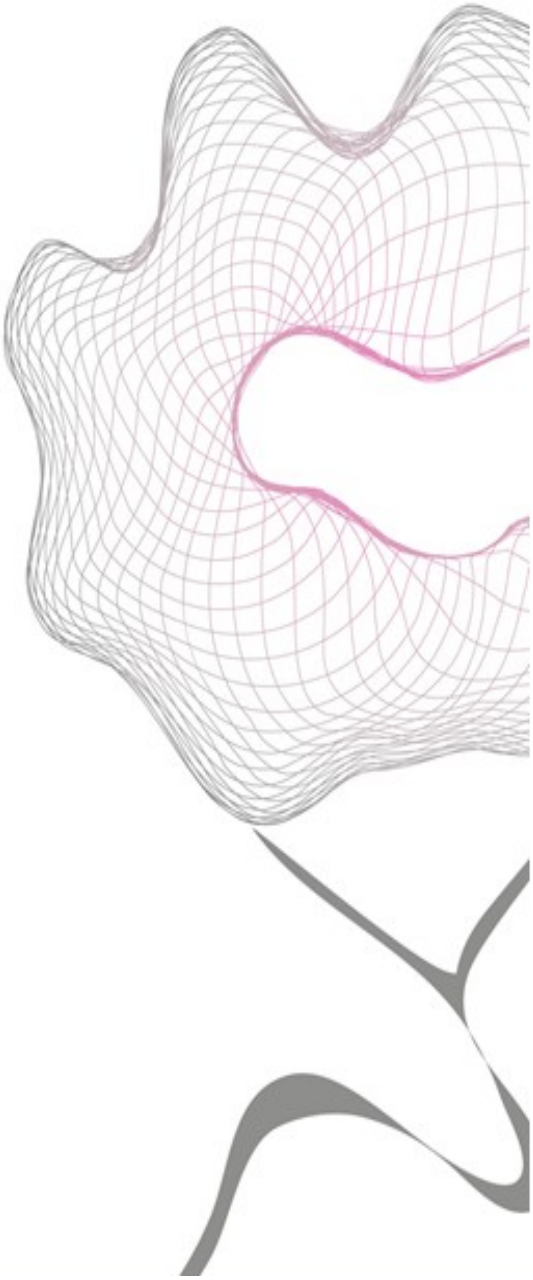

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Social Media and Mental Health:

Does Relationship Status moderate the Relationship between Instagram Usage and Self-esteem?

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Bachelor Thesis in Psychology

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Does Relationship Status moderate the Relationship between Instagram Usage and Self-Esteem?

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Abstract

While a growing body of research has focused on the relationship between Instagram usage and self-esteem, no studies have yet been conducted on whether an individual's relationship status (being single vs. being in a romantic relationship) would potentially moderate this relationship. The present study therefore aimed to fill this existing gap in the literature. For this purpose, an online survey was created and the responses of n = 169 predominantly German Instagram users between 18 and 24 year of age (M = 20.3, SD = 1.5) were subjected to correlation and moderation analyses. Results indicated that no negative relationship existed between an individual's Instagram usage and self-esteem. However, relationship status was found to be a significant moderator of the relationship between Instagram use and self-esteem. More specifically, the relationship between Instagram usage and self-esteem turned out to be negative for singles, while it was positive for individuals who were in a romantic relationship. It is argued that future research is necessary to investigate the direction of potential causality between mentioned variables.

Keywords: Instagram, relationship status, self-esteem, young adults, social comparison, actual self, idealized self.

Introduction

Throughout the last decade the world has witnessed a significant increase in the number of people that use the internet. With the rise of devices that made the internet portable and hence more easily accessible (e.g. smartphones), websites that made internet usage more popular (e.g. social networking sites) and software that facilitated the ease of use of such websites (e.g. applications), the percentage of global internet users has grown from 24% in 2009 to 49% in 2017 (Meeker, 2018). At the same time, the percentage of global internet users that used social networking sites (SNSs) increased from 50% to 76% (Meeker, 2018).

The fast pace in which humans have been willing to adopt the use of portable internet devices and SNSs may indicate that most users perceive considerable benefits from using the internet and some of its specific functions. Especially SNSs appear to be perceived by the public as beneficial because they enable their users to enjoy multiple functions such as messaging, looking up news or playing games by merely using one instead of various different websites (Livingstone, 2008). According to Kuss and Griffiths (2011), SNSs such as Facebook or Instagram can be seen as "virtual communities where users can create individual public profiles, interact with real-life friends, and meet other people based on shared interests". While SNSs are primarily used to maintain real-life relationships (Kuss & Griffiths, 2011), they have, among other things, given users new opportunities by enabling them to socialize with even more and distant persons (Livingstone, 2008) or to compensate for a lack of real-life friendships (Kuss & Griffiths, 2011). Researchers have also argued that SNSs can be used to express oneself with less social inhibitions (Griffiths & Kuss, 2011) and to meet potential romantic partners (Lee & Bruckman, 2007). In a similar line of thought, Griffiths and Kuss (2011) argued that for most people the positives of being online outweigh the negatives by a large margin. Statistics about the prevalence of using SNSs in the Netherlands appear to support this notion, evidencing that 73% of the total Dutch population use Facebook and 35% use Instagram (Van der Veer, Boekee, & Hoekstra, 2019).

The effects of Social Networking Site (SNS) usage on Mental Health. The growing popularity of SNSs has inspired a fair amount of research on the topic and researchers have repeatedly demonstrated that excessive usage of such is related to various mental health problems (Xu & Tan, 2012; Phanasathit, Manwong, Hanprathet, Khumsri, & Yingyeun, 2015).

Nonetheless, in general the results obtained by scholars have differed widely with respect to the exact consequences of excessive SNS usage. While researchers such as De Cock et al. (2014) found excessive SNS users to possess lower emotional stability, lower self-esteem and more depressive feelings, other researchers have reported that only Instagram was related to lower self-esteem and more depressive feelings (Donnelly & Kuss, 2016) and some did not find any negative relationship between SNS-use and mental health at all (Jelenchick, Eickhoff, & Moreno, 2013).

The mixed nature of results may well stem from a number of different reasons and methodological shortcomings inherent in past research within the field. Kuss & Griffiths (2017), for example, suggested that scholars have many times used such labels as *problematic use*, *excessive use* or *addiction* interchangeably, which has limited the extent to which meaningful deductions from the literature could be drawn for any respective concept. Griffiths, Kuss, and Demetrovics (2014) also claimed that a large majority of studies conducted within the field has been carried out with different assessment tools and cut-off points to measure the ever differently labeled theoretical concepts, which, in turn, further complicates the comparison between the results obtained in different studies.

Another possible cause for the mixed nature of results revolves around the fact that past research has often tried to link the general use of SNSs to certain mental health outcomes, thereby undermining the fact that SNSs are made up of a multitude of specific functions and mechanisms which may in themselves influence the users' mental health in very different ways (Griffiths, 2012). Since a user's mental health appears to be influenced by certain SNS-inherent functions rather than by SNSs in their entirety (Griffiths, 2012), it does not seem surprising that studies which focused on general SNS-use have come to different conclusions, as they ignored the fact that each SNS may possess unique or somewhat differing functions. Following this line of thought, it would seem rather likely that certain SNSs have more detrimental effects on the mental health of their users than others, as they may possess particularly harmful functions in which their users engage.

Research has indeed confirmed that SNSs differ with regard to their functionality and the effects that they have on their users' mental health. Particularly for Instagram, negative relationships between amount of usage and self-esteem have repeatedly been demonstrated (Sherlock & Wagstaff, 2018; Vogel, Rose, Roberts & Eckles, 2014; Kuss, 2017), while no such

relationships were found for other SNSs such as Facebook or Snapchat (Donnelly & Kuss, 2016; Kuss, 2017). In the light of the mixed nature of results obtained by past research focusing on general SNS-use, this study specifically aims at focusing on how the use of Instagram, with its' inherent functions, is related to the users' mental health.

Instagram use and Mental Health. Throughout the year 2018, the online platform Instagram has seen a 20% growth in the number of Dutch users, which currently makes it the fastest growing SNS in the Netherlands (Van der Veer, Boekee, & Hoekstra, 2019). In total, almost one third of its user base is between 18 and 24 years old (Statista, 2019), evidencing its popularity especially among younger adults. Young adults pertaining to this age group used Instagram for an average of 32 minutes per day, which is higher than for all other age groups (Instagram Press, 2017).

While Instagram is in essence similar to e.g. Facebook in that it addresses various social needs of its users, such as the need to socialize or to engage in self-expression (Griffiths & Kuss, 2011), Instagram also differs in certain important aspects in its functionality with regard to other SNSs. Lup, Trub, and Rosenthal (2015) argued that especially the passive use of Instagram, which is characterized by browsing through the news feed or through other user's profiles without posting own content, prompted users to engage in upwards social comparisons. According to social comparison theory (Festinger, 1954), humans have an innate tendency to evaluate their own situation by comparing it to social information relating to other individuals. Individuals can thereby engage in either upwards or downwards social comparisons, depending on whether they feel that they are worse or better off than the persons they are comparing themselves to, respectively (Festinger, 1954). While Haferkamp and Krämer (2011) argued that SNSs in general offer an optimal ground for engaging in social comparisons, it appears that Instagram differs from other SNSs in three fundamental characteristics through which users may especially be prompted to engage in *upwards* social comparisons (De Vries, Möller, Wieringa, Eigenraam, & Hamelink, 2017), which have been shown to result in lower self-esteem and lower subjective well-being (Vogel et al., 2014).

The first fundamental difference revolves around the fact that the content which people upload on Instagram is mostly "idealized". Photographs or videos that are posted on Instagram are commonly edited with filters that enhance the content's visual appearance (Sherlock &

Wagstaff, 2018) and users usually share only the most “perfect” moments in their lives, so that a positively biased impression of real life is created (Lup et al., 2015). Sherlock and Wagstaff (2018) reasoned that the passive browsing through the idealized Instagram news feed may inevitably lead to upwards social comparisons for users who feel that they do not live up to these idealized standards.

Secondly, the content on Instagram purely consists of photographs and videos. This is in contrast to other SNSs which also revolve around written content such as wall posts, status updates or shared news articles. Research found that visual information has a more profound impact on human memory than written information (Noldy, Stelmarck, & Campbell, 1990). As Instagram exclusively consists of visual input, the detrimental effects of upwards social comparisons may be stronger than for users of other SNSs (Sherlock & Wagstaff, 2018).

Thirdly, it was found that Instagram users engage with more strangers than users of other SNSs (Kuss, 2017). Lup et al. (2015) found that the number of strangers which an individual followed on SNSs was positively related with the tendency to engage in social comparisons. This may be problematic, however, since the exposure to idealized pictures from celebrities may foster beliefs in users that other people live happier lives than they do (Vogel et al., 2014). Furthermore, it may be difficult to falsify such beliefs because Instagram users do not personally know many of the users that purport to live ideal lives (Kuss, 2017).

All in all, it therefore seems as if the harmful effects of Instagram use primarily emerge when users spend large amounts of time passively consuming idealized Instagram content and therefore begin to feel as if they cannot attain the presented standards, which gives rise to the process of upwards social comparisons (Haferkamp & Krämer, 2011). While upwards social comparisons have been linked to a number of detrimental outcomes on the mental health of individuals, its negative relationship has perhaps been demonstrated most consistently with regard to levels of self-esteem.

Levels of self-esteem. Self-esteem can be described as the positive or negative self-evaluation about whether an individual perceives him- or herself as worthwhile and competent (Coopersmith, as cited in Vogel et al., 2014). Self-esteem has often been conceived as a crucial part of mental health and it has also been found to buffer individuals against negative emotions such as stress or depression (Leary, Tambor, Terdal, & Downs, 1995).

Researchers have predominantly identified a negative relationship between the amount of time individuals spent on Instagram and self-esteem (Kuss, 2017; De Cock et al., 2014), whereby Sherlock and Wagstaff (2018) found that this relationship was mediated by social comparisons. Interestingly, Gonzales and Hancock (2011) found that Instagram usage may also have the potential to increase users' self-esteem as it enables users to showcase an idealized virtual self in the form of a favorable user profile, which can help reduce the gap between actual self – ideal self and thereby increase self-esteem. While these findings may seem paradoxically at first sight, Vogel et al. (2014) argue that both findings do not necessarily contradict each other since they originated from studies that revolved around different Instagram-inherent functions. Pempek, Yermolayeva, and Calvert (2009), however, argued that Instagram users spend the majority of their online time with the passive consumption of content, so that the detrimental effects of upwards social comparisons outweigh the benefits from constructing ideal online selves. This imbalance between beneficial and harmful Instagram functions may on the one side be due to the fact that uploading a new picture to an Instagram profile may not take as much time as browsing through uploaded content. On the other side, Instagram has designed their news-feed in a way which allows users to browse new content almost indefinitely and thereby led users to engage in a higher proportion of passive usage (Harris, 2016). Passive usage, in turn, has been linked to more social comparisons and lower self-esteem (Lup et al., 2015).

Thus, it is likely that the negative effects of upwards social comparisons on self-esteem may offset the positive effects that went along with the creation of an ideal online self. Nevertheless, this negative relationship may manifest itself differently for individuals who are either less or more susceptible to the negative effects of social comparison.

Relationship Status. Even though an individuals' relationship status has not been found to be a direct predictor of levels of self-esteem (McLaughlin, 2015), it has been shown to be predictive of whether individuals are able to narrow the gap between their actual and ideal selves, which may result in higher self-esteem (Gonzales & Hancock, 2011) that could somewhat counteract the negative effects of upwards social comparisons.

According to Ryan and Deci (2000), being in a romantic relationship can reduce a person's perception that discrepancies between one's actual and ideal self are present and thus lead to higher self-esteem and subjective well-being. Przybylski, Weinstein, Murayama, Lynch,

and Ryan (2012) added to this notion that being part of a romantic couple could facilitate the emergence of the partner's ideal self. Therefore, individuals who have a romantic partner should be expected to experience smaller discrepancies between their actual and ideal selves than singles and to enjoy higher levels of self-esteem and well-being, which would allow them to be more robust against the harmful effects of passive Instagram usage.

Singles, on the other hand, may be less robust against the effects of upwards social comparisons due to not being in a romantic relationship through which the gap between actual and ideal selves can be narrowed. Moreover, Haferkamp and Krämer (2011) found that the negative effects of upwards social comparisons were more pronounced in individuals who were presented with pictures of attractive persons or social event such as parties or vacations, which were not attainable for the individual. Since singles are regularly confronted with pictures of romantic couples on Instagram (Lee, Choi, Lee, & Sung, 2019), this may accentuate the fact that they currently do not have a romantic partner. Therefore, the effects of upwards social comparisons are expected to be stronger for singles in contrast to non-singles.

To the knowledge of the author, the evidence focusing on whether singles are more prone to the harmful effects of SNS-usage has so far been sparse at best. While past research has linked being single to addictive SNS-usage and depressive symptoms (Andreassen et al., 2016), so far little if any evidence has been accumulated with regard to whether the expected negative relationship between Instagram use and self-esteem may be dependent on the user's relationship status. This may be important to investigate, in turn, because gathering further knowledge about whether the use of Instagram may be particularly harmful for certain groups of individuals could be the first step in protecting such at-risk groups through the development of empowering counter-measures. The present study will therefore attempt to fill this knowledge gap in the literature by examining whether the use of Instagram and its inherent functions will have a more detrimental impact on the self-esteem of singles than non-singles.

The present study. Based on above mentioned reasoning, it is hypothesized that larger amounts of Instagram usage may compromise the users' levels of self-esteem. That is, because Instagram was found to possess certain mechanisms which prompted users to engage in upwards social comparisons (De Vries et al., 2018), which lead to lower self-esteem (Vogel et al., 2014). Furthermore, it is expected that the negative relationship between Instagram use and self-esteem

would be dependent on the users' relationship status, as being in a romantic relationship was hypothesized to buffer against the negative effects resulting from social comparisons to a larger extent than being single.

As the age group of 18 to 24 year-olds was found to be the one that was most prone to engage in high levels of Instagram usage and social comparisons (Sherlock & Wagstaff, 2018), in the present study it is aimed at examining whether young adults' amounts of daily Instagram usage are related to their self-esteem and if this relationship is moderated by the individuals' relationship status.

The research question of the present study therefore reads as follows:

> Is there a relationship between young adults' daily Instagram use and their levels of self-esteem, and is this relationship moderated by their relationship status?

In order to examine the research question two hypotheses were established:

H1: Young adults' amount of daily Instagram use is negatively related to their levels of self-esteem.

H2: The negative relationship between young adults' amounts of Instagram use and their levels of self-esteem is moderated by the individuals' relationship status, in the way that this negative relationship will be stronger for singles than for individuals in a romantic relationship.

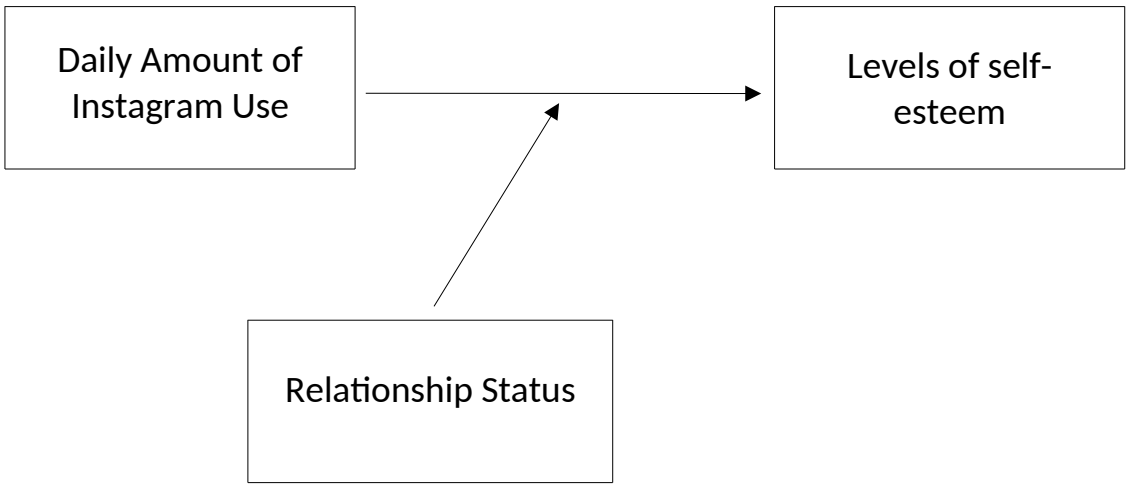

Figure 1. Conceptual model of the expected moderation effect of relationship status on the relationship between daily amount of Instagram use and levels of self-esteem.

Methods

Design

This study employed a quantitative cross-sectional online survey-based research design, in which respondents' data was collected at a single point in time. Such research designs do not allow the establishing of causal relationships between variables but are nonetheless suited for the exploration of comparably unexplored research topics (Hulley, Cummings, Browner, Grady, & Newman, 2007), like for instance the question to which extent daily Instagram usage, relationship status and self-esteem are related. This research design also has the advantage that it yields results in a relatively fast and inexpensive fashion and that no loss due to follow-up is experienced (Hulley et al., 2007).

In the present study *daily Instagram usage* served as the independent variable, *levels of self-esteem* as the dependent variable and *relationship status* (being in a relationship vs. being single) as a potential moderator.

Participants

It is important to note that the present study about Instagram usage was conducted as part of a larger study in which the relationships between various SNSs and certain personality traits were examined (N = 322). The present study therefore featured all respondents of this super-

ordinate study who were eligible due to the fact that they fully completed the survey and used the SNS Instagram. Further established inclusion criteria for this study were being between 18 and 24 years old, possessing sufficient English comprehension skills and having access to one's individual daily usage time statistic on Instagram. This latter inclusion criterion was established due to the fact that people were found to be rather unreliable when estimating instead of looking up the amount of time they spend online (Lee, Ahn, Nguyen, Choi, & Kim, 2017). Moreover, the results of a pilot study suggested that it would have been hardly possible for a respondent to complete the present survey in less than six minutes of time while simultaneously giving deliberated answers, even after controlling for the fact that some respondents did not have to complete each question of the survey since not all questions were applicable to all participants. Therefore, all respondents were removed from the data set which completed the survey in less than six minutes. Furthermore, only respondents who indicated a motivation level of at least three out of five points were retained in the final data set in order to further reduce the risk of a possible contamination of the data due to inaccurate answering of items due to a lack of motivation.

For the purpose of recruiting a large number of respondents, the researcher relied on the convenience sampling technique, which involved the recruitment of a target group consisting of students from the University of Twente (UT) and individuals which were recruited via recruitment messages that included invitation links to the survey and were sent through the researcher's private SNS-channels. All respondents participated voluntarily and those UT-students who took part in this study via the university-own online platform SONA-Systems, which allows students to sign up and partake in their fellow students research projects, had the opportunity to obtain course credit, in the form of SONA-points, in exchange for their participation.

Ultimately, a total of 169 adults between 18 and 24 years of age ($M = 20.31$, $SD = 1.53$) complied with the inclusion criteria of this study and formed part of the final data set, on the basis of which the statistical analyses were conducted. Descriptive statistics of the final sample are given in Table 1.

Table 1
Demographic Characteristics of the Respondents (N= 169)

Variable	Frequency	%
Gender		
Female	133	78.7
Male	36	21.3
Nationality		
Dutch	17	10.1
German	137	81.1
Other	15	8.9
Occupational Status		
Student	159	94.1
Working	8	4.7
Other	2	1.2
Relationship Status		
Single	86	50.9
In a Relationship	83	49.1

Measuring Instruments

In order to test whether daily Instagram usage would have the expected relation with self-esteem and to examine whether this relationship would be moderated by the respondents' relationship status, the participants were asked to respond to a set of demographic questions, scales and specific questions about the respondents' relationship status, Instagram usage times and motivation to participate. The survey was hosted on the online survey platform Qualtrics®.

Demographic Questions & Relationship Status. In the beginning, respondents were asked to answer a number of demographic questions revolving around their gender, age, nationality and occupation. The participants' relationship status was then assessed by asking the respondents to indicate if they were 'in a relationship', if they were 'single' or whether they held some 'other' relationship status. The exact questions can be found in Appendix A.

Daily Instagram Usage. Subsequently, respondents were invited to indicate how many minutes per day they spent on average on the platform within the last week. For enabling the participants to provide a valid response to this item, instructions were given about how to retrieve this statistic from the 'Your Activity' layer within an individuals' Instagram profile (see Appendix A).

Rosenberg Self-Esteem Scale. For the purpose of assessing the respondents' levels of self-reported self-esteem at a given moment, the Rosenberg Self-Esteem Scale (RSES) was employed as part of this study. The RSES was created by Morris Rosenberg in 1965 and originally intended to measure self-esteem among high-school students, but has been applied to a large variety of different groups ever since (Rosenberg, 1979). The scale consists of ten items to which the respondent is asked to express his or her level of agreement on a 4-point Likert-scale from *strongly disagree* (0) to *strongly agree* (3), whereby items 2, 5, 6, 8 and 9 are worded negatively and hence scored inversely. The scores of all ten items are summed in order to compute a respondent's total score on the RSES, which can range between 10 and 30 points. Higher scores are indicative of higher self-esteem and vice versa. The scale for example consists of positively worded statements such as "I take a positive attitude towards myself" and negatively worded ones such as "I feel that I do not have much to be proud of." Within the present study, the RSES displayed high internal consistency ($\alpha = .89$), which supports the notion that it has been found to possess good reliability in a sample of Spanish university students ($n = 420$) with Cronbach's alpha coefficients ranging between .85 and .88 (Martín-Albo, Núñez, Navarro, & Grijalvo, 2007). The scale is presented in Appendix B.

Motivation to participate. One further item was included in this study by which it was aimed to measure the participants' levels of motivation with regard to their participation in the present study on a five-point Likert-scale ranging from 'very unmotivated' (1) to 'very motivated' (5). The question can be found in Appendix A.

Procedure

After obtaining approval from the Ethics Committee of the University of Twente, data was collected from the 24th of March 2019 until the 11th of May 2019 via the online survey tool Qualtrics®.

Once respondents clicked on their invitation links to the survey, they were transferred to a Qualtrics® web page on which the estimated duration of the study (between 20 and 30 minutes) was displayed as well as information about the goal of the study, the anonymity of the respondents' answers and the confidentiality with which their data was treated. Due to their voluntary nature of participation, respondents were also assured in their right to withdraw from

the study at any given point without having to mention a reason and e-mail addresses of the researchers and their supervisor were provided to allow respondents pose questions regarding the study. Respondents then had the choice to either give their active consent to participate in the survey or to withhold their consent and withdraw from the study.

When consent was given to participate, the survey started and the respondent was first and foremost given the opportunity to fill in his or her anonymous SONA participant number so that course credit could be granted in exchange for the participation.

Upon completion of the survey, participants were given the option to receive the final report of this study by reporting their e-mail addresses, which were separated from the data set in order to eliminate the possibility to trace a respondent's e-mail address back to the responses given throughout the survey and thereby protecting the respondents' right to participate anonymously. Finally, participants were thanked for their participation and encouraged to contact the researchers via e-mail in case of any remarks or questions.

Data Analysis

All data was analyzed using the computer software IBM SPSS Statistics 24. In order to test the linear regression models for a potential moderation effect of relationship status on the relationship between daily Instagram usage and self-esteem, the PROCESS macro for SPSS was used (Hayes, 2017).

Before running the statistical analyses, Skewness and Kurtosis were calculated in order to assess the assumption that the scores on the RSES and amounts of Instagram usage time were standard normally distributed, with -1 and +1 serving as the cut-off points outside of which a score was no longer considered to be indicative of the presence of a normal distribution (Groeneveld & Meeden, 1984). In order to account for potential non-normality of the distribution of RSES scores or Instagram usage times, bootstrapping was performed as part of the moderation analysis.

Next, means and standard deviations were computed for the amount of minutes spent on Instagram and the scores on the RSES, and frequencies were computed for the amount of singles vs. non-singles in the present sample. Descriptive statistics of the remaining demographic data have been given in Table 1.

Subsequently, the Pearson correlation between daily Instagram use and levels of self-

esteem was calculated in order to test Hypothesis 1. According to Cohen (1988), a correlation can be deemed significant if the p-value is lower than .05 and an effect size is considered to be large when $r > .50$, medium when r is between .30 and .50 and low when r ranges between .10 and .30 (Cohen, 1988).

Lastly, a multiple regression analysis with *levels of self-esteem* as dependent variable, *daily Instagram usage* as independent variable and *relationship status* as a moderator was performed to test for possible moderation effects. To this end, the PROCESS macro in SPSS was used and the predictors were centered in order to prevent potentially problematic high multicollinearity (Aiken & West, 1991). In step 1 of the moderation analysis, it was investigated whether a model featuring both predictor variables would account for a significant amount of variance in self-esteem. In step 2, the interaction term of daily Instagram use and relationship status was added to the previous model to test whether a potentially significant interaction effect would emerge. For a moderation to be present the interaction coefficient needs to be significant at the $p < .05$ level. A potential interaction effect was plotted in Microsoft Excel in order to visualize how the amounts of Instagram usage were related to levels of self-esteem for singles and non-singles, respectively. Low, average and high levels of Instagram usage and self-esteem were depicted based on the values corresponding to the 16th, 50th and 84th percentiles in the distributions of Instagram usage times and self-esteem scores within the present sample.

Results

In the following, the results of the conducted analyses will be presented in the following order: (1) Descriptive Statistics and Reliability Analysis; (2) Correlational Analysis; (3) Moderation Analysis.

Descriptive Statistics and Reliability Analysis

Once all necessary adjustments to the data set had been made, Skewness and Kurtosis were calculated for the distributions of scores on the RSES and for the daily Instagram usage times in order to examine their assumed normality. As can be seen in Table 2, the scores on the Rosenberg Self-Esteem Scale did not exceed the established cut-off scores of -1 and +1 for Skewness and Kurtosis, which is indicative of a normal distribution of scores. A different picture emerged for the distribution of Instagram usage times, where Skewness (1.51) and Kurtosis

(2.64) exceeded their respective cut-off scores, suggesting a distribution that is positively skewed with a longer right-sided than left-sided tail and with a high concentration of scores around the mean. As recommended by Preacher and Hayes (2008), 5,000 bootstraps were therefore performed via PROCESS in order to account for the non-normality of the distribution of Instagram usage times.

Lastly, means and standard deviations were calculated with respect to the respondents' daily Instagram usage times and levels of self-esteem (Table 2).

Table 2
Descriptive statistics and correlations between daily Instagram use, relationship status and self-esteem (as measured by the RSES).

Variables	M	SD	α	Skewness	Kurtosis	1.	2.	3.
1. Self-esteem	19.43	5.42	.89	-.42	.32	-		
2. Daily Instagram use	46.53	35.26	-	1.51	2.64	.04	-	
3. Relationship status	-	-	-	-	-	.03	.05	-

Note. * Significant correlation at the α < .05 level.

Correlational Analysis

In order to test Hypothesis 1, the Pearson correlation between daily Instagram use and levels of self-esteem was computed. Between both variables a positive but non-significant correlation emerged (r = .04, p = .607), which is contradicting with respect to Hypothesis 1. While it was expected that higher levels of Instagram usage would be associated with lower self-esteem, no such negative relationship between the variables was found.

Moderation analysis

In order to test Hypothesis 2, in which a moderating effect of relationship status on the relationship between daily Instagram usage and self-esteem was expected, a hierarchical multiple regression analysis was performed in which the first step revolved around a regression model that featured relationship status and daily Instagram usage as main effects. This model did not account for a significant proportion of the variance in young adults' levels of self-reported self-esteem, R^2 = .003, F(2, 166) = .22, p = .803.

In the following step, the interaction term of relationship status and daily Instagram usage was created and the variables were centered as a means to prevent potentially problematic high

multicollinearity (Aiken & West, 1991). The interaction term was then added to the previous regression model resulting in a model that accounted for a significant amount of variance in the respondents' self-esteem, $\Delta R^2 = .03$, ΔF (1, 165) = 4.27, $p = .040$, $b = .049$, $t(165) = 2.07$, $p = .040$. Thus, while no significant main effect of either the amount of daily Instagram usage or the respondents' relationship status was found on self-esteem, the interaction term between relationship status and daily Instagram usage nonetheless added a significant amount of variance in self-esteem to the previous model (see Table 3). The presence of this cross-over interaction (Figure 2) is indicative of a moderating effect of relationship status on the relationship between daily amount of Instagram usage and self-esteem. However, the expected negative relationship between Instagram use and self-esteem was only found for singles. For individuals who were in a romantic relationship, in turn, the relationship between Instagram use and self-esteem turned out to be positive. Hypothesis 2 can therefore neither be fully rejected nor accepted.

Table 3
Moderation analysis of relationship status (M), daily Instagram use (IV) and self-esteem (DV)

					95% Confidence Interval for B	
Variables	B	S.E.	t	Sig.	Lower bound	Upper bound
(Constant)	19.39	.42	46.68	.000	18.57	20.21
Daily Instagram use	.01	.01	.44	.664	-.02	.03
Relationship status	.35	.83	.42	.673	-1.29	1.99
DIU x RS	.05	.02	2.07	.040	.01	.10

Note. Model without interaction term: $R^2 = .028$, $F(3, 165) = 1.57$, $p > .05$; Interaction: $\Delta R^2 = .025$, $F(1, 165) = 4.27$, $p = .040$;

B = unstandardised coefficient, S.E. = Standard Error, RS = relationship status, DIU = daily Instagram use.

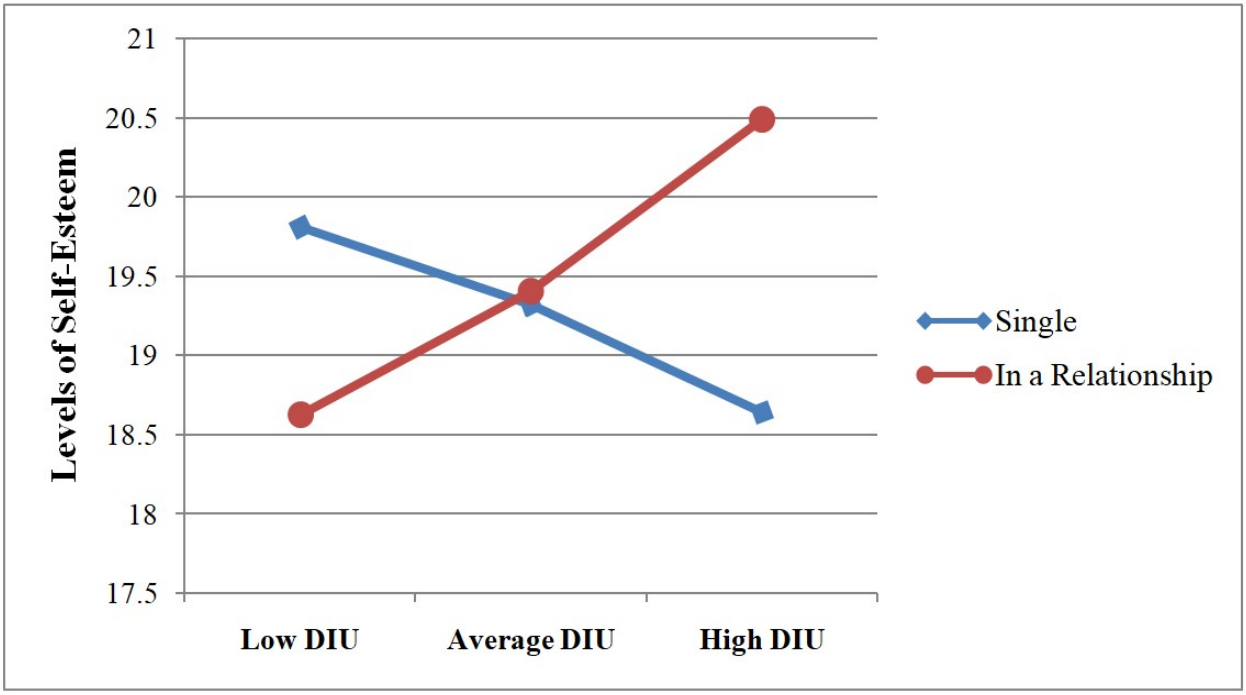

Figure 2. Interaction Plot depicting how relationship status and daily Instagram use are related to the respondents' self-esteem.

Discussion

The goal of the present study was to examine the relationship between the daily amount of time that users spend on the social networking site Instagram and the level of self-esteem they experience. It was hypothesized that higher amounts of daily Instagram usage would be related to lower levels of self-esteem. Furthermore, it was expected that this negative relationship between the amount of daily Instagram usage and self-esteem would be stronger for individuals who were single as opposed to individuals who were in a romantic relationship.

In the following, first of all the results of this study will be discussed and interpreted in the light of related findings within the field. Secondly, shortcomings and strong points of the present study will be addressed, based on which some recommendations for future research will be given. Lastly, it will be discussed in which way the present findings have contributed to the field of research and a short conclusion will be given.

Does relationship status moderate the relationship between the daily amount of Instagram usage and self-esteem? The results of the correlational analysis revealed that no significant relationship existed between the daily amount of Instagram usage and self-esteem, which contradicts the expectation that higher amounts of Instagram usage would be associated with lower self-esteem. This finding is not in line with past research which has repeatedly linked high amounts of Instagram usage to lower self-esteem through the prolonged exposure to uploaded content which embodied idealized versions of normal life (Kuss, 2017; Sherlock & Wagstaff, 2018). One possible explanation for this finding could be that in the present study it was not measured whether respondents' actual Instagram usage patterns lived up to the expectations that they e.g. engaged with mostly strangers on the platform or that they spend the majority of their time on Instagram with passive browsing. As research has shown that individuals differ with respect to why and how they use Instagram (Lee, Lee, Moon, & Sung, 2015), it is argued that future research should take such variables into account when interpreting the effects of Instagram usage on self-esteem.

Even though no overall negative effect was evident with regard to the relationship between daily Instagram usage and self-esteem, findings revealed that an individual's relationship status moderated the relationship between both variables. On the one hand, this finding lended support for the expectation that singles would experience lower self-esteem the

more they used Instagram. On the other hand, the finding that non-singles' levels of self-esteem increased as a function of higher amounts of time spent on Instagram was in contrast to what was predicted in this study. The presence of this cross-over interaction effect may also explain why no overall main effects were found for both daily Instagram usage and relationship status. It therefore appears that the effect of daily Instagram usage on self-esteem is dependent on the individual's relationship status.

One possible explanation for this finding is that a high exposure to idealized pictures on Instagram may only have a detrimental impact on the self-esteem of singles, but not on the self-esteem of non-singles. After all, Instagram news feeds typically feature pictures in which users purport to live 'ideal' lives so that the nature of the uploaded content in essence focuses exclusively on the most noteworthy and perfect moments of its users' lives (Chou & Edge, 2012). Since for many people some of the most memorable and perfect moments involve their partner or relationship itself, it should not be surprising that much of the uploaded content revolves around beauty- (Sherlock & Wagstaff, 2018), love- or relationship-related pictures (Lee et al., 2019). The exposure to an Instagram picture that idealizes romantic relationships may therefore lead singles and non-singles to engage in different types of social comparisons. While singles may be led to engage in harmful upwards social comparisons as they are confronted with a currently unattainable ideal (Haferkamp & Krämer, 2011), non-singles may come to see their own relationship in a more favorable light because romantic relationships may be depicted as more perfect and attainable than they appear in real life. Non-singles may therefore come to engage in downwards social comparisons with persons who are not in a relationship, which has been shown to boost self-esteem (Vogel et al., 2014).

Another possible explanation could be that singles and non-singles experience distinct effects of higher Instagram usage because they differ with regard to why and how they use Instagram. As Andreassen, Torsheim, and Pallesen (2014) argued, Instagram may enable singles to meet potential romantic partners, which likely means that they visit more profiles of other users compared to persons in a relationship for whom the possibility to meet potential new partners is expected to be less important since they already are in a relationship. Research found that passive browsing through online profiles of other users increased the belief that other users live happy and successful lives (Chou & Edge, 2012) and lead to harmful upwards social comparisons (Lin & Utz, 2015), which could mean that singles who used Instagram to a higher

extent may have experienced the negative effect of passive usage on self-esteem (Vogel & Rose, 2016). Interestingly, non-singles with naturally high levels of self-esteem showed negative attitudes towards meeting potential romantic partners on Instagram and were more likely to post pictures together with their romantic partner, while the inverse trend emerged for non-singles with naturally low self-esteem (Lee et al., 2019). In this respect, non-singles with low self-esteem may, in a similar fashion to singles, engage in more passive browsing of others profiles which can compromise self-esteem (Chou & Edge, 2012). Non-singles with high self-esteem, on the other hand, may not only be less prone to the effects passive browsing, they may also be able to obtain positive feedback for not only their own idealized online self, but also for pictures of their partner or pictures together with their partner, which may lead to a decrease in the gap of their actual and ideal selves (Gonzales & Hancock, 2011).

Strengths and Limitations of the Present Study

A particularly strong point of the present study revolves around the fact that the respondents reported their daily amount of Instagram usage in accordance to the Instagram-inherent application time tracker. In this way, the researcher was able to obtain the exact number of minutes that each individual spent on average on Instagram within the last seven days, thereby ensuring high validity of the Instagram usage time measurement. Lee et al. (2017) proposed that people tend to be rather inaccurate when estimating the time that they spent online. While a large number of studies investigating the relationship between the usage of SNSs and mental health still rely on estimated usage times, the present study distinguishes itself in that the risk of obtaining distorted results due to measurement error was relatively small.

Another strength of this study concerns the fact that relationships between very specific rather than broad variables were investigated in order to increase the predictive power of the ensuing results. Thereby, this study offers the opportunity to contribute precise information regarding specific SNS- and mental health variables to a field of research, which has often yielded contradicting findings due to the investigation of very broad constructs.

A related strong point pertains to the fact that the results of this study were based on a large sample (n = 169) that exclusively consisted of members of that age group, which has been found to be at the highest risk of being prone to excessive SNS-use and social comparison. While the generalizability of this study’s results may be confined to young and highly educated adults,

the validity of obtained results for this subpopulation can be conceived as rather high.

One important limitation of this study concerns the notion that romantic relationships are not the only relationships that can fulfill an individual's needs for autonomy and competence (Ryan & Deci, 2000). Since the presence of any sort of relationship which addresses these two needs was associated with a reduction in the gap between actual and ideal self, a measurement assessing the amount to which the respondents' 'relationship needs' are fulfilled could have been a more adequate concept to include as part of this study. Future research is therefore encouraged to elaborate on this notion, especially since relationship status in itself already served as a significant moderator between daily Instagram use and self-esteem.

Another shortcoming of this study was that the sample consisted of 79% female respondents, which is not representative for the gender distribution within this age group. More importantly, however, gender has been found to predict differences regarding how and for which purposes SNSs are used (Kuss & Griffiths, 2011), so that the results of this study could therefore reflect a bias towards how female Instagram users make use of the platform.

Recommendations for Future Research

Finally, it is argued that future research is needed in order to elaborate on this explorative study and advance the understanding about how Instagram and its inherent functions relate to self-esteem. Therefore, it might prove fruitful to investigate which specific functions Instagram consists of and to which extent people engage in them. As a next step, further explorative studies would be needed to investigate in which ways those functions may relate to or causally influence their users' mental health. It is argued that only by gaining exact knowledge about how specifically the interplay of Instagram functions relates to the users' mental health, future psychologists, policy makers or software designers can allow SNS users to reap the benefits of using such platforms without having to pay a price for it.

Conclusion

In the present study it was investigated whether the amount of daily Instagram usage would be negatively related to young adults' levels of self-esteem and whether relationship status would moderate this relationship. While no significant relationship was found between Instagram usage time and self-esteem, relationship status was found to be a significant moderator of this

relationship. More specifically, for singles the relationship between Instagram usage and self-esteem was negative, while for persons in a romantic relationship it was positive.

Since this study was one of the first to investigate the role of relationship status with regard to SNSs and mental health variables, it was recommended that future research could take the general quality of an individual's relationships into account. More importantly, however, in this study it was called for a mindset-change regarding the way in which research is conducted with respect to the relationship between SNSs and mental health variables. It is argued that once research succeeds in understanding which effects the specific underlying functions of the respective SNSs have on their users' mental functioning, SNSs could theoretically be redesigned in ways to protect users who are especially prone to experiencing the detrimental effects of using SNSs. In the light of the present study's findings, it seems important to take the needs of potential at-risk groups, such as singles, more seriously into account, e.g. by adapting the content which singles encounter in their newsfeeds and thereby preventing them from being exposed to idealized relationship pictures, which could lead to upwards social comparisons and harm their self-esteem.

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Appendix: Full Questionnaire (excl. scales)

Question 1.

Dear Participant,
thank you for taking part in the study ‘Social Media and Mental Health’. This study is being conducted by Andre Nedderhoff and Julen Sánchez. Both of us are currently studying Psychology at the University of Twente.

The purpose of this study is to examine if the use of social media platforms, such as Facebook, Instagram or WhatsApp, may be related to its users' mental health and levels of self-esteem. This survey will take you approximately 15 to 30 minutes to complete.

As your participation in the study is entirely voluntary, please note that you have the right to withdraw at any time without giving any reason. At the end of this survey, you have the opportunity to indicate whether or not you would like to receive the results of this study. The e-mail address you may provide us in order to receive the results of this study will be separated from the answers you provided during the survey, so that no connection can be drawn between your answers and your personal e-mail address. Therefore, all of your responses will be anonymous and the resulting data will be treated confidentially by the researchers. In order to minimize any breaching risks, your anonymous data will be stored in the local University of Twente database.

Please read the instructions carefully before answering each question.
Do you have any questions or comments? Contact:

Andre Nedderhoff [a.nedderhoff@student.utwente.nl]

Julen Sánchez [j.o.sanchez@student.utwente.nl]

Marileen Kouijzer [m.t.e.kouijzer@utwente.nl]

I hereby declare that I have been informed in a clear manner about the aim and method of this study. Furthermore, I participate in my own free will and I am aware that I can withdraw from this research at any time without having to mention a reason. Information about anonymity and how to get in contact with the researchers in case of questions or comments are clear to me.

◯ Yes

◯ No

Question 2.

Are you participating in this study by using SONA-systems (a platform for students of the UT)?

○ Yes, my SONA ID is: _____

○ No

Question 3.

Please indicate your gender.

○Male

○Female

○Other

Question 4.

Please indicate your age.

_____

Question 5.

Please indicate your current relationship status.

○ Single

○ In a Relationship

○ Other, namely _____

Question 6.

Please indicate your nationality.

○ Dutch

○ German

○ Other, namely _____

Question 7.

Please indicate your current occupation.

○ Employed Full-Time

○ Employed Part-Time

○ Unemployed

◯ Retired

◯ Student

◯ Other, namely _____

Question 8.

Please indicate on which social networking sites you have a user account.

(Multiple answers possible!)

◯ Facebook

◯ Twitter

◯ Instagram

◯ Snapchat

◯ WhatsApp

◯ Other, namely _____

◯ None

Question 9.

Please indicate your daily usage of Instagram (in minutes).

In order to answer this question as accurately as possible, please open Instagram, go to your profile, click on the menu icon and report your daily usage time (in minutes) as indicated under "Your Activity".

In case you do not find your daily usage time, please leave this field blank.

_____

Question 10.

Please indicate on a scale from 1 (very unmotivated) to 5 (very motivated) how motivated you were while filling out this survey.

Motivation ◯ 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5

Appendix B: Rosenberg Self-Esteem Scale

Instructions

Below is a list of statements dealing with your general feelings about yourself. Please indicate how strongly you agree or disagree with each statement.

1. On the whole, I am satisfied with myself.

○ Strongly Agree ○ Agree ○ Disagree ○ Strongly Disagree

2. At times I think I am no good at all.

○ Strongly Agree ○ Agree ○ Disagree ○ Strongly Disagree

3. I feel that I have a number of good qualities.

○ Strongly Agree ○ Agree ○ Disagree ○ Strongly Disagree

4. I am able to do things as well as most other people.

○ Strongly Agree ○ Agree ○ Disagree ○ Strongly Disagree

5. I feel I do not have much to be proud of.

○ Strongly Agree ○ Agree ○ Disagree ○ Strongly Disagree

6. I certainly feel useless at times.

○ Strongly Agree ○ Agree ○ Disagree ○ Strongly Disagree

7. I feel that I am a person of worth, at least on an equal plane as others.

○ Strongly Agree ○ Agree ○ Disagree ○ Strongly Disagree

8. I wish I could have more respect for myself.

○ Strongly Agree ○ Agree ○ Disagree ○ Strongly Disagree

9. All in all, I am inclined to feel that I am a failure.

○ Strongly Agree ○ Agree ○ Disagree ○ Strongly Disagree

10. I take a positive attitude toward myself.

○ Strongly Agree ○ Agree ○ Disagree ○ Strongly Disagree