Social media and online self-presentation: Effects on how we see ourselves and our bodies

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Chapter 4

Adolescents’ Social Network Site Use, Appearance Training, and Body Dissatisfaction: Testing a Mediation Model

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Abstract

Due to their focus on personal photographs and physical appearance, social network sites may encourage and facilitate appearance training among adolescents, that is, influencing each other to conform to sociocultural body ideals. The tripartite influence model of body image predicts that receiving appearance training contributes to body dissatisfaction (Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999). Therefore, social network site use was expected to increase body dissatisfaction through appearance training. The present two-wave panel study tested these hypothesized relationships among 604 Dutch adolescents (aged 11-18) and explored the potential moderation of gender. Structural equation modeling showed similar results for boys and girls: Social network site use increased body dissatisfaction and also predicted increased appearance training. However, appearance training did not predict body dissatisfaction. The effect of social network site use on body dissatisfaction was thus not mediated by appearance training.
Body dissatisfaction is a significant threat to adolescents' wellbeing (Markey, 2010). Adolescents who are more dissatisfied with their physical appearance run a high risk to suffer, for example, from depression, eating disorders, and low self-esteem (as reviewed by Markey, 2010). As a result, there has been much public and academic interest into identifying factors which contribute to body dissatisfaction. The current study aims at contributing to this knowledge by exploring a relatively understudied potential impact on body dissatisfaction, namely the use of social network sites. Social network sites are websites which consist of personal profiles of users (Pempek, Yermolayeva, & Calvert, 2009). On these profiles users present the self to others through text and pictures, view and comment on the self-presentations of other users, and read others’ comments on the own self-presentations (Pempek et al., 2009).

There is some initial correlational evidence that social network site use is negatively associated with body image among adolescent girls (Tiggeman & Miller, 2010; Tiggeman & Slater, 2013). However, at least three important gaps remain in our knowledge about the relation between the use of social network sites and adolescents' body image. First, existing studies on the effects of social network site use on body image are limited to cross-sectional data (Meier & Gray, 2013; Tiggeman & Miller, 2010; Tiggeman & Slater, 2013). These studies show that individuals who are more dissatisfied with their appearance concurrently also use social network sites more frequently. However, we do not know whether social network site use changes body dissatisfaction over time. The first aim of the current study is therefore to test if the frequency of social network site use longitudinally predicts changes in body dissatisfaction.

Second, no studies to date have tested mechanisms that may explain the initial association found between social network site use and body image (Tiggeman & Miller, 2010; Tiggeman & Slater, 2013). Due to the popular activities of posting photographs of the self on social network sites and commenting on each other’s pictures, as well as the centrality of physical appearance in these activities, social network sites may lend themselves to “appearance training” among friends (Meier & Gray, 2013). Appearance training entails talking about physical appearance and reinforcing each others’ attempts to improve physical appearance (Jones, 2004). In this way, appearance training influences individuals’ body image (Jones, 2004; Jones, Vigfusdottir, & Lee 2004; McCabe & Ricciardelli, 2001). Social network sites may thus impact body dissatisfaction by increasing the amount of appearance training received from friends. It is the second aim of this study to test this mediation mechanism.
Third, research on the effect of social network site use on body image has only focused on girls (Meier & Gray, 2013; Tiggeman & Miller, 2010; Tiggeman & Slater; 2013). Although this focus is understandable because body image problems are more prevalent among girls, there is evidence that boys also experience body dissatisfaction (McCabe & Ricciardelli, 2001). Furthermore, factors that affect girls’ body image were also found to impact boys’ body image (Ricciardelli & McCabe, 2004). It is therefore our third aim to investigate the relationships between social network site use, appearance training, and body dissatisfaction both among boys and among girls and to establish if and how these factors and processes differ between boys and girls.

The Tripartite Influence Model of Body Image

A useful conceptual framework for investigating body image is the tripartite influence model of body image, which is also referred to as the sociocultural model of body image (Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999). This model describes that beauty ideals are conveyed to individuals through a variety of sociocultural channels, notably individuals’ parents, peers, and the media (Thompson et al., 1999). Individuals internalize these beauty ideals, and, to the extent that their own appearance does not match these ideals, become dissatisfied with their appearance. As typically very few bodies look like the ideal, body dissatisfaction is the most likely outcome for the vast majority of individuals. In this way, sociocultural channels contribute to body dissatisfaction.

In line with predictions of the tripartite influence model, the influence of the media, parents, and peers on adolescent body dissatisfaction has been supported by research (Keery, Van den Berg, & Thompson, 2004; Shroff & Thompson, 2006; Stanford & McCabe, 2005). Studies that dealt with the effects of media, such as TV and magazines, have typically focused on the effects of highly idealized images of physically attractive people and appearance-focused content on body dissatisfaction (for meta-analyses see Bartlett, Vowels, & Saucier, 2008 [males]; Groesz, Levine, & Murnen, 2002 [females]). However, few studies have paid attention to the changing media landscape and the rise of online media. Not only are online media particularly often used by adolescents (Lenhart & Madden, 2007; Lenhart, Purcell, Smith, & Zickuhr; SPOT, 2012), they also offer adolescents unprecedented opportunities to present their own bodies while scrutinizing those of others (Meier & Gray, 2013; Ringrose, 2011; Siibak, 2009). This raises the question if and how social network site use also influences adolescent body image.
Research into adolescents’ activities and experiences on social network sites suggests that social network sites do influence adolescents’ appearance. Some studies have initially shown that social network site use is negatively related to body image, at least among adolescent girls (Tiggeman & Miller, 2010; Tiggeman & Slater, 2013). This finding merges with evidence that physical appearance plays a central role in adolescents’ activities and experiences on social network sites (Ringrose, 2011; Siibak, 2009). For example, social network site activities revolve around personal photographs, as adolescents upload pictures of themselves to their profile (Lenhart et al., 2010; Madden et al., 2013) and the choice of which pictures are uploaded is at least partly based on the uploader’s physical appearance in the photograph (Siibak, 2009). Both male and female adolescents reported good looks as the most relevant factor for choosing a profile picture on their social network site profile (Siibak, 2009). Furthermore, adolescent girls report that they edit their photos to create a physically attractive representation of themselves on their profile (Ringrose, 2011).

Existing evidence thus suggests that social network site use may exert a sociocultural influence on adolescents to look physically attractive. According to the tripartite influence model, sociocultural influences to look attractive contribute to body dissatisfaction. Therefore, we hypothesized:

H1: As adolescents use social network sites more frequently, their body dissatisfaction increases.

A Mediation Model

Hypothesis 1 predicts that social network site use impacts body dissatisfaction. However, in order to fully comprehend this potential effect of social network site use on body dissatisfaction, we need to understand the mechanism underlying this effect. One potential factor mediating the effect of social network site use on body dissatisfaction involves peer influence. During adolescence, peers are an important source for shaping norms and behavior in several arenas (Biddle, Bank, & Marlin, 1980; Brown, Bakken, Ameringer, & Mahon, 2008). One such arena concerns appearance norms and behavior (Jones, 2004; Paxton, Schutz, Wertheim, & Muir, 1999). More specifically, adolescents engage in appearance training which involves talking about each other’s appearance and reinforcing each other’s attempts to conform to the appearance ideals (Jones, 2004).

Appearance training among friends may be particularly frequent on, or in response to, social network site profiles, given the centrality of physical appearance
SNS, Appearance Training, and Body Dissatisfaction

on social network sites (Ringrose, 2011; Siibak, 2009; Wang, Moon, Kwon, Evans, & Stefanone, 2010). The large majority of adolescents upload one or more photographs of the self to their social network site profile (Madden et al., 2013) and receive feedback about their physical appearance in response to these profiles (Ringrose, 2010). Furthermore, adolescents are reinforced for looking attractive because adolescents who appear more attractive are more popular on social network sites (Siibak, 2009). Such feedback and reinforcement about appearance constitute appearance training. Therefore, social network site use can be expected to go hand in hand with appearance training among friends.

The body types which adolescents report as their ideals generally mirror those represented in mass media (Dittmar et al., 2000). The large majority of individuals do not look like this ideal, which is generally considered to be difficult to attain (Buote, Wilson, Strahan, Gazzola, & Papps, 2011). The tripartite influence model predicts that because adolescents are pressured to conform to these beauty ideals that they typically will not match receiving appearance training from friends will result in body dissatisfaction. In line with this prediction, research has shown that adolescents who talk about their bodies with friends more frequently, as well as those who perceive more peer pressure to conform to the cultural beauty ideal, are less satisfied with their bodies (e.g., Jones, 2004; Jones et al., 2004; Keery et al., 2004). In sum, if the use of social network sites can be expected to increase appearance training and appearance training is likely to increase body dissatisfaction, then appearance training will mediate the effect of social network site use on body dissatisfaction. We hypothesized:

H2: (a) As adolescents frequency of social network site use increases, the degree to which they receive appearance training from friends increases, which in turn (b) leads to greater body dissatisfaction. (c) The use of social network sites exerts thus at least a part of its effect on body dissatisfaction indirectly though appearance training.

Moderation by Gender

Based on the existing literature, there are reasons to assume that the relations hypothesized above may differ in strength depending on adolescents’ gender. The tripartite influence model emphasizes that adolescents’ body dissatisfaction results from sociocultural channels that convey unrealistic beauty ideals to them. Although boys and girls are both influenced by sociocultural channels to conform to these appearance ideals, there is evidence that these influences are
generally greater on girls than on boys (McCabe & Ricciardelli, 2001). Furthermore, the types beauty ideals as well as their attainability differs greatly between the two genders.

The female body ideals are often considered to be more homogenous and rigid than the male body ideals (Buote et al., 2011). Media images of women almost exclusively portray thin, young, attractive women, whereas media images of men are more flexible, with more different body types being considered attractive. In addition, the appearance ideals for women are typically less attainable than the ideals for men (Buote et al., 2011). This means that it is considered to be less possible for women to achieve the female body ideal than for men to achieve the male body ideal (Buote et al., 2011). As a result, girls are expected to perceive greater discrepancies between their actual body and the sociocultural ideal.

The tripartite model predicts that when sociocultural channels exert more influence on individuals to conform to beauty ideals, and when the discrepancy between these ideals and the actual body is larger, body dissatisfaction will be greater. Given that girls perceive more pressure to conform to beauty ideals from sociocultural channels than boys (McCabe & Ricciardelli, 2001) and that the discrepancy between the own body and the ideal body is expected to be larger among girls due to the greater unattainability of the female beauty ideals (Buote et al., 2011), sociocultural influences on body image are expected to lead to more body dissatisfaction among girls. Accordingly, one experiment found that idealized appearance in mass media contributed to body dissatisfaction among adolescent girls but not among boys (Hargreaves & Tiggemann, 2004). In light of the preceding discussion in which we highlight social network site use as a potential sociocultural influence on adolescent body image, we hypothesized:

H3a: The positive effect of frequency of social network site use on body dissatisfaction is stronger among adolescent girls than among boys.

One way in which social network sites may exert greater influence on girls’ than boys’ body image is due to girls’ more frequent reception of appearance training during social network site use. Adolescent girls receive comments about their physical appearance more often than boys do (McCabe, Ricciardelli, & Ridge, 2006). This gender difference regarding friends’ feedback and comments about appearance seems also present on social network sites. Some research has shown that, on social network sites, females are evaluated more strongly based on their physical appearance than males (Manago, Graham, Greenfield, & Salimkhan, 2008). Furthermore, people pay more attention to females’ than males’ physical
appearance on social network sites (Seidman & Miller, 2013), which may also result in more comments. Consequently, girls may receive more appearance training as a result of their use of social network sites than boys do. Thus we predicted:

H3b: The positive effect of frequency of social network site use on appearance training is stronger among adolescent girls than boys.

As the ideals adolescents train each other to conform to mirror those in mass media (Dittmar et al., 2000) appearance training will pressure girls to conform to a more unattainable body ideal than boys. Appearance training is therefore expected to lead female adolescents to perceive a greater discrepancy between their bodies and the ideal than male adolescents. As the tripartite model posits that the discrepancy between the ideal body conveyed by sociocultural channels and the actual body contributes to body dissatisfaction we predicted:

H3c: The effect of appearance training on body dissatisfaction is stronger among adolescent girls than among boys.

Method

Sample and Procedure

A two-wave panel survey was conducted by Rutgers WPF (Dutch Expert Centre on Sexuality) and the Netherlands Youth Institute (Nederlands Jeugdinstuut). In addition to the measures described below, the survey also included questions related to (sexual) media use, sexual attitudes and behaviors, and body image. The first wave was conducted in July through September 2008 and the second wave in December 2009. The survey was conducted among children of members of Intomart GfK, an online access panel which consists of 25,000 members across the Netherlands. Recruitment across the Netherlands improves generalizability in comparison with convenience samples. Coverage bias due to the use of an online panel was unlikely because internet access was 98% among people under 25 in the Netherlands (Centraal Bureau voor de Statistiek, 2012).

In all, 3,160 Intomart GfK members, who were parents of at least one child aged between 11 and 18, were contacted with a screening questionnaire and asked for permission to contact their children. Of these members 50.6% responded, gave permission, and filled out the screening questionnaire completely. This resulted in 1,600 adolescents being invited to participate in the first wave, of whom 1,294 (80.9%) completed the questionnaire. For the second wave, adolescents who had...
completed the first questionnaire were asked, again via their parents, to complete a questionnaire similar to the first. In total, 604 adolescents completed all measures that were of interest for the current study in both waves. Retention rate was thus 54.2%.

The age of participants in the final sample ranged between 11 and 18 (\( M = 14.7, SD = 1.7 \) at time 1). There were no differences in terms of gender, \( t(1292) = .082, p > .05 \), or level of education, \( t(1292) = -1.09, p > .05 \) between adolescents who completed both waves and those who dropped out after the first wave. However, respondents who only completed one wave were four months older on average than respondents who completed both waves, \( t(1292) = -3.32, p = .001 \). The sample did not deviate from official Dutch population statistics in terms of gender (50.7% girls), but were more likely to receive higher levels of education and have parents born in the Netherlands than the average Dutch population (Centraal Bureau voor de Statistiek, 2012).

**Measures**

**Social network site use.** Frequency of social network site use was assessed with the question: “How often did you visit Hyves.nl in the past six months?” The response options ranged from 0 (never) to 4 (always) (\( M = 2.4, SD = 1.5 \) at time \( t \); \( M = 2.6, SD = 1.4 \) at time 2). Hyves.nl at that time was a social network site comparable to Facebook in terms of its goal, set-up, and technological possibilities. Hyves.nl was the most social network site among Dutch adolescents at the time of the study. Although there were other social network sites on which some adolescents had a profile (Facebook, MySpace, etc) Hyves.nl was the dominant and most popular social network site (like Facebook is currently) with 75% of adolescents age 12-17 having a profile on the website (Mijn Kind Online, 2009).

**Appearance training.** Appearance training from friends was measured using a scale constructed specifically for the survey. This scale consisted of four items asking participants how often their friends (1) give them tips to get a more beautiful body, (2) give them negative feedback about their appearance or clothes, (3) give them tips to look sexy, and (4) tell them it is important to look good. The response options ranged from 0 (never) to 4 (very often). Factor analysis showed that the four items could be combined into a single factor which explained 62.6% of the variance. The items were averaged to create a composite score. Cronbach's alpha was .79 at time 1 and .82 at time 2 (\( M = 0.53, SD = 0.57 \) at time 1; \( M = 0.59, SD = 0.60 \) at time 2).
Body dissatisfaction. Body dissatisfaction was assessed using a version of the Dutch translation of the Body Areas Satisfaction Scale, a subscale of the Multidimensional Body-Self Relations Questionnaire (Cash, 1994), which was adapted for the use with adolescents. A similar scale has been successfully used among Dutch adult males and females (Woertman & van den Brink, 2008), and a comparable scale has been used among adolescent boys and girls in the US (Jones, 2004). The scale entailed items asking respondents how satisfied they are with eight different appearance attributes (face, hair, buttocks, stomach, breasts/chest, genitals, muscularity, and body weight). The response options ranged from 0 (very satisfied) to 4 (very dissatisfied). Scores were averaged to create a composite score. Factor analysis revealed that all eight items loaded on a single factor which explained 49.1% of the variance. Cronbach’s alpha was: .85 at time 1 and .84 at time 2 ($M = 1.46, SD = 0.65$ at time 1; $M = 1.45, SD = 0.65$ at time 2).

Data Analysis

First, zero-order correlations were calculated between all measures at both time points. Then, we tested the first hypothesis and the second set of hypotheses in two separate models using structural equation modeling in SPSS, AMOS version 19. In order to test the hypothesized moderation of gender specified in the third set of hypotheses, the models were subjected to multiple group analysis. In the set-up of the models, we followed recommendations by Cole and Maxwell (2003). All analyses therefore included previous levels of the variables of interest. In this way, we controlled for past behavior, which increases the validity of the influence of the effect of the predictor variables at time 1 on the outcome variables at time 2 (Cudeck, 1991; Gollob & Reichardt, 1991).

In the structural equation models, the eight items of the body dissatisfaction scale were combined into three parcels using the item-to-construct balanced procedure suggested by Little, Cunningham, Shahar, and Widaman (2002). Item parceling results in more parsimonious models and reduces the chance of double loadings and the influence of sampling error (Little et al., 2002). The single-item measure social network site use was included into the model as manifest variable. The four items measuring appearance training were not subjected to item-parceling, as there were not enough items to create three parcels, the recommended number in the item-to-construct balanced procedure (Little et al., 2002).

The assumption of multivariate normality required for the traditional parametric tests was not met according to results of Shapiro-Wilk tests. To alleviate
statistical problems due to violation of the assumption of normality we applied the bootstrap method to all models (1,000 bootstrap samples, \( N = 604 \) each) (Efron & Tibshirani, 1993), and based our conclusions both on the bootstrap bias–corrected and accelerated 95% confidence intervals as well as the results of the parametric tests for the estimates. We only considered a hypothesis supported if the results of both tests supported this hypothesis.

### Results

#### Descriptive Statistics and Zero Order Correlations

As shown in Table 1, girls visited social network sites more frequently, experienced appearance training from friends more often, and were more dissatisfied with their bodies than boys. In addition to what is displayed in Table 1, it is interesting to note that, at time 1, 58.1% of the boys and 79.1% of the girls visited the social network site “regularly” to “always.” At time 2, this was respectively 66.5% and 87.3%. In contrast, at time 1, 25.5% (time 2: 19.8%) of boys and 19.8% (time 2: 5.9%) of girls never used the social network site.

<table>
<thead>
<tr>
<th></th>
<th>Social Network Site Use</th>
<th>Appearance Training</th>
<th>Body Dissatisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Time 1</td>
<td>Time 2</td>
<td>Time 1</td>
</tr>
<tr>
<td>Girls</td>
<td>2.79***</td>
<td>2.03***</td>
<td>0.59**</td>
</tr>
<tr>
<td>Boys</td>
<td>2.03***</td>
<td>1.99***</td>
<td>0.47***</td>
</tr>
<tr>
<td>Mean</td>
<td>2.79***</td>
<td>2.03***</td>
<td>0.59**</td>
</tr>
<tr>
<td>SD</td>
<td>1.42</td>
<td>1.56</td>
<td>0.60</td>
</tr>
<tr>
<td>Minimum</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Maximum</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

Note. Social network site use represents the frequency with which adolescents visit the social network site (0 = never, 4 = always). Appearance training represents how often appearance training is experienced from friends (0 = never, 4 = very often). Body dissatisfaction represents how satisfied respondents are with different appearance attributes (0 = very satisfied, 4 = very dissatisfied).

* \( p < .05 \). ** \( p < .01 \). *** \( p < .001 \) (two-tailed)

#### Effect of Social Network Site Use on Body Satisfaction

As the zero-order correlations in Table 2 indicate, frequency of social network site use at time 1 positively correlated with body dissatisfaction at time 2,
which is congruent with H1. To test this hypothesis more rigorously, we modeled the hypothesized influence of hypothesis 1, namely the effect of social network site use (time 1) on body dissatisfaction (time 2) in a structural equation model, as outlined in the methods section. The resulting model achieved good fit, $\chi^2(\text{df} = 14, N = 604) = 16.420, p = .288$, CFI = .999, RMSEA = .017 (90% CI: .000/.045). Frequency of social network site use positively and significantly predicted body dissatisfaction, $\beta = .101, B = .038 \text{ SE} = .014, p = .005$. The bootstrap bias–corrected and accelerated 95% confidence interval (Bt bca 95% CI) ranged from .007 to .065. This confidence interval does not include zero which indicates statistical significance. The findings thus supported H1.

**Table 2**

<table>
<thead>
<tr>
<th>SNS Use</th>
<th>Appearance Training</th>
<th>Body Dissatisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time 1</td>
<td>Time 2</td>
<td>Time 1</td>
</tr>
<tr>
<td>SNS Use</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Time 1</td>
<td>.597***</td>
<td>—</td>
</tr>
<tr>
<td>Time 2</td>
<td>.122**</td>
<td>.110**</td>
</tr>
<tr>
<td>Appearance Training</td>
<td>.176***</td>
<td>.175***</td>
</tr>
<tr>
<td>Time 1</td>
<td>.056</td>
<td>.085*</td>
</tr>
<tr>
<td>Time 2</td>
<td>.133**</td>
<td>.114**</td>
</tr>
</tbody>
</table>

Note. SNS use represents the frequency with which adolescents visit the social network site (0 = never, 4 = always). Appearance training represents how often appearance training is experienced from friends (0 = never, 4 = very often). Body dissatisfaction represents how satisfied respondents are with different appearance attributes (0 = very satisfied, 4 = very dissatisfied).

**p < .01. ***p < .001 (two-tailed)**

**Mediation Model**

With respect to the second set of hypotheses, frequency of social network site use at time 1 positively correlated with appearance training at time 2, which is congruent with H2a. In contrast with H2b, appearance training at time 1 and body dissatisfaction at time 2 were not significantly correlated. The second set of hypotheses was also tested more rigorously in a second AMOS model in which the effect of social network site use (time 1) on appearance training (time 2), and of appearance training (time 2) on body dissatisfaction (time 2) were modeled. This model yielded a good fit, $\chi^2(\text{df} = 89, N = 604) = 151.114, p = .000$, CFI = .986, RMSEA = .034 (90% CI: .024/.043).
In line with H2a, the effect of social network site use at time 1 on appearance training at time 2 was positive and significant, $\beta = .140$, $B = .052$, $SE = .015$, $p < .001$ (Bt bca 95% CI: .020/.082). In contrast to H2b, the effect of appearance training (time 2) on body dissatisfaction (time 2) was not significant, $\beta = .066$, $B = .067$, $SE = .040$, $p = .095$ (Bt bca 95% CI: -.017/.170). The indirect effect of social network site use (time 1) on body dissatisfaction (time 2) through appearance training (time 2) (H2c) was not significant in the parametric tests, but was significant according to the bootstrap interval, $\beta = .009$, $B = .003$, $SE = .003$, $p = .085$ (Bt bca 95% CI: .000/.011). Because we only considered a hypothesis supported when both tests were significant, H2c was rejected.

**Moderation of Gender**

The third set of hypotheses, specifying moderating effects of gender, was tested using multiple group analyses with gender as the grouping variable. We first compared the model testing H1 with a partly constrained model, in which we constrained the path from social network site use (time 1) to body dissatisfaction (time 2). When the fits of the constrained and the unconstrained model differ significantly, the focal influence of the constrained path differs significantly between groups. In contrast to the prediction of H3a, this constrained model did not yield a significantly different fit than the unconstrained model, $\chi^2(1, N = 604) = 1.837$, $p = .175$, TLI$_{change} = .001$. This suggests that the effect of social network site use on appearance training was not moderated by gender, contrasting H3a.

We then compared the unconstrained model testing H2a-c with two partly constrained models in order to test H3b and H3c. In the first constrained model, we constrained the path from social network site use (time 1) to appearance training (time 2). In contrast to the prediction of H3b, this constrained model did not yield a significantly different fit than the unconstrained model, $\chi^2(1, N = 604) = .869$, $p = .351$, TLI$_{change} = .000$. This suggests that the effect of social network site use on appearance training was not moderated by gender. H3b was thus not supported. To test H3c, which predicted that the effect of appearance training on body dissatisfaction would be stronger among girls, we constrained the path of appearance training (time 2) on body dissatisfaction (time 2) in a second model. This second constrained model did not have a significantly different fit than the unconstrained model, $\chi^2(1, N = 604) = 2.846$, $p = .092$, TLI$_{change} = .000$, contrary to the predictions of H3c.
Discussion

The current study is, to our knowledge, the first to investigate longitudinally the effects of social network site use on adolescents’ body dissatisfaction; to test an underlying mechanism of this effect; and to incorporate the experiences of boys as well as girls. The results showed that social network site use augmented body dissatisfaction. Furthermore, social network site use predicted more frequent appearance training received from friends. However, in contrast to our expectations, appearance training did not predict body dissatisfaction, thus not mediating the effect of use of social network sites on body dissatisfaction. There were no significant gender differences regarding the investigated processes or the strength of effects. These findings have several theoretical and practical implications.

Regarding the theoretical implications of this study, our findings support several notions of the tripartite model, contradict others, and extend some. The results of the current study shed new light on the nature and effects of the sociocultural influences, which, according to the tripartite model, impact body image. Regarding the nature of the sociocultural influences, the tripartite influence model only considers parents, peers, and mass media influences on body image. Our finding that social network site use augmented body dissatisfaction suggests that social network sites form an additional sociocultural channel that influences adolescent body image. The tripartite model may thus need to be extended to incorporate new media in which users create, share and respond to appearance-related content as an additional sociocultural channel. Further research should also explore other new media as potential channels influencing adolescent body image, including online platforms that revolve around physical appearance (e.g., pro-ana communities, Custers & Van den Bulck, 2009).

Regarding the effects of the sociocultural influences on appearance, the finding that appearance training was not related to body dissatisfaction contradicts the tripartite models’ notion that peer influence to conform to appearance ideals in general contributes to body dissatisfaction. One explanation for this unexpected finding may be that the impact of received appearance training on body dissatisfaction may depend on the valence of the appearance training received. Research suggests that positive reinforcement regarding appearance increases satisfaction with appearance whereas negative feedback increases body dissatisfaction (Herbozo & Thompson, 2006). The current measure of appearance training did not capture such differences. Therefore, we cannot preclude that, if the
current sample of adolescents on average received the same amount of negative as positive appearance comments, the effects may have cancelled each other out. Future research should investigate whether the valence of comments and feedback from sociocultural channels moderates the effect of appearance training on body dissatisfaction, which could add an important new condition to the processes specified in the tripartite model.

Another explanation for the missing mediation effect of appearance training may be that the effect of appearance training on body dissatisfaction is confined to a specific group of adolescents. Previous research has shown differential susceptibility regarding sociocultural influences on body image. For example, experimental evidence suggests that, in the long run, reading fashion magazines only affects the body image of adolescent girls who are characterized by relatively high levels of perceived pressure to be thin and body dissatisfaction, and lower levels of social support (Stice, Spangler, & Agras, 2001). In the same way, appearance training may in particular influence the body image of adolescents who are already dissatisfied with their appearance; who perceive more pressures to conform to the body ideals; and who experience social support deficits. Future research should identify potentially vulnerable groups in order to fully understand the impact of sociocultural influences, including appearance training and social network sites, on body image.

The finding that the effect of social network site use on body dissatisfaction was not mediated by appearance training suggests that there are other mechanisms at play. One potential mediator through which social network site use may impact body dissatisfaction is through increasing exposure to appearance ideals. Adolescents tend to put up only the best looking pictures of themselves on their social network site profiles, sometimes even editing pictures to look more attractive (Ringrose, 2011; Siibak, 2009). In this way, idealized versions of bodies are disproportionally displayed on social network sites in a similar way as in mass media, yet portraying peers instead of models and celebrities. As a result, viewing social network sites possibly influences adolescent body image in a similar way as viewing the beauty ideal in mass media. It would be useful to investigate the degree to which social network site use is related to exposure to body ideals, and whether this mediates the effect of social network site use on body dissatisfaction.

The results of the current study also have implications for research on the psychosocial well-being of adolescents. The finding that social network site use impacts body dissatisfaction is important because body dissatisfaction poses a significant threat to adolescent well-being (Markey, 2010). Furthermore, the use
of social network sites is widespread and most adolescents spend vast amounts of time on social network sites (Lenhart et al., 2010; Lenhart & Madden, 2007; SPOT, 2012). Since the second wave of the study in 2009 the frequency with which adolescents visit and the amount of time they spend on social network sites have only increased (Lenhart et al., 2010; Lenhart & Madden, 2007; SPOT, 2012). Furthermore, with the development of smartphones and tablets, adolescents’ engagement in the activities most associated with adolescent body image, namely photo-related activities (Meier & Gray, 2013) may have increased in particular. As a result, the impact of social network site use on adolescent body image may be even greater than what we established in the current study. We therefore advise researchers who are interested in adolescents’ well-being to include measures of social network site use in their studies.

Although our study points to possibly negative effects of social network site use, it is important to note that the adolescents in the sample were on average more satisfied than dissatisfied with their bodies. Furthermore, the vast majority of the current sample of Dutch adolescents reported that they never or only sometimes received appearance training from friends. While this points to relatively healthy patterns in Dutch youth’s relations with their bodies, it has been shown that the degree of body dissatisfaction and received appearance training may be more troublesome among adolescents in other countries. For example, it is documented that, among adult women, body dissatisfaction is lower in Western Europe than in North and South America (Swami et al., 2010). These cross-cultural differences may also apply to adolescents and may present an important contextualization of our results.

In terms of practical implications, our study suggests that adolescents who do report body dissatisfaction or are at a greater risk for developing body image problems may benefit from interventions or guidelines to decrease the negative impact of social network site use on body image. Such interventions could be beneficial in the same way that some interventions seem effective at decreasing the negative effects of exposure to beauty ideals in the mass media on body image (Wilkisch & Wade, 2010; Yamamiya, Cash, Melnyk, Posavac, & Posavac, 2005). However, in order to develop such interventions and implement these effectively, we need to increase our understanding of how social network site use precisely impacts body image; which social network site activities affect body image; among which adolescents this occurs most strongly; and under which conditions the effects come about.
Future research on these issues would benefit from experimental approaches in order to rigorously establish causality. The current study, with its two-wave panel design, can shed first light on the causality of relations established in previous cross-sectional research, but does not have the same internal validity as an experimental design. Another shortcoming of our study refers to the investigation of hypothesized mediation. Although the current design offers a more thorough approach at establishing the temporal order of mediated effects than cross-sectional designs, a three-wave survey would have been preferable. A final limitation of the current study is the exclusive investigation of one social network site, which was very popular in the Netherlands when the study was conducted, but has declined in popularity since (Newcom Research & Consultancy, 2012). The (social) media landscape is changing: Adolescents keep switching from one online platform to another, and the platforms themselves as well as the activities on these platforms are also subject to change. One recommendation for future research is therefore to investigate the impact of activities which are not specific to one platform or to platforms at one moment in time, such as the effects that the publishing of pictures of the self or the viewing of pictures of attractive peers has on body image.

Despite these limitations, the current study shows researchers, parents, and practitioners that social network site use poses a risk to adolescent boys’ and girls’ body image and that they should aim to understand and try to counter these negative effects.
References


