

The Relationship between Online Dating, Self-Esteem and Body Image

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Abstract

Background: Over the past years online dating has become increasingly popular and has changed the way people meet potential dating partners and/or form relationships. Previous research has indicated that the perceived attractiveness of the profile picture, can be the most important determinant to be contacted by others.

Objective: The purpose of this study was to assess the relationship between the frequency of online dating usage and self-esteem and to find out whether body image concerns moderate this relationship.

Methods: A cross-sectional survey was conducted to explore users' frequency of online dating, their self-esteem levels with a possible moderation effect of body image concerns. A sample of (N = 264) mostly German (72%), female (65%) participants completed the questionnaire for data collection. The survey involved demographic questions, questions about the frequency of online dating usage, the Rosenberg Self-Esteem Scale, and the Subscale "Body Image Concerns" of the Body Uneasiness Test (BUT).

Results: The results of the analysis revealed that body image concerns are negatively related to self-esteem levels. However, the results of this study indicate that frequency of online dating usage is not related to levels of self-esteem and/or body image concerns. Although the correlation was not significant, the effect sizes for the relationship differed on different levels of body image, showing a quite large effect size for people who score high on body image concerns.

Conclusion: The results suggest that the frequency-time on online dating platforms does not predict self-esteem levels, and therefore, people who use online dating more often, can be less worried that it might affect their self-esteem negatively.

Key words

Online dating, self-esteem, body image, body uneasiness, body image concerns

Introduction

Since the beginning of mediated communication, humans have always been trying to seek and maintain romantic relationships through available channels, such as airwaves, the post, wires, or phone calls. Over the past decade, people gained a richer variety of mediated communication channels, and the opportunities for people to form relationships have changed. Among these, online dating has changed the way people meet potential dating partners and has become increasingly popular among young adults (Smith, 2016). For example, one of the most popular online dating platforms worldwide is the mobile application 'Tinder', which has around 50 million users and is distributed in more than 190 countries (Tinder, 2019). Tinder promotes itself as a platform that empowers "users around the world to create new connections that otherwise might never have been possible" (Tinder, 2019). Although, using online dating platforms was considered to be stigmatizing and seen as a possibility to compensate for real-life deficiencies for a long time (Gatter & Hodkinson, 2016), the usage of online dating has become almost common nowadays. Reasons for the increasing popularity of online dating might be the facts that it gives users the opportunity to narrow down to a huge amount of possible connections in order to single out potential dates, and partners can be found with a limited amount of effort (Fullwood & Atrill-Smith, 2018). After filling out some demographic information, such as age range and area of residence, users are presented with photographs of other users; A swipe to the right means "like", whereas a swipe to the left means "reject" (Gatter & Hodkins, 2016). Hereby, the perceived attractiveness of the profile picture can be the most important determinant to be contacted by potential dates (Olivera-La Roa, Arango Tobon & Ingram, 2019). Therefore, it is unsurprising that users tend to present themselves in the best possible light to increase their chances of eventually meeting a date offline. In an offline scenario, singles tend to spruce themselves up on a night out to increase their attractiveness and to present oneself online in an idealized fashion, might be the equivalent to this (Fullwood & Atrill-Smith, 2018). A factor that influences how people present themselves to others is self-esteem, which can be defined as the overall evaluation a person has about their self-worth or personal value (Fullwood & Atrill-Smith, 2018). Despite the fact that self-esteem has a crucial role in determining partner choices offline, little is known about the role self-esteem has when it comes to online dating. Therefore, the current paper focuses on online dating with a specific focus on self-esteem and body image. In the following, the general topic of online dating and some underlying mechanisms will be explained. Then, the concepts of body image and self-esteem are discussed more into detail with specific regard to online dating.

Early research on online interaction has found that communication within traditional online communication media hinders the formation of interpersonal connections, based on the absence of social presence and the lack of social cues (Fiore, Taylor, Mendelsohn & Hearst, 2008). But with time, research began to doubt this initial hypothesis and instead, claimed that the dearth of social cues in fact might aid the formation of interpersonal relationships. This view was supported by the research of Walther and colleagues (1992). Walther's theory of Social Information Processing (1992), states that within social situations, people make inferences about others based on the available cues. With his notion of "hyperpersonal" interaction, he went a step further. Since social cues are limited and might be slow to arrive within social media, people might tend to form higher levels of affinity for another than it might have been the case if they would have met face-to-face. Walther argues that when the information about a person is limited, people tend to fill in the blanks optimistically.

Based on the fact that social cues are limited in the context of online dating, people have more control and possibilities, concerning the manner in which they want to present themselves. For example, users can present themselves in a more idealized version by uploading only the best photographs of themselves (Fullwood & Attrill-Smith, 2018). Furthermore, through the use of asynchronous online communication, people can edit and re-edit themselves into their most optimal version, and therefore, users of computer monitored communication often tend to experience idealized images of their communication partner (Gentile, 2013). The tendency to create idealized images of oneself is motivated by the intention to appear more attractive to potential dates (Olivera-La Roa, Arango Tobon & Ingram, 2019).

The intention to appear more attractive also might be fostered by the underlying mechanisms of how such dating applications work. Since the nature of dating websites is to let users look through a catalog of photographs to be clicked through until a suitable dating candidate catches one's attention, the profile picture can be the most important determinant to be contacted (Olivera-La Roa, Arango Tobon & Ingram, 2019). Therefore, physical attraction determines largely with whom people connect and hence, influences the chances to meet a potential dating partner online. Evidence supports this statement, by suggesting that the strongest predictor that determines the desirability of an online dating profile, is the physical attractiveness of the profile photo (Fiore, Taylor, Mendelsohn & Hearst, 2008). An underlying factor for this might be the fact that photographs displaying people who are considered as attractive are rated as more warm, sensitive, sociable, and successful in life when compared to less physically attractive individuals (Dion, Berscheid & Walster, 1972). This is in line with

the 'physical attractiveness stereotype', which suggests that the evaluation of physical attractiveness is positively related to the evaluation of positive inner qualities. This means that purely based on physical appearance, individuals who are considered physically attractive are more likely to be seen as also having desirable personality traits by others (Dion, Berscheid & Walster, 1972). Moreover, it becomes apparent that when people tend to create idealized images of themselves online, the general probability for other users to encounter idealized images also becomes higher.

Due to the fact, that media sources mostly portray idealized images of men and women that represent currently ruling specific beauty ideals, for example, muscularity in men or thinness in women, a substantial number of studies has found a positive correlation between media exposure and body image concerns in the past (Tiggemann, 2005; Grabe, Ward & Hyde, 2008; Harrison & Cantor, 1997). As a consequence, people are susceptible to biases when using online dating and therefore, online dating might be as deceiving as traditional mass media.

Since audiences compare their appearance to media images, research indicates that this appearance-related comparison might contribute to body discontent and the drive to adapt/fit into those beauty ideals (Grabe, Ward & Hyde, 2008). Although most of the research on this topic has focused on the exposure of mass media, "idealized" images also often appear on online dating websites. As previously discussed, users often enhance their appearances on their social media profiles by editing their images. Therefore, private images and information on online profiles often depict enhanced images of social peers (Kim & Chock, 2015). If a user engages more in online dating and is more frequently active, he or she increases the opportunities to view idealized and enhanced images, which could in turn lead to a greater tendency to compare oneself to the appearance of others.

Based on the fact that the individual self-esteem is largely reflected by the relative measure between ideal-self and the current self-image (Alpay, 2000), it might be possible, that some people become so dissatisfied with their perceived appearance that their self-esteem is affected negatively. A substantial number of research have demonstrated that levels of self-esteem are strongly correlated to beliefs people have about themselves, whereby people with high self-esteem have more positive attitudes about themselves, for example concerning their general appearance, intelligence, popularity, attractiveness, and so on (Baumeister, Campbell, Krueger & Vohs, 2003). As a consequence, people with higher self-esteem levels have more confidence, compared to people with lower self-esteem levels (McFarlin & Blascovich, 1981). On the one hand, people with high levels of self-esteem are generally believed to

engage more in self-presentation and to be more direct and motivated to achieve goals, which could lead to the belief that high self-esteem people use online dating more often. On the other hand, people with low levels of self-esteem are generally regarded to be risk-avoiding as well as confused and uncertain about themselves (Baumeister, Bushman & Campbell, 2000). Since the cyber-space offers greater control for individuals with lower self-esteem levels concerning their self-presentation (Fullwood & Atrill-Smith, 2018), it could also be assumed that online dating is generally more frequently used by individuals with lower self-esteem levels.

Besides having low or high levels of self-esteem, a common and important characteristic of human self-esteem is, that it is often more strongly impacted by the opinions of acquaintances than by the opinions of close others (Harter, 1999; as cited in Neff, 2011). Consequently, the foundations of one's self-esteem can be vague and ill-formed. Cooley (1902) stated that our feelings of self-worth mainly stem from our perception of how we appear to others, also called the 'looking glass self' (Cooley, 1902; as cited in Neff, 2011). The desire to feel worthy and valued motivates people's behavior and shapes their thinking patterns (Crocker & Park, 2004).

As mentioned earlier, since the exposure of idealized images within all kinds of media increases, many people become frustrated with not matching those beauty standards, whereby the levels of frustration might be different for people, depending largely on the perception of their own body image. This is due to the fact, that the domains people consider as meaningful to their personal self-worth and thus, influence their self-esteem, are individual and differ from person to person (Crocker & Wolfe, 2001). To be more precise, it might be the case that some people consider attractiveness and their own appearance as the most important domain that adds to their self-esteem, whereas others might retrieve their self-esteem from another domain, for example, from having high academic achievements. People who stress out their appearance and regard attractiveness as highly important might be more prone to become frustrated by the exposure of idealized images and therefore, the levels of body image concerns might be different for everyone and determine how strongly online dating might affect their level of self-esteem. As a consequence, it can be argued that the frequency of using online dating platforms, such as Tinder, could affect the self-esteem of users negatively and of body image concerns could moderate this relationship.

Considering the expanding numbers of online dating sites and people joining up, as well as the worldwide proliferation of such, online dating presumably plays a role in many people's every-day life. Therefore, the aim of this research paper is to investigate the

relationship between the frequency of online dating usage, the user's body image, and self-esteem. Taking everything into account, it can be expected that online dating usage is negatively related to self-esteem levels for people with high body image concerns, whereas this relationship is expected to be weaker for people with low body image concerns.

RQ1: To what extent does the frequency of online dating predict levels of self-esteem?

RQ2: To what extent does body image moderate the relationship between the frequency of online dating usage and levels of self-esteem?

H1: Higher frequency of online dating usage is correlated to lower levels of self-esteem

H2: Body image moderates the relationship between frequency of online dating usage and self-esteem

Method

Design

The current research paper applied a cross-sectional survey design. The reported data is part of a larger study investigating the influence of online dating, whereas this study specifically focuses on self-esteem and body image. The study received ethical approval by the BMS ethics committee (200344).

Participants

In order to reach a broader sample, respondents were recruited through personal invitations, via social networks (e.g. Instagram, Facebook) and the online participation system SONA systems, which is available for students of the Behavioral, Management, and Social science Faculty (BMS) of the University of Twente. In total, 264 participants ($N = 264$) responded to the questionnaire. The exclusion criteria were being below 18 years of age or not completing the questionnaire. 14 people had to be excluded from the sample for missing data in the survey, reducing the number to 250 participants.

Students received test subject hours for taking part in the survey.

Materials

The materials contain an informed consent and multiple questionnaires that had to be filled out online on the platform 'Qualtrics'.

Sample characteristics and other constructs. The online questionnaire with 63 items that was predicted to take approximately 20 to 30 minutes. The language of the survey was English. The questionnaire was used to capture the participants demographic data (age, gender, nationality, sexual orientation) and the experiences of users, for example, "*Do you use online dating sites or mobile dating apps?*". Also, the dependent variables, the self-esteem of users, and the moderation variable body image were captured in the survey. Moreover, the questionnaire targeted constructs such as body satisfaction, rejection, self-compassion, body image concerns, self-objectification, and sociocultural attitudes towards appearance. However, this study solely focuses on the relation of the frequency of online dating and levels of self-esteem and body image concerns.

Online dating usage. The second part of the study focused on receiving more specific information about the participant's online dating behavior. This section included five questions regarding which applications were used, the frequency of use and the motives for engaging in online dating. For example: *Which site or app do/did you use? How often do you make use of online dating apps/websites? How often do you make use of online dating apps/websites daily?*

Self-esteem. In order to measure the dependent variable self-esteem, the ‘Rosenberg Self-Esteem Scale’ (Appendix C) (Hagborg, 1993) was used. The Rosenberg-Self-Esteem scale is a widely used self-report inventory to measure individual levels of self-esteem and has shown a reliability of $\alpha = .857$ in the current sample. The scale contains 10 items, whereby five of the items are positively formulated; for example, “On the whole, I am satisfied with myself”, while the other five items are negatively formulated; for example, “At times I think I am no good at all”, measuring the participants’ level of self-esteem. Since the items 2, 5, 6, 8, and 9 are negatively worded they have to be reverse scored. All participants were asked to respond on a four-point Likert scale varying from 0 = “strongly agree” to 4 = “strongly disagree”. The scores range between 10 and 40, whereby higher scores indicate higher levels of self-esteem.

Body image. The mediator variable “body image concerns” was measured by using the subscale “body image concerns” of the Body Uneasiness Test (BUT) (Appendix D) (Cuzzolaro, Vetrone, Marano & Garfinkel, 2006). The body image concerns subscale has shown a reliability of $\alpha = .917$ in the current sample. The subscale consists of 9 positively formulated items; for example, “I like those clothes which hide my body” or “I would do anything to change some parts of my body”. Participants were asked to answer each item on a six-point Likert-scale, ranging from 0 = never, to 5 = always. The scores range between 10 and 50 whereby higher scores suggest higher body image concerns.

Procedure

The survey that was used for the current research was available via the platform Qualtrics and people could participate through an online link. First, each participant received an informed consent (Appendix A), which provides general information about the purpose of the research project. After agreeing to the terms and conditions, participants were redirected to the survey and were asked to fill out their demographic data, such as their age, gender, nationality, sexual orientation and if they are currently using or have been using online dating platforms in the past. Participants that have used online dating in the past, or are currently using it, answer five questions about online dating, investigating the frequency, the used application(s) and the social motive for using it. Then, the Body-Satisfaction Scale, the Rosenberg Self-Esteem Scale, the Mental Health Continuum - Short Form, the Rejection Sensitivity RS-Adult questionnaire, the Self Compassion Scale - Short Form, Body Uneasiness Test Scale, Self-Objectification Scale, and the Sociocultural Attitudes Towards Appearance Scale-4 followed in that order. The correspondence of the research study was saved anonymously per

participant number; therefore, all traceable information was removed. For students of the University of Twente, the participation at the survey was granted with 0.25 SONA credits.

Design and Analysis

The current research paper applied a cross-sectional survey design. In order to analyze the collected data, the program IBM SPSS Statistics 24 was used. Before the analysis, descriptive statistics were computed for all three variables, including means, standard deviations, skewness, and Cronbach's alpha. In the following, it was checked whether the three variables are distributed normally. Afterwards, a Spearman's Rho correlation was made between the three variables, in order to circumvent the non-normality issue.

The effect of the moderator variables was tested by using the multiple regression model of the so-called PROCESS macro, which was developed by Hayes and Preacher (2014), in order to test whether body image moderates the relationship between the frequency of online dating usage and self-esteem. The interaction effect was tested by putting the 'frequency of online dating' as an independent variable and 'self-esteem' as a dependent variable. In the following, it was analyzed whether body image in fact moderates the relationship by including the variable body image as a moderator into the analysis.

Results

Table 1 depicts the demographics of the sample. Generally, there were more women than men in this sample (64.8%). The mean age of participants was 22 years, with a range from 18 to 55 and a standard deviation of 4.39. Most of the participants were German (72.4%), 8.4% of the people were Dutch and 19.2% of the participants were from other countries. Furthermore, most of the participants already had experiences with online dating, namely 66.4%, whereby 23.6% use online dating currently. However, 33.6% of the participants never used online dating before.

Table 1

Sociodemographic characteristics of the sample

Characteristics	Category	Participants (N= 250)
Age, years (SD)		22.7 (4.39)
Gender, n (%)	Female	162 (64.8)
Nationality, n (%)	Dutch	21 (8.4)
	German	181 (72.4)
	Other	48 (19.2)
Online dating users, n (%)	Yes, I use it currently	59 (23.6)
	Yes, I used it in the past	107 (42.8)
	No, I never used it	84 (33.6)

In Table 2 the descriptive statistics, including the means, standard deviations, skewness, and kurtosis values for all variables are shown. The mentioned values provide insight into the data distribution and the normality. To be more precise, the skewness and kurtosis values indicate a normal distribution of the current sample on the variables self-esteem and body uneasiness, since the scores did not exceed the cut off points of -1 and 1 (see Table 2). In general, the participants scored medium to high on the variable self-esteem. The sum score $M = 29.48$ (4.77) indicated a medium to a high level within the possible range of 0 to 40. With regards to the variable body image concerns, the sum score of $M = 23.57$ (9.31), showed that participants scored medium when considering the possible range between 9 and 54.

Table 2

Descriptive Statistics

Scales	N	M	SD	Skewness	Kurtosis	Cronbach's alpha
Frequency of use per week	166	3.82	1.682	-.222	-1.062	
Self-esteem	231	29.48	4.77	-.039	-.034	.738
Body uneasiness	199	23.75	9.31	.699	.185	.917

Note. Entries on the main diagonal are Cronbach's alpha for each scale. Spearman's Rho was calculated to examine the associations between all variables.

Correlation analysis

The tests of normality revealed the following; the Kolmogorov-Smirnov test shows significantly that the variable self-esteem is not normally distributed within the sample. On the other hand, the Shapiro-Wilk test showed was not significant and therefore revealed that the distribution is in fact normal. For the other two variables, namely body uneasiness and frequency of use, the normality tests indicated significantly a non-normal distribution. Therefore, the non-parametric correlation Spearman's Rho was used for the correlational analysis. In order to test the first hypothesis, whether individuals who use online dating more frequently have lower levels of self-esteem (H1), Spearman's Rho correlation was computed between the two variables self-esteem and frequency of use. Self-esteem and frequency of use were not significantly correlated ($r = .058, p = .238$).

Furthermore, the second hypothesis that body image moderates the relationship between frequency of online dating usage and self-esteem was also tested by using Spearman's Rho. Here, body uneasiness and self-esteem showed to be negatively related to each other, meaning that higher body uneasiness is linked to lower self-esteem ($r = -.492, p < .01$), whereas frequency of use and body uneasiness did not show a significant association ($r = .098, p = .125$). Thus, hypothesis 2 is only supported in the relationship between self-esteem and body uneasiness. In Table 3 a full overview of all correlation coefficients and p -values is given.

Table 3

Spearman's Rho Correlations and p-values

	1	2	3
1. Frequency of use			
2. Self-esteem	.058		
p-value	.238		
3. Body uneasiness	.098	-.492**	
p-value	.125	.000***	

Moderation analysis

In order to answer the second hypothesis, whether body image moderates the relationship between frequency of online dating usage and self-esteem (H2), a conceptual model with a moderator variable was used. The model was analyzed by using Hayes PROCESS macro by placing frequency of use as the predictor variable (WX), body uneasiness as the moderator variable (W) and self-esteem (Y) as the outcome variable. As shown in Table 4, the analysis of those variables revealed that the frequency of online dating usage does not significantly predict levels of self-esteem.

Firstly, the model summary has shown to be significant ($p=.0000$), indicating that the overall model indeed predicts self-esteem to some extent. To be more precise, 23% of the variance in the outcome variable, namely self-esteem, can be explained by this model $F(13,7464) = .48$, $p = .0000$, $R^2 = .2327$.

Secondly, the analysis revealed that only the moderator variable significantly contributes to the prediction, namely only body uneasiness significantly predicts self-esteem ($p=.0001$). The coefficient indicates, that with each increase in body uneasiness, the self-esteem level lowers by $-.4272$ on the Rosenberg self-esteem scale. The values for the moderation analysis with self-esteem as the outcome variable are shown in Table 4.

Thirdly, generally, looking at confidence interval, the models suggests to not be significant, since 0 was between the confidence intervals (LLCI: $-.0019$, ULCI: $.1016$). However, the interaction of the correlation was not significant ($p = .0587$), instead only the main effect of the variables body uneasiness was significant ($p = .0001$).

Lastly, the conditional effects of the model analysis, illustrates the results for the moderator variable body uneasiness on low-, medium- and high levels. It shows that the effect sizes for the relationship differed on different levels of the moderator variable body image. Although, the frequency of online dating does not significantly predict the outcome, it was found that for people who scored high on body image concerns, the size of the effect was quite large ($b = .6105$), which is larger than the effect of body image concerns alone.

Table 4

Moderation analysis, outcome variable: Self-esteem

	b	SE B	t	p
Frequency of use	-1.007	.6437	-1.5655	.1198
Body uneasiness	-.4272	1.062	-4.0234	.0001***
Frequency of use x Body uneasiness	.0499	.0262	1.9068	.058

* p -value significant at .05 margin, ** p -value significant at .01 margin, *** p -value significant at .001 margin.

Note. $R^2 = .2327$

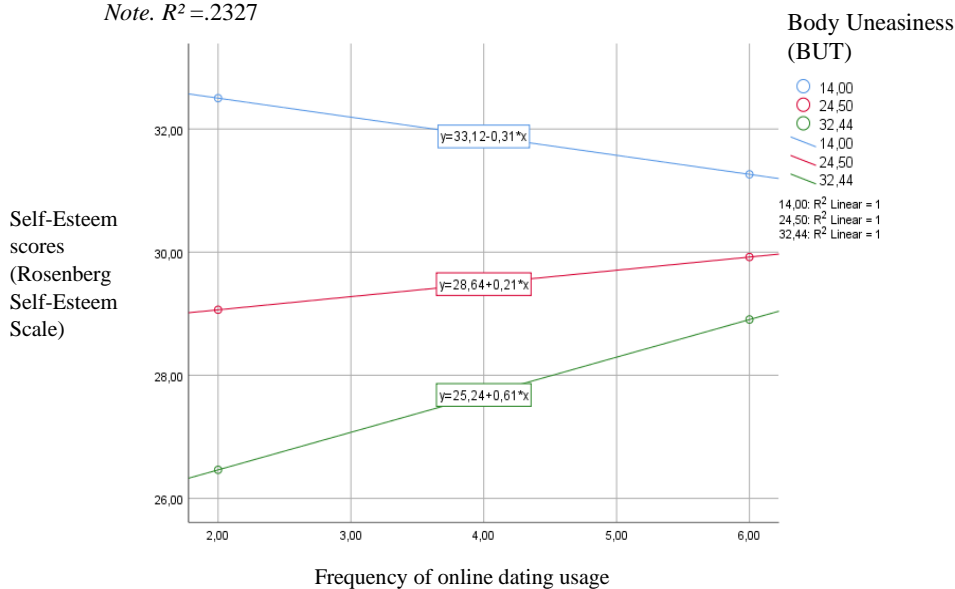


Figure 1. Interaction Plot of Model (N = 250).

Figure 1 depicts the different levels for the moderator variable body uneasiness. Although body uneasiness did not moderate the relationship between online dating and self-esteem significantly, the graph shows that the relationship differed on different levels. The lines of the graph are not parallel

In conclusion, the results of the current study show that the first hypothesis (H1) has to be rejected, since the results have shown that the frequency of online dating usage is not related to levels of self-esteem. However, the conditional effects of the moderator variable suggest a trend that there is a relationship for the model, but only for people who score high on body uneasiness. The second hypothesis is only supported with regard to the relationship of body image and self-esteem (H2).

Discussion

The purpose of this study was to investigate the relationship between the frequency of online dating usage and self-esteem and whether body image moderated this relationship. Since the relationship between the frequency of online dating usage, self-esteem, and body image has not been investigated so far, the current study represents the first cross-sectional analysis of this association. The results of the analysis pointed out two main findings: body image concerns were negatively related to self-esteem levels, the frequency of online dating usage, however, was not related to self-esteem levels. In addition to this, although the overall relationship was not significant, it was found that the hypothesized relationship differed between different levels on the moderator variable body image. To be more concrete, on low and medium levels of the moderator variable, the effect size was small. However, for people who scored high on body image concerns, the effect size was found to be quite high. In the following, the findings of the present research, the practical implications, the strengths, and the limitations and recommendations for future research will be discussed.

The first point of discussion that arose concerns the findings regarding self-esteem in relation to online dating. Since this study did not yield a significant effect, the first hypothesis had to be rejected; the frequency of online dating usage was not related to self-esteem levels. This result can be interpreted in a way that it is in line with previous research findings. For instance, a review on the topic of self-esteem concluded that levels of self-esteem are indeed related to positive or negative feelings and motivation, but do not necessarily cause outcomes, such as good job performances, academic achievement, violence, drinking or taking drugs (Baumeister, Campbell, Krueger & Vohs, 2003). It becomes apparent that self-esteem is a complex construct. If self-esteem does not serve as a general predictor to produce certain outcomes, such as good job performance, the question arises if it can be generalized as a general outcome of online dating. Instead, many more factors seem to play a role when it comes to the generalizability of self-esteem, which is in line with previous studies that have argued that self-esteem might not be as decisive as assumed, but instead, it is much more complex and individual (Swann, 1987).

Prior research on self-esteem has shown that self-esteem is a multidimensional construct (Marsh & Shavelson, 1985; Swann, 1987). On the one side, there is the global self-esteem and on the other side, there is the specific self-esteem. To become clearer, this merely means people have attitudes towards and object as a whole (global self-esteem), as well as towards the specific aspects of that object (specific self-esteem) (Rosenberg, Schooler, Schoenbach & Rosenberg, 1995). Taking this explanation into account to the findings of the

current study, it might be possible that a person has a positive attitude towards themselves as a whole, but that person might have a different attitude toward their appearance, which is a more specific aspect of themselves. The two facets of self-esteem are not interchangeable or equivalent (Rosenberg, Schooler, Schoenbach & Rosenberg, 1995) and therefore, it might be the case that online dating only affects certain and specific aspects of self-esteem.

Furthermore, it became apparent that it is important to not only consider the trait self-esteem levels, and whether they are high or low. It is equally crucial to attend to how people pursue their self-esteem and what they exactly do to boost or avoid drops in their levels of self-esteem on a daily basis. State self-esteem has great motivational consequences for individuals because increases in self-esteem feel good, whereas decreases feel bad. Consequently, people tend to validate their qualities and abilities in domains that are personally meaningful to them and add to their personal self-worth (Crocker & Wolfe, 2001). But people distinguish on their beliefs on what they have to do to feel valuable and worthy (Rosenberg, Schooler, Schoenbach & Rosenberg, 1995). Because all people differ in what boosts or drops their self-esteem, it might be the case that online dating only affects the self-esteem of people who view online dating as personally meaningful to them. Some people might stake their self-esteem by online dating success, others by receiving good grades in school, by being smart, or thin; and so on. To conclude this, self-esteem is only influenced by successes and failures within specific domains that add to personal self-worth (Crocker & Park, 2004) and if online dating successes or failures do not add to personal self-worth in a person, it becomes logically that their self-esteem is not affected by frequency of using such dating applications or websites.

The second point of discussion is based on the fact that the second hypothesis, showed only to be true with regard to body image and not with regard to the frequency of online dating. This means that body image concerns are negatively related to self-esteem levels, but the frequency of online dating does not significantly predict this relation. The finding that high body image concerns are correlated to low self-esteem levels in individuals is in line with previous research that associated body image disturbances with lowered self-esteem (Lowery et al., 2005). Moreover, people construct their body image from self-observation and the reactions of others. Cooley (1902) stated that people's self-esteem is mainly derived from our perception of how we appear to others, also called the 'looking glass self' (Cooley, 1902; as cited in Neff, 2011). Since those two explanations are very similar to each other, it might be the case that some people regard the two concepts of self-esteem and body image as somehow interchangeably.

The next point of discussion concerns the fact that although no overall valid relationship was found between all three variables, the conditional effects of the moderation analysis have revealed that the effect sizes differed between different levels of body uneasiness. To be more precise, for people who scored low and medium on the moderator body image, the effect size was small, but for people who scored high on body image, the effect size was quite large ($b = .6105$, $p = .06$), which is larger than the effect of body image concerns alone. Although, the correlation was not significant in terms of p-values, this finding suggests, that for people who high on body image concerns, the frequency of online dating usage seems to be positively related to levels of self-esteem. It might be the case that people who are high on body image concerns may use online dating in a way that it benefits or boosts their self-esteem, but no clear conclusions can be drawn from this since the correlations were not significant. Therefore, future research should explore these findings further.

Although the results have shown that there is no relationship between the frequency of online dating usage and self-esteem levels, some practical implications and insights can be drawn from the fact that these two are not related to each other. The results have shown that in general, people do not have to be worried about whether engaging in online dating might affect their self-esteem negatively. Also, the body image of online dating users is not affected by the frequency of using such applications or websites. Of course, this is also true for the other way around; people that use online dating more frequently do not have generally lower or higher self-esteem levels. This also speaks against some general assumptions that people who use online dating more often try to compensate for deficiencies they might have in real life as mentioned earlier in the introduction.

Moreover, for people who are high on body image concerns, online dating usage might even benefit their self-esteem and feelings of self-worth. Although this study did not compute significant results to prove this relationship significantly, it is highly advised that future research takes this finding into account, which will be more explained in depth towards the end of the discussion section.

The current research provided several strengths. First, based on the sample size and the measurement instruments, the current study has shown to be quite reliable. The questionnaires that were used for data collection, such as the Rosenberg Self-Esteem Scale and the Body Uneasiness Test have shown high reliability. The internal consistency, which shows the consistency of participant's answers across the items, was good on the variables body image and self-esteem. These aforementioned factors support a high reliability of the results. Another strength is based on the fact that the study collected data of more than 200

participants and fulfilled the criterion of relative reliable research. Furthermore, also the sample of the current study supports the generalizability of the results since it resembles the online dating population with regards to age. Hence, the results are broadly applicable to online dating users. Another strength of the study is the used bootstrapping method, which is a nonparametric approach to statistical inference, that helps to reduce bias and to circumvent the non-normality problem. The basic idea of the bootstrapping method is to produce a random sample of the same size as the original sample, where estimates of the parameters of interest, for example, mean, are provided (Field, 2017).

Limitations and Recommendations for Future Research

Nevertheless, the present study also provided some limitations that should be considered by future research.

First of all, taking into account the aforementioned argumentation concerning the construct of self-esteem, future research is advised to not merely focus on general levels of self-esteem. Additionally, questions that clarify which domains are meaningful for participants to pursuit self-esteem from should be included, since the concept of self-esteem is such a complex construct that has a profound and individual meaning for everyone. If future research wants to know if a certain domain is related to self-esteem levels, it is of crucial importance to clarify whether this specific domain has a personal meaning to the participants. This would help to make more concrete and funded conclusions and alternative explanations can be reduced.

Next, because the data was only measured at one point in time it is not correct to make causal inferences from it (Levin, 2006). Consequently, valid conclusions cannot be made from these findings. Therefore, these circumstances should be considered in future research. Therefore, based on the results of the present study, it is not possible to exclude possible alternative explanations and a causal ordering cannot be drawn. In the future, a longitudinal study could provide more insight into the direction of the relation.

Another limitation is based on the fact that the questionnaire that collected the data was relatively objective and did not give any room for the participant's own thoughts. Future research could use more subjective and indirect tools or procedures for data collection. For example, measuring the frequency of online dating usage and feelings towards oneself, including self-esteem and body uneasiness levels in terms of a diary- or interview study. This would allow future research to gain more insight into the individual feelings and differences users might have about online dating and how it affects self-esteem from the users' perspective. Therefore, it is recommended for future research to consider more indirect

measurement tools and open questions to receive more qualitative information concerning the meaningfulness of online dating for participants.

Lastly, the fact the questionnaire just focused on the frequency a person is using online dating but did not ask for the specific activities a user engages in during online dating, proposes another limitation. The social engagement behavior for every user might be different within online dating platforms and some people might engage more in certain activities than others. For example, some users are more likely to check friends' profiles, looking through photographs, commenting pictures, or leaving messages. The types of social engagement behaviors a user engages in automatically increases or decreases the opportunities to view idealized images of others, which in turn also affects the possibilities to compare oneself to others. Thus, it is possible to assume that the specific activities might be more strongly related to body image concerns and self-esteem than the simple exposure time (Kim & Chock, 2015). Therefore, future research should consider the types of activities online dating users engage in in order to make valid and substantiated conclusions.

Conclusion

Despite some limitations, the present research contributes to the overall knowledge concerning body image and self-esteem in online dating settings. The findings of the present study answer the research questions and indicate that there is no relationship between the frequency of using online dating, body image concerns, and self-esteem levels. The results suggest that the frequency-time on online dating platforms is not a significant predictor, and therefore, people who use online dating a lot, can be less worried that it might affect their self-esteem negatively. Also, the general society can drop some stigma concerning the assumption that people who engage more frequently in online dating use it as a possibility to compensate for real-life deficiencies. Moreover, the study has proven the assumption that higher body image concerns are indeed related to lower self-esteem levels. Lastly, although the different effect sizes for the different levels on the moderator variable body image were not significant, the results suggest a tendency that should be explored in future research, namely that people who are high on body image concerns, seem to benefit from online dating.

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Appendices

Kommentiert [T1]: Start appendices on a new page (as done here)

Appendix A: Consent Form

Dear participant,

You are being invited to participate in a research study about "Mental wellbeing in an era of online dating". This study is being done by a group of third-year Psychology students from the University of Twente from the Faculty of Behavioural, Management, and Social Sciences at the University of Twente.

The purpose of this research is to investigate the relationship between online dating and different facets of mental wellbeing, and will take approximately 20-30 minutes to complete. The data collected in this online survey will be treated strictly confidential. As such, all analysis of the collected data occurs anonymously and only for the purpose of this study. If the data is published, measures will be taken to ensure that no data of any individual is recognizable as such.

Your participation in this study is entirely voluntary and you can withdraw at any time. There are no right or wrong answers to the questions. Try to go along with the first thoughts you have.

We believe there are no known risks associated with this research study. We will minimize any risks by safely storing the data, and anonymize all of your answers. However, during the study you are asked to individually self-reflect upon different constructs of your current mental well-being level. If you have the feeling that your current level of mental well-being is at risk we kindly invite you (if you are a student of the University of Twente to contact the student psychologist (please contact the secretariat of SACC on office hours: +31 53 489 2035 or visit the desk in the Vrijhof, 3rd floor, room 311) or your study advisor) to get help by contacting self-help hotlines (<https://www.nhs.uk/conditions/stress-anxiety-depression/mental-health-helplines/>).

Study contact details for further information: Miriam Sanhaji, m.sanhaji@student.utwente.nl
Charlie Chrie, c.s.chrie@student.utwente.nl Lea Faesing, l.m.faesing@student.utwente.nl

Thank you for your participation.

In compliance with the EU General Data Protection Regulation GDPR for collection of new data active, informed consent is required.

I understand and consent that:

1. I am 18 years old or older.
2. The procedure will approximately take 20-30 minutes.
3. I understood the content and agreed to contribute my data for the use of this research.

4. I can withdraw from this research at any time by informing the researchers and all my data will be deleted.
5. My personal information will be anonymised to protect my privacy.
6. With my permission, I agree that all my data can be evaluated and used for the research.
7. I have been given the guarantee that this research project has been reviewed and approved by the BMS Ethics Committee. For research problems or any other questions regarding the research project, the Secretary of the Ethics Commission of the faculty Behavioural, Management and Social Sciences at the University of Twente may be contacted through ethicscommittee-bms@utwente.nl
- In the case of questions or ambiguities, the researchers Miriam Sanhaji (m.sanhaji@student.utwente.nl), Charlie Chrie (c.s.chrie@student.utwente.nl) , Lea Faesing (l.m.faesing@student.utwente.nl) will be available in order to help.

- Yes, I do consent.
- No, I do not consent.

Appendix B: Demographics

Instructions. Please fill in the following questions on your demographics

What is your age?

Q3

What is your gender?

- Male
- Female
- Other, namely:

- Prefer, not to answer

Q4

What is your nationality?

- Dutch
- German
- Other, namely:

Q5

What is your sexual orientation?

- Heterosexual
- Gay/Lesbian
- Bi-sexual
- Other, namely:

- Prefer, not to answer

Q6

Do you use online dating sites or mobile dating apps

- Yes, I use it currently
- Yes, I used it in the past
- No, I never used it

Appendix B: Online Dating Questionnaire

Which site or app do/did you use?

- Tinder
- Lovoo
- Bumble

- Badoo
- Other, namely:

How often do you make use of online dating apps/websites?/ How often have you made use of online dating apps/websites in the past?

- Once a month
- 2-3 times a month
- Once a week
- 2-3 times per week
- 4-5 times per week
- Daily

How often do you make use of online dating apps/websites per day?/ How often have you made use of online dating apps/websites per day in the past?

- 2-3 times per day
- 4-6 times per day
- Once an hour
- 2 or more times per hour

Which statement can you most identify with regarding the social motives to use online dating services?

- I want to meet new people/ find new friends
- I am seeking a romantic relationship
- I am looking for casual sex

Which statement can you most identify with regarding the non-social motives to use dating services?

- Because it passes time when I'm bored.
- As a self-confidence boost.
- To procrastinate things I should be doing (working, studying,...).

Appendix C: Rosenberg Self-Esteem Scale

Instructions. Please rate how strongly you would agree or disagree with the following statements.

(4-Point Likert Scale: 1 = Strongly disagree, 2 = Disagree, 3 = Agree, 4 = Strongly Agree).

	Strongly Agree	Agree	Disagree	Strongly Disagree
On the whole, I am satisfied with myself.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
At times I think I am no good at all.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel that I have a number of good qualities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am able to do things as well as most other people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel I do not have much to be proud of.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I certainly feel useless at times.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel that I'm a person of worth, at least on an equal plane with others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Strongly Agree	Agree	Disagree	Strongly Disagree
I wish I could have more respect for myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
All in all, I am inclined to feel that I am a failure.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I take a positive attitude toward myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Appendix D: Body Uneasiness Test (BUT) - Subscale “Body Image Concerns”

Instructions. Please mark the answer which best expresses your experience at the moment. (6-Point Likert Scale: 1 = Never, 2 = Seldom, 3 = Sometimes, 4 = Often, 5 = Very often, 6 = Always)

	Never	Seldom	Sometimes	Often	Very often	Always
I like those clothes which hide my body.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I spend a lot of time thinking about some defects of my physical appearance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think my life would change significantly if I could correct some of my aesthetic defects.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would do anything to change some parts of my body.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Never	Seldom	Sometimes	Often	Very often	Always
I feel I am laughed at because of my appearance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am dissatisfied with my appearance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My physical appearance is disappointing compared to my ideal image.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can't stand the idea of living with the appearance I have.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am ashamed of my body.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>