

The relationship between rejection sensitivity of online dating app users' mental well-being and self-esteem

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Abstract

Research showed that trait rejection-sensitivity in intimate relationships has negative influences on one's mental well-being and self-esteem. In the modern world, online dating is a popular tool to look for intimate relationships. Nevertheless, rejection can also occur on these platforms. Therefore, this study focuses on investigating what effects rejection sensitivity has on the mental well-being and self-esteem of online dating app users. The second objective is to determine if low self-esteem moderates the relationship between mental well-being and rejection sensitivity in the online context. In the online survey a total of 166 individuals participated with a mean age of 23.4. The materials used in this study were three self-reported questionnaires: the Adult Rejection Sensitivity questionnaire, the Mental Health Short Continuum Scale, and the Rosenberg Self-esteem Scale. Firstly, the results showed that rejection sensitivity is not related to mental well-being for online dating app users. Secondly, rejection sensitivity showed to have a significant positive association with self-esteem. Lastly, the results indicated that low self-esteem has no moderating effect on the relationship between rejection sensitivity and mental well-being. It was suggested that rejection sensitive individuals could benefit from online dating as it is not associated with worse mental well-being, but is associated with heightened self-esteem. For the future, research could focus on how exactly online dating, or online interactions in general, change the way rejection and intimacy is perceived or experienced. Furthermore, research could focus on whether online dating should be used as an extension or substitute to offline intimate relationships and investigate if the online environment is more beneficial for individual's well-being.

Introduction

The dating environment has drastically evolved over the past years, with an increasing number of people looking for intimate relationships online. Advances in mobile technologies enabled the development of online dating apps which are now part of the contemporary dating culture (Blackhart, Fitzpatrick & Williamson, 2014). With these online dating apps, people have access to meeting a diverse variety of people from around the globe. At any time, it is possible to use the mobile phone to access an online dating app and find a potential date. Most online dating apps work as follows: users create a profile by uploading pictures and providing a short description. Other users can then see the profile and either “like” or “dislike” it. When two people match on the dating app, they can start texting each other. The popularity of these apps becomes evident by looking at the statistics which showed that 219,69 million people around the world used online dating in the year 2019 (Finkel, Eastwick, Karney, Reis & Sprecher, 2012).

The motivations behind why so many people use dating apps can be explained by how interpersonal intimacy is considered one of the most satisfying, affirming, and pleasant human social exchanges (Baumeister & Leary, 1995). According to Baumeister and Leary (1995), the need to belong and connect with others is a “fundamental human motivation”. Furthermore, having a good intimate relationship with somebody is an essential predictor for mental and physical well-being (Diener & Seligman, 2002). Similar findings showed that online social interactions, including online dating, have positive effects on one’s mental well-being, including heightened self-esteem (Shaw & Gant, 2002; Steinfield et al., 2008), better mood (Green et al., 2005) and fewer feelings of loneliness (Kang, 2007). Moreover, loneliness and unhealthy relationships elicit higher risks of developing depression and other illnesses (Cacioppo et al., 2002). Therefore, most individuals strive for and pursue fulfilling romantic relationships.

Mobile dating apps provide users with a huge pool of potential romantic and sexual partners but with that, the possibility to experience rejection will also increase (Holtzhausen, Fitzgerald, Thakur, et al., 2020). Research showed that online dating apps often confront users with considerable rejection. Many people who use dating apps report that they have been abruptly “ghosted” which is the sudden quit of a developing relationship without explanation (LeFebvre et al., 2019). These negative experiences can influence one’s mental health and make people feel ignored or disliked and even make them question their physical appearance (Strubel & Petrie, 2017). Research for example showed that Tinder is associated

with lower satisfaction with one's appearance, more body shame and appearance comparisons which is often caused by rejection. Together the rejection and the resulting lower satisfaction with one's appearance showed to decrease mental well-being (Strubel & Petrie, 2017).

For people, the need to belong, be accepted, and liked by others is especially important (Baumeister & Leary 1995). Therefore, anything that violates this need, such as experiencing rejection by others, can be very distressing for an individual (Baumeister & Leary, 1995; MacDonald & Leary, 2005). Furthermore, a study showed that dating app users have lower self-esteem and worse psychological well-being than non-users which could be a consequence of frequent rejection (Holtzhausen, Fitzgerald, Thakur, et al., 2020).

Persistent rejection can contribute to the development of a trait called rejection sensitivity. Rejection sensitivity is defined as "anxiously expect, readily perceive, and overreact to rejection" (Downey & Feldman, 1996, p. 1327). Rejection sensitivity can cause anger, hurt, anxiety, and is known to decrease mental and physical well-being and disrupt social functioning (Watson & Nesdale, 2012). Moreover, one factor that has been associated with rejection sensitivity is an individual's self-view such as self-esteem (Leary, Schreindorfer & Haupt, 1995). One's self-esteem can be strongly influenced by social acceptance and inclusion by other people, and there is evidence showing that high rejection sensitivity can lead to lower self-esteem.

The traits discussed, such as rejection sensitivity, well-being and self-esteem have been extensively researched for offline relationships (Finkel et al., 2012; Holtzhausen et al., 2020; Lomanowska & Guitton, 2016). However, individuals have started to consider online dating as a substitute to offline dating and there is limited research exploring the implications of online relationships. Therefore, the research applied to offline relationships should be transposed to the dating app context.

To fill this gap in research, this study aims to extend the knowledge on rejection sensitivity and especially focus on the context of online dating, by investigating how this trait is related to mental well-being and self-esteem for the app users. This is important because intimate relationships play a significant role in people's mental health. Online dating apps are an increasingly common tool to pursue intimate relationships, and therefore, it is essential to research factors that are associated with them or that could be beneficial or detrimental to one's mental well-being.

This study will focus particularly on rejection sensitivity as it is strongly relevant to the outcomes of the dating environment, as well as being related to the consequent experience of one's well-being and self-esteem. Previous research demonstrated that individuals that are

especially rejection sensitive are more prone to using online dating apps, therefore, investigating rejection sensitivity is relevant to a major part of users. Knowledge of rejection sensitivity and its association with mental well-being and self-esteem could provide beneficial information for users of online dating apps. It would help individuals that use online dating or consider using it to know what effects it can have on their well-being, and help assess if online dating is a good alternative for users as opposed to forming relationships offline.

Thus, firstly literature on rejection sensitivity will be reviewed, following the impact of rejection sensitivity on mental well-being will be illustrated. Next, the relationship between rejection sensitivity and self-esteem will be reviewed. Lastly, the role of self-esteem as a potential moderator for the relationship between rejection sensitivity and mental well-being will be considered.

Conceptualizing rejection sensitivity

Rejection sensitivity emerges when an individual's wish to belong continuously remains unfulfilled, which then leads to the expectations of always getting rejected and therefore causes an oversensitivity towards rejection (Levy, Ayduk, & Downey, 2001). In their research on rejection sensitivity, Levy and colleagues (2001) showed that rejection sensitivity is positively related to social rejection. When confronted with ambiguous rejection cues individuals that are rejection sensitive stated more feelings of rejection than individuals with less sensitivity in rejection. Individuals that are rejection sensitive overreact to minor cues of rejection which can lead to a self-fulfilling prophecy in which one expects to be rejected. This self-fulfilling prophecy, can for example lead to the tendency of individuals that are rejection sensitive to act in ways that reduce the chances to keep an intimate relationship and lead to actual rejection from the partner (Levy, Ayduk, & Downey, 2001). Rejection sensitive individuals overreact frequently to small cues of rejection from the partner with hostility, extreme jealousy or show controlling behaviour (Downey & Feldmann, 1996). During discussions for example they refuse to take responsibility for a problem, degrade their partners and make nonverbal gestures that express disgust or disapproval. Together, these behaviours decrease the likelihood to keep an intimate relationship (Downey & Feldmann, 1996).

Rejection sensitivity and online dating

Research has shown that individuals that are rejection-sensitive use online dating sites more often than those with less sensitivity to rejection (Blackhart, Fitzpatrick & Williamson, 2014). It is supposed that rejection sensitive individuals could feel more comfortable dating online, as it is easier to avoid possible rejection or its cues are less striking than in offline

dating environments. One reason might be that the online environment provides anonymity by promoting the privacy of personal information, emotions or opinions. For example, in online dating apps people have control over what they want to present about themselves, or the way they communicate, which means that users can filter which aspects of themselves they want their potential dates to see, which could then decrease rejection by others (Walther, 1996). In line with this, a study demonstrated that rejection-sensitive individuals feel they can more accurately present their real selves online than offline (Holtzhausen, Fitzgerald, Thakur et al., 2020). Additionally, research demonstrated that rejection sensitivity is associated with more loneliness (Watson & Nerdale, 2012) and these apps can help online dating app users to alleviate their loneliness (Correa et al., 2010).

Furthermore, research stated that rejection is experienced differently in the online dating environment, for example in Tinder rejection can occur only by a swipe to the left which means that the user is most of the time not even aware by who he/she gets rejected (Lomanowska & Guitton, 2016). The heavy emotions that are usually related to rejection in offline scenarios are less significant online than offline and the anxiety to get rejected will be decreased. Different research revealed that rejection in online dating is less significant in comparison to face to face rejection (Lomanowska & Guitton, 2016) which also supports the claim that rejection sensitive individuals are more comfortable with online dating. A study reported that participants stated feelings of indifference when confronted with rejection in the online context. Also, respondents in the study saw rejection as common, expected, or less intense in online dating apps (Holtzhausen, Fitzgerald, Thakur et al., 2020).

Rejection sensitivity and mental well-being

Although research demonstrated that rejection sensitive individuals feel more comfortable in an online dating environment, extensive research also demonstrated strong negative consequences of rejection sensitivity on mental health. Therefore, a second variable this study will focus on is mental well-being which includes psychological, emotional, and social well-being. More specifically, previous research has found rejection sensitivity to lead individuals to feelings of hostility, depressions, emotional distress, and withdrawal from relationships (Watson & Nerdale, 2012). Individuals with high rejection sensitivity tend to falsely interpret intentions or actions of others which can lead to emotions of anger and feelings of loneliness; they show increased physiological activity and are sensitive to rejection cues which as a consequence can lead to anxiety or personality disorders (Downey et al., 2004). Based on these findings the current study expects that the negative influences of rejection sensitivity will remain consistent for the well-being of online dating app users.

Rejection sensitivity and self-esteem

The other variable this study will focus on is self-esteem. Global self-esteem can be defined as an individual's general sense of self-worth or how an individual value himself (Rosenberg, Schooler & Schoenbach, 1995). It includes beliefs about oneself like the evaluation of one's physical appearance, behaviors, or thoughts. Like rejection sensitivity, for self-esteem the reactions of other people and how others value or accept them play an essential role: different studies showed that self-esteem and rejection sensitivity are associated with each other (Gyurak & Ayduk, 2007; Kashdan et al., 2014).

Firstly, research demonstrated that individuals with a low self-esteem experience rejection as more intense: it can confirm their perception of themselves as not being enough (Ford & Collins, 2013). For these individuals, rejection acts like an additional intensifier that decreases their already negative self-image (Ford & Collins, 2013). Individuals with low self-esteem overreact and develop growing sensitivity to cues of rejection and additionally have higher expectations of getting rejected by others. On the other hand, people with higher self-esteem show less sensitivity to rejection cues. Accordingly, the sociometer theory states that individuals are in general sensitive to rejection cues, and that the role of self-esteem is to control the extent to which people feel accepted or rejected by others (Leary, Tambor, Terdal, & Downs, 1995). The sociometer theory suggests that the reason for which self-esteem is valued by the individual is that it is a way of measuring one's social appeal and relational value; it is an indicator that monitors the reactions of other people towards oneself. One's social appeal is then identified by the acceptance or rejection by others. When a person is confronted with rejection the low or high self-esteem indicates how one feels or behaves in response to the rejection. Therefore, where self-esteem is higher, the response to rejection will be more positive, and it will be negative when lower.

However, research has traced evidence of how rejection sensitivity can predict self-esteem. One study showed that as rejection sensitivity increases, self-esteem decreases. For example, research showed that self-esteem decreases due to criticism or rejection (Baumeister & Leary, 1995). When individuals see that others don't value their relationship as important they feel rejected and as a consequence, their self-esteem will often be reduced or they will distance themselves from their social surroundings (Baumeister & Leary, 1995). Furthermore, research showed that individuals that received high amounts of acceptance throughout their lives develop high self-esteem. In contrast, people who often experience rejection develop high rejection sensitivity and have lower self-esteem (Harter, 1993). In the online dating

context, rejection sensitive individuals can be often confronted with experiences of rejection. It is important to focus on the impact of rejection sensitivity on their self-esteem and their relationship, because it can determine the outcome of intimate relationships. Therefore, another objective set by this study will focus on investigating if rejection sensitivity is negatively related to one's self-esteem for online dating app users.

The impact of self-esteem on mental well-being

Self-esteem is one of the significant predictors of psychological distress and mental and emotional problems (Leary, 1999). Research showed that individuals with lower self-esteem are more likely to be anxious, depressed, shy, and unhappy. Furthermore, people with low self-esteem are less likely to enjoy close relationships, and research findings demonstrated that people with low self-esteem more frequently report feelings of loneliness or dejection (Leary, 1999). However, this research argued that decreased mental well-being is not solely a consequence of low self-esteem; it is argued that the lower mental well-being is elicited by rejection and that self-esteem acts as a booster either intensifying or decreasing the relationship. Self-esteem is related to both mental well-being and rejection sensitivity. Therefore, the current study aims to investigate if self-esteem can act as a moderator affecting or strengthening the relationship between rejection sensitivity and mental well-being.

Self-esteem, rejection sensitivity, and mental well-being

Existing studies illustrated how self-esteem can moderate the effects of rejection on one's mental well-being in offline environments. It has been demonstrated that there are differences in the way that people respond to rejection and their level of sensitivity (Ford & Collins, 2013). These studies found self-esteem to be a significant variable in shaping one's reactivity to rejection: lower self-esteem individuals would perceive rejection as a reflection of the negative view they have of themselves; high self-esteem, on the contrary, has been shown to soften the effects of rejection, as there is a positive self-view.

Also, different studies revealed that individuals that hold negative views about themselves, including low self-esteem, react to rejection in ways that are damaging to their mental well-being (e.g. Downey & Feldman, 1996; Ford & Collins, 2013; Murray, Bellavia, Rose, & Griffin, 2003). In a similar study, participants showed heightened stress and depressed feelings after experiencing rejection (Ford & Collins, 2013). As mentioned before, rejection as a single factor has a negative influence on one's mental well-being, and as lower self-esteem can heighten reactivity to rejection, it can thereby contribute to greater vulnerability for lower mental well-being. The negative effects associated with rejection will be heightened and the state of their well-being decreased (Ford & Collins, 2011). That means

individuals with lower self-esteem experience lower mental well-being after experiencing rejection. This is also in line with the sociometer theory described earlier, stating that self-esteem can be seen as an indicator that monitors the level of sensitivity when reacting to acceptance and/or rejection by other individuals. Thereby, low self-esteem heightens the sensitivity to rejection which will increase the negative effects individuals experience from rejection and thereby will also decrease one's mental well-being (Leary, Tambor, Terdal, & Downs, 1995). These findings from previous literature lead to the expectation that low self-esteem has a moderator effect on the relationship between rejection sensitivity and mental well-being for online dating app users, coherently to offline scenarios (Figure 1).

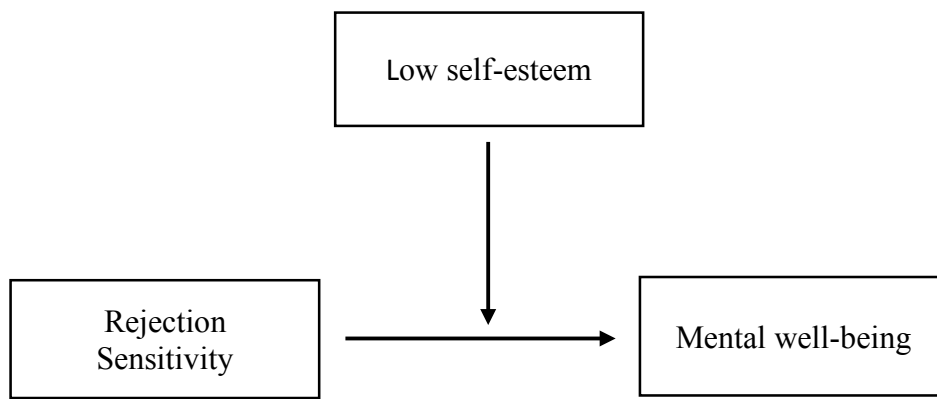


Figure 1. Research design

Present study

The relation of rejection sensitivity in offline intimate relationships on well-being has received a fair amount of attention in previous research. Nevertheless, existing literature has examined its relationship to one's mental well-being and self-esteem in the context of online dating. Taking into account that online dating is now a popular way to look for intimacy and a setting in which rejection can occur, factors like rejection sensitivity and its impact on health are important to focus on. This research wants to address this research gap, and more specifically, will thereby focus on the following research questions and hypothesis:

RQ1: *What is the relationship between rejection sensitivity of online dating app users and their mental well-being?*

Hypothesis: Rejection sensitivity of online dating app users is negatively related to mental well-being

RQ2: *What is the relationship between rejection sensitivity of online dating app users and their self-esteem?*

Hypothesis: Rejection sensitivity of online dating app users is negatively related to their self-esteem.

RQ3: *Can low self-esteem of online dating app users moderate the relationship between their rejection sensitivity and mental well-being?*

Hypothesis: Low self-esteem of online dating app users has a moderating effect on the relationship between rejection sensitivity and mental well-being

Methods

Study design

The current study is part of a larger study about well-being in the era of online dating. The survey was approved by the ethics committee of Behavioral Management and Social Sciences (BMS) with the approval number: 200344. After receiving the approval, the Sona system published the survey so that all BMS students of the University of Twente could fill it out.

Participants

A convenience sampling technique was used for the recruitment of the participants. They were reached through the Sona system, a website where university students can publish research surveys. Additionally, participants were contacted personally by the researcher through social media platforms including Facebook, Instagram, and WhatsApp. A total of 262 individuals participated in the study. The present study focuses solely on online dating app users, which includes individuals that currently use online dating or used it in the past. Therefore, 96 participants were excluded as they never made use of online dating. The final sample consisted of 166 all participants who filled out the questionnaires, provided consent, and who currently used or had used online dating. Of the 166 people, 69 participants were male and 97 female. The mean age of the sample was 23.4 (SD: 4.90). Out of the sample, 70.5% were German, 9.6 % Dutch and 19.9 % had another nationality.

Procedure

The survey started with an informed consent which explained that the data collected will remain anonymous and that the participants can withdraw from the study whenever they want (see Appendix A). At the end of the informed consent, the participants had to agree that they understand everything and that they consent to participate in the study. All of the participants took part in the survey voluntarily. The participants firstly were asked to give responses on demographic information like age and nationality and next they filled out the Adult Rejection Sensitivity questionnaire, the Rosenberg Self-esteem Scale, and The Mental Health Short Continuum. In total, the questionnaire took approximately 35 minutes. Students from the University of Twente who filled out the questionnaire received partial study credits after successfully filling out the survey.

Materials

The materials used for this research included three questionnaires distributed through Qualtrics survey software. The survey includes a consent form and demographic questions (see Appendix B). The three questionnaires relevant for this study will be described in detail.

The Mental Health Continuum Short Form (MHC-SF).

The Mental Health Continuum Short Form (MHC-SF) (see Appendix D) assesses emotional, social, and psychological well-being (Keyes et al., 2008) and is based on the 40-item health continuum (Keyes, 2002). The scale consists of 14 items that can be scored on a 6-point Likert scale ranging from 0 (never) to 5 (every day). One item on this scale is for example “In the past month how often did you feel that you liked most parts of your personality?” The total score on this scale could range from 0 to 70 points. The higher the scores, the higher is the level of emotional well-being. Different research on the psychometric properties of the MHC-SF showed that it has excellent internal consistency (Cronbach’s Alpha = .80) (Keyes, 2005b, 2006; Keyes et al., 2008; Lamers et al., 2011; Westerhof & Keyes, 2009). Furthermore, the test-retest reliability in a 9-month test-retest was .65 (Lamers et al., 2011). The reliability for the sample in the present research was excellent (Cronbach’s Alpha = .89).

The Adult Rejection Sensitivity Questionnaire (A-RSQ).

The Adult Rejection Sensitivity Questionnaire (A-RSQ) (see Appendix E) is a version of the Rejection Sensitivity Questionnaire by Downey and Feldmann. It assesses generalized expectations and anxiety about whether significant others meet one's needs for acceptance or get rejected (Berenson et al., 2011). The 9 items from the A-RSQ illustrate hypothetical situations in which participants make demands from important others, such as parents or dating partners. Examples of this are: “You approach a close friend to talk after doing or saying something that seriously upset him/her,” “You bring up the issue of sexual protection with your significant other and tell him/her how important you think it is”. For each item, participants have to state in a six-point Likert scale first their level of concern (from very unconcerned to very concerned) about the person's reaction to the request; and second their expectation that the person would accept the request (from very likely to very unlikely). Rejection sensitivity is then calculated by multiplying rejection concern with rejection expectancy. The total score was measured by computing the mean of the rejection sensitivity scores for all the items. Research from Berenson, Downey, Coifman, and Paquin (2011) reported that the A-RSQ has sufficient internal consistency with $\alpha = .89$. The test-retest reliability showed to be also high with Spearman-Brown coefficient = .91 (Berenson et al., 2011).

The original A-RS scale includes six response options but for this research one response option was added so that the participants could provide more accurate responses. The reliability of the two dimensions of rejection sensitivity was calculated. For rejection concern, Cronbach was sufficient with $\alpha=.81$ and equally acceptable for rejection expectancy with $\alpha=.778$.

The Rosenberg Self-esteem scale.

The Rosenberg Self-Esteem Scale (RSE) is a globally used assessment of self-esteem (Rosenberg, 1965) (see Appendix C). The scale is a ten-item Likert scale that measures self-worth by estimating both positive and negative feelings about oneself. The items can be answered with a 4-point Likert scale which ranges from strongly agree to strongly disagree. To give an example, one item on this scale is “I feel like a person who has several good qualities”. The Rosenberg self-esteem scale spans from 0-30. Scores that lay within 15 and 25 are considered normal range, scores under 15 indicate low self-esteem. Considering the psychometric properties of the scale, the Cronbach’s Alpha coefficient ranging from .72 to .87 shows a high internal consistency. Furthermore, test-retest reliability ranges from 0.85 to 0.85 (Rosenberg, 1965). The reliability in the current sample showed to be very good with a Cronbach’s Alpha of .85.

Data analysis

To analyze the data from the study, IBM SPSS Statistics 25 was used. Firstly, data that did not attain the inclusion criteria like missing data or people that did not use online dating was excluded. Secondly, important demographic information was measured by calculating the frequencies and descriptive statistics with the mean scores and the standard deviations.

The first hypothesis was tested by conducting a linear regression whereby “rejection sensitivity was the predictor variable and “mental well-being” the outcome variable. The assumptions of normality and linearity had been met which made this analysis possible. For the second hypothesis, a linear regression was conducted as well, to see if there is an association between rejection sensitivity and self-esteem. Additionally, a Pearson correlation was conducted to demonstrate how all variables used in the study are correlated to each other. For the last hypothesis, the program PROCESS macro for SPSS was used to test if there is a moderation effect with low self-esteem as the moderator variable and rejection sensitivity as predictor variable and mental well-being as the outcome variable.

Results

Descriptive statistics that show the means and standard deviations (SD) for the variables self-esteem, mental well-being, and rejection sensitivity were calculated and are presented in Table 1. The table shows that the participants have average levels of self-esteem, rejection sensitivity and mental well-being (see materials for scoring).

Table 1

Mean and standard deviations of the RSE, A-RSQ and MHC-SF scale

	N	Mean	SD	Variance
Self-esteem	143	20.6	7.3	53.6
Rejection sensitivity	156	29.5	4.7	21.9
Mental well-being	153	3.9	.83	.68

A simple linear regression was calculated to test the hypothesis that rejection sensitivity predicts decreased well-being for online dating app users. The results showed that there is a non-significant association between rejection sensitivity and the dependent variable well-being ($F(1,141) = 2.002$, $p = .16$, $R^2 = .01$). Thus, rejection sensitivity did not predict the mental well-being of online dating app users.

To test the second hypothesis “rejection sensitivity of online dating users is negatively associated with self-esteem” also a linear regression was conducted. The results showed that there is a significant positive association between rejection sensitivity and self-esteem ($F(1,141) = 7.5$, $p = 0.007$, $R^2 = 0.051$). Thus, users of online dating applications that are more sensitive to rejection have higher self-esteem.

In Table 2, a Pearson correlation illustrates how the variables of interest in the present study are correlated.

Table 2*Pearson correlation between the variables of Interest*

	Mental well-being	Self-esteem	Rejection sensitivity
Mental well-being	.	.50**	.14
Self-esteem	.50**	.	.27**
Rejection sensitivity	.14	.00	.

Note. ** Correlation is significant at the 0.01 level (2-tailed)

Regarding the third hypothesis, the moderation analysis showed that self-esteem has statistically no significant effect on the relationship between rejection sensitivity and mental well-being ($b = 0.0024$, 95% CI [-.0012, 0.0060], $t = 1.29$, $p = 0.198$). This indicates that low self-esteem has no moderation effect on the relation between rejection sensitivity and mental well-being.

Discussion

This research aimed to investigate if rejection sensitivity is negatively related to mental well-being and self-esteem for online dating app users. The secondary objective was to determine if low self-esteem has a moderating effect on mental well-being and rejection. An increasing number of people use online dating as a way to find an intimate relationship. However, one of the negative consequences of dating online is the experience of rejection, especially for those that are rejection sensitive. Rejection sensitivity showed to be related to decreased mental well-being and self-esteem in offline relationships. Limited research has examined this relationship in the context of online dating. Therefore, the goal of this research is to focus on this and to provide essential information for individuals that use online dating platforms or are rejection sensitive. The findings can then help in deciding whether offline or online dating is more beneficial for these individuals.

The first hypothesis, stating that rejection sensitivity is negatively related to mental well-being for online dating app users, could not be supported by the present findings. The second hypothesis that rejection sensitivity is negatively related to self-esteem for online dating app users, could as well not be supported by the results as they indicated that rejection sensitivity is positively related to the self-esteem of online dating app users. Lastly, the hypothesis that low self-esteem has a moderating effect on the relationship between rejection sensitivity and mental well-being for online dating app users was also not supported, as the results illustrated that self-esteem has no impact on the relationship between rejection sensitivity and mental well-being.

Firstly, the finding that rejection sensitivity for online dating app users is not related to well-being is unexpected. It stands in contrast with various literature that has shown how rejection sensitivity can lead to a lower mental well-being experienced through depression, loneliness and anxiety (Ayduk, Downey, & Kim, 2001; Ayduk, Downey, Testa, Yen, & Shoda, 1999; Downey & Feldman, 1996; Levy et al., 2001). However, these previous studies did not focus on online dating app users but offline intimate relationships. As already mentioned in the introduction, it should be kept in mind that an online dating environment could be beneficial for rejection sensitive users (Lomanowska & Guitton, 2016). One suggestion for why online dating could be beneficial is that research showed that online dating helps rejection sensitive individuals to lessen feelings of loneliness (Blackhart, Fitzpatrick & Williamson, 2014).

Another study showed that rejection in the online environment is less severe than offline dating (Holtzhausen, Fitzgerald, Thakur, et al., 2020). The participants in that study reported that rejection experienced online is less intense compared to rejection in an offline environment. The research argued that this might be due to the way rejection in online dating occurs is different. Rejection in online dating apps such as Tinder, for example, can occur mostly by simply swiping left or ignoring a message to display disinterest (Holtzhausen, Fitzgerald, Thakur, et al., 2020). That means most of the times the users are not even aware of getting rejected as they don't know who or how many people swiped to the left to display disinterest. Furthermore, receiving a rejection message or ignoring a message showed to be less salient than a face-to-face conversation where the disinterest will be communicated. This might be the reason why rejection in online dating is experienced as less intense compared to face to face rejection where a physical conversation takes place (Holtzhausen, Fitzgerald, Thakur, et al., 2020).

Moreover, research showed that online dating can be beneficial for individuals because it can increase one's mental well-being by heightening self-esteem, increasing mood and decreasing depression or anxiety (Finkel, Eastwick, Karney, Reis & Sprecher, 2012). Additionally, as previous research found that rejection sensitivity is one predictor of online dating use; it can be argued that especially individuals that are sensitive to rejection use online dating to feel better as it can lower feelings of loneliness or increase mood, and therefore, online dating will not have a bad impact on their mental well-being. Therefore, existing research on online dating can be supportive of the positive outcomes of these results. The findings of this research noted how rejection sensitivity has a less severe impact in the online environment, and along with the beneficial effects of online dating, it could be a possible explanation of why there was no negative association. Nevertheless, this suggestion would need additional research and could be explored in future studies.

The results for the second hypothesis revealed that rejection sensitivity has a positive effect on self-esteem for online dating app users. This finding was unexpected and is not in line with previous research that reported that rejection sensitivity can lead to decreased self-esteem (Ford & Collins, 2013). However, it is again important to take into account that these studies were not focused on online dating app users, but on offline scenarios.

The study found that online dating can increase one's self-esteem (Lomanowska & Guitton, 2016). This might be explained by previous research that suggests that online dating lowers feelings of loneliness and depression which could consequently increase self-esteem in online dating. The emotions of decreased loneliness and being more socially supported might

be a reason for heightened self-esteem (Shaw & Gant, 2004). Another factor that is important to consider is that online intimate relationships differ inherently from offline relationships (Shaw & Gant, 2004). Online dating provides specific anonymity which makes individuals feel more comfortable revealing private information. Users could display certain characteristics of their personalities that they eventually suppress in their lives or keep as a secret such as their political views or sexual orientation. The online dating environment allows individuals to use it to overcome specific barriers and express aspects of their identities that would otherwise be left unrevealed. Due to this, individuals may feel that potential mates can accept them for their genuine traits of interest, leading to a more fulfilling experience. This could have led to increased self-esteem as online dating provides a place where individuals express their true selves. Furthermore, as rejection and rejection sensitivity in online dating seems to be less severe in online dating it correspondingly will also not have negative effects on self-esteem (Shaw & Gant, 2004).

Each of these aspects mentioned might have together contributed to the results in the current research. On one hand, the positive effects of online dating could decrease anxious expectations about getting rejected, and therefore rejection sensitivity would not lead to decreased self-esteem. On the other hand, self-esteem might increase regardless of rejection sensitivity thanks to the online environment. This potential relationship between rejection sensitivity and self-esteem with online dating factors has not been investigated by previous research and might require further examination.

The third hypothesis stated that low self-esteem has a moderator effect on rejection sensitivity and well-being for online dating app users. The hypothesis could not be supported by the results. This finding stands in contrast to what was expected and what was found in previous research that showed that self-esteem can have a moderating effect on rejection sensitivity and mental well-being. Previous research stated that self-esteem is like a monitor that can either increase or decrease the way rejection is experienced. Whereby low self-esteem leads to more sensitivity to rejection which consequently has a greater negative influence on one's mental well-being. That means the moderation can only occur if the participants have low levels of self-esteem which consequently have a strengthening effect on the relationship between rejection sensitivity and mental well-being. However, the majority of the participants in the current study did not have low levels of self-esteem, rather they showed average self-esteem rates (see Table 1). Therefore, this could be an explanation for the current findings: if the study focused on low self-esteem individuals, this trait could have been proved to moderate and strengthen the negative relationship between rejection

sensitivity and mental well-being as only low self-esteem set the condition for the moderation to occur.

Limitations and recommendations for future research

The present research has some limitations that must be addressed. Firstly, the questionnaires used in the study were all self-reported and this might have influenced the way the participants responded. The responses of the participants could be biased as it is possible that socially desirable replies were given. Research showed that individuals try to give answers in questionnaires that are socially desirable because they feel specific responses allow them to appear better. Individuals try to give replies that they think reflect values or traits that are culturally and socially evaluated by others as good (Paulhus, Harms, Bruce, & Lysy, 2003). In line with this, there is evidence that individuals will distort responses about specific sensitive topics and attitudes such as non-normative sexual orientation, alcohol abuse, and negative personality traits (Paulhus, Harms, Bruce, & Lysy, 2003). As rejection is an especially sensitive topic for some individuals for example, rejection sensitive participants might have not felt comfortable admitting their sensitivity, compromising the results. Additionally, self-esteem could be a sensitive trait to talk about as well, and research showed that self-esteem and social desirability are related to each other. In line with this, it has been demonstrated that social desirability includes the unconscious likelihood to give positively but distorted self-reported responses to protect one's self-esteem (Paulhus, Harms, Bruce, & Lysy, 2003). Therefore, there is the possibility that responses, especially regarding self-esteem might have been biased.

Secondly, the sample used for the study mainly belonged to the same age range which was around 23. The study could have included older participants, making it more generalizable. Young adults are the target group of online dating apps and make up for a significant share of users, however, it would be relevant to see if the results would differ for a sample including older adults. Rejection sensitivity might change depending on the age gap and lifestyle. In a study for example older adults stated more increases in hurt emotions when experiencing rejection (Cheng & Grühn, 2015). Furthermore, research demonstrated that rejection sensitivity for older adults is associated with more mental health problems compared to younger adults. This is in line with other research that reported that rejection sensitivity and low psychological health were higher for older adults (Chow, Au & Chiu, 2008).

Additionally, a study compared young adults and older adults on their levels of rejection sensitivity found that the mean scores for rejection sensitivity for young adults were much lower than the mean scores of the older participants (Kang & Chasteen, 2009). Next to that, a study demonstrated that age-related rejection sensitivity is negatively related to self-esteem. Thus, older age groups might have a different relationship with rejection. Based on these findings it seems to be important to investigate and make further research on how older adults experience rejection sensitivity and mental well-being in the context of online dating as it might lead to different research findings that could be important.

Another limitation in this study could be that the rejection sensitivity questionnaire used in this study provided seven response options instead of giving the participants six-response options like in the original version. This could have led to different outcomes. Nevertheless, the scale still showed good reliability. Therefore, future directions could even take into consideration to also include a seven-point Likert scale to test rejection sensitivity as it could lead to more specific and accurate response options.

Future research could expand to different aspects of online dating, from what characterizes the environment to further implications for the individual user. Research could focus on how exactly online dating, or online interactions in general, change the way individuals perceive rejection or experience intimacy. There can be similarities and differences between the making of virtual and physical intimate relationships, and studies could investigate how the shift to online communication methods affect the relationship outcomes or well-being within the relationship. Future research should then question whether online intimacy is more beneficial as an extension to offline connections or as a substitute.

Furthermore, following recent events such as the Covid-19 pandemic and lockdowns, it could be interesting for future studies to explore the impacts that this social situation had on online dating and the need to use dating apps. The quarantine for instance, where individuals have been excluded from their typical social interactions and in cases from any form of physical intimate relationships, might have negative repercussions on their mental well-being. This form of seclusion might have elicited feelings of loneliness and exclusion. Therefore, the motives and perceptions of online dating might have changed, as it became the only option to seek intimacy outside one's household and the craving for building connections increased. Future studies could then focus on the effects of this context on the use of the apps, as well as well-being and sensitivity to rejection.

Implications and Conclusion

This study explored the effects of rejection sensitivity on mental well-being and self-esteem and tested if self-esteem has a moderating effect on the other two constructs. These effects have not been examined in previous research with particular attention to the online dating environment, and this study aimed at covering this gap. The study provided an insight into the context of online dating and highlighted that rejection sensitivity doesn't appear to be associated with mental well-being. Furthermore, the study showed that rejection sensitivity was associated with heightened self-esteem. Various research has been done on the negative effects of online dating on well-being, but the present study showed that this may not always be the case: it can be a positive predictor, and users that are sensitive to rejection don't experience negative consequences on their well-being.

This study has been relevant in demonstrating that there could be beneficial effects of online dating use for rejection sensitive individuals. It can be suggested that the mental health of individuals using online dating is less affected by rejection sensitivity than in offline environments. The change from offline dating to online can be a big factor as the findings showed that for the app users' rejection sensitivity neither positively nor negatively affects mental well-being. Online dating environments might be a safer place for people with rejection sensitivity. Rejection is a common aspect of online dating, however after the findings of this study, individuals high in rejection sensitivity could see online environments as positive, where not only anxieties of rejection are reduced, but self-esteem is increased as well.

To conclude, the findings of this study did not confirm the hypothesis that were set. The data collected reflected that rejection sensitivity has no impact on well-being and rather than decreasing self-esteem in the online environment it can increase it. Moreover, self-esteem cannot be considered as a moderator shaping the relationship between rejection sensitivity and self-esteem, as it is non-existent. Regarding the final results, there is room for further research on the online dating environment, its differences from offline dating, and particularly its positive implications on rejection sensitivity, self-esteem, and well-being. Future research might consider a broader and more varied sample of respondents, as well as expand on applications in the psychological practice.

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Appendices

Appendix A: informed consent

Q1 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. (1)
- No, I do not consent. (2)

Appendix B: demographic questions

Q2 Please fill in the following questions on your demographics

What is your age?

Q3 What is your gender?

- Male (1)
- Female (2)
- Other, namely: (3) _____
- Prefer, not to answer (4)

Q4 What is your nationality?

- Dutch (1)
- German (2)
- Other, namely: (3) _____

Q5 What is your sexual orientation?

- Heterosexual (1)
- Gay/Lesbian (2)
- Bi-sexual (3)
- Other, namely: (4) _____
- Prefer, not to answer (5)

Q6 Do you use online dating sites or mobile dating apps

- Yes, I use it currently (1)
- Yes, I used it in the past (2)
- No, I never used it (3)

Appendix C: Rosenberg Self-Esteem Scale

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

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

8. I wish I could have more respect for myself.
9. All in all, I am inclined to feel that I am a failure.
10. I take a positive attitude toward myself.
10. I take a positive attitude towards myself.

Appendix D: The Mental Health Continuum Short Form (MHC-SF)

Questions about emotional well-being

Emotional well-being 1. happy 2. interested in life 3. satisfied with life

During the past month, how often did you feel ...	NEVER	ONCE OR TWICE	ABOUT ONCE A WEEK	2 OR 3 TIMES A WEEK	ALMOST EVERY DAY	EVERY DAY
...happy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...interested in life	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Online dating, Rejection sensitivity, Self-esteem, Well-being

...satisfied with life

Social well-being

During the past month, how often did you feel ...

NEVER	ONCE OR TWICE	ABOUT ONCE A WEEK	2 OR 3 TIMES A WEEK	ALMOST EVERY DAY	EVERY DAY
-------	---------------	-------------------	---------------------	------------------	-----------

...that you had something important to contribute to society

...that you belonged to a community (like a social group, your school, or your neighborhood)

...that our society is a good place, or is becoming a better place, for all people

...that people are basically good

...that the way our society works made sense to you

Psychological well-being

Online dating, Rejection sensitivity, Self-esteem, Well-being

During the past month, how often did you feel ...	NEVER	ONCE OR TWICE	ABOUT ONCE A WEEK	2 OR 3 TIMES A WEEK	ALMOST EVERY DAY	EVERY DAY
...that you liked most parts of your personality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...good at managing the responsibilities of your daily life	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...that you had warm and trusting relationships with others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...that you had experiences that challenged you to grow and become a better person	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...confident to think or express your own ideas and opinions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...that your life has a sense of direction or meaning to it	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Appendix E: Adult Rejection Sensitivity questionnaire

The items below describe situations in which people sometimes ask things of others. For each item, imagine that you are in the situation, and then answer the questions that follow it. 1. You ask your parents or another family member for a loan to help you through a difficult financial time

How concerned or anxious would you be over whether or not your family would want to help you?

- extremely concerned (1)
 - moderately concerned (2)
 - slightly concerned (3)
 - neither concerned nor unconcerned (4)
 - slightly unconcerned (5)
 - moderately unconcerned (6)
 - extremely unconcerned (7)
-

I would expect that they would agree to help as much as they can.

- extremely likely (1)
 - moderately likely (2)
 - slightly likely (3)
 - neither likely nor unlikely (4)
 - slightly unlikely (5)
 - moderately unlikely (6)
 - extremely unlikely (7)
-

2. You approach a close friend to talk after doing or saying something that seriously upset him/her. How concerned or anxious would you be over whether or not your friend would want to talk with you?

- extremely concerned (1)
- moderately concerned (2)

- slightly concerned (3)
 - neither concerned nor unconcerned (4)
 - slightly unconcerned (5)
 - moderately unconcerned (6)
 - extremely unconcerned (7)
-

I would expect that he/she would want to talk with me to try to work things out.

- extremely likely (1)
 - moderately likely (2)
 - slightly likely (3)
 - neither likely nor unlikely (4)
 - slightly unlikely (5)
 - moderately unlikely (6)
 - extremely unlikely (7)
-

3. You bring up the issue of sexual protection with your significant other and tell him/her how important you think it is. How concerned or anxious would you be over his/her reaction?

- extremely concerned (1)
 - moderately concerned (2)
 - slightly concerned (3)
 - neither concerned nor unconcerned (4)
 - slightly unconcerned (5)
 - moderately unconcerned (6)
 - extremely unconcerned (7)
-

I would expect that he/she would be willing to discuss our possible options without getting defensive

- extremely likely (1)
 - moderately likely (2)
 - slightly likely (3)
 - neither likely nor unlikely (4)
 - slightly unlikely (5)
 - moderately unlikely (6)
 - extremely unlikely (7)
-

4. You ask your supervisor for help with a problem you have been having at work. How concerned or anxious would you be over whether or not the person would want to help you?

- extremely concerned (1)
 - moderately concerned (2)
 - slightly concerned (3)
 - neither concerned nor unconcerned (4)
 - slightly unconcerned (5)
 - moderately unconcerned (6)
 - extremely unconcerned (7)
-

I would expect that he/she would want to try to help me out.

- extremely likely (1)
- moderately likely (2)
- slightly likely (3)
- neither likely nor unlikely (4)
- slightly unlikely (5)
- moderately unlikely (6)
- extremely unlikely (7)

5. After a bitter argument, you call or approach your significant other because you want to make up. How concerned or anxious would you be over whether or not your significant other would want to make up with you

- extremely concerned (1)
 - moderately concerned (2)
 - slightly concerned (3)
 - neither concerned nor unconcerned (4)
 - slightly unconcerned (5)
 - moderately unconcerned (6)
 - extremely unconcerned (7)
-

I would expect that he/she would be at least as eager to make up as I would be

- extremely likely (1)
 - moderately likely (2)
 - slightly likely (3)
 - neither likely nor unlikely (4)
 - slightly unlikely (5)
 - moderately unlikely (6)
 - extremely unlikely (7)
-

6. You ask your parents or other family members to come to an occasion important to you. How concerned or anxious would you be over whether or not they would want to come?

- extremely concerned (1)
- moderately concerned (2)

- slightly concerned (3)
 - neither concerned nor unconcerned (4)
 - slightly unconcerned (5)
 - moderately unconcerned (6)
 - extremely unconcerned (7)
-

I would expect that they would want to come

- extremely likely (1)
 - moderately likely (2)
 - slightly likely (3)
 - neither likely nor unlikely (4)
 - slightly unlikely (5)
 - moderately unlikely (6)
 - extremely unlikely (7)
-

7. At a party, you notice someone on the other side of the room that you'd like to get to know, and you approach him or her to try to start a conversation. How concerned or anxious would you be over whether or not the person would want to talk with you?

- extremely concerned (1)
 - moderately concerned (2)
 - slightly concerned (3)
 - neither concerned nor unconcerned (4)
 - slightly unconcerned (5)
 - moderately unconcerned (6)
 - extremely unconcerned (7)
-

I would expect that he/she would want to talk with me

- extremely likely (1)
 - moderately likely (2)
 - slightly likely (3)
 - neither likely nor unlikely (4)
 - slightly unlikely (5)
 - moderately unlikely (6)
 - extremely unlikely (7)
-

8. Lately you've been noticing some distance between yourself and your significant other, and you ask him/her if there is something wrong. How concerned or anxious would you be over whether or not he/she still loves you and wants to be with you?

- extremely concerned (1)
 - moderately concerned (2)
 - slightly concerned (3)
 - neither concerned nor unconcerned (4)
 - slightly unconcerned (5)
 - moderately unconcerned (6)
 - extremely unconcerned (7)
-

I would expect that he/she will show sincere love and commitment to our relationship no matter what else may be going on.

- extremely likely (1)
- moderately likely (2)
- slightly likely (3)
- neither likely nor unlikely (4)
- slightly unlikely (5)
- moderately unlikely (6)

- extremely unlikely (7)
-

9. You call a friend when there is something on your mind that you feel you really need to talk about. How concerned or anxious would you be over whether or not your friend would want to listen?

- extremely concerned (1)
 - moderately concerned (2)
 - slightly concerned (3)
 - neither concerned nor unconcerned (4)
 - slightly unconcerned (5)
 - moderately unconcerned (6)
 - extremely unconcerned (7)
-

I would expect that he/she would listen and support me.

- extremely likely (1)
- moderately likely (2)
- slightly likely (3)
- neither likely nor unlikely (4)
- slightly unlikely (5)
- moderately unlikely (6)
- extremely unlikely (7)