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Social Media and Body Dissatisfaction: Investigating the Role of Instagram

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Abstract

Previous research has shown an association between social media use and body dissatisfaction. However, little is known about the factors that may impact this relation. This study investigates the relation between social media use and body dissatisfaction and explores one potential moderating factor: the role of Instagram use. The sample of this study consisted of 440 participants aged 12 to 19 (mean age 14.9; $SD = 1.8$; 47% girls) from the Netherlands. Results showed that social media use was positively associated with body dissatisfaction, even when controlling for gender. The findings indicate that Instagram use did not moderate the relation between social media use and body dissatisfaction. However, experimental studies are needed to examine the direction of effects of social media use and to explore the influence of Instagram use, while taking into account the online activities on this platform (such as celebrities being followed, the images that are being viewed).

Keywords: adolescence, body dissatisfaction, social media use, Instagram use, cross-sectional

Introduction

Body dissatisfaction is defined as the degree to which individuals feel dissatisfied with their appearance, including their body shape and size (Cash et al., 1997). Adolescents who are less satisfied with their body are more likely to experience sexual dysfunction, eating disorders and depression (Sharpe et al., 2018; Miner-Rubino et al., 2002). Besides, longitudinal analyses show that body dissatisfaction during adolescence predicts higher mental distress and lower self-esteem (Holsen et al., 2001). The negative consequences of body dissatisfaction for adolescents indicate the importance to examine possible predictors of body dissatisfaction.

Social media use seems to be one possible predictor of body dissatisfaction (Fardouly & Vartanian, 2016). Social media use is defined as participation in one or more social networking sites, like Facebook, Instagram or TikTok. Cross-sectional studies have shown that adolescents who use social media frequently, are more likely to internalize beauty ideals compared to adolescents who use less social media (Vandenbosch & Eggermont, 2012). Idealized media images seem to place pressure on adolescents to resemble these ideal images (Brown & Tiggeman, 2016). The exposure to idealized media images makes it easy to compare oneself with those ideals. Consequently, adolescents seem to feel pressure to ‘look perfect’ (Chua & Chang, 2016). Social media images seem to have a significant influence on body ideals and body image, mainly for women (Perloff, 2014). The use of social media seems to increase the risk of a negative attitude towards one’s own physical appearance.

Social media use among adolescents increases every year (Lenhart et al., 2015). Research has shown that social media use is one of the most popular activities among adolescents nowadays (Ahn, 2011; Lenhart et al., 2015). Social media is available on different devices and is therefore more accessible than before (Allen et al., 2014). According to recent report, 71% of all adolescents who are using social media use more than one account and 24% of them consider themselves to be ‘almost constantly’ online¹ (Lenhart et al., 2015).

The increasing popularity of social media poses several challenges. In contrast to traditional media (e.g. television or magazines), social media features the users themselves and mostly an idealized version of their appearance (Fardouly & Vartanian, 2016). Adolescents post photographs of themselves which are carefully selected and edited (Chua &

¹ See for example: <https://ourworldindata.org/grapher/daily-hours-spent-with-digital-media-per-adult-user>

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Chang, 2016). Physical appearance plays an important role in social media activities of adolescents and the adolescents receive feedback from other users.

The social comparison theory (Festinger, 1954) suggests a possible explanation how social media use affects body dissatisfaction. According to the social comparison theory, people have an innate thrive to compare themselves to others (Festinger, 1954). Online platforms make it possible to compare oneself to others, which leads to social comparison processes. This process usually leads to body dissatisfaction, which may be explained by the unrealistic images online. Adolescents seem to be mainly concerned with this comparison process, as they share pictures of themselves and compare themselves with peers and celebrities on online platforms. Social comparison theory suggests that people compare themselves to people who are more similar with themselves. Unlike traditional media, social media offers the opportunity to compare themselves with peers (Fardouly & Vartanian, 2016). In addition, social media is accessible at any time. As a result, the frequency of comparison increases due to the continuous opportunity to compare themselves to their peers. In short, the social comparison processes online may lead to body dissatisfaction.

Limited research has been published on which factors moderate the relation between social media use and body dissatisfaction. The effects of social media use on body dissatisfaction in previous studies are usually small (Williams & Ricciardelli, 2014). This could mean that there is great variation, and some groups are more influenced than others. Not all adolescents are susceptible for the negative impact of social media use to the same extent (Brown & Tiggeman, 2016). If we know which factors increase the risk for negative effects of social media use, interventions and information for adolescents can be adapted to this. Vulnerable groups can be better protected and this can possibly contribute to reducing depression and eating disorders in the future.

The type of social media platform that adolescents use may be a possible factor that can moderate the risk of body dissatisfaction. A lot of previous research has focused on the most popular social media platform in the world: Facebook (GlobalWebIndex). However, Instagram is growing in popularity and is more image-based than Facebook (Fardouly & Vartanian, 2016). Instagram has a visual focus: short videos and images are the most common content (Lee, 2015). This may provide more opportunities for users to compare their appearance to others and its impact might be even larger. Despite Instagram focusing on peers, the accounts of skinny, tanned, attractive celebrities have most followers (Telegraph,

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2016). The risk of the combination of images of peers and celebrities is that adolescents will perceive celebrities in the same way as peers (Brown & Tiggeman, 2016). Besides, research has shown that women compare their social skills to peers, but their appearance mostly with celebrities and models (Strahan et al., 2006). This can potentially cause body dissatisfaction. For example, exposure to images of attractive celebrities on Instagram led to greater negative mood and body dissatisfaction (Brown & Tiggeman, 2016). Other unique factors that distinguish social media from traditional media potentially increase the influence of the images of celebrities online on body dissatisfaction. First, celebrities present the ideal version of themselves and delete images in which they feel less attractive (Manago et al., 2008). Besides, in addition to images, people often post other appearance-related content and comments on social media, which possibly also influence body dissatisfaction of adolescents (Fardouly & Vartanian, 2016).

Since Instagram is mainly visual and exposes adolescents to both peers and celebrities, the current study hypothesizes Instagram use to be a possible moderator in the relation between social media use and body dissatisfaction. The aim of this study investigates the following research question: *'What is the relation between social media and body dissatisfaction among adolescents and does Instagram use moderate this relation?'*

Scientifically, this research might be interesting, because there is much known about social media and body dissatisfaction, but less about what the impact is of the type of social media platform. Not all previous research found an association between social media use and body dissatisfaction. This may be due to the differences in the degree of appearance-related content that is shared on different platforms (Fardouly & Vartanian, 2016). Fardouly & Vartanian (2016) also made the recommendation for future research to examine the impact of this image-based platforms. It is important to find out if Instagram moderates the effect of social media use on body dissatisfaction, because it is expected that this could be because this platform is particularly image-based and shows pictures of celebrities as well as peers. In addition, knowledge about a possible moderator provides insight into which platforms cause body dissatisfaction among adolescents. The results could eventually be used to educate adolescents about the possible effects of social media use and to improve interventions.

Because of the transition during puberty, adolescents are vulnerable for the effects of social media use and therefore this study focuses on this group. The sample of adolescents in this study is aged between 14 and 19. While adolescents are exposed to ideal images, they are

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also developing their identity (Salomon & Spears Brown, 2018). Adolescents are forming attitudes about their body and their appearance is becoming increasingly important (Murphy et al., 2016). In addition, adolescents experience a lot of physical changes during this period of their life (VandenBosch & Eggermont, 2012).

In line with previous research, the following hypotheses are proposed:

H1: Adolescents who use more social media, are less satisfied with their body.

In addition, Instagram is particularly image-based which may provide more social comparisons. It is possible that because Instagram is so visual, the effects of Instagram use on body dissatisfaction are even bigger. Therefore, the second hypothesis is as follows:

H2: For adolescents who use Instagram, there is a stronger relation between social media use and body image than for adolescents who do not use Instagram.

Social media use is particularly popular among young women and that is one of the reasons that women seem to be more vulnerable for the effects of social media (Kimbrough et al., 2012). Women seem to use more social media, compared to men. If women use more social media, it could be that they are vulnerable for body dissatisfaction. Information about the role of gender within this topic, may help us to give the right information and interventions can be given, adjusted based on gender. So, the influence of gender is considered as a covariate to examine the influence of this continuous variable.

Methods

Participants and procedure

The sample of this study consisted of 440 participants aged 12 to 19 (mean age 14.9; $SD = 1.8$; 47% girls) from the Netherlands. The sample was a convenience sample recruited by eight graduate students in 2016 through secondary schools. These students recruited participants in high schools. Several secondary schools have been approached for this study and have given permission to participate. Questionnaires were administered in different classes at the schools. Before the adolescents participated in the study, parents and adolescents were informed about the purpose and procedure of the study. Two weeks prior to the data collection, the parents received a letter about the study. Parents were given the opportunity to retract participation of their child by sending an email to the researcher. In addition, the adolescents provided active written informed consent. Participants knew they could stop completing the questionnaire at any time. If consent was given, the participants completed a paper-pencil questionnaire that took half an hour to fill out during a lesson.

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The education that the participants attended varied: 50.9% higher level of education, 15.9% lower level of education and 33.9% middle level of education. Most participants had parents that were born in the Netherlands (87.6% of the mothers and 87.2% of the fathers).

Instruments

Body dissatisfaction. The body dissatisfaction subscale of the Body Attitude Test (BAT; Probst et al. 1995) was used to measure body dissatisfaction. This subscale measures the body dissatisfaction of the participant, as reported by the adolescent. The scale consists of four items. The response scale was a Likert type scale with possible answers from 1 (totally disagree) to 7 (completely agree). An example item from this scale is “When I look at my body in the mirror, I am dissatisfied”, another example is “I am jealous of the looks of others”. One variable ‘Body dissatisfaction’ is computed from these four items by averaging the four items. The reliability of this subscale was good ($\alpha = .87$). The higher the score, the less satisfied the participant is with his/her body.

Social media use. An adapted version of the Multidimensional Scale of Facebook Use (MSFU; Frison and Eggermont 2016) was used to measure social media use. The MSFU asks about three types of Facebook use: passive Facebook use, active private Facebook use and active public Facebook use. To make sure that items would not only refer to Facebook use, items were rephrased so they refer to social network sites in general. For example, the item “How often do you post a photo on your own Facebook timeline” was rephrased to “How often do you post a photo on social network sites.” Originally the MSFU has seven response options: (1) never, (2) less than once a month, (3) one to three times a month, (4) once per week, (5) multiple times a week, (6) daily, and (7) multiple times a day. Because recent statistics show that adolescents often use social media constantly throughout the day (Wennekers et al. 2016) an additional category: (8) all day long was included. A total social media score was calculated by averaging all items. A lower score indicated less frequent social media use.

Instagram use. This dichotomous variable is measured by asking if the adolescent uses Instagram. The answer options consist of ‘0=Yes’ or ‘1= No’. 436 participants have answered this question. Among these participants, 339 (77%) did use Instagram and 96 (21.8%) did not.

Analysis

Descriptive statistics and data analyses were conducted in SPSS 25. First, bivariate

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correlations were calculated to explore the relation between all model variables. Regression analyses were used to test the hypotheses. A hierarchical multiple regression analysis was conducted with body dissatisfaction as the dependent variable. This hierarchical multiple regression analysis was also used to test Instagram use as a moderator of the relation between social media use and body dissatisfaction. An interaction term was computed from the predictor (social media use) and the moderator (Instagram use). In model 1, body dissatisfaction was entered as the outcome variable and social media use and Instagram use were entered as predictors. In model 2 gender was added as a covariate. In model 3, the interaction term (social media use x Instagram use) was entered as a moderator.

Results

The descriptive statistics of all study variables are presented in Table 1.

Table 1

Means and Standard Deviations of all Study Variables (n= 437)

	Total			Girls			Boys		
	<i>M</i>	<i>SD</i>	<i>Range</i>	<i>M</i>	<i>SD</i>	<i>Range</i>	<i>M</i>	<i>SD</i>	<i>Range</i>
Body dissatisfaction	2.81	1.43	1.00-7.00	3.39	1.39	1.00-7.00	2.29	1.24	1.00-7.00
Social media use	3.90	1.40	0.00-7.50	4.30	1.20	1.00-7.50	3.54	1.47	0.00-6.80
Instagram use	.78	.42	0.00-2.00	.89	.33	0.00-2.00	.69	.46	0.00-1.00

Missing data

Of the 440 participants, four participants did not report on their Instagram use. 26 participants did not report on their social media use and eight did not complete the measure of body dissatisfaction. In total, there were 32 participants with missing values, of whom three participants did not report on any study variable. Of the other 29 participants, data was missing on one of the study variables. Results from the Little's (1989) Missing Completely at Random test showed that data was randomly missing ($p = .837$), and not systematically tied to other variables. Accordingly, by making use of estimated means (EM) values of the missing data were estimated, this ensures that all available data were used in the current study.

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The bivariate correlations among all study variables are presented in Table 2. Almost all bivariate correlations among the study variables were significant, except the correlation between body dissatisfaction and Instagram use. To establish effect sizes for Pearson correlations, Cohen's thresholds were applied (Cohen, 1988). The positive correlations between social media use and body dissatisfaction and gender and social media use were considered small to moderate. The positive correlation between body dissatisfaction and gender was moderate to large, which confirmed the expectation that there is a difference between boys and girls.

Table 2

Pearson Correlations among all Study Variables (n = 437)

	1	2	3	4
1. Body dissatisfaction	1			
2. Social media use	.29**	1		
3. Instagram use	.16**	.54**	1	
4. Gender (0= boys, 1= girls)	.39**	.27**	.24**	1

Note. **Correlation is significant at the 0.01 level (1-tailed)

Assumptions

Prior to the analyses, assumptions for multiple regression were evaluated. To investigate the normality of the variables an examination of stem-and-leaf plots and boxplots was used. This indicated that social media use and body dissatisfaction were approximately normally distributed. There were no univariate outliers. Second, a linear regression analysis of the variables tested multicollinearity. Collinearity statistics revealed that Tolerance was $> .1$ for all predictors, ranging from .78 to .92. Variance Inflation Factor (VIF) was < 10 for all predictors, ranging from 1.09 to 1.29. High tolerances and low VIFs indicated that correlations between predictors were not too high to interfere the interpretation of the analyses. Therefore, the assumption of multicollinearity was met. Third, normality, linearity, and homoscedasticity of the residuals were checked by an examination of the normal

probability plot of standardized residuals and the scatterplot. These results indicate that all three assumptions about the residuals were met.

Effect of social media use on body dissatisfaction

To test the hypothesis that social media use accounts for a significant proportion of the variance in body dissatisfaction, hierarchical multiple regression analysis (HMRA) was employed.

Model 1 included social media use and tested the hypothesis that social media use was positively related to body dissatisfaction (H1). Model 1 accounted for a significant 8.0% of the variance in body dissatisfaction, $R^2 = .08$, $F(1, 435) = 40.0$, $p < .001$. The results demonstrated a significant positive relation between social media use and body dissatisfaction, $B = 0.30$, $SE = .05$, $\beta = .29$, $p < .001$. Higher levels of social media use of the adolescent seem to predict body dissatisfaction. Therefore, the first hypothesis is supported. The beta coefficient of $\beta = .29$ indicated that with every increase of one standard deviation in social media use, body dissatisfaction increased with .29 standard deviation. This means that the more social media an adolescent uses, the less satisfied the participants seem to be with their bodies.

For Model 2, gender was added to the regression equation, and this Model 2 accounted for an additional 11.0% of the variance in body dissatisfaction, $R^2 = .19$, $F(1, 434) = 49.68$, $p < .001$. Because this result was significant, social media use seems to be a significant predictor of body dissatisfaction, even when controlling for gender.

Moderation by Instagram Use

For Model 3, the interaction variable was added and this Model 3 accounted for 19% of the variance in body dissatisfaction. The effect of the interaction variable was non-significant. This means that Instagram use does not moderate the relation between social media use and body dissatisfaction. Therefore, H2 is rejected.

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Table 3

Hierarchical Multiple Regression Analysis predicting body dissatisfaction with Moderation by Instagram Use (n = 437)

	<i>R</i>	<i>R</i> ²	ΔR^2	<i>B</i>	β	sr ²	<i>t</i>
Model 1	.29	.08	.08***				
Social media use				.30	.29	.08	6.32***
Instagram use				-.01	-.0	.00	-.02
Model 2	.43	.19	.10***				
Gender				.95	.33	.10	7.38***
Model 3	.44	.19	.00***				
Instagram use* Social media use				.15	.07	.00	1.45

Note. * $p < .05$; ** $p < .01$; *** $p < .001$

Discussion

Body dissatisfaction has negative consequences for the well-being of adolescents (Miner-Rubino et al., 2002; Holsen et al., 2001). Therefore, it is important to know which factors are associated with body dissatisfaction, in order to prevent body dissatisfaction among adolescents in the future. Previous research has shown that social media use is one possible factor that can lead to body dissatisfaction (Fardouly & Vartanian, 2016). However, not all adolescents are susceptible for the negative impact of social media use to the same extent (Brown & Tiggeman, 2016). Research on individual susceptibility to social media effects on body dissatisfaction has mostly focused on individual traits. The possible moderating role of the social media platform that is used were under examined. Therefore, the aim of the current study was to obtain a better understanding of the relation between social media use and body dissatisfaction and this study investigated the moderating role of Instagram use.

The effect of social media use on body dissatisfaction

As hypothesized, findings of the study revealed a positive relation between social media use and body dissatisfaction. Although this effect was small, it suggests that higher levels of social media use predict body dissatisfaction. As expected, results of this study showed that social media use is more popular among girls and girls reported higher levels of

body dissatisfaction. Therefore, gender is added as a covariate. When controlling for gender, social media use seems to be a significant predictor of body dissatisfaction.

The role of Instagram use

The current study found no evidence for the idea that Instagram use moderates the relation between social media use and body dissatisfaction. The hypothesis stating a moderating effect was not supported as the findings suggest that Instagram use does not predict a stronger relation between social media use and body dissatisfaction. One possible explanation for this outcome is that the participants only reported whether he or she uses Instagram, but not reported what images they view and how much time he or she spends on this platform. This could explain a lack of effect of Instagram use, because adolescents viewing images of models are probably more likely to compare themselves and become less satisfied with their bodies than someone viewing pictures of cars (Brown & Tiggeman, 2016). Besides, research has shown that women compare their appearance mostly with celebrities and models and this may create a higher risk of body dissatisfaction (Strahan et al., 2006). The participants of this study did not report how many people they follow on Instagram and how many celebrities are included. Future research is needed before the effect of the use of this social media platform can be excluded. Nonetheless, the current study does not exactly contradict with the literature where expectations were based on. To wit, these studies argued that the social media platforms like Instagram have the ability to elicit social comparison and nothing was concluded in regard to the indirect relation between Instagram use and body dissatisfaction (Fardouly & Vartanian, 2016; Lee, 2015).

Theoretical and practical implications

The present study adds to our knowledge of the effect of social media use on body dissatisfaction among adolescents. First, as predicted, there is a positive relation between social media use and body dissatisfaction. The finding that higher levels of social media use predicts higher levels of body dissatisfaction is in line with the social comparison theory (Festinger, 1954). As also shown in previous research, the effects of social media use differ between boys and girls where it appears that girls are more vulnerable for the negative effects of social media use. Although this effect may be small, it is important to be aware that a lot of adolescents are exposed to social media daily (Chua & Chang, 2016). Based on the current findings, it is recommended to educate adolescents about the possible effects of social media use.

Moreover, the results extend knowledge about Instagram use, by showing that Instagram use does not moderate the association between social media use and body dissatisfaction in the current study. This is not in line with expectations based on previous research, which showed that exposure to images of attractive celebrities on Instagram led to body dissatisfaction (Brown & Tiggeman, 2016; Fardouly & Vartanian, 2016).

Based on the current findings, it is recommended that education in secondary schools about social media inform adolescents about the possible consequences of social media use on their body image.

Limitations of this study and suggestions for future research

Study limitations need to be considered while interpreting the findings. First, there are some restrictions to the study design. The current sample only consists of participants from the Netherlands and ethnically rather homogeneous. Besides, adolescents with higher educational levels are overrepresented. Thus, the findings may not generalize to other groups of adolescents. A sample with more variance in ethnicity and educational levels would provide the possibility to test if the findings of this current study generalize to other populations. In addition, the cross-sectional nature of the current study precludes drawing conclusions about the direction of the effects that are found.

Second, the current study design can not exclude some alternative explanations and confounding factors regarding the relation that is found. Previous research showed that level of puberty, the influence of peers/siblings and BMI are potential individual factors that affect body dissatisfaction (Holsen et al., 2012; Shroff and Thompson, 2006). Considering the small effect sizes found in the current study, it is expected that other factors also explain the differences in body dissatisfaction between adolescents. It is suggested for future research to make use of a sample in which body dissatisfaction is generally present to a greater extent. In that case, larger effect sizes may be found. In addition, future research should not only control for other influences like level of puberty, but also investigate how these factors influence adolescent's body dissatisfaction. If a better sample is used, the effect of Instagram use can be re-examined within this sample.

There are some gaps in knowledge that need to be addressed. First, future research is needed with more diverse samples to provide a better understanding of the effect of social media use on body dissatisfaction. In addition, future research could examine which aspects of social media are most disadvantageous to adolescent's body image. To examine the

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possible effect of Instagram use, it is necessary to examine what content, images or comments are viewed when adolescents use Instagram and how much time they spend comparing themselves online. Therefore, more information about the participant's use of Instagram is needed.

Conclusion

Social media use is associated with body dissatisfaction, even when controlling for gender. Not all adolescents are susceptible for this negative influence to the same extent. Future research is needed to examine which individual factors influence adolescent's body dissatisfaction. This current study did not find a moderating effect of a specific online social platform; Instagram. However, more research is recommended which includes how much time the adolescents spend on Instagram, what kind of people he/she follows and which content he or she views. Although more research is needed, the available evidence suggests that intervention programs should address the impact of social media on adolescents. For example, adolescents should be educated about the impact of social comparisons online and need to become more aware of the risks of social media use on their appearance concerns.

Since the effects of social media use were only small and other predictive factors have greater relevance, future research could spend more time and energy on other facets of body dissatisfaction.

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Appendix I regarding data-collection

In the past nine months, I have carried out some data collection activities to gain experience with processes involved in conducting scientific research. Due to the COVID-19 pandemic, these activities were mainly online and there were fewer options. My previous supervisor who supervised me for six months, was involved in the Digital Family Project. Therefore, I was involved in this project and I mainly helped with updating the data. First, I assisted in the recruitment of participants, by approaching families that I know and through my LinkedIn network. Thereafter, I have performed tasks related to the codebooks that were used for this study. I was instructed to thoroughly compare the questionnaires of the different measurements (T1 and T2). I marked the questions that were added in T2 compared to T1, and I made an overview of questions that were removed. Subsequently, I could modify the codebooks in Excel. These activities have given me more insight into the use and possibilities of Excel and how important it is to work accurately when it comes to data.

In addition, I helped with an article that had to be resubmitted to a scientific researcher. The references in the text and in the reference list were listed according to the APA guidelines of the 6th edition. However, this must be done according to the guidelines of the 7th edition. Specifically, this involved changing the in-text reference for references with three or more authors, the DOIs in the reference list were needed to be formatted as URLs and the reference to books in the reference list has been adjusted. This taught me a lot about the differences between APA guidelines in the 6th and 7th edition and made me aware of the fact that your research must always meet the most recently set requirements. I experienced more stress with performing this task, because there was little time before the deadline expired.

I would have liked to have gained more practical experience, for example by conducting interviews or being involved in home visits, but due to COVID-19 this was no longer an option.