The relationship between highly visual social media and body image concerns with active

versus passive use as a moderating variable

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Abstract

Introduction: This research aims at testing whether the use of highly visual social media is positively correlated with having body image concerns. Moreover, it was expected that an active use of highly visual social media rather than a passive use moderates the relationship between use of highly visual social media and body dissatisfaction. **Methods:** 157 participants (M_{age} = 21.44, SD = 3.71), whereof 123 women, 33 men and 1 other, were asked to fill in an online survey. The survey consisted of different questionnaires, for instance about body dissatisfaction and active versus passive use of highly visual social media. **Results:** A weak correlation between time spent on highly visual social media and body image concerns could be found. However, the data did not show that active versus passive use of highly visual social media moderates this effect. **Discussion:** The findings indicate that there is a positive, but weak relationship between time spent on highly visual social media and body dissatisfaction, meaning that people who use highly visual social media might also be more dissatisfied with their body. However, active versus passive use of highly visual social media does not seem to influence that relationship. Moreover, the study has practical implications for the development of interventions aimed at raising awareness for the relationship between time spent on highly visual social media and body dissatisfaction.

Keywords: social media, body dissatisfaction, body image concerns, photo manipulation, photo investment

The relationship between highly visual social media and body image concerns with active versus passive use as a moderating variable

Using social media is a way "to create and share content or to participate in social networking" (Oxford Living Dictionary, n.d.), which has risen in popularity ever since it has been founded. As an example, 99% of young adults in the UK report using social media frequently (Carson, 2017). Social media platforms like Facebook, Twitter, Instagram and Snapchat are ways to communicate with others online through messaging or sharing content like pictures or videos.

The purpose of this research is to explain the risks that the increased popularity and the higher user rates of social media might bring with it, especially since using social media has become an integral part of life (Sampasa-Kanyinga & Lewis, 2015). In this particular case, the focus lies on the possible relationship between body image concerns and the use of highly visual social media, which will be discussed later. Moreover, it will be elaborated in which way a more active rather than a passive use influences possible body image concerns. This is done in order to be able to estimate the consequences of the use of highly visual social media.

Highly visual social media

A subgroup of the more general term 'social media' is 'highly visual social media' (HVSM). HVSM focuses on visual content like images or short videos with the possibility to modify them by using filters. Examples of HVSM are Instagram and Snapchat (Marengo, Longobardi & Settanni, 2017). These platforms have recently experienced a rise in popularity, especially among young people (RSPH, 2017). According to a study by Marengo et al. (2017), adolescents also reported using HVSM more than 'regular social media sites' like Facebook.

Although the popularity of those platforms rises, various researchers found that the use of social media, and HVSM in particular, can have negative influences on the users. Among

others, the use can ultimately lead to sleep problems, anxiety or depression (RSPH, 2017) as well as to inattention, hyperactivity, impulsivity and loneliness (Barry, Sidoti, Briggs, Reiter & Lindsey, 2017). Moreover, there is a possibility of getting addicted to using social media, which might then again lead to fear of missing out (FOMO) or to the neglect of responsibilities (Donnelly & Kuss, 2016). Overall, the use of social media can be associated with poor mental health and increasing internalizing symptoms (Sampasa-Kanyinga et al., 2015). In addition to that, researchers found that especially the use of HVSM leads to greater body image concerns and dissatisfaction with the own body for users (Marengo et al., 2017).

Body image concerns

Having body image concerns means that one is dissatisfied with the own body in some way. More precisely, it can be defined as "the negative perceptions and feelings a person has about their body and is influenced by factors such as body shape and appearance, attitudes towards weight gain, and cultural norms in relation to an ideal body" (McGuinness & Taylor, 2016). Even though it is per definition defined as having negative perceptions, body image concerns are also closely related to disordered eating (McGuinness et al., 2016).

Past research explains the development of body image concerns through social media by using the social comparison theory (Marengo et al., 2017). This theory states that HVSM users compare themselves to the content they see on social media. The comparison might lead to the realization that there are differences between the pictures found on HVSM and the own body, which can ultimately lead to the formation of body image concerns. Specifically because the pictures and videos are usually flattering shots or might even be edited (Lang & Barton, 2015), which increases the possibility that the posted content shows a highly idealized image (Manago, Graham, Greenfield & Settanni, 2008; Kim & Chock, 2015). Hence, comparing oneself to highly idealized images, realizing a difference between the own body and the ideal and trying to cope with that gap might ultimately bring consequences with it.

Being dissatisfied with the own body and having body image concerns can be associated with several risks. Besides showing unhealthy eating behaviors, including restrictive eating, people who try to cope with body dissatisfaction might be at risk for excessive exercise or drug consumption (Colunga-Rodríguez, Orozco-Solis, Flores-Villavicencio, de-la-Roca-Chiapas, Gomez-Martínez, Mercado, et al., 2016). Furthermore, being concerned about the own body was found to be positively correlated with showing internalizing symptoms like anxiety and depression (Bucchianeri, Fernandes, Loth, Hannan, Eienberg & Neumarkt-Sztainer, 2016).

Active versus passive use of social media

Additionally, earlier researchers elaborated that active and more passive social media users can be differentiated. More importantly, this difference seems to be important when talking about the consequences of social media use, in this particular case body image concerns (Marengo et al., 2017). Being an active user includes taking and editing pictures and uploading content, whereas using social media in a more passive way mostly includes looking at other people's content. Moreover, using social media in an active way includes worrying about what to upload and which reactions one will get for the upload (McLean, Paxton, Wertheim & Masters, 2015).

According to a past study, social media users who invest and engage into editing their pictures before posting them online tend to experience increased body dissatisfaction (Cohen, Newton-John & Slater, 2018). This was also supported by the work of other researchers, who found that photo investment and photo manipulation in the context of sharing selfies (i.e., pictures of oneself) was associated with higher body dissatisfaction (McLean et al., 2015). Researchers hypothesize that people who engage in photo manipulation have a higher degree of body dissatisfaction to begin with (Cohen et al, 2018). Another possible explanation is that people who invest more into editing their pictures do so in a more self-conscious way, which might have the formation of body image concerns as a consequence. In any case, the active

use of highly visual social media seems to influence the relationship between time spent on highly visual social media and body dissatisfaction. This conclusion is supported by McLean at al. (2015), who state that photo activities on social media, including taking and editing pictures of oneself, rather than the use of social media in general, is responsible for the formation of body image concerns.

Research design and hypotheses

Since only little research has been conducted about the influence of highly visual social media on body image concerns, and even less about the difference between active versus passive use (Cohen et al., 2018; McLean et al., 2015), it was decided to further investigate those relationships through an online survey. This decision was made because of the associations between the use of social media and severe consequences, which were found in previous research (McLean et al., 2015; Cohen et al., 2018; Bucchianeri et al., 2016; Colunga-Rodríguez et al., 2016) as well as because of the rise in popularity of those social media sites (RSPH, 2017). The more people use highly visual social media, the more people could be affected by the possible consequences.

On the basis of the research mentioned earlier, two hypotheses were formulated. The first hypothesis is:

H_1: "Time spent on highly visual social media is positively related to body dissatisfaction." And the second hypothesis is:

H_2: "Active use of highly visual social media has a moderating effect on the relationship between use of highly visual social media and body image concerns."

Moreover, Figure 1 represents the research design, which is used for this study.
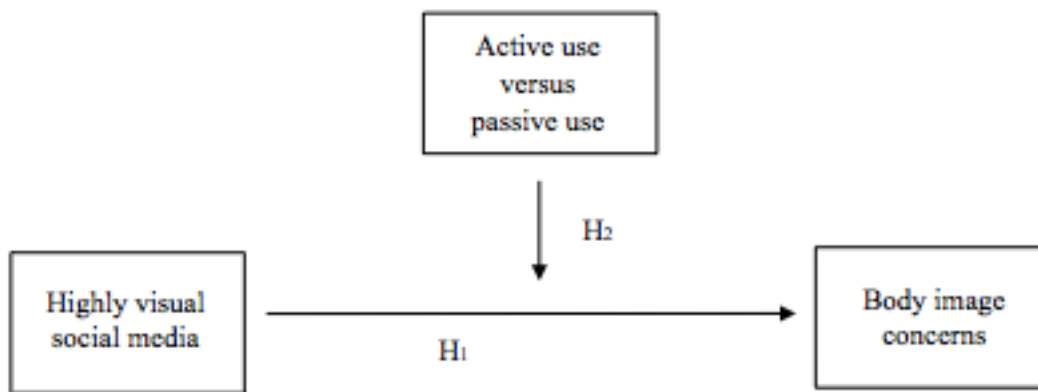
Figure 1. Research design.

Methods

Participants

The participants were selected by using a convenience sample. In total, 251 people took part in the study. Of those, 94 participants did not fill in the questionnaires that are relevant for this research or indicated that they did not use highly visual social media. Therefore only the 157 people who did fill in the relevant questionnaires and also used HVSM will be taken into account. As shown in Table 1, the mean age of the participants was roughly 21 years and the majority of the participants were female. Moreover, the larger part of the participants indicated living in Germany, followed by participants, who indicated living in the Netherlands. Most participants were University students and were therefore highly educated (high school diploma, Bachelor's degree or Master's degree). In addition to that, a great part of the participants consisted of school students.

Table 1

Age, gender, country of residency, education level and occupation of the participants

(N = 157)

Participant characteristics	Range	M (SD)
Age	18 - 59	21.44 (3.71)
		Frequency (%)
Gender	Male	33 (21%)
	Female	123 (78.3%)
	Others	1 (0.6%)
Country of residency	Netherlands	53 (33.8%)
	Germany	96 (61.1%)
	Europe	6 (3.8%)
	Outside of Europe	2 (1.3%)
Educational level	Master's degree	1 (0.6%)
	Bachelor's degree	19 (12.1%)
	High school diploma	105 (66.9%)
	HBO	3 (1.9%)
	MBO, Occupational training	10 (6.4%)
	Vmbo, Havo, Vwo	16 (10.2%)
	Middle school	3 (1.9%)
Occupation	School student	47 (29.9%)
	University student	97 (61.8%)
	Occupational training	1 (0.6%)
	Employed	11 (7.0%)
	Unemployed	1 (0.6%)

Procedure

Data for this study was collected between April 13th 2018 and April 27th 2018 after having received ethical approval by a committee of the University of Twente. The study was conducted in the form of an online questionnaire and was made available to the participants via the program Qualtrics. The participants were either approached personally by the

researchers, for example through personal communication, or they were selected because they are part of the extra course credit program of the University of Twente (SONA). It took the participants between 20 and 25 minutes to complete the questionnaire. Participants received a link to the online study and after clicking on a link, the participants were directed to that online study. First, they were asked to read an informed consent. They could only proceed with filling in the questionnaire when they agreed with the terms. If participants agreed and therefore continued, they filled out the questionnaire. It was made mandatory to answer each question of the questionnaire in order to avoid missing data. Moreover, it was only possible to select one answer for each question. This research was part of a bigger research, but only the relevant questionnaires for this research will be discussed. At the end of the questionnaire a short debriefing was placed giving a brief explanation about the aim of the study, thanking the participants for their participation and offering the opportunity to contact the researchers if they had questions or remarks. Some participants received course credits for their participation, others had participated because they were acquaintances of the researchers.

Materials

 Demographic variables. The questionnaire consisted of demographic questions about gender, age, place of residence, level of education and employment status.

 Social media use. Moreover, the questionnaire contained two questions measuring highly visual social media use of the participants. The questions were designed by the researchers of this study. It was asked if the participants use highly visual social media as well as how much time the spent on it. One example is: "Do you use Highly Visual Social Media (for example Instagram, Snapchat, Tumblr)?". Participants were asked to answer this question with a yes or no answer. Another example is: "How much time do you spend ONLY on Highly Visual Social Media (for example Instagram, Snapchat, Tumblr) each day?". The answer options for this kind of question ranged from (1) "0 - 1 hour" up to (4) "more than 3 hours".

Body Dissatisfaction. Body dissatisfaction was measured by using the questionnaire 'Body Image Concern Inventory' by Littleton and Breitkopf (2005). Participants were asked to answer 19 questions regarding body dissatisfaction on a 5-point Likert scale, ranging from (1) "never" to (5) "always". An example for the questions is: "I am dissatisfied with some aspects of my appearance". According to the research by Littleton et al. (2005), the questionnaire has a Cronbach's alpha of .93, indicating high reliability. In this research, the Cronbach's alpha was .94, which supports the assumption about high reliability by Littleton et al. (2005).

Active versus passive social media use. In order to measure the active versus passive use of social media, the participants were given three questionnaires measuring photo activity, photo investment and photo manipulation. All three questionnaires were designed by McLean et al. (2015). In their research, the three questionnaires were used individually. For this research, it was chosen to make those three questionnaires one concept, since they all measure the engagement with pictures. Therefore, answers to these questionnaires were computed into one variable, namely active versus passive use of HVSM, and used as a total score.

The questionnaire 'Photo Activity', consisting of four questions, was used for this research. The first two questions measured how frequently participants took, using a 8-point Likert scale ranging from "more than twice a day" to "less than once a month". An example for the questions is: "How often do you take selfies with only you in the picture?". The other two questions measured posting photos of oneself on social media. A 5-point Likert scale was used, ranging from "never" to "always". An example of those questions is: "Do you avoid putting photos of yourself on social media?". Earlier research showed that the questionnaire possesses good internal consistency ($r_S = 0.81$) (McLean et al., 2015). For this research, the Cronbach's alpha for the questionnaire was .685, indicating questionable reliability.

In order to measure the effort that the participants put into their photos before posting them on social media, the questionnaire 'Photo Investment' was used. Participants were asked to use a slider in order to indicate how far they agree with seven statements, for example: "It's

easy to choose the photo.". The slider ranged from 0 to 100, indicating agreement or disagreement respectively. According to past research, the questionnaire showed good reliability with a Cronbach's alpha of 0.85 (McLean et al., 2015). In this research, the Cronbach's alpha of the questionnaire was .685, indicating questionable reliability.

The questionnaire 'Photo Manipulation' was used to measure in which way participants edit their photos before posting them. In total, there were 10 items in the questionnaire. Participants were asked to indicate what they do in order to make photos look better, for example: "Get rid of red eye.". A 5-point Likert scale, ranging from "never" to "always", was used. Earlier research found a Cronbach's alpha of .85, indicating good reliability (McLean et al., 2015). In this research, the Cronbach's alpha of the questionnaire was .83, indicating good reliability as well.

Data Analysis

The program SPSS Version 25 was used for the data analysis.

Descriptive Statistics. In order to be able to make statements about time spent on highly visual social media, body dissatisfaction and the active versus passive use of highly visual social media, descriptive statistics were calculated. For each of those variables, the mean and the standard deviation were calculated.

Hypothesis testing. In order to test the first hypothesis, a Pearson correlation was used. Time spent on highly visual social media was correlated with body dissatisfaction in order to find out whether the use of highly visual social media can be related to an increase in body image concerns.

A regression analysis was conducted in order to test the second hypothesis, namely whether active versus passive use of highly visual social media moderates the relationship between the use of highly visual social media and body image concerns. The variable use of HVSM was used as the independent variable, the variable body image concerns was used as the dependent variable and active versus passive use was used as the moderating variable.

Results

Descriptive statistics.

In order to give an overview about the three variables, namely time spent on HVSM, body dissatisfaction and active versus passive use of HVSM, descriptive statistics were calculated. The range, the mean and the standard deviation of those three variables can be found in Table 2.

Table 2

Range, means and standard deviations for time spent on highly visual social media, body dissatisfaction and active versus passive use of HVSM (N = 157)

	Scale Range	M	SD
Time spent on HVSM *	1-4	2.01	.937
Body Dissatisfaction	21.00-93.00	53.95	15.43
Active versus passive use of HVSM	34.65-85.95	58.73	9.57

Note. * per day

Hypothesis testing. To examine whether time spent on HVSM is positively correlated with body dissatisfaction, a Pearson correlation was calculated. The results showed a weak, but statistically significant correlation between time spent on highly visual social media and body dissatisfaction ($r = 0.16$, $N = 157$; $p<0.05$). This means that the use of HVSM and body image concerns might be related with one another.

To test whether the active versus the passive use of highly visual social media moderates the relationship between time spent on HVSM and body dissatisfaction, a hierarchical multiple regression analysis was conducted. In the first step, two variables were included: time spent on HVSM and active versus passive use of HVSM. As presented in Table 3, this model accounted for a significant amount of variance in body dissatisfaction (R^2

= .562, $F(2, 154) = 28.459$, $p < .001$). Furthermore, the variables were centered and an

interaction term between time spent on HVSM and active versus passive use of HVSM was

created. Next, the interaction term was added to the regression model. As shown in Table 3, it

did not account for a significant amount of variance in body dissatisfaction ($\Delta R^2 = .004$, $\Delta F(1,$

153) = .83, $p = .364$, $B = -.105$, $SE(B) = .116$, $\beta = -.422$, $p > .05$). This means that active

versus passive use of HVSM does not moderate the correlation between use of HVSM and

body dissatisfaction.

Table 3

Summary of hierarchical regression analyses predicting body dissatisfaction

		B	SE(B)	β	R^2	ΔR^2	F
Step 1					.562[a]	.316[a]	28.459[a]
	Constant	-.08[b]	6.51[b]				
	Time spent on HVSM	1.013[b]	1.11[b]	.062[b]			
	Active versus passive use	.885[a]	.109[a]	.549[a]			
Step 2					.565[b]	.004[b]	.83[b]
	Constant	-13.243[b]	15.868[b]	.433[b]			
	Time spent on HVSM	7.132[b]	6.818[b]	.433[b]			
	Active versus passive use	1.114[a]	.274[a]	.691[a]			
	Interaction: time spent on HVSM and active versus passive use	-.105[b]	.116[b]	-.422[b]			

Note. [a] p < .001, [b] p > .05

Discussion

This research was aimed at finding out whether the time spent on highly visual social media (HVSM) is positively related to body dissatisfaction and whether this relationship was moderated by active versus passive use of HVSM. The results show that there is in fact a significant correlation between time spent on HVSM and body dissatisfaction. That means that people who spent more time on highly visual social media might also be more dissatisfied with their body. This is in accordance with previous research, which also found that higher levels of engagement with social media were associated with greater body dissatisfaction (McLean et al., 2015, Marengo et al., 2017). However, the correlation found in this research ($r = .16$) as well as the correlations that were found in previous research ($r = .21$ in the research by McLean et al., 2015 and $r = .17$ in the research by Marengo et al., 2017) were rather low. This indicates that there is a relationship between time spent on HVSM and body dissatisfaction, but also that this relationship is relatively weak. Therefore, conclusions that are drawn from this weak correlation should be treated with caution.

Furthermore, it was assumed that the way that people use highly visual social media moderates the correlation between time spent on HVSM and body dissatisfaction. Therefore, actively engaging in social media through posting pictures or selfies and editing pictures was expected to have an influence on the effect between spending time on HVSM and body dissatisfaction. However, the results did not reveal such an effect, which disproves the hypothesis. This is against what was expected from previous research (Cohen et al., 2018; McLean et al., 2015) because previous researchers found that the active use of highly visual social media through sharing photos, especially the investment and the manipulation of such photos, was associated with the existence of body image concerns. Moreover, McLean et al. (2015) also found that active versus passive use of social media influenced the relationship between social media use and body-related concerns. However, only little research has focused on the moderating effect of active versus passive use of HVSM (Cohen et al., 2018;

McLean et al., 2015). In addition to that, no research has been published, which tried to replicate and extent those findings. This research tried to replicate previous findings with regard to the moderating effect of active versus passive use of HVSM. Therefore, this research can be seen as an addition to extent literature, even though no moderating effect could be found. For now, based on this research, it can be stated that active versus passive use of HVSM does not seem to moderate the relationship between time spent on HVSM and body dissatisfaction. Due to the differences of the findings, more research could be conducted within that area in order to be able to make precise assumptions about the role of active versus passive use of HVSM.

Strengths, limitations & recommendations for future research

The present study has various strengths, which are worth discussing. First of all, most of the participants were young adults, which is exactly the group that uses highly visual social media the most (Cohen et al., 2018). This is especially important to note because previous research (McLean et al., 2015; Marengo et al., 2017) has mostly focused on young adolescence, which were between 13 and 15 years old. Therefore, the participants of this research might be a better sample when looking at the use of HVSM and potential consequences.

Furthermore, a lot of research has been conducted within the field of social media, especially about the social media platform Facebook (for example: Donnelly & Kuss, 2016). However, the interest in those social media sites has been overtaken by interest in highly visual social media sites, like Instagram. The user rates of HVSM sites like Instagram and Snapchat are growing rapidly, whereas the user rates of regular social media sites are slowly declining (Chaffey, 2018), which proves the fact that HVSM has become more popular within the last years (RSPH, 2017). Yet, only little research has been conducted within that new field (Marengo et al., 2017). Since this research particularly looked at the use of HVSM, it is a good addition to existing research.

Moreover, this research has some limitations to consider. First of all, the participants were asked to estimate how much time they think they spent on highly visual social media. However, participants might not have been able to estimate their use correctly. This might have been due to social desirability or retrospective bias and could have lead to underestimating the time they actually spent on highly visual social media (Cohen et al., 2018). Therefore, future research could try to collect more valid data by applying a different method, like using an app, which tracks activity on HVSM. It is expected that people spent more time on HVSM than they indicated in this research, which might have an influence on the data and the outcomes. Moreover, a more accurate estimation could lead to more variance between the participants.

Secondly, the sample was relatively homogeneous. The majority of the participants were University students and therefore highly educated. That means that it is not possible to draw conclusions for the whole population, but only for a certain subgroup, which decreases the ability to generalize from the results found in this research. Therefore, future research could aim at collecting data from a more heterogeneous sample in order to improve generalizability.

Conclusion

The present study adds to the extant literature by supporting the positive relationship between use of highly visual social media and body image concerns, even though the correlations that were found are relatively weak. Moreover, the effects with regard to active versus passive use of HVSM could not be found, meaning that the effect might not be as apparent as previously thought or might not be there at all. This leads to the conclusion that an active versus a passive use of HVSM does not seem to moderate the relationship between time spent on HVSM and body dissatisfaction.

Several researchers advise to design and carry out interventions aimed at raising awareness about the potential impact that exposure to highly visual social media can bring

with it, especially with regard to body dissatisfaction (Marengo et al., 2017; McLean et al., 2015; Cohen et al., 2018). The findings of this research with regard to the relationship between time spent on HVSM and body dissatisfaction support this advice. However, researchers also recommend paying special attention to the role of taking, editing and posting selfies (an active use of HVSM) when designing and carrying out interventions (Cohen et al., 2018; McLean et al., 2015). This recommendation cannot be supported by the findings of this research and therefore, the main focus of potential interventions should lie on raising awareness about the relationship between time spent on HVSM and body dissatisfaction.

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