Models that varied in body shape were selected and pretested to represent either 'thin' or 'normal' body shapes while being evaluated as equally attractive. Responses were measured in terms of body dissatisfaction, objectified body consciousness, and body comparison with media models.

From the previous theoretical discussion, we expected the information label to induce less negative body perceptions and body comparison by adolescent girls in response to thin-ideal images compared with an images-only (no-label) condition. Furthermore, given the developmental stage of our adolescent target group, we expected the warning-label to backfire and lead to opposite effects, resulting in higher levels of body dissatisfaction, objectified body consciousness and body comparison, when compared to the information label and images-only. Previous research has shown that adolescent girls are particularly sensitive to thin-ideal images in the media and exposure to such thin-ideal imagery induces more negative responses than exposure to normally sized media models (Grabe et al., 2008; Groesz et al., 2002). Consequently, the effects of the textual weight labels are more pronounced with regards to thin media models than with regards to normal-sized media models. Hence, our hypothesis expresses a counteracting effect as follows:

H1. For thin media models, scores on (a) body dissatisfaction, (b) objectified body consciousness, and (c) body comparison will be lower when the images are paired with an information label and higher when paired with a warning label than when they have no label, whereas for normal-weight media models, scores on the three measures will not differ across the three label conditions.

Based on previously discussed research, we assumed that girls with lower self-esteem would respond differently to the media models’ body shape by weight label conditions than girls with higher self-esteem. Girls with higher self-esteem were more resistant to thin-ideal exposure because they experienced fewer adverse effects from exposure to objectifying media (Aubrey, 2006; Stice et al., 2001). Hence, girls with higher self-esteem who were exposed to thin-ideal imagery with information labels attached would respond less (i.e.,
lower levels of negative body perceptions) because such information does not introduce anything new for them. For girls with lower self-esteem, the message that ‘thin media models are underweight’ may be the message that they need to hear to feel better about body perceptions. Thus, we expected self-esteem to moderate the effects of labels attached to thin-ideal media models as follows:

H2. The effects of labeling thin media models as proposed in H1 are stronger for girls with lower self-esteem than for girls with higher self-esteem.

3.2 Method

3.2.1 Participants and Design
The participants included 178 adolescent girls (12-18 years old, $M_{age}=14.54$, $SD_{age}=1.45$) who were selected from fifteen different secondary schools in The Netherlands. Furthermore, we optimized selection throughout schools in the country by combining the data-collection for our study with other, unrelated studies along similar lines of media effects on youngsters. Also, the boys received another questionnaire for an unrelated study. The educational ability levels in our sample included lower (27.5%), middle (34.3%), and higher (38.2%) levels. The Dutch secondary school system uses standardized tests to group students into three different educational ability levels: (1) VMBO/MAVO is the lowest ability level, (2) HAVO is the middle level, and (3) VWO is the highest educational ability level.

Hypotheses were tested in a 3 (weight labels: information vs. warning vs. no-label) x 2 (media models’ body shape: thin vs. normal weight) x 2 self-esteem (lower vs. higher) design. Body dissatisfaction, objectified body consciousness, and body comparison with media models served as dependent variables. The girls were randomly assigned within classrooms to one of the six experimental conditions before completing a paper-and-pencil questionnaire. Responsible school authorities and teachers gave permission for the research to be conducted, and parents and respondents gave consent. Of the original 179 respondents, we had to exclude one due to extreme and deviant values on her BMI in view of other responses.

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1 The Dutch standardized test at the end of primary school is an independent test to measure the proceedings of childrens’ achievements. The results give an indirect weighted measurement of factors that are of importance for future school success, such as intelligence, learning pace, accuracy, and concentration. Based on the scores of this test, students are divided and advised to continue their education at either low, middle, or high ability schools. Low = VMBO, Voorbereidend Middelbaar Beroeps Onderwijs (focus at lowest level of professional education), and MAVO, Middelbaar Algemeen Voortgezet Onderwijs. Middle = HAVO, Hoger Algemeen Voortgezet Onderwijs (intermediate level of general education; approx. 100-110 IQ; Dijk & Tellegen, 1994). High = VWO, Voorbereidend Wetenschappelijk Onderwijs (including ‘Gymnasium’; high level of general education to prepare for university). This differentiation was effective in previous media-related research (Nije Bijvank, Konijn, & Bushman, 2012).
3.2.2 Materials

**Media models’ body shape.** Media models’ body shapes were either thin or of normal weight. We included ‘thin’ media models because they are displayed most frequently in current media and an independent sample of adolescent girls evaluated them as such in our pretest (see below). For comparison purposes, we added ‘normal’ body shapes. To increase external validity, each body shape condition included three examples of media models. Three photographs of thin media models were used in the ‘thin body shape’ condition and another three photographs were used in the ‘normal body shape’ condition. We selected three pairs of *thin versus normal weight media models* from two separate pre-tests (described below); each pre-test was conducted as an online study.

**Pre-tests of media models.** Pre-tests were conducted for two separate samples of adolescent girls, which preceded and were independent of the main study sample, while comparable in characteristics such as age. Each pre-test showed 35 photos of bikini models. The pictures used in our pre-tests were selected from available digital photos of media models. The body shapes were clearly visible because each model wore a bikini and was presented in a beach setting. Furthermore, the ‘thin’ versus ‘normal weight’ media models had to be perceived as equally attractive. Preferably, they should have similar hair color, posture and backgrounds to avoid possible experimental confounds.

For each pre-test, adolescent girls were recruited online via their schools to complete an online questionnaire in the classrooms. After providing their age and some demographics, they were exposed to full-color and full-screen presentations of the media models. Each model was presented on a separate page. Immediately after exposure, the girls rated each individual model using 10-point semantic differential rating scales for perceived thinness (i.e., I consider this woman to be ‘extremely thin’ (1) to ‘extremely big’ (10)) and for perceived attractiveness (i.e., I consider this woman to be ‘very ugly’ (1) to ‘very beautiful’ (10)). The girls could stop at any time during the pre-test, and their answers were guaranteed anonymous. After evaluating each of the 35 photos of media models with regards to body size and beauty, the girls were thanked for their participation. Note that the above process assessed body shapes as observed from the point of view of the adolescent girls.

In the first pre-test, 47 adolescent girls (12-18 years old, \(M_{\text{age}} = 15.17, SD_{\text{age}} = 1.93\)) evaluated 35 photos of bikini models. Based on their evaluations, we selected one pair of a ‘thin’ versus ‘normal weight’ media models that significantly differed in thinness (pair 1; \(t(46) = -6.86, p < .001\)), but was of comparable attractiveness (\(t(46) = -.83, p = .41\)). In a second pre-test, another 36 adolescent girls (aged 12-19 years, \(M_{\text{age}} = 16.81; SD_{\text{age}} = 1.86\)) assessed another set of 35 photos of bikini models. Paired sample *t*-tests revealed two additional pairs of matching ‘thin’ versus ‘normal weight’ media models: two models differed
significantly in thinness \( (t(35) = 9.92, p < .001) \) but not in attractiveness (pair 2; \( t(35) = .44, p = .67 \)). Another two models (pair 3) were also identified as significantly different in thinness \( (t(34) = 19.96, p < .001) \) but of comparable attractiveness \( (t(34) = 1.28, p = .21) \).

In the pretests, three pairs of thin versus normal weight media models were identified as appropriate stimuli (i.e., perceived as significantly different in weight yet equally attractive). The results (i.e., means and standard deviations of perceived thinness and attractiveness per media model pair) of both pre-tests are summarized in Table 3.1. See Supplement I. for the selected media models.\(^2\)

**Table 3.1** Means \((M)\) and Standard Deviations \((SD)\) for Perceived Thinness and Perceived Attractiveness of the Selected Media Models from the Pre-Tests

<table>
<thead>
<tr>
<th>Selected Media Model Pairs (from pre-tests)</th>
<th>Perceived Thinness</th>
<th>Perceived Attractiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( M )</td>
<td>( SD )</td>
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<tr>
<td><strong>Pair 1 (Pretest 1)</strong></td>
<td></td>
<td></td>
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<tr>
<td>Thin Media Model</td>
<td>2.85</td>
<td>a</td>
</tr>
<tr>
<td>Normal Weight Media Model</td>
<td>4.72</td>
<td>b</td>
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<tr>
<td><strong>Pair 2 (Pretest 2)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thin Media Model</td>
<td>1.67</td>
<td>a</td>
</tr>
<tr>
<td>Normal Weight Media Model</td>
<td>3.86</td>
<td>a</td>
</tr>
<tr>
<td><strong>Pair 3 (Pretest 2)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thin Media Model</td>
<td>1.74</td>
<td>a</td>
</tr>
<tr>
<td>Normal Weight Media Model</td>
<td>6.83</td>
<td>b</td>
</tr>
</tbody>
</table>

*Note.* The paired media models differ significantly in perceived thinness, while they did not differ significantly in perceived attractiveness. Means for each pair with different subscripts indicate a significant difference in paired samples \( t \)-tests.

**Weight labels.** The labels in our experiment varied by the text accompanying the media models. With regard to label design, previous research indicated that labels should be clear, simple, and highly readable to be most effective and understandable, especially when the labels are presented in a setting that requires a quick response (Cowburn & Stockley, 2005; Feunekes, Gortemaker, Willems, Lion, & Van den Kommer, 2008). Furthermore, both information and warning label types should include an informative component (Bushman, 1998). In our study, this informative component refers to the weight status of the media models. Following the work of Bushman (1998), and Cowburn and Stockley (2005), we designed our information labels to be descriptive labels that presented clear, simple, and factual information about the content of the given ‘product’; in our case, this information was the weight status of the portrayed media models. Thus, the information label properly informed the respondents about the media model’s body shape by using a congruent label. That is, the information labels stated “These models are underweight” for the ‘thin’ media

\(^2\) The information in Supplement I. has been added for the purpose of this dissertation, and is not published in the orginal article
models condition, and “These models have a normal weight” for the ‘normal weight’ media models condition.

Because a warning label includes an additional component that warns the viewer about the personal risk as a consequence of the behavior of the viewers (Bushman, 1998, p.98), the warning labels in our study included a simple warning about personal risk of exposure to media models. In the thin media models condition, the warning label stated “These models are underweight. Unconsciously, exposure to media models may negatively impact your self-image”. The warning label in the normal weight media models condition stated “These models have a normal weight. Unconsciously, exposure to media models may negatively impact your self-image”. Here, ‘exposing yourself’ is the behavioral component of the viewers and ‘the negative impact on self-image’ is the risk of that behavior.

Finally, a no-label condition was included that solely presented the media models without accompanying text (i.e., images only).

**Magazine format.** Combining text with images provides a realistic research setting that adolescent girls encounter in media such as magazines (as suggested by Harrison, Taylor, & Marske, 2006; Holmstrom, 2004). A magazine cover page was used to represent the media models and label combinations. Although research has shown that exposure to thin-ideal media models impacts adolescent girls regardless of media format (i.e., television, magazines, and music videos), magazines in particular have been identified as the most important sources in the thin-ideal internalization process and subsequent effects (e.g., Harrison & Cantor, 1997; Jones, Vigfusdottir, & Lee, 2004; Sands & Wardle, 2003; Tiggemann, 2003). This assumption is twofold: 1) magazines have a high density of body-related content (Nemeroff, Stein, Diehl, & Smilack, 1994; Wiseman, Gray, Mosimann, & Ahrens, 1990), and 2) adolescent girls are large-scale consumers of magazines (Field et al., 1999). Research has shown that combining texts and pictures has the most persuasive results compared with text-only or picture-only exposures (e.g., Fong, Hammond, & Hitchmann, 2009). In addition, images of media models in magazines are often accompanied by articles and texts reflecting on body shapes (Dohnt & Tiggemann, 2006). Thus, a magazine format seemed an appropriate appearance-focused setting to convincingly combine media models with weight labels in our study. The text labels and pictures of media models were integrated in various full-color cover pages of a magazine that focused on adolescent girls; each varied in accordance with the particular experimental condition.

To increase ecological validity and resemble current girl-oriented magazines, the magazine cover page included a (non-existent) title ‘Fashion & Beauty Trend Magazine’, and several short texts referring to ‘Spring 2011’ and ‘Fashionable Bikinis of 2011’. In addition, pictures of make-up brushes and beach slippers were included.
In summary, the combination of weight labels (i.e., either an ‘information label’, ‘warning label’, or ‘no-label’) and media models’ body shape (i.e., either ‘thin’ or ‘normal weight’) directed the six experimental conditions of our study.

3.2.3 Procedure
In class, the study was presented in the context of a lesson on media use and perceptions related to media. While distributing the questionnaires, the adolescent girls were randomly assigned to one of the six experimental weight labels by media models’ body shape conditions in class. The participants were assured that their answers were anonymous and confidential and would only be used for study purposes. They each individually completed their assigned questionnaire.

In the questionnaire, participants were first asked about their social-demographic and physical features (e.g., current body weight and height) and their level of self-esteem. Second, on a separate page, they were exposed to a full-color and large-size presentation of the magazine cover page designed for the present study, which featured one of the six weight labels for the media models experimental conditions. The instruction in the questionnaire regarding viewing the stimulus was simple and clear (i.e., “carefully consider the following page before turning to the next page”). Immediately after exposure, the girls answered manipulation check questions about the media models’ body shape and appearance. Afterward, they filled in the measurements of body dissatisfaction, objectified body consciousness, and body comparison with media models. Next, they wrote down their general thoughts about images of women that they encounter on television, in magazines, and on the internet. Upon completion, they were debriefed by means of a media lesson (that only followed upon completion of all questionnaires in the class), and given the opportunity to ask questions. The research assistant also provided some more context information about media effects and media manipulation awareness. Finally, the participants were thanked for their participation.

3.2.4 Measurements
The measurements of body dissatisfaction, objectified body consciousness, body comparison, and self-esteem were based on previous research and obtained by a paper-and-pencil questionnaire containing Likert-type items and by 5-point rating scales, ranging from 1 (totally disagree) to 5 (totally agree). We applied similar rating scales to each measurement for consistency throughout the questionnaire and to avoid confusion in view of our relatively young target group, which also included youngsters with lower educational ability.
**Body dissatisfaction.** Body dissatisfaction was measured by six indicative and seven counter-indicative items (e.g., ‘I think my belly is too big; ‘I’m happy with my figure’). The original nine-item Body Dissatisfaction Subscale from the Eating Disorder Inventory for Anorexia Nervosa and Bulimia (Garner, Olmstead, & Polivy, 1983) was expanded with four items that addressed overall satisfaction with appearance and with breast size to more equally balance the subject body parts and number of indicative items versus counter-indicative items. These four items were: ‘I think that my breasts are just the right size’, ‘I think that my breast size is too large’, ‘I feel satisfied about the way I look’, and ‘I feel bad about my looks’. The scale had a good fit (Cronbach's alpha = .86), with higher scores indicating higher levels of body dissatisfaction.

**Objectified body consciousness.** Eight items for measuring objectified body consciousness were based on Lindberg, Hyde, and McKinley's Objectified Body Consciousness Scale for Preadolescent and Adolescent Youth (2006). The scale entails two dimensions of objectified body consciousness: *body surveillance* (three items, e.g., ‘I often worry about how I look’) and *body shame* (five items, e.g., ‘I would be ashamed for people to know what I really weigh’). Based on previous research of the target group (Veldhuis, Konijn & Seidell, 2012) and its overlap with comparison items, we removed the following item from the original four-item body surveillance subscale: ‘I often compare how I look with how other people look’. Higher scores on this adjusted scale (Cronbach’s alpha = .83) indicated more objectified body consciousness in terms of body surveillance and body shame.

**Body comparison with media models.** The Social Comparison to Models and Peers Scale (SCMP; Jones, 2001; Jones & Crawford, 2006) is a measurement that assesses to what extent one compares different body parts and attributes (i.e., belly, hips, weight, figure, and thighs) with models and peers. Because our study focused on media models, we used the five-item social comparison with the media models-subscale. An example of an item is ‘I compare my hips with the hips of models and media celebrities’. The five-item scale was extended with one item targeting a more general appearance comparison (i.e., ‘I compare my appearance with the appearance of models’), which was derived from the Sociocultural Attitudes Toward Appearance Questionnaire-3 (SATAQ-3; Thompson, Van den Berg, Roehrig, Guarda, & Heinberg, 2004). A principal component analysis revealed that the six items represent one factor. Higher scores on this reliable scale (Cronbach's alpha = .90) indicated a higher level of body comparison with media models.

**Self-esteem.** The self-esteem of adolescent girls was measured by the 10-item Rosenberg’s Self-Esteem Scale (RSE; Rosenberg, 1965). Examples of items are ‘I feel I have a number of good qualities’ and ‘I wish I could have more respect for myself’. The scale was reliable according to a Cronbach's alpha of .88. After recoding the five counter-indicative
items, higher scores indicated higher self-esteem. A median split was used to create the lower and higher self-esteem groups for the purpose of analysis (the cut-off score was 3.80, with scores lower than 3.80 recoded into lower self-esteem, and scores higher than or equal to 3.80 recoded into higher self-esteem).

**Manipulation checks.** To check our manipulation of the media models’ body shape, ratings of *perceived thinness* and *perceived attractiveness* of the presented models as well as *perceived familiarity* with these models were measured on 10-point rating scales. After exposure to the stimulus material, the participants were asked to grade the women they observed on the magazine cover. These measurements were in line with previous studies (e.g., Martin and Gentry, 1997). The girls were familiar with this type of 10-point rating scale because it is similar to the grading scale used in their school system. The girls indicated whether they considered the portrayed women to be ‘extremely thin’ (1) to ‘extremely big’ (10) and ‘very ugly’ (1) to ‘very beautiful’ (10), and the extent to which they were ‘very unfamiliar’ (1) to ‘very familiar’ (10) with the women they observed.

**Demographic variables.** The *age* of the participants was asked in an open-ended question (i.e., 'What is your age?' (in years)). Additionally, *educational ability* was assessed (i.e., classification in lower, middle, and higher educational ability level; see ‘Participants and Design’). Lastly, participants’ *Body Mass Index* (BMI) was calculated based on self-reported measures of weight and height. Dividing the weight (in kilos) by the squared height (in meters) provided a value for the BMI of each participant (i.e., a universal measure of weight-to-height ratio). Previous research has shown that self-reported measurements of height and weight correlate strongly, which adds to the validity of these self-reported measurements (e.g., Field et al., 1999).

### 3.3 Results

#### 3.3.1 Manipulation Check

Manipulation checks confirmed that the media models’ body shapes as derived from the pretests were successfully chosen. Because each experimental condition in the present study featured three media models (i.e., not just one model), questions with regard to perceived thinness and perceived attractiveness were formulated accordingly (i.e., I consider these women to be ... ‘extremely thin’ to ‘extremely big’ and ‘very ugly’ to ‘very beautiful’).

A univariate 3 (weight labels: information vs. warning vs. no-label) x 2 (media models’ body shape: thin vs. normal weight) analysis of variance (ANOVA) showed that the media models in the present study varied significantly for perceived thinness ($F(1,172) = 30.14, p < .001, \eta^2 = .15$). Hence, models in the thin body shape condition ($M = 3.43, SD = 1.66$) were rated significantly slimmer than media models in the normal weight condition ($M$
Informing Versus Warning

Furthermore, models in both conditions were considered to be equally attractive \((F(1, 172) = .563, p = .45, \eta^2 = .00; M_{\text{thin}} = 7.31, SD_{\text{thin}} = 1.64 \text{ and } M_{\text{normal}} = 7.13, SD_{\text{normal}} = 1.46)\). We also checked whether perceived familiarity with the presented models was similar in each condition. A univariate ANOVA confirmed that the models in both body shape conditions were relatively unknown \((F(1, 168) = .787, p = .38, \eta^2 = .00; M_{\text{thin}} = 3.33, SD_{\text{thin}} = 2.26 \text{ and } M_{\text{normal}} = 3.02, SD_{\text{normal}} = 2.37)\). This is important for reasons of comparison and to alleviate possible confounding effects of attractiveness and familiarity.

Furthermore, the univariate ANOVAs showed no significant effects for weight labels on perceived thinness of the models \((F(2, 172) = .056, p = .95, \eta^2 = .00)\), perceived attractiveness of the models \((F(2, 172) = 1.98, p = .14, \eta^2 = .02)\), and perceived familiarity with the models \((F(2, 168) = .449, p = .64, \eta^2 = .00)\).

3.3.2 Testing Hypotheses

To test our hypotheses, a multivariate analysis of variance (MANOVA) was conducted with weight labels, media models’ body shape, and self-esteem (lower, higher) as between-subjects factors, and body dissatisfaction, objectified body consciousness, and body comparison with media models as dependent variables.\(^3\)

The MANOVA yielded significant main effects for media models’ body shape and self-esteem, but not for weight labels. Because the main effects were not included as hypotheses, the results are presented in Table 3.2 in order to be complete, without further discussion. A significant multivariate 2-way interaction was found between media models’ body shape and weight labels on the dependent variables \((\text{Wilks’ } \lambda = .924, F(6, 328) = 2.20, p = .04, \eta^2 = .04)\). The main effects and the 2-way interaction were qualified by a multivariate three-way interaction for weight labels by media models’ body shape by self-esteem, \(\text{Wilks’ } \lambda = .910, F(6, 328) = 2.65, p = .02, \eta^2 = .05\). No significant 2-way interactions were found for body shape and self-esteem \((p = .43)\) and weight labels and self-esteem \((p = .37)\). Relevant univariate F-tests were used to specifically test our hypotheses and are described for each hypothesis below.

**Effects of weight labels by media models’ body shapes.** Testing the *counteracting hypothesis* (H1), a univariate F-test confirmed the significant interaction of weight labels by media models’ body shape for body dissatisfaction \((F(2, 166) = 2.63, p = .07, \eta^2 = .03)\), but not for objectified body consciousness \((p = .44)\), and body comparison with media models \((p = .38)\). Subsequently, the results for *body dissatisfaction* were tested in more detail by means

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\(^{3}\text{Preliminary analyses by means of Pearson’s correlations revealed that self-esteem was significantly (} p < .01) \text{ and negatively associated with body dissatisfaction (} r = -.617) \text{, objectified body consciousness (} r = -.568) \text{, and body comparison (} r = -.419), indicating that a lower self-esteem relates to more negative body perceptions and more body comparison. Hence, the requirements for performing a multivariate analysis of variance were met.}
of simple effects analysis, which compared the three labels within each media models’ body shape condition.

The results of the simple effects analysis indicated that the weight label conditions differed significantly at the level of the thin body shape condition \((F(2,166) = 5.54, p = .01, \eta^2 = .06)\). Pairwise comparisons (Fisher’s LSD) further revealed that the thin media models combined with an information label exhibited significantly less body dissatisfaction than the thin media models accompanied by no-label \((p = .001; M_{info} = 2.34, SD_{info} = .55; M_{no-label} = 2.86, SD_{no-label} = .68)\) or by a warning label \((p = .04; M_{warning} = 2.72, SD_{warning} = .87)\). No significant difference in body dissatisfaction between the no-label and the warning label conditions was found \((p = .20)\). Simple effects analysis also revealed that the weight labels did not differ significantly at the level of the normal body shape condition \((p = .69; M_{info} = 2.56, SD_{info} = .66; M_{warning} = 2.48, SD_{warning} = .80; M_{no-label} = 2.51, SD_{no-label} = .67)\). Thus, H1 is supported for body dissatisfaction.

As expected, accurately confirming the ‘underweight’ status of thin media models’ body shape by means of an information label induced significantly lower levels of body dissatisfaction by adolescent girls when compared with girls in the no-label and warning-label conditions. Unexpectedly, there was no effect of a warning label (compared to no label) for thin models. No significant results for objectified body consciousness and body comparison with media models were found. Likewise, in accordance with our expectations, no differences between the label conditions within the normal weight media models condition were found. However, a significant 3-way interaction indicated that the level of self-esteem of the girls made a difference in how the effects of the labels on thin-ideal images were perceived.
Table 3.2 Means Scores, F Ratios, and Effect Sizes for Univariate Main Effects of Weight Label, Media Models’ Body Shape, and Self-Esteem (Lower, Higher) on Body Dissatisfaction, Objectified Body Consciousness, and Body Comparison.

<table>
<thead>
<tr>
<th>Weight Label&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Media Models’ Body Shape&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Self-Esteem&lt;sup&gt;c&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean Scores</td>
<td>Mean Scores</td>
</tr>
<tr>
<td></td>
<td>Information (n = 59)</td>
<td>Warning (n = 59)</td>
</tr>
<tr>
<td><strong>Body Dissatisfaction</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No-Label (n = 60)</td>
<td>2.68 (.73)</td>
<td>2.60 (.82)</td>
</tr>
<tr>
<td>Warning (n = 59)</td>
<td>2.46 (.85)</td>
<td>2.46 (.84)</td>
</tr>
<tr>
<td><strong>Objectified Body</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consciousness</td>
<td>2.46 (.88)</td>
<td>1.67 (.68)</td>
</tr>
<tr>
<td><strong>Body Comparison</strong></td>
<td>1.98 (.88)</td>
<td>1.75 (.87)</td>
</tr>
</tbody>
</table>

Note. Mean scores (with standard deviations in parentheses) represent means for body dissatisfaction, objectified body consciousness, and body comparison from 1 (strongly disagree) to 5 (strongly agree).

* p < .05, ** p < .01, *** p < .001.

<sup>a</sup> Multivariate main effect for weight label: Wilks’ λ = .937, F(6, 328) = 1.80, p = .10, ηp² = .03.

<sup>b</sup> Multivariate main effect for media models’ body shape: Wilks’ λ = .941, F(3, 164) = 3.46, p = .02, ηp² = .06.

<sup>c</sup> Multivariate main effect for self-esteem (lower, higher): Wilks’ λ = .688, F(3, 164) = 24.84, p < .001, ηp² = .31.
Self-esteem as a moderator of the weight labels by body shapes interactions. Regarding H2, univariate $F$-tests indicated that the three-way interaction of weight labels and media models’ body shape by self-esteem was significant for all dependent measures: body dissatisfaction ($F(2,166) = 4.86, p = .01, \eta^2 = .06$), objectified body consciousness ($F(2,166) = 3.88, p = .02, \eta^2 = .05$), and body comparison with media models ($F(2,166) = 4.25, p = .02, \eta^2 = .05$). To further test our three-way interactions, we used simple effects analysis that compared the weight label conditions within each media model condition. In the following section, we only present test results for the significant effects.

Simple effects analysis revealed a significant contrast effect on body dissatisfaction at the level of the thin media model mainly for the girls who have lower self-esteem ($F(2,166) = 8.83, p < .001, \eta^2 = .10$). Supplementary pairwise comparisons (Fisher’s LSD) revealed similar patterns as described for the two-way interaction above. That is, for girls with lower self-esteem, the thin media models combined with an information label induced significantly less body dissatisfaction than the thin media models accompanied by a warning label ($p < .001$) or image-only (i.e., no-label; $p = .001$). No significant difference in body dissatisfaction between the no-label and the warning label conditions was found. For girls with higher self-esteem, no significant effect was found for weight labels at the level of the thin media models. Furthermore, no significant contrast effects for the weight labels in the normal weight media models condition were found for girls with either lower or higher self-esteem. The results are displayed in Figure 3.1 (for means and standard deviations, see Table 3.3). In conclusion, the results indicate that the effect of information labels on thin media models causes less body dissatisfaction when compared with the other experimental conditions, especially in girls with lower self-esteem compared to girls with higher in self-esteem.

Furthermore, the three-way interaction revealed similar patterns for objectified body consciousness (see Table 3.4). Simple effects analysis that compared the weight label conditions for each media model condition revealed a significant contrast effect on objectified body consciousness at the level of the thin media models only for the girls who had lower self-esteem ($F(2,166) = 4.27, p = .02, \eta^2 = .05$; not for girls with higher self-esteem). Pairwise comparisons (LSD) further showed that for girls with lower self-esteem, using an information label that confirmed the ‘underweight’ status of the thin media models induced lower levels of adolescent girls’ objectified body consciousness when compared with the warning label ($p = .01$) and image-only (no-label; $p = .03$). The no-label and warning label conditions regarding the thin media models did not reveal different responses. Furthermore, no significant differences were found between the labels for normal weight media models for girls with either lower or higher self-esteem.
Figure 3.1 Interaction of weight labels and media models’ body shapes on body dissatisfaction for girls with a higher or lower self-esteem.

Note. Bars with different letters indicate a significant difference based on pairwise comparisons (LSD), \( p < .05 \).

Table 3.3 Means (\( M \)) and Standard Deviations (\( SD \)) for Body Dissatisfaction per Media Models’ Body Shape by Weight Label Condition for Girls with Higher or Lower Self-Esteem, and the Number of Participants per Condition

<table>
<thead>
<tr>
<th>Body Dissatisfaction with Higher Self-Esteem</th>
<th>Media Models’ Body Shape</th>
<th>( M )</th>
<th>( SD )</th>
<th>( n )</th>
<th>( M )</th>
<th>( SD )</th>
<th>( n )</th>
<th>( M )</th>
<th>( SD )</th>
<th>( n )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Label</td>
<td>Thin</td>
<td></td>
<td></td>
<td></td>
<td>Normal</td>
<td></td>
<td></td>
<td>Total</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No-Label</td>
<td></td>
<td>2.52</td>
<td>.41</td>
<td>16</td>
<td>2.19</td>
<td>.59</td>
<td>17</td>
<td>2.35</td>
<td>.53</td>
<td>33</td>
</tr>
<tr>
<td>Information Label</td>
<td></td>
<td>2.30</td>
<td>.55</td>
<td>18</td>
<td>2.09</td>
<td>.51</td>
<td>13</td>
<td>2.21</td>
<td>.54</td>
<td>31</td>
</tr>
<tr>
<td>Warning Label</td>
<td></td>
<td>2.02</td>
<td>.57</td>
<td>14</td>
<td>2.10</td>
<td>.75</td>
<td>12</td>
<td>2.06</td>
<td>.65</td>
<td>26</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>2.29</td>
<td>.54</td>
<td>48</td>
<td>2.14</td>
<td>.60</td>
<td>42</td>
<td>2.22</td>
<td>.57</td>
<td>90</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Body Dissatisfaction with Lower Self-Esteem</th>
<th>Media Models’ Body Shape</th>
<th>( M )</th>
<th>( SD )</th>
<th>( n )</th>
<th>( M )</th>
<th>( SD )</th>
<th>( n )</th>
<th>( M )</th>
<th>( SD )</th>
<th>( n )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Label</td>
<td>Thin</td>
<td></td>
<td></td>
<td></td>
<td>Normal</td>
<td></td>
<td></td>
<td>Total</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No-Label</td>
<td></td>
<td>3.24\textsubscr{b}</td>
<td>.75</td>
<td>14</td>
<td>2.93</td>
<td>.74</td>
<td>13</td>
<td>3.09</td>
<td>.74</td>
<td>27</td>
</tr>
<tr>
<td>Information Label</td>
<td></td>
<td>2.41\textsubscr{a}</td>
<td>.56</td>
<td>11</td>
<td>2.92</td>
<td>.52</td>
<td>17</td>
<td>2.72</td>
<td>.58</td>
<td>28</td>
</tr>
<tr>
<td>Warning Label</td>
<td></td>
<td>3.34\textsubscr{b}</td>
<td>.57</td>
<td>16</td>
<td>2.75</td>
<td>.66</td>
<td>17</td>
<td>3.03</td>
<td>.68</td>
<td>33</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>3.05</td>
<td>.74</td>
<td>41</td>
<td>2.85</td>
<td>.63</td>
<td>47</td>
<td>2.95</td>
<td>.68</td>
<td>88</td>
</tr>
</tbody>
</table>

Note. Means in each column with different subscripts indicate a significant difference based on pairwise comparisons (LSD), \( p < .05 \).
Table 3.4  Means (M) and Standard Deviations (SD) for Objectified Body Consciousness per Media Models’ Body Shape by Weight Label Condition for Girls with Higher or Lower Self-Esteem

<table>
<thead>
<tr>
<th>Label</th>
<th>Thin M</th>
<th>SD</th>
<th>Normal M</th>
<th>SD</th>
<th>Total M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>No-Label</td>
<td>2.27</td>
<td>.62</td>
<td>1.88</td>
<td>.74</td>
<td>2.07</td>
<td>.70</td>
</tr>
<tr>
<td>Information Label</td>
<td>2.14</td>
<td>.58</td>
<td>1.86</td>
<td>.44</td>
<td>2.02</td>
<td>.54</td>
</tr>
<tr>
<td>Warning Label</td>
<td>1.93</td>
<td>.37</td>
<td>2.06</td>
<td>.48</td>
<td>1.99</td>
<td>.42</td>
</tr>
<tr>
<td>Total</td>
<td>2.12</td>
<td>.55</td>
<td>1.93</td>
<td>.58</td>
<td>2.03</td>
<td>.57</td>
</tr>
</tbody>
</table>

Objectified Body Consciousness with *Higher* Self-Esteem

<table>
<thead>
<tr>
<th>Label</th>
<th>Thin M</th>
<th>SD</th>
<th>Normal M</th>
<th>SD</th>
<th>Total M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>No-Label</td>
<td>3.09b</td>
<td>.87</td>
<td>2.78</td>
<td>.67</td>
<td>2.94</td>
<td>.78</td>
</tr>
<tr>
<td>Information Label</td>
<td>2.47a</td>
<td>.78</td>
<td>2.64</td>
<td>.81</td>
<td>2.57</td>
<td>.79</td>
</tr>
<tr>
<td>Warning Label</td>
<td>3.23b</td>
<td>.91</td>
<td>2.43</td>
<td>.73</td>
<td>2.82</td>
<td>.91</td>
</tr>
<tr>
<td>Total</td>
<td>2.98</td>
<td>.90</td>
<td>2.60</td>
<td>.74</td>
<td>2.78</td>
<td>.84</td>
</tr>
</tbody>
</table>

Note. Means in each column with different subscripts indicate a significant difference based on pairwise comparisons (LSD), *p* < .05.

The three-way interaction on body comparison showed a somewhat different pattern. For the girls with lower self-esteem, a significant contrast effect was found for weight labels at the level of the normal weight media models (*F*(2, 166) = 4.15, *p* = .02, η² = .05). More specifically, pairwise comparisons (LSD) revealed that girls with lower self-esteem showed lower levels of body comparison in response to both information and warning labels accompanying *normal* weight media models when compared to normal weight models with no-label (*p* = .03 and *p* = .01, respectively, and no significant difference between the information and warning labels on normal weight media models). No significant contrast effect of labels at the level of normal weight media models was found for girls with higher self-esteem. In contrast with the findings for body perceptions, no significant contrast effects were found for girls with lower or higher self-esteem at the level of comparing the weight labels within the thin media models conditions. See Table 3.5.
Table 3.5  Means (M) and Standard Deviations (SD) for Body Comparison per Media Models’ Body Shape by Information Label Condition for Girls with Higher or Lower Self-Esteem.

### Body Comparison with Higher Self-Esteem

<table>
<thead>
<tr>
<th>Label</th>
<th>Thin</th>
<th>Normal</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>No-Label</td>
<td>1.89</td>
<td>.79</td>
<td>1.60</td>
</tr>
<tr>
<td>Information Label</td>
<td>1.68</td>
<td>.62</td>
<td>1.21</td>
</tr>
<tr>
<td>Warning Label</td>
<td>1.30</td>
<td>.41</td>
<td>1.46</td>
</tr>
<tr>
<td>Total</td>
<td>1.64</td>
<td>.67</td>
<td>1.44</td>
</tr>
</tbody>
</table>

### Body Comparison with Lower Self-Esteem

<table>
<thead>
<tr>
<th>Label</th>
<th>Thin</th>
<th>Normal</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>No-Label</td>
<td>2.27</td>
<td>.94</td>
<td>2.28b</td>
</tr>
<tr>
<td>Information Label</td>
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<td>.82</td>
<td>1.69a</td>
</tr>
<tr>
<td>Warning Label</td>
<td>2.58</td>
<td>1.06</td>
<td>1.53a</td>
</tr>
<tr>
<td>Total</td>
<td>2.37</td>
<td>.96</td>
<td>1.79</td>
</tr>
</tbody>
</table>

*Note. Means in each column with different subscripts indicate a significant difference based on pairwise comparisons (LSD), p < .05.*

In summary, the results of the three-way interaction showed that, especially for those girls with lower self-esteem, information labels confirming the underweight status of thin media models induced lower scores of body dissatisfaction and objectified body consciousness than warning labels or no-labels on thin-ideal images. These results are in line with our expectations in H2. For body comparison with media models, a more divergent pattern was found. For girls with lower self-esteem, both the information and warning labels on normal weight media models lowered body comparisons with media models when compared to no-labels approach using similar (normal weight) models.

### 3.4 Discussion

The present study aimed to counteract negative body perceptions in adolescent girls in response to the thin-body ideal in the media by providing information on the weight status of media models. We assessed the impact of both information labels and warning labels referring to the weight status of media models (attached to media models imagery) on the body self-perceptions of adolescent girls. Our results highlight that a simple content label that provided proper information about the body shape of a thin media model (i.e., underweight status)
induced less negative body perceptions when compared to warnings or images-only, especially in girls with lower self-esteem.

To our knowledge, our study is the first in media effects research relating to the thin-body ideal that tests the effectiveness of pragmatic information in an information label versus warning label context that could be applied in a mass media setting. Our findings showed the two-sided coin of media effects. On the one hand, mass media negatively affects the body image of adolescent girls (e.g., Spettigue & Henderson, 2004). On the other hand, mass media can be used positively as an appropriate channel for releasing counteractive interventions. These findings further highlight the need to systematically investigate the factors and underlying mechanisms that contribute to and prevent or reduce negative body perceptions resulting from exposure to thin-ideal bodies in mass media (cf., López-Guimerà et al., 2010). Given the popularity and reach of mass media, including simple information labels seems a promising way to counteract the negative effects of media’s thin-body ideal in adolescent girls with lower self-esteem.

The study’s findings generally support our counteracting hypothesis. The counteracting hypothesis predicts that information labels attached to (extremely) thin media models will counteract negative body perceptions of adolescent girls in response to thin-ideal imagery (i.e., images only; also following Veldhuis et al., 2012). Our findings accordingly showed that the models’ body shape and weight labels interact in their effect on body dissatisfaction. More specifically, accurately informing the participant about the ‘underweight’ status of thin media models’ body shape by means of an information label induced lower levels of body dissatisfaction in adolescent girls than exposure to thin-ideal images with warning texts or without textual weight labels. This finding is compatible with previous research that indicates that factual information about, for example, food products and beverages has positive effects on the health beliefs and behaviors of consumers (e.g., Bushman, 1998; Vermeer et al., 2010). However, the counteracting effect of labeling media models must be placed in perspective of the important role of self-esteem, which we will discuss below.

Although the two-way interaction revealed that labeling thin models to be underweight did work and induced less body dissatisfaction, the three-way interaction of weight labels, media models’ body shape, and self-esteem more precisely designated for whom labeling thin-ideal imagery works, that is, for adolescent girls with lower self-esteem. This result is consistent with the extant literature in which objectifying media induced adverse effects, especially in girls with lower self-esteem (Aubrey 2006; Stice et al., 2011). In our study, girls with lower self-esteem were particularly responsive to simple information that confirmed the underweight status of a thin media model in decreasing their negative body perceptions (i.e., lowering body dissatisfaction and objectified body consciousness). Hence,
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girls with lower self-esteem may respond to the informational message because it is something they need to hear, whereas this information might already be familiar for the girls with higher self-esteem. Thus, information labels offer a benefit particularly to girls with lower self-esteem.

Interestingly, warning adolescent girls about the risk of being exposed to thin media models did not affect their body perceptions differently than exposure to models without any information. Such findings can be explained by Reactance theory (Brehm, 1972), which states that when freedom in behavior is threatened, message rejection will occur. Thus, the warning that media images may negatively influence self-image may have caused adolescent girls not to adhere to the message (most likely avoiding or rejecting it). However, this finding cannot be explained by forbidden fruit theorizing (Christenson, 1992; Nije Bijvank et al, 2009) because the warning label in our study did not increase the attractiveness of thin-ideal models (which would have resulted in more negative body perceptions than in the no-label condition). An alternative explanation can be found in affirmation theory (Harris, Mayle, Mabbott, & Napper, 2007; Steele, 1988). Affirmation theory postulates that individuals are continuously motivated to support or maintain a positive self-image. The warning label may have provoked the self-integrity (cf. self-esteem) of adolescent girls in such a way that they restored a positive self-image by rejecting the message.

Overall, it can be concluded that a simple information weight label that informs about the underweight status of a thin media model is most effective in counteracting negative body perceptions in girls with lower self-esteem. That is, this simple information label was most effective when compared to thin media models without any additional information or with a warning for the risk of exposure to the thin-body ideal. The usefulness of a label seems to depend on the body shape of the media model it is targeting as well as on the level of self-esteem of the recipient. Furthermore, adolescent girls’ intensity of comparing their bodies with those of media models showed a different pattern than their body perceptions. Girls with lower self-esteem showed less body comparison with media models when they saw normal weight media models paired with information and warning labels than when they saw normal weight models’ images-only. This result may indicate that body perceptions and body comparison are addressed differently by labeling media models.

As with most studies, our study has strengths and weaknesses that should be considered in future studies. A strength is the high internal validity of our study due to pretesting and checking the manipulation of the media models’ body shapes in the perception of the adolescent girls themselves. Furthermore, the magazine format used, presented the stimulus materials to the girls in a format they are familiar with from common fashion magazines (see Konijn, Veldhuis, & Plaisier (2013) for an extension of this format in YouTube).
Including more participants in future research would increase the statistical power to further inspect the three-way interaction of media models’ body shape by information label by self-esteem. Given the number of factors and participants, the results of the three-way interaction in the current study have to be interpreted with caution. To assess in more detail whether information labels on thin models decrease negative body perceptions, or prevent an increase in negative body perceptions, a no-exposure group could be included. As the focus of the present study was to test the relative effects of different types of weight labels, we contrasted our weight labels with an images-only condition (i.e., without labels). Furthermore, our design cannot be considered a full-factorial design, in the sense that the normal-weight visuals were only associated with a ‘normal weight’ label, and the thin visuals were only associated with an ‘underweight’ label. Thus, there was no opportunity to see what would happen when ‘normal-weight’ models were called underweight and when ‘underweight’ models were called normal. However, we did so in a previous study showing that only the congruent labels (i.e., ‘underweight’ on thin models, and ‘normal weight’ on normal-weight models) counteracted negative body perceptions (Veldhuis et al., 2012).

The results of our study further indicated that we need to identify the individual differences and underlying psychosocial mechanisms that contribute to different reactions to media models by adolescent girls in combination with surrounding text. Due to the many predisposing and reinforcing factors involved, identification of these mechanisms is as complex as unraveling body weight-related clinical pictures such as anorexia, obesity, and eating disorders in general. While adolescent girls are the most susceptible group for developing media-induced negative body perceptions (e.g., Grabe et al., 2008; Groesz et al., 2002), including more participants may allow segmentation into the various developmental stages of adolescence (e.g., Nije Bijvank et al., 2009; Veldhuis et al., 2012). It can be expected, for example, that middle adolescents would more strongly respond to warning labels in terms of reactance, whereas early adolescents who just entered puberty might show less reactance to such warning labels. Furthermore, as our study used a single-time exposure for directly measuring body perceptions and comparison levels, using a multiple-exposure design in future research as well as follow-up measurements may unravel effects of labeling media models over time.

Future research could further focus on building a theoretical framework for both explaining the effects of labeling media models and designing such labels in an attractive and effective way. Affirmation and reactance mechanisms underlying the response of adolescent girls to weight labels accompanying media models seem important in furthering insight in message processing and evaluation. The design of effective labels on media models could draw on the insights gained from counter-arguing and two-sided messaging research (e.g., Bohner,
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Einwiller, Erb, & Sibler, 2003; Rucker, Petty, & Briñol, 2008). Furthermore, adding reference values such as ‘what is a healthy BMI’ might add to the effectiveness of information labels because these reference values may support the intended interpretation of the label information (see Cowburn & Stockley, 2005). However, it is difficult to avoid stigmatizing connotations such as ‘there is something wrong with those models’ in this type of research. Thus, it is important to interpret the results in a relative manner and to explore future replications and variations, such as by applying variations in text labels, models, and body shapes. By doing so, the extent of stigmatization can also be included as an outcome.

In a world where ideally shaped models dominate the media landscape, our study contributed to further our understanding in the field of media effects of the thin-body ideal by revealing a counteracting mechanism. In addition to the scientific relevance, our study also holds important practical implications and adds to the societal debate on mandatory information accompanying models in media offerings. Our proposed intervention by means of attaching simple and factual information labels to media models coincides with, for example, Israel’s policy decision to ban excessively skinny models from national media and to use a disclosure on media models that reveals the amount of retouching (Reuters, 2012). Furthermore, a point-system in the United Kingdom on the amount of editing used in images is being carefully considered by the government for legislation (BBC, 2012). Likewise, editors of Vogue-magazine have decided that models who are too young and too thin should not appear in magazines in favor of showing a healthier standard of the female body. These examples illustrate the feasibility of applying labels to media models in real-world contexts, although the specific effects of such real-life precautions in mass media are not yet clear. By carefully testing the causal effects of labeling of media models in an experimental design, our study adds to the societal and political debates regarding the use of mandatory labels and disclaimer information on (edited) photo models (also see Konijn, Veldhuis, Plaisier, Spekman & Den Hamer, in press).

Finally, our results are relevant in view of media literacy interventions in providing a cost-effective approach through pragmatic information labels that clearly address the target issue. In the present study, the labels directly and explicitly addressed the weight status of the presented models and were effective in affecting lower self-esteem girls’ weight-related body perceptions, such as body dissatisfaction and objectified body consciousness compared to images-only or warnings. The clear role of self-esteem as an important individual difference factor pleads for a careful tailoring of interventions with respect to this specific target group. The message should be explicit, simple, and to-the-point; there is no need to elaborate on risks of exposure to the thin-body ideal because it is not in the warning but in the actual content.
Acknowledgements

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References


## Supplement I. Model Pairs from Pre-Tests

<table>
<thead>
<tr>
<th>Media Models Body Shape</th>
<th>Pair 1</th>
<th>Pair 2</th>
<th>Pair 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thin</td>
<td><img src="image1" alt="Image" /></td>
<td><img src="image2" alt="Image" /></td>
<td><img src="image3" alt="Image" /></td>
</tr>
<tr>
<td>Normal</td>
<td><img src="image4" alt="Image" /></td>
<td><img src="image5" alt="Image" /></td>
<td><img src="image6" alt="Image" /></td>
</tr>
</tbody>
</table>

*Note.* The pre-tests revealed three pairs of appropriate ‘extremely thin’ versus ‘normal weight’ media models that were subsequently used for creating the extremely thin and normal weight media models experimental conditions. Note that within each pair, the bikini models not only significantly differ in body size, but were rated to be of comparable beauty. The models were assessed as seen from the adolescent girls’ point of view.
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