

**The Moderating Role of Comparison Orientation on the Association between Instagram  
Use and Life Satisfaction**

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### Abstract

**Background:** With the increased use of social media and its rising popularity among people of all ages, possible negative health consequences of social media are commonly addressed by the media and scientists. One particular social media platform, that is commonly used among young adults, is Instagram. As young adults are especially vulnerable to several mental disorders, investigating the association between the passive use of Instagram and mental health of young adults is inevitable. Additionally, Instagram is suggested to provide large comparison potential. Therefore, the tendency to compare oneself to similar others needs further attention to better understand the relation between Instagram and mental health.

**Method:** An online survey was conducted, making use of a cross-sectional design. Therefore, two pre-established questionnaires were used, namely the Iowa-Netherlands Comparison Orientation Scale and the Satisfaction with Life Scale. To gather participants convenience and snowball sampling was performed. In the final sample  $N=76$  participants were included. The data was analysed using SPSS and the PROCESS macro for moderation analysis.

**Results:** No significant correlation between passive Instagram use and satisfaction with life was found ( $r(76) = .05, p = .69$ ). Additionally, the estimated model of the interaction effect of passive Instagram use and comparison orientation on satisfaction with life was found to be insignificant ( $F(3, 72) = 0.85, p = .47, R^2 = .03$ ). Also, the moderation effect of comparison orientation on the relationship between passive Instagram use and satisfaction with life was not confirmed by this analysis ( $b = -.12, p = .09$ ).

**Conclusion:** Overall, passive Instagram use is not associated with life satisfaction no matter how much people tend to compare themselves with others. The results of this study provided valuable insights into the ongoing debate on the effects of Instagram on mental health and provided ideas for future research.

*Keywords:* social media, Instagram, social comparison, comparison orientation, life satisfaction, well-being, moderation analysis, young adults

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## **The Moderating Role of Comparison Orientation on the Association between Instagram Use and Life Satisfaction**

With the increased use of the World Wide Web and the greater need to stay connected with people all over the globe, social media has become more popular over recent years than ever. Nowadays more than 4.2 billion people are using social networking sites all over the world (Statista, 2022). Whereas many are happy about the new possibilities that come with the application of social networking sites, such as Facebook or Instagram, more and more people are raising concern about the (mental) health effects that social media might have on individuals and society (Berryman et al., 2017).

Social networking sites are defined as online platforms, which facilitate the exchange and creation of content, and information within virtual online communities. It is an umbrella term for internet-based applications, where people can share personal information such as videos, photos, or thoughts (Dollarhide, 2021; Vincent, 2016). The most used social networking site is Facebook with over 2.9 billion users worldwide, although people between the age of 18 and 29 use Instagram most often (Auxier & Anderson, 2021; Statista, 2022). The majority of social media users, access their social media platforms daily (Auxier & Anderson, 2021).

There are different possibilities to interact with each social networking site but, generally, social networking behaviour can be divided into two categories. On the one hand, users can engage actively, by creating and sharing content or communicating with other people to facilitate social connections (Gerson et al., 2017). On the other hand, they can use social networking sites passively by only consuming the content of others while neither producing content themselves nor sharing content with other users (Gerson et al., 2017). Especially passive social media use is associated with negative mental health consequences, such as decreased subjective well-being, increased social anxiety, depression, fear of missing out, feelings of envy and upward social comparisons (Burnell et al., 2019; Koroleva et al., 2011; Selfhout et al., 2009; Shaw et al., 2015; Verduyn et al., 2017). The hypothesis that passive social media use has negative effects on the well-being of social media users is also called the passive social media use hypothesis (Hall et al., 2019; Lachmann et al., 2018; Sheldon & Bryant, 2016). Active social media use, on the other hand, is correlated with increased social capital and fewer depressive symptoms (Koroleva et al., 2011).

In recent years, also general implications of social media use on mental health were increasingly investigated. Symptoms of depression and anxiety, loneliness, decreased psychological and physical well-being and lower self-esteem, are only some of the negative health consequences that were associated with the use of social media (Selfhout et al., 2009;

Shaw et al., 2015; Yang, 2016). Contrastingly, other studies found that the use of social media is associated with increased self-esteem, increased social interactions, more social capital, enhanced overall psychological well-being and less loneliness (Koroleva et al., 2011; Lup et al., 2015). Thus, findings on social media and its relationship with mental health are rather inconclusive and lack convincing evidence (Yang, 2016). This is especially alarming, knowing that young adults are particularly vulnerable to mental disorders and suicidal tendencies (WHO, 2021) and only little is known about the association of the most popular social media networking site among young adults, Instagram, and its effects on mental health.

### **Instagram**

Often solely the umbrella term “social media” is investigated, which does not serve the complex demands of different social media platforms, because of substantial differences such as motivation for usage, entertainment, identification, emotions, stimulation, practical use or social interactions (Voorveld et al., 2018). With over 71% of young adults using Instagram, it is a social networking site that is rising in popularity (Auxier & Anderson, 2021, Statista, 2022). On Instagram, users can share photos and videos and support them by adding short texts, as well as locations and hashtags, which help to spread their content also to strangers. Other users can react to these photos and videos by liking or commenting underneath the posts or sending direct messages. Additionally, people can post stories or do live videos which makes it easy to engage with followers and other users (Kim et al., 2017). While doing so, the invention of (face)-filters is increasingly adopted within Instagram, idealising images to unrealistic and unnatural standards (Bakhsh et al., 2015; Rettberg, 2014).

Instagram is a rather new social media platform and research about the health implications of Instagram is scarce. Whereas some studies report lower levels of well-being and higher scores for different psychological disorders such as eating disorders, social anxiety, or depression (Ceballos et al., 2018; Griffiths et al., 2018; Schmuck et al., 2019; Yurdagül et al., 2019), other studies were not able to find those associations (Brailovskaia & Margraf, 2018; Vannucci et al., 2018). Verduyn et al. (2015) found, that well-being of Facebook users seems to decrease when using Facebook passively but increase when using Facebook actively. Such findings are not established for Instagram yet.

Research is needed to further explore the relationship between specific social media platforms, social media usage, and their role in relation to mental health (Seabrook et al., 2016). Most often, social media research is focused on Facebook (Sharma et al., 2020), as it is the most often used social networking site among the general population, ignoring that Instagram is more popular among young adults. Therefore, especially for young adults, who are vulnerable to

mental health problems such as depression or even suicide (Blakemore, 2019; WHO, 2021), research on social networking sites such as Instagram instead of Facebook, is necessary.

### **Social Comparison Orientation**

Given that Instagram is an image-based social networking site, making use of many features such as likes, followers, filters, stories, live videos or reels, it is likely that Instagram serves as a great platform to compare oneself to others. People can not only follow the daily life of their friends but also that of strangers, providing users with many opportunities to compare their own daily life, behaviour or opinions to that of other people. An experimental study by Engeln et al. (2020), supports this by showing that social comparison effects are stronger for Instagram users than for Facebook users, due to the focus of Instagram on photos and videos which provoke more social comparison behaviours.

Social Comparison theory was first proposed by Festinger in 1954, who theorised that humans have a natural drive to evaluate their opinions and abilities and that this evaluation in turn affects a person's behaviour. According to Festinger (1954), people evaluate their opinions and abilities by comparing these to the abilities and opinions of others, if objective, non-social means are not accessible for comparison. In addition, people only compare their opinions and abilities to others who lie within a self-imposed range of similarity to themselves, also called the similarity hypothesis. The more similar the person for comparison is to oneself, the more likely it is that one compares her-/himself with that person (Suls & Wheeler, 2000).

Social comparison orientation refers to the extent to which people compare their accomplishments, situations and experiences to those of others (Buunk & Gibbons, 2006). It differentiates itself from sole social comparison behaviours in being a distinctive trait that people possess, and can score high or low in. Therefore, people having a high social comparison orientation engage in social comparison behaviours universally more frequently than people who have a low social comparison orientation.

People can either engage in upward or downward comparison. If someone makes use of upward social comparison, they compare themselves with others who are perceived as better than them on the factor to be compared (Hakmiller, 1966). People engaging in downward comparison on the other hand compare themselves with a person below their level (Hakmiller, 1966). It was found that people generally tend to engage in upward comparison more often than in downward comparison (Festinger, 1954; Hakmiller, 1966; Thornton & Arrowood, 1966). This is due to the desire to evaluate oneself compared to the ideal aspired (Rogers et al., 2017). Though, if the self-regard of people is threatened, they tend to engage in downward comparison

to heighten their well-being by comparing themselves to the less fortunate (Hakmiller, 1966; Wills, 1981).

Buunk and Gibbons (2007) found that people who have a high tendency to socially compare are more likely to feel uncertain about themselves and make use of social information for self-evaluation. Therefore, it is likely that people with a high comparison tendency also make use of Instagram and social media to compare themselves with others. Next to the several negative health consequences of passive social media use already mentioned, it was found that passive social media use increases the feeling that other people are doing better than oneself and is related to negative social comparisons (Chen et al., 2016; Suls & Wheeler, 2000). This is in line with the fact that people who engage in passive social media use also engage more frequently in upward social comparisons (Burnell et al., 2019; Rousseau et al., 2017), which is related to increased negative affect and higher levels of admiration and envy within social media users (Chen et al., 2016; Suls & Wheeler, 2000). Engeln et al. (2020) suggest that effects found for social media, in general, are similar or even stronger for Instagram, due to its image and video-based nature. Still, the literature about Instagram and social comparison is scarce.

A high social comparison orientation may have tremendous effects on individuals. With increasing social comparison orientation, self-esteem, positive affect and optimism are likely to decrease while negative affect, envy, guilt, regret and depressive- and anxiety symptoms are likely to increase (Gibbons & Buunk, 1999; White et al., 2006). Additionally, a study by Vogel et al. (2015) found that a high social comparison orientation leads to heavier Facebook use. They further found that after engaging in brief social comparisons, people with a high comparison orientation experience lower self-perception and increased negative affect compared to those with a low comparison orientation. Conclusively, several studies suggest a negative association between social comparison orientation and life satisfaction (Buunk et al., 2007; Civitci & Civitci, 2015; Edillo et al., 2012). Multiple studies have found that comparison processes play a crucial role in individual life satisfaction (Clark & Oswald, 1996; D'Ambrosio & Frick, 2007; Hagerty, 2000; McBride, 2001). Recent findings show conclusive evidence, suggesting that individuals who engage in social comparisons more often, consistently have lower self-reported satisfaction with their lives (Buunk et al., 2007; Clark & Senik, 2010).

### **Satisfaction with life**

With the increasing attention of social media and its relation to mental health, the association between social media and well-being, and in this respect also life satisfaction, were taken a closer look at. Satisfaction with life is, among negative and positive affect, one of the three components of subjective well-being (Andrews & Withey, 1976). Whereas positive and



negative affect touch on the affective and emotional components, satisfaction with life refers to the cognitive and judgemental aspects of subjective well-being (Neto, 1995). Therefore, life satisfaction is defined as the cognitive and global evaluation of the quality of one's life based on individual sets of criteria (Pavot & Diener, 1993; Shin & Johnson, 1978). The perceived life circumstances are compared to a self-imposed standard to make a judgement on how well these circumstances match this standard. If it is a good match, the satisfaction with life will be higher. The standard to which individuals compare their own life circumstances is different for every individual. Therefore, different people can have different standards for success and unique criteria for a “good life” (Diener et al., 1985).

Studies show that social media use decreases satisfaction with life and well-being (Errasti et al., 2020; Hawi & Samaha, 2017). Many studies have established a negative correlation between social media use and life satisfaction (Asbury & Hall, 2013; Errasti et al., 2020; Hawi & Samaha, 2017). Contrastingly, Houghton et al. (2020) found that individuals report using social media to heighten their satisfaction with life, implying that social media may increase the perceived satisfaction with the life of its users. The relationship between social media use and life satisfaction seems to be influenced by the way people are using their social media. In this regard, passive social media use is once again identified as decreasing life satisfaction in social media users, whereas active use can promote life satisfaction (Asbury & Hall, 2013).

The relation between Instagram use and life satisfaction is vastly understudied. One recent finding suggests a weak negative correlation between increased Instagram use and life satisfaction (Yesilyurt & Solpuk Turhan, 2020). It is also suggested that there are existing gender differences, with women having a larger increase in life satisfaction after a break from Instagram than men (Fiovaranti et al., 2020). To this date, no convincing conclusions can be drawn about the use of Instagram and its effect on individuals' life satisfaction.

Though, two studies were conducted on the effect of social media and well-being when being moderated by comparison orientation. De Vries et al. (2017) investigated the moderating role of social comparison orientation on positive affect in relation to watching posts of strangers on Instagram. They found that differences in positive affect seem to be moderated by the tendency to engage in social comparison. Therefore, individuals who scored high on social comparison orientation were more likely to be negatively affected by looking at positive Instagram posts from strangers, while people who score low on social comparison orientation, are positively affected by viewing positive posts from strangers on Instagram. This effect was also established in other studies investigating social media in general (Vogel et al., 2015; Wang

et al., 2017). Still, conclusive, recent research on the moderating role of comparison orientation especially with regards to Instagram and life satisfaction is still missing.

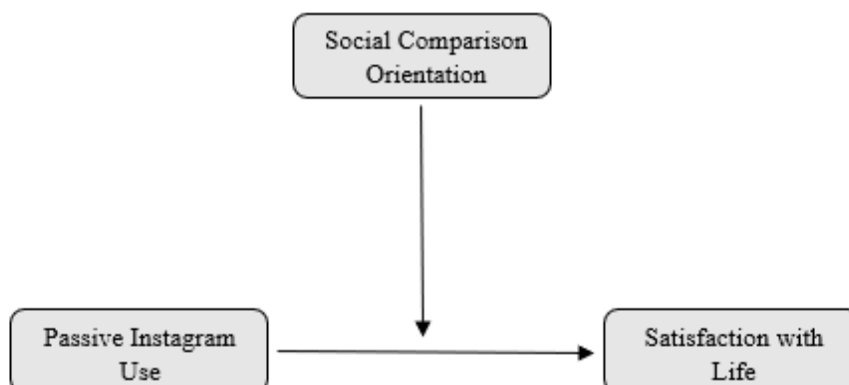
### **The present study**

The compilation of previous research points to gaps when looking at the relationship between Instagram use and life satisfaction, as well as the moderating role of comparison orientation. Thus, further research is especially necessary, as Instagram is the most popular social networking site among the 18- to 29-year-old population in western countries (Statista, 2022). Due to the vulnerability of young adults to several mental health disorders (WHO, 2021), it is important to further explore the relationship between Instagram use and life satisfaction, including a possible moderating role of comparison orientation. Most previous research focused on social media in general instead of focusing on a specific platform, and findings cannot be generalised for all platforms because of substantial differences in domains such as motivation for usage, entertainment, identification, emotions, stimulation, practical use or social interactions (Voorveld et al., 2018). Therefore, the umbrella term of social media is not suitable for making conclusive predictions about the mental health of young adults. In addition, Instagram is a photo- and video-based platform, which provides additional and heightened room for social comparisons in contrast to other social networking sites such as Facebook (Engeln et al., 2020). Therefore, this thesis will focus exclusively on the use of Instagram and its association with the mental health of young adults. More specifically, the aim of this thesis is to gain a better understanding of the association between Instagram use and young adults' life satisfaction while investigating a possible interacting role of social comparison orientation and passive Instagram use on this relationship. The investigated effect is visualised in Figure 1. The research question of this paper is:

*RQ: Does comparison orientation moderate the relationship between passive Instagram use and satisfaction with life?*

**Figure 1.**

*Moderation effect of social comparison orientation on the relationship between passive Instagram use and satisfaction with life.*



To answer the research question, the general correlation between Instagram use and satisfaction with life should be investigated. To this date, no conclusive evidence was established covering the interplay of passive Instagram use and Satisfaction with Life. Still, studies focusing on social media instead of Instagram suggested that passive social media use is associated with several negative health consequences (Burnell et al., 2019; Koroleva et al., 2011; Selfhout et al., 2009; Shaw et al., 2015; Verduyn et al., 2017). Additionally, Verduyn et al. (2015) found passive Facebook use to be negatively correlated with well-being. These effects are also assumed for the relation between passive Instagram use and life satisfaction. Thus, the first hypothesis is:

*H1: There is a negative correlation between passive Instagram use and satisfaction with life.*

To investigate the moderating role of social comparison orientation on the relationship between Instagram use and satisfaction with life, the moderation effect of social comparison orientation on this relationship should be explored. The moderating effect of social comparison orientation on the relation between social media use and well-being was found in several studies (de Vries et al., 2017; Vogel et al., 2015; Wang et al., 2017). As different social media platforms differ profoundly in the effect they have on their users, it is important to find out whether this interaction effect can also be established for Instagram. Therefore, the second hypothesis is:

*H2: Comparison orientation moderates the relationship between passive Instagram use and satisfaction with life.*

## **Methods**

### **Design**

As the variables passive Instagram use, satisfaction with life and social comparison orientation are already well established, a quantitative cross-sectional design is adopted for measuring the moderating effect of social comparison orientation on the relationship between passive Instagram use and satisfaction with life.

### **Procedure**

The study was submitted and ethically approved by the BMS ethics committee of the University of Twente (request number 220244). After the ethical approval, the survey link was distributed to the participants via Instagram or WhatsApp. After clicking on the survey link, the participants were directed to the survey via Qualtrics.com. A short introduction of the topic of the survey was provided and the participants were asked for informed consent to participate in the study. The participants were educated about the purpose of the study, voluntary participation, their withdrawal rights, anonymity, and data handling. After giving consent to participate in the study, participants were directed to the next section in which they were asked several questions about their demographics, such as age, nationality, and gender. Consequently, the survey items were shown, and the participants had the opportunity to answer several questions and scales relating to mental health and questions regarding their social media use.

At the beginning of the survey, the contact information of the research team was provided in case any questions or problems arise during the data collection. When the participants finished the survey, they were thanked for their participation and were allowed to close the online survey. The whole survey took two about 40 for the participants to complete.

### **Participants**

Convenience and snowball sampling were used to collect data. The participants were recruited via social media, such as Instagram or WhatsApp. Additionally, the study was uploaded into Sona Systems from the University of Twente. Therefore, the survey was accessible to all Psychology students from the University of Twente. Participants who filled in the survey via Sona Systems received 0.25 credits for their participation, of which they need 15 in total for their studies. All other participants did not receive any rewards. The survey was also distributed to the social environment of the researchers, who were asked to forward the survey further.

The survey was available from the 12<sup>th</sup> of April to the third of May of 2022. To ensure the quality and usability of the data some exclusion criteria were pre-established. Therefore, participants under 18 or above 29 years were excluded from the analysis, as the study concerned

young adults only. Additionally, participants who did not indicate to use Instagram were excluded from the analysis. Of the participants,  $n = 6$  were excluded because they failed to provide consent and  $n = 121$  of the participants needed to be excluded because they did not complete the survey. Another  $n = 2$  were excluded as they did not use Instagram and  $n = 4$  people were cleared from the sample as they were above 29 years. Additionally,  $n = 24$  participants had to be excluded as they did not pass the attention check. Therefore, a convenience sample was gathered with  $N = 235$  participants, from which  $N = 76$  participants were included in the analysis. This was in line with the suggested sample size by G\*Power of  $N = 73$ , which was calculated for a two tailed moderation analysis, using a significance criterion of  $\alpha = .05$ , and a power = .90, while expecting an  $f^2 = 0.15$ . The majority of participants were female and from Germany (71.1%). For more details about the demographics of the sample, see Table 1.

**Table 1**

*Demographic Characteristics of Participants*

Characteristic	Sample	
	<i>N</i> (%)	<i>M</i> ( <i>SD</i> )
Age	76 (100)	22.45 (1.45)
Gender	Female	48 (63.2)
	Male	27 (35.5)
	Prefer not to say	1 (1.3)
Nationality	German	54 (71.1)
	Dutch	6 (7.9)
	Other	16 (21.1)

*Note.* *N* = sample size; *M* = Mean; *SD* = Standard Deviation.

**Materials**

For this research, an online survey was established. The survey was a joint work of different researchers who investigated the topic of mental health and social media. For this thesis, a self-invented question measuring Instagram use and two validated scales measuring the comparison orientation and satisfaction with life of the participants were used. The survey can be found in Appendix A. For the data collection, the software Qualtrics was used. To

participate in the survey a working internet connection and a device, preferably a laptop or computer were needed. Participants were able to participate in the survey from wherever they wanted. One item for checking the attention of the participants was incorporated in the survey saying, “If you are paying attention, please select “Strongly disagree””. The participants had to select “Strongly disagree” on a five-point Likert scale, to pass the attention check. Overall, the survey was composed of an information page, consent form, demographic questions, and the above-mentioned scales.

### *Demographics*

For this study, the participants were asked about their age, gender, and nationality. The age was assessed in an open question. Next, they could select their gender from a variety of seven options. Participants were also provided with the option of “prefer not to say”. Lastly, they were asked which nationality they have. For this, participants were able to choose between “German”, “Dutch” and “Other”. For those who picked “Other” a text field was provided to state their nationality.

### *Instagram Use*

For measuring the participants` Instagram use, one item was included in the survey. To this date, no psychometrically evaluated questionnaire for the use of Instagram is established, wherefore a new item measuring the Instagram use of the participants was created. While formulating this item, attention was paid to neutral and easy phrasing. For this analysis, participants were asked to indicate the extent to which they make use of Instagram passively by asking the participants to “Please indicate how much you use Instagram passively. Passive use is defined as browsing content, viewing others' posts, reading comments.”. Participants had to indicate the extent to which they use Instagram passively by selecting their answer on a 7-point Likert scale, where one was “not passively at all” and seven was “only passively”.

### *Iowa-Netherlands-Comparison-Orientation Scale*

The Iowa-Netherlands-Comparison-Orientation Scale is an 11-item scale asking about the extent to which people generally compare themselves to others (Gibbons & Buunk, 1999). The scale is the only valid and reliable scale measuring social comparison orientation. When filling in the Iowa-Netherlands-Comparison Scale, participants had to indicate, to what extent they agree or disagree with the predefined statements, such as “I often try to find out what others think who face similar problems as I face” on a five-point Likert scale, with one being “I disagree strongly” and five being “I agree strongly”. Two items were scored in reverse to ensure the validity of the scale. Its validity and reliability were tested and confirmed for populations of the United States, The Netherlands and Germany (Gibbons & Buunk, 1999; Schneider &

Schupp, 2011). The internal reliability of the Iowa-Netherlands-Comparison Scale ranges from  $\alpha = .78$  to  $.85$  and shows strong temporal stability ( $.60$  to  $.71$ ) (Buunk & Gibbons, 1999). Buunk and Gibbons (1999) also established the validity of the scale as being good. For the sample used in this thesis, the internal reliability was good with a Cronbach's Alpha of  $\alpha = .78$ .

#### *Satisfaction with Life Scale*

The Satisfaction with Life Scale is a measure of global life satisfaction with good reliability ( $\alpha = .61$  to  $.81$ ) and validity (Diener et al., 1985; Pavot et al., 1991). This was supported by the findings of this analysis. In the used sample a Cronbach's alpha of  $\alpha = .85$  was found suggesting very good internal consistency. The scale contains five questions, and the participants had to indicate to what extent they agree or disagree with given statements, such as “I am satisfied with my life”. Therefore, participants had to make choices on a seven-point Likert scale ranging from “strongly agree”, to “disagree strongly”.

#### **Data Analysis**

For this analysis, passive Instagram use served as the independent variable, comparison orientation as the moderator variable and satisfaction with life as the dependent variable. The data analysis was performed using IBM SPSS statistics Version 28.0.1. First, the data was cleaned, by assigning values to specific answers where necessary, re-coding the data of reversed items and erasing invalid responses, to facilitate the analysis.

Next, several assumptions were tested to check whether the data is suitable for performing linear regressions. In that regard, the data was tested for normality. This test was performed using the Shapiro-Wilk test and by looking at the respective Q-Q plots, as well as the skewness of the variable data. Only the data on comparison orientation was normally distributed, which is why the data measuring satisfaction with life and comparison orientation was transformed using the square root transformation. After transforming the data to fit a normal distribution, uncorrelatedness of the residuals was tested, by performing the Durbin-Watson test. Next, multicollinearity was assessed by looking at the variance inflation factor (VIF) of the independent variable and the moderator. To check the assumption of homoscedasticity, the Breusch-Pagan test was used to test the hypothesis, that the error variances are equal across the sample. To make sure that not only the data but also the residuals in the estimated model were normally distributed, the Shapiro-Wilk test and the Q-Q Plot of the residuals were checked. Lastly, it was made sure that there were no outliers within the dataset, by investigating the interquartile range of the variables.

Subsequently, descriptive statistics of the gathered data were calculated. To test the pre-established hypotheses, a correlational analysis between the independent variable passive

Instagram use and the dependent variable satisfaction with life was performed using Pearson's correlation coefficient. A correlation of  $r < .30$  indicated a weak correlation,  $r < .50$  a moderate and  $r > .50$  a strong correlation. After that, the moderation effect of comparison orientation on the relationship between passive Instagram use and satisfaction with life was investigated using the SPSS extension PROCESS 4.0 by Andrew Hayes (n.d.). Therefore, a multiple linear regression was performed using a two tailed test with an  $\alpha = .05$  as a cut-off value for statistical significance. By this, it was investigated whether the supposed interaction effect of passive Instagram use, and comparison orientation was able to significantly predict life satisfaction.

## Results

### Descriptive Statistics

A sample size of  $N=76$  was used for analysis, which fit the suggested sample size by the G\*Power analysis of  $N=73$ . At first descriptive statistics were calculated for each variable. Overall, the participants were dissatisfied with their life ( $M=14.04$ ), as scores on the Satisfaction with Life Scale between 10 and 14 indicate dissatisfaction with life. Additionally, the participants made use of Instagram more passively than actively, as can be seen in the large left skew of the data. When looking at the Iowa-Netherlands Comparison Orientation scores, the light left skew of the data shows that the participants tend to engage in social comparisons regarding their abilities, behaviours, and opinions. Table 2 shows all descriptive statistics for all three variables. The survey took the participants about 40 minutes to complete.

**Table 2**

*Descriptive Statistics for the variables passive Instagram use, comparison orientation and satisfaction with life*

	<i>M</i>	<i>SD</i>	Variance	Confidence Interval	
				Lower	Upper
Passive Instagram Use	5.51	0.84	0.71	5.33	5.7
Comparison Orientation	3.26	0.35	0.12	3.18	3.34
Satisfaction with Life	14.04	5.53	30.63	12.82	15.34

*Note.*  $N=76$ ;  $M$ =Mean;  $SD$  = Standard Deviation; Confidence Interval = 95%.



## Assumption check

### *Normality*

To whether the assumptions for conducting a multiple linear regression were met, all three variables were tested for normality. The Shapiro Wilk test showed a significant deviation from normality for the variables of satisfaction with life ( $W(76) = .97, p = .04$ ) and passive Instagram use ( $W(76) = .84, p < .001$ ), and therefore suggested a non-normal distribution for the data of those variables.. This finding was also supported by the Q-Q plot (see Appendix B and C). Thus, both, the variable satisfaction with life and the variable passive Instagram use were transformed using the square root transformation leading to a normal distribution within the data of satisfaction with life ( $W(76) = .97, p = .06$ ) but not within the data of passive Instagram use ( $W(76) = .85, p < .001$ ) (see also Q-Q Plot, Appendix D and E). Therefore, also the skewness of the data of passive Instagram use and the Q-Q plot were looked at again, which both indicated that the data is approximately normally distributed (skewness of 0.19,  $SE = .28$ ). For comparison orientation the Shapiro-Wilk test established non-significant values of  $W(76) = .98, p = .20$  suggesting a normal distribution of the variable data, which was also supported by the Q-Q plot (Appendix F) and the skewness (-0.18). Therefore, it is assumed that the variable comparison orientation is following a normal distribution and is suitable for further regression analysis.

### *Uncorrelatedness of Residuals*

To ensure that the observations are independent and provide no information about the occurrence of another observation, the residuals must not be serially correlated. Therefore, the Durbin-Watson test was performed, which supported the assumption that the observations were indeed independent (Durbin-Watson = 1.93).

### *Multicollinearity*

To estimate a linear regression the independent variables must not be strongly correlated. Therefore, the variables were tested for multicollinearity. For this, the variance inflation factor (VIF) was looked at. Both independent variables, passive Instagram use and comparison orientation showed high VIF-values indicating strong multicollinearity, namely  $VIF = 77.92$  and  $VIF = 32.58$ , respectively. Therefore, the variables were mean centered to correct the collinear nature of the data leading to VIF values of  $VIF = 1.04$  for passive Instagram use and  $VIF = 1.01$  for comparison orientation. With the mean-centered values, the interaction effect was calculated, which also showed no sign of multicollinearity with either of the independent variables ( $VIF = 1.04$ ).

### *Homoscedasticity*

To test the assumption of homoscedasticity, hypothesising that the variance stays equal across the sample, the Breusch-Pagan test was performed. No indication of heteroscedasticity was found, with  $p = .76$ . This finding was also supported visually by a scatter plot (Appendix G), wherefore it was concluded that the assumption of homoscedasticity was met.

### *Normality of Residuals*

Next to the raw data, also the residuals were tested to meet the assumption of normality. The Q-Q Plot of the residuals (Appendix H) indicated a light skew to the right of 0.21, even though the Shapiro Wilk test indicated a normally distribution ( $W(76) = .97, p = .05$ ).

### *Outliers*

No outliers were detected in the dataset.

## **Passive Instagram Use on Satisfaction with Life**

The first hypothesis, *there is a negative correlation between passive Instagram use and satisfaction with life*, was tested using Pearson's correlation coefficient. This revealed a weak, statistically non-significant positive relationship between the two variables ( $r(76) = .05, p = .69$ ). Therefore, the first hypothesis is to be rejected.

## **Moderation effect of Comparison Orientation on the relationship between passive Instagram use and Satisfaction with Life**

The second hypothesis, *comparison orientation moderates the relationship between passive Instagram use and satisfaction with life*, was tested using the PROCESS macro by Hayes (n.d.) for moderation analysis. Overall, the model was not significant ( $F(3, 72) = 0.85, p = .47, R^2 = .03$ ). Therefore, it must be concluded that the model of passive Instagram use and comparison orientation predicting life satisfaction was not was not able to predict the effect of passive Instagram use and comparison orientation on satisfaction with life.

Additionally, the effect of passive Instagram use on life satisfaction was found to be non-significant ( $b = .09, p = .80$ ), meaning that passive Instagram use can not predict satisfaction with life. Next, the effect of comparison orientation on satisfaction with life was examined. The results showed that comparison orientation was not significantly connected to satisfaction with life ( $b = .39, p = .13$ ). Additionally, the interaction effect was found to be non-significant ( $b = -.12, p = .09$ ), suggesting no moderating effect of comparison orientation on the relationship between passive Instagram use and satisfaction with life (Table 3). Therefore, it can be concluded that there is no moderating effect of comparison orientation, resulting in the rejection of the second hypothesis.

**Table 3**

*Unstandardised values for the interaction effect of comparison orientation on the relationship between passive Instagram use and satisfaction with life*

	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>
Constant	3.67	.09	42.14	<.01
Passive Instagram Use	.09	.34	.26	.80
Comparison Orientation	.39	.25	-1.54	.13
Passive Instagram Use * Comparison Orientation	-.12	.91	-.13	.90

*Note.*  $N = 76$ ;  $SE =$  Standard Error; Confidence interval = 95%.

### Discussion

The aim of this thesis was to deepen the understanding of the relationship between passive Instagram use and satisfaction with life. Moreover, a possible moderation effect of comparison orientation was examined, to answer the research question: *Does comparison orientation moderate the relationship between passive Instagram use and satisfaction with life?* For this purpose, two hypotheses were established, namely *There is a negative correlation between passive Instagram use and satisfaction with life* and *Comparison orientation moderates the relationship between passive Instagram use and satisfaction with life*, which were both rejected based on the results of this analysis.

The suggested negative correlation between passive Instagram use and satisfaction with life, was not found to be significant in this analysis, suggesting that there is no association between passive Instagram use and life satisfaction. This stands in contrast with many studies supporting the passive social media use hypothesis on well-being (Hall et al., 2019; Lachmann et al., 2018; Sheldon & Bryant, 2016). One explanation for the contradicting findings could be that passive social media use decreases subjective well-being by loading only on the affective component of well-being. This would be in line with the findings of Verduyn et al. (2015), who found that passive Facebook usage is associated with negative affect by increasing the feeling of envy and thereby decreasing well-being. Therefore, one possible explanation for the different

findings is that passive Instagram use might influence the affective component of well-being but not the cognitive component and thus is not associated with life satisfaction.

Another explanation for not finding a relationship between passive Instagram use and satisfaction with life might be associated with the understanding of the concept of life satisfaction as such. Stubbe et al. (2005) conducted a twin-study in which they found that about 38% of one's life satisfaction can be attributed to genetic influences. Therefore, individual life satisfaction may be partly inherited, which means that next to environmental factors, genetics are a major influence on individual life satisfaction. This would provide room to suggest that life satisfaction might be more stable and less variable than thought, making it less susceptible to short-term influences, such as browsing on social media. In line with that Headey and Wearing (1992) found that people seem to have a baseline life satisfaction to which they balance back after negative or positive life events. Thus, life satisfaction can decrease during negative life events but most of the time people are able to adapt to these situations and get back to their baseline life satisfaction (Headey & Wearing, 1992). Therefore, it may be that life satisfaction is a rather stable factor across the life span. This would mean that life satisfaction could be influenced by Instagram on a short-term basis but will most likely bounce back to one's normal level of life satisfaction after a short time, making it rather unlikely for life satisfaction to be persistently influenced by the use of Instagram. Thus, it might be that the effects of Instagram usage on life satisfaction are detectable immediately after using Instagram but due to the resilience of life satisfaction, it is hard to grasp these effects at a later point in time.

Additionally, Schimmack and Oishi (2005) found that domain-specific satisfaction is one of the most proximal predictors of overall life satisfaction. Domain-specific satisfaction relates to the happiness or satisfaction in specific areas of one's life. Thus, overall life satisfaction is influenced by the sum of all domain-specific satisfactions, which are influenced by the individual life events. Therefore, another possible explanation for the missing effect of passive Instagram use on satisfaction with life is that the passive Instagram use may only affect specific domains. If only one of the domains relating to life satisfaction is influenced by Instagram use, the effect of this one domain compared to all other domains may be too small to be detected by measuring overall life satisfaction. This could also explain why no moderation effect of comparison orientation was found and the second hypothesis was rejected in this analysis as well. If for example, someone is following a lot of travel influencers, the person might compare their luxurious vacations to his/her own vacations. Therefore, the satisfaction in the domain of vacation gets lower. Still, the overall satisfaction of that person's life only decreases very marginally, as there are a lot of other domains which were not affected by

looking at the travel influencers. Therefore, this decrease in one domain is compensated for in other domains and it does not lead to a measurable overall decline in life satisfaction. Thus, there might be a moderation of comparison orientation but rather on the relationship between passive Instagram use and domain-specific satisfaction and not overall life satisfaction.

The second hypothesis, that comparison orientation does moderate the relationship between passive Instagram use and life satisfaction, was rejected by this analysis. Generally, the missing moderation effect of comparison orientation on passive Instagram use and life satisfaction may contrast existing literature. De Vries et al. (2017) and Wang et al. (2017) investigated the moderating effect of comparison orientation on the correlation between passive social media use and well-being. Contrastingly to this analysis, they found that comparison orientation does moderate the relationship between passive social media use and well-being. Social comparisons elicit the feeling of envy and that others are better off (Chen et al., 2016; Suls & Wheeler, 2000), which are both emotions and therefore closely related to the affective component of well-being (Taj et al., 2020) and not life satisfaction. As already pointed out above, satisfaction with life is only one of the components of well-being and therefore comparison orientation might only moderate the relation between passive Instagram use and affective states but not overall life satisfaction, explaining the different results of de Vries et al. (2017) and Wang et al. (2017) compared to this analysis.

Additionally, according to this analysis, the concepts of comparison orientation and satisfaction with life were largely unrelated. This finding contrasts the literature, which suggests that comparison orientation is not only associated with satisfaction with life but plays a crucial role in individual life satisfaction (Buunk et al., 2007; Civitci & Civitci, 2015; Clark & Oswald, 1996; D'Ambrosio & Frick, 2007; Edillo et al., 2012; Hagerty, 2000; McBride, 2001). The contradicting results could have resulted from the fact that many studies investigating the relationship between comparison orientation and life satisfaction focus on major life influences such as income, job satisfaction, unemployment or family circumstances (Buunk et al., 2007; Clark & Oswald, 1996). Thus, being a widow or being unemployed substantially influences life satisfaction even for longer periods of time and after being employed again, when comparing your own life situation with that of others. In this analysis, comparison behaviours were not reduced to single constructs such as income or employment. Hence, general comparison orientation, which also incorporates comparisons that affect one's life circumstances to a lesser extent, such as hobbies or vacation destinations, may have a smaller influence on general life satisfaction. This leads to the assumption that comparison orientation may have a substantial contribution to life satisfaction when talking about major life influences, such as

unemployment, but not so much in relation to minor life circumstances, such as vacation destinations.

Even though no significant effects were found within this study, the study has brought some insights into how passive Instagram use affects life satisfaction and the role of comparison orientation on that effect. The study was the first to investigate the moderation effect of comparison orientation on the relationship between passive Instagram use and life satisfaction. It showed that the passive social media use hypothesis may not hold in relation to satisfaction with life and Instagram. Additionally, it provided grounds to assume that this relationship may only pertain to the affective component of well-being. Therefore, passive Instagram use may not be as harmful for satisfaction with life as it seems to be for subjective well-being. The results of this study also imply that comparison processes may have less influence on satisfaction with life than many studies suggest. Still, further research is needed to support these assumptions and draw valid conclusions.

In conclusion, no association between passive Instagram use and satisfaction with life was found. Also, the moderation effect of comparison orientation was not confirmed by this analysis. This contrasts most existing literature and provides grounds to assume that satisfaction with life may not play a role when investigating Instagram usage. Additionally, the findings of this study suggest that the relationship between passive Instagram use and life satisfaction may be more complex than expected and that other factors such as genetics or domain-specific satisfaction should be considered. This underlines the complexity of the topic and provides grounds for future research.

### **Strengths and Limitations**

The conducted study has many strengths but also some limitations. First of all, the conducted sample size ( $N = 76$ ) was large enough to satisfy the minimum sample size of  $N = 73$ . This ensured the usability of the data to draw valid and reliable conclusions from it. Additionally, two out of the three scales that were used fulfilled the criteria of being validated, reliable and intensely used within research. Solely the passive Instagram use item was self-invented. The reliability of the two scales was also established for the sample used in this study, showing that both the Iowa-Netherlands Comparison Orientation Measure and the Satisfaction with Life Scale were appropriate for measuring the intended constructs. Additionally, a more differentiated picture was drawn by this analysis, as this thesis focused on a specific social media platform (Instagram) and the Instagram usage was divided into active and passive. This provided additional, more detailed information about user behaviour on Instagram.

A limitation of this study pertains to the number of participants that were lost during the data collection. Of the initially  $N = 235$  people who started to fill in the survey more than half ( $n=121$ ) were lost because they did not complete the survey. This may be due to the survey length. Revilla and Ochoa (2017) established that the ideal survey length is 10 minutes, and a maximum of 20 minutes should not be exceeded. Additionally, Galesic and Bosnjak (2009) found that with increasing survey length, the quality of answers decreases. Therefore, the rather long completion time and the large number of items may have led to less qualitative answers from the participants and higher dropout rates.

Additionally, another study design could have brought more elaborative insights into the relationship between the three variables. Self-reported measures always have a risk of biases and may lead to distorted results (Brenner et al., 2003). This could have been the case, especially for the item measuring the passive Instagram use of the participants. This item was self-invented and therefore provided no validity or reliability measures. Also, it may be hard for participants to estimate the time they spend actively or passively on Instagram, as this can vary from day to day. A validated scale measuring the active, passive or general user behaviour on Instagram would therefore be preferable. This cross-sectional survey only provided insight at a specific moment, leaving less room for investigating the immediate effects of Instagram use on life satisfaction. Also, as Life satisfaction is found to be a rather stable construct, the short-lived increases or decreases in life satisfaction are hard to detect using a survey.

### **Recommendations**

This study brought up several recommendations for future research. Firstly, future research should focus less on active or passive Instagram usage and more on the specific user behaviour. Instagram has many unique features that are actively targeting comparison tendencies within individuals, such as Influencers or filters. With its passive nature, most Instagram users spend more time browsing through the app than creating their own content. Therefore, investigating the difference between active and passive use is not goal-directed and lacks application, which was confirmed in this analysis. Therefore, it might be more effective to refrain from the distinction of active and passive use in the future and focus on more specific usage patterns such as following behaviour or specific interventions to counteract the negative effects of social media use in general.

Secondly, experiments or experience sampling studies can help to get more insights into the dynamics of the moderation of comparison orientation on passive Instagram use and life satisfaction or well-being. By manipulating the variables in a controlled way, it is easier to draw conclusions from the data. This could be especially valuable when investigating the relationship

between passive Instagram use and mental health. In that regard, more elaborate insights could be gained by making use of experience sampling methods, which provide more detailed information about the persons' behaviour on the social networking site and the resulting thoughts or emotions. With the use of experience sampling, the feelings, thoughts and behaviours of people can be documented and analysed more extensively (Larson & Csikszentmihalyi, 2014). Therefore, longitudinal designs providing the experience from participants across time would be beneficial for understanding the relationship between the concepts. This could also help in understanding the distinct effects of active and passive use and how they affect individual well-being. Experience sampling could also be a good method to overcome the stability argument made earlier in relation to life satisfaction. Investigating immediate effects of Instagram use with the help of experience sampling could give valuable insights into whether the use of Instagram has short-term effects on life satisfaction. Additionally, it could help to understand how Instagram influences life satisfaction and whether it targets specific domains of one's life satisfaction, as suggested.

Lastly, making comparisons between the effect of passive Instagram use on the affective component of well-being and the effect of passive Instagram use on the cognitive component of life satisfaction might deepen the understanding of their relationship. Many studies found correlations between well-being and passive Instagram use. Those relationships were not yet established for the sub-component of well-being, satisfaction with life, which this study also failed to establish. Therefore, it might be that passive Instagram use is connected to the affective component of well-being but not life satisfaction. By this, new insights could be gained to establish the extent to which the affective component and the cognitive component of well-being are affected by passive Instagram use.

### **Conclusion**

While the problematic use of social media and Instagram especially among young adults is commonly discussed within society, previous findings indicating a negative relationship between passive Instagram use and life satisfaction were not confirmed by this analysis. Additionally, this study did not find an interaction effect between passive Instagram use and comparison orientation to predict life satisfaction. Therefore, it can be assumed that a higher potential to compare oneself to others may not lead to reduced life satisfaction when engaging in passive Instagram use. Still, these findings need further support and confirmation.



### Reference List

- Andrews, F. M., & Withey, S. B. (1976). *Social Indicators of Well-being: Americans' Perceptions of Life Quality* (1<sup>st</sup> ed.) Springer.
- Asbury, T., & Hall, S. (2013). Facebook as a Mechanism for Social Support and Mental Health Wellness. *Psi Chi Journal of Psychological Research*, 18(3), 124–129. <https://doi.org/10.24839/2164-8204.jn18.3.124>
- Auxier, B., & Anderson, M., (2021, April 7). *Social Media Use in 2021*. Pew Research Center. <https://www.pewresearch.org/internet/2021/04/07/social-media-use-in-2021/>
- Bakhshi, S., Shamma, D. A., & Gilbert, E. (2014). Faces engage us: Photos with faces attract more likes and comments on Instagram. In M. Jones, & P. Palanque (Eds.), *Proceedings of the 32nd annual ACM conference on Human factors in computing systems* (pp. 965-974). ACM.
- Berryman, C., Ferguson, C. J., & Negy, C. (2017). Social Media Use and Mental Health among Young Adults. *Psychiatric Quarterly*, 89(2), 307–314. <https://doi.org/10.1007/s11126-017-9535-6>
- Blakemore, S. J. (2019). Adolescence and mental health. *The Lancet*, 393(10185), 2030–2031. [https://doi.org/10.1016/s0140-6736\(19\)31013-x](https://doi.org/10.1016/s0140-6736(19)31013-x)
- Blomfield Neira, C. J., & Barber, B. L. (2014). Social networking site use: Linked to adolescents' social self-concept, self-esteem, and depressed mood: SNS use and adolescent indicators of adjustment. *Australian Journal of Psychology*, 66(1), 56–64. <https://doi.org/10.1111/ajpy.12034>
- Brailovskaia, J., & Margraf, J. (2018). What does media use reveal about personality and mental health? An exploratory investigation among German students. *PLOS ONE*, 13(1), e0191810. <https://doi.org/10.1371/journal.pone.0191810>
- Brener, N. D., Billy, J. O. G., & Grady, W. R. (2003). Assessment of factors affecting the validity of self-reported health-risk behavior among adolescents: evidence from the scientific literature. *Journal of Adolescent Health*, 33(6), 436-457. [https://doi.org/10.1016/S1054-139X\(03\)00052-1](https://doi.org/10.1016/S1054-139X(03)00052-1)
- Burnell, K., George, M. J., Vollet, J. W., Ehrenreich, S. E., & Underwood, M. K. (2019). Passive social networking site use and well-being: The mediating roles of social comparison and the fear of missing out. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, 13(3). <https://doi.org/10.5817/cp2019-3-5>
- Buunk, A. P., & Gibbons, F. X. (2006). Social comparison orientation: A new perspective on those who do and those who don't compare with others. In S. Guimond (Ed.), *Social*

- comparison and social psychology: Understanding cognition, intergroup relations, and culture* (pp. 15–32). Cambridge University Press.
- Buunk, A. P., & Gibbons, F. X. (2007). Social comparison: The end of a theory and the emergence of a field. *Organizational Behavior and Human Decision Processes*, *102*(1), 3–21. <https://doi.org/10.1016/j.obhdp.2006.09.007>
- Buunk, A. P., Groothof, H. A., & Siero, F. W. (2007). Social comparison and satisfaction with one's life. *Journal of Social and Personal Relationships*, *24*(2), 197-205. <https://doi.org/10.1177/0265407507075410>
- Burnell, K., George, M. J., Vollet, J. W., Ehrenreich, S. E., & Underwood, M. K. (2019). Passive social networking site use and well-being: The mediating roles of social comparison and the fear of missing out. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, *13*(3). <http://dx.doi.org/10.5817/CP2019-3-5>
- Campisi, J., Folan, D., Diehl, G., Kable, T., & Rademeyer, C. (2015). Social media users have different experiences, motivations, and quality of life. *Psychiatry Research*, *228*(3), 774–780. <https://doi.org/10.1016/j.psychres.2015.04.042>
- Ceballos, N. A., Howard, K., Dailey, S., Sharma, S., & Grimes, T. (2018). Collegiate binge drinking and social media use among hispanics and non-hispanics. *Journal of Studies on Alcohol and Drugs*, *79*(6), 868-875. <https://doi.org/10.15288/jsad.2018.79.868>
- Chen, W., Fan, C. Y., Liu, Q. X., Zhou, Z. K., & Xie, X. C. (2016). Passive social network site use and subjective well-being: A moderated mediation model. *Computers in Human Behavior*, *64*, 507–514. <https://doi.org/10.1016/j.chb.2016.04.038>
- Civitci, N., & Civitci, A. (2015). Social Comparison Orientation, Hardiness and Life Satisfaction in Undergraduate Students. *Procedia - Social and Behavioral Sciences*, *205*, 516–523. <https://doi.org/10.1016/j.sbspro.2015.09.062>
- Clark, A., & Oswald, A. J. (1996). Satisfaction and comparison income. *Journal of Public Economics*, *61*(3), 359–381. [https://doi.org/10.1016/0047-2727\(95\)01564-7](https://doi.org/10.1016/0047-2727(95)01564-7)
- Clark, A., & Senik, C. (2010). Who compares to whom? The anatomy of income comparisons in Europe. *The Economic Journal*, *120*(544), 573-594. <https://doi.org/10.1111/j.1468-0297.2010.02359.x>
- D'Ambrosio, C., & Frick, J. R. (2007). Income Satisfaction and Relative Deprivation: An Empirical Link. *Social Indicators Research*, *81*, 497–519. <https://doi.org/10.1007/s11205-006-0020-0>
- De Vries, D. A., Möller, A. M., Wieringa, M. S., Eigenraam, A. W., & Hamelink, K. (2017). Social Comparison as the Thief of Joy: Emotional Consequences of Viewing Strangers'

- Instagram Posts. *Media Psychology*, 21(2), 222–245.  
<https://doi.org/10.1080/15213269.2016.1267647>
- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction with Life Scale. *Journal of Personality Assessment*, 49, 71-75.
- Dollarhide, M. (2021). *Social Media*. Investopedia.  
<https://www.investopedia.com/terms/s/social-media.asp>
- Edillo, M. T. A. F., Turiano, M. K. U., Reyes, J. A. S., & Villanueva, C. L. J. G. (2012). The mediating role of social comparison in the relationship between choice-making orientation and subjective well-being. *Philippine Journal of Counselling Psychology*, 14(1), 13-28.
- Engeln, R., Loach, R., Imundo, M. N., & Zola, A. (2020). Compared to Facebook, Instagram use causes more appearance comparison and lower body satisfaction in college women. *Body Image*, 34, 38–45. <https://doi.org/10.1016/j.bodyim.2020.04.007>
- Errasti, J., Amigo, I., & Villadangos, M. (2017). Emotional Uses of Facebook and Twitter: Its Relation With Empathy, Narcissism, and Self-Esteem in Adolescence. *Psychological Reports*, 120(6), 997–1018. <https://doi.org/10.1177/0033294117713496>
- Festinger, L. (1954). A Theory of Social Comparison Processes. *Human Relations*, 7(2), 117–140. <https://doi.org/10.1177/001872675400700202>
- Fioravanti, G., Probst, A., & Casale, S. (2020). Taking a Short Break from Instagram: The Effects on Subjective Well-Being. *Cyberpsychology, Behavior, and Social Networking*, 23(2), 107–112. <https://doi.org/10.1089/cyber.2019.0400>
- Galesic, M., & Bosnjak, M. (2009). Effects of Questionnaire Length on Participation and Indicators of Response Quality in a Web Survey. *Public Opinion Quarterly*, 73(2), 349–360. <https://doi.org/10.1093/poq/nfp031>
- Gerson, J., Plagnol, A. C., & Corr, P. J. (2017). Passive and Active Facebook Use Measure (PAUM): Validation and relationship to the Reinforcement Sensitivity Theory. *Personality and Individual Differences*, 117, 81–90.  
<https://doi.org/10.1016/j.paid.2017.05.034>
- Gibbons, F. X., & Buunk, B. P. (1999). Individual differences in social comparison: Development of a scale of social comparison orientation. *Journal of Personality and Social Psychology*, 76(1), 129–142. <https://doi.org/10.1037/0022-3514.76.1.129>
- Griffiths, S., Murray, S. B., Krug, I., & McLean, S. A. (2018). The contribution of social media to body dissatisfaction, eating disorder symptoms, and anabolic steroid use among

- sexual minority men. *Cyberpsychology, Behaviour, and Social Networking*, 21(3), 149-156. <https://doi.org/10.1089/cyber.2017.0375>
- Hawi, N. S., & Samaha, M. (2016). The Relations Among Social Media Addiction, Self-Esteem, and Life Satisfaction in University Students. *Social Science Computer Review*, 35(5), 576–586. <https://doi.org/10.1177/0894439316660340>
- Headey, B., & Wearing, A. (1992). *Understanding happiness: A theory of subjective well-being*. Melbourne: Longman Cheshire.
- Hagerty, M. R. (2000). Social comparisons of income in one's community: Evidence from national surveys of income and happiness. *Journal of Personality and Social Psychology*, 78(4), 764–771. <https://doi.org/10.1037/0022-3514.78.4.764>
- Hakmiller, K. L. (1966). Threat as a determinant of downward comparison. *Journal of Experimental Psychology*, 1(1), 32-39. [https://doi.org/10.1016/0022-1031\(66\)90063-1](https://doi.org/10.1016/0022-1031(66)90063-1)
- Hall, J. A., Johnson, R. M., & Ross, E. M. (2019). Where does time go? An experimental test of what social media displaces and displaced activities' associations with affective well-being and quality of day. *New Media & Society*, 21(3), 674-692. <https://doi.org/10.1177/1461444818804775>
- Hayes, A. F. (n.d.). Process macro for SPSS and Sas. The PROCESS macro for SPSS, SAS, and R. <http://processmacro.org/index.html>.
- Houghton, D., Pressey, A., & Istabulluoglu, D. (2020). Who needs social networking? An empirical enquiry into the capability of Facebook to meet human needs and satisfaction with life. *Computers in Human Behavior*, 104, 106153. <https://doi.org/10.1016/j.chb.2019.09.029>
- Kim, D. H., Seely, N. K., & Jung, J. H. (2017). Do you prefer, Pinterest or Instagram? The role of image-sharing SNSs and self-monitoring in enhancing ad effectiveness. *Computers in Human Behaviour*, 70, 535-543. <https://doi.org/10.1016/j.chb.2017.01.022>
- Koroleva, K., Krasnova, H., Veltri, N., & Günther, O. (2011). It's All About Networking! Empirical Investigation of Social Capital Formation on Social Network Sites. *The Thirty Second International Conference on Information Systems*. <https://doi.org/10.7892/boris.47120>
- Lachmann, B., Sindermann, C., Sariyska, R. Y., Luo, R., Melchers, M. C., Becker, B., Cooper, A. J., & Montag, C. (2018). The Role of Empathy and Life Satisfaction in Internet and Smartphone Use Disorder. *Frontiers in Psychology*, 9. <https://doi.org/10.3389/fpsyg.2018.00398>

- Larson, R., & Csikszentmihalyi, M. (2014). *The Experience Sampling Method*. In: Flow and the Foundations of Positive Psychology. Springer. [https://doi.org/10.1007/978-94-017-9088-8\\_2](https://doi.org/10.1007/978-94-017-9088-8_2)
- Lup, K., Trub, L., & Rosenthal, L. (2015). Instagram #Instasad?: Exploring Associations Among Instagram Use, Depressive Symptoms, Negative Social Comparison, and Strangers Followed. *Cyberpsychology, Behavior, and Social Networking*, 18(5), 247–252. <https://doi.org/10.1089/cyber.2014.0560>
- McBride, M. (2001). Relative-income effects on subjective well-being in the cross section. *Journal of Economic Behavior & Organization*, 45(3), 251-278. [https://doi.org/10.1016/S0167-2681\(01\)00145-7](https://doi.org/10.1016/S0167-2681(01)00145-7)
- Neto, F. (1995). Predictors of satisfaction with life among second generation migrants. *Social Indicators Research*, 35(1), 93–116. <https://doi.org/10.1007/bf01079240>
- Pavot, W. G., Diener, E., Colvin, C. R., & Sandvik, E. (1991). Further validation of the Satisfaction with Life Scale: Evidence for the cross-method convergence of well-being measures. *Journal of Personality Assessment*, 57(1), 149-161. [https://doi.org/10.1207/s15327752jpa5701\\_17](https://doi.org/10.1207/s15327752jpa5701_17)
- Pavot, W., & Diener, E. (1993). The affective and cognitive context of self-reported measures of subjective well-being. *Social Indicators Research*, 28(1), 1–20. <https://doi.org/10.1007/bf01086714>
- Rettberg, J. W. (2014). *Seeing Ourselves Through Technology: How We Use Selfies, Blogs and Wearable Devices to See and Shape Ourselves* (2014th ed.). Palgrave Macmillan.
- Revilla, M., & Ochoa, C. (2017). Ideal and Maximum Length for a Web Survey. *International Journal of Market Research*, 59(5), 557-565. <https://doi.org/10.2501%2FIJMR-2017-039>
- Rogers, A., Fuller-Tyszkiewicz, M., Lewis, V., Krug, I., & Richardson, B. (2017). A Person-by-Situation Account of Why Some People More Frequently Engage in Upward Appearance Comparison Behaviors in Everyday Life. *Behavior Therapy*, 48(1), 19–28. <https://doi.org/10.1016/j.beth.2016.09.007>
- Rousseau, A., Eggermont, S., & Frison, E. (2017). The reciprocal and indirect relationships between passive Facebook use, comparison on Facebook, and adolescents' body dissatisfaction. *Computers in Human Behaviour*, 73, 336-334. <https://doi.org/10.1016/j.chb.2017.03.056>
- Selfhout, M. H. W., Branje, S. J. T., Delsing, M., ter Bogt, T. F. M., & Meeus, W. H. J. (2009). Different types of internet use, depression, and social anxiety: The role of perceived

- friendship quality. *Journal of Adolescence*, 32(4), 819–833.  
<https://doi.org/10.1016/j.adolescence.2008.10.011>
- Schimmack, U., & Oishi, S. (2005). The influence of chronically and temporarily accessible information on life satisfaction judgments. *Journal of Personality and Social Psychology*, 89(3), 395–406. <https://doi.org/10.1037/0022-3514.89.3.395>
- Schmuck, D., Karsay, K., Matthes, J., & Stevic, A. (2019). “Looking up and Feeling Down”. The Influence of mobile social networking site use on upward social comparison, self-esteem, and well-being of adult smartphone users. *Telematics and Informatics*, 42, 101240. <https://doi.org/10.1016/j.tele.2019.101240>
- Schneider, S., & Schupp, J. (2011). The Social Comparison Scale: Testing the Validity, Reliability, and Applicability of the Iowa-Netherlands Comparison Orientation Measure (INCOM) on the German Population. *SOEPpapers on Multidisciplinary Panel Data Research(360)*.
- Seabrook, E. M., Kern, M. L., & Rickard, N. S. (2016). Social Networking Sites, Depression, and Anxiety: A Systematic Review. *JMIR Mental Health*, 3(4), e50. <https://doi.org/10.2196/mental.5842>
- Sharma, M. K., John, N., & Sahu, M. (2020). Influence of social media on mental health. *Current Opinion in Psychiatry, Publish Ahead of Print*. <https://doi.org/10.1097/yco.0000000000000631>
- Shaw, A. M., Timpano, K. R., Tran, T. B., & Joormann, J. (2015). Correlates of Facebook usage patterns: The relationship between passive Facebook use, social anxiety symptoms, and brooding. *Computers in Human Behavior*, 48, 575–580. <https://doi.org/10.1016/j.chb.2015.02.003>
- Sheldon, P., & Bryant, K. (2016). Instagram: Motives for its use and relationship to narcissism and contextual age. *Computers in Human Behavior*, 58, 89-97. <https://doi.org/10.1016/j.chb.2015.12.059>
- Shin, D. C., & Johnson, D. M. (1978). Avowed happiness as an overall assessment of the quality of life. *Social Indicators Research*, 5(1–4), 475–492. <https://doi.org/10.1007/bf00352944>
- Statista Research Department. (2022, February 8). *Instagram Statistics & Facts*. [https://www.statista.com/topics/1882/instagram/#topicHeader\\_\\_wrapper](https://www.statista.com/topics/1882/instagram/#topicHeader__wrapper)
- Stubbe, J. H., Posthuma, D., Boomsma, D. I., & de Geus, E. J. C. (2005). Heritability of life satisfaction in adults: a twin-family study. *Psychological Medicine*, 35(11), 1581–1588. <https://doi.org/10.1017/s0033291705005374>

- Suls, J., Wheeler, L. (2000). *Handbook of Social Comparison. Theory and Research*. Kluwer Academic Publishers. New York. doi:10.1007/978-1-4615-4237-7
- Taj, A., Ali, S., Zaheer, Z., Gul, M. (2020). Impact on Envy on Employee Wellbeing: Role of Self-efficacy and Job Satisfaction. *Journal of Behavioural Science*, 30(2), 97.
- Thornton, D. A., & Arrowood, A. J. (1966). Self-evaluation, self-enhancement, and the locus of social comparison. *Journal of Experimental Social Psychology*, 1(1), 40-48. [https://doi.org/10.1016/0022-1031\(66\)90064-3](https://doi.org/10.1016/0022-1031(66)90064-3)
- Vannucci, A., McCauley Ohannessian, C., & Gagnon, S. (2018). Use of Social Media Platforms in Relation to Psychological Functioning in Emerging Adults. *Emerging Adulthood*, 7(6), 501-506. <https://doi.org/10.1177%2F2167696818782309>
- Verduyn, P., Lee, D. S., Park, J., Shablack, H., Orvell, A., Bayer, J., Ybarra, O., Jonides, J., & Kross, E. (2015). Passive Facebook usage undermines affective well-being: Experimental and longitudinal evidence. *Journal of Experimental Psychology: General*, 144(2), 480–488. <https://doi.org/10.1037/xge0000057>
- Verduyn, P., Ybarra, O., Résibois, M., Jonides, J., & Kross, E. (2017). Do Social Network Sites Enhance or Undermine Subjective Well-Being? A Critical Review. *Social Issues and Policy Review*, 11(1), 274–302. <https://doi.org/10.1111/sipr.12033>
- Vincent, E. A. (2016). Social Media as an Avenue to Achieving Sense of Belonging Among College Students. *VISTAS Online*, 63, 1-14.
- Vogel, E. A., Rose, J. P., Okdie, B. M., Eckles, K., & Franz, B. (2015). Who compares and despairs? The effect of social comparison orientation on social media use and its outcomes. *Personality and Individual Differences*, 86, 249–256. <https://doi.org/10.1016/j.paid.2015.06.026>
- Voorveld, H. A. M., van Noort, G., Muntinga, D. G., & Bronner, F. (2018). Engagement with Social Media and Social Media Advertising: The Differentiating Role of Platform Type. *Journal of Advertising*, 47(1), 38-54. <https://doi.org/10.1080/00913367.2017.1405754>
- Wang, J.-L., Wang, H.-Z., Gaskin, J., & Hawk, K. (2017). The Mediating Roles of Upward Social Comparison and Self-esteem and the Moderating Role of Social Comparison Orientation in the Association between Social Networking Site Usage and Subjective Well-Being. *Frontiers in Psychology*, 8(771). <https://doi.org/10.3389/fpsyg.2017.00771>
- White, J. B., Langer, E. J., Yariv, L., & Welch, J. C. (2006). Frequent Social Comparisons and Destructive Emotions and Behaviors: The dark side of social comparisons. *Journal of Adult Development*, 13(1), 36-44. <https://doi.org/10.1007/s10804-006-9005-0>

- Wills, T. A. (1981). Downward comparison principles in social psychology. *Psychological Bulletin*, *90*(2), 245–271. <https://doi.org/10.1037/0033-2909.90.2.245>
- World Health Organisation. (2021, November 21). *Adolescent Mental Health*. <https://www.who.int/news-room/fact-sheets/detail/adolescent-mental-health>
- Yang, C. C. (2016). Instagram Use, Loneliness, and Social Comparison Orientation: Interact and Browse on Social Media, But Don't Compare. *Cyberpsychology, Behavior, and Social Networking*, *19*(12), 703–708. <https://doi.org/10.1089/cyber.2016.0201>
- Yesilyurt, F., & Solpuk Turhan, N. (2020). Prediction of the time spent on Instagram by social media addiction and life satisfaction. *Cypriot Journal of Educational Science*. *15*(2), 208–219. <https://doi.org/10.18844/cjes.v15i2.4592>
- Yurdagül, C., Kiraburun, K., Emirtekin, E., Wang, P., & Griffiths, M. D. (2019). Psychopathological consequences related to problematic Instagram use among adolescents: The mediating role of body image dissatisfaction and moderating role of gender. *Internal Journal of Mental Health and Addiction*, *19*, 1385-1387. <https://doi.org/10.1007/s11469-019-00071-8>



## Appendix A

### Survey measuring Instagram use, Satisfaction with Life, and Comparison Orientation

# Bsc Thesis

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#### Start of Block: Information sheet

Q39 Dear participant,

Thank you for taking part in this study. Please read the following information carefully.

#### **Purpose of this study**

The purpose of this study is to examine the relationship between social media platforms and user's mental health and/or well-being. This survey will take approximately 15-25 minutes to complete. To take part in this study, you have to be above the age of 18.

#### **Study content**

This study is part of the bachelor's theses of a group of psychology students from the University of Twente. As the focus of each thesis differs slightly, the questions will be divided into several sections. First, you will be asked to answer some demographic questions. This will be followed by questions that concern your daily social media consumption, including topics such as your average screen time and your intention of social media use. Lastly, you will be asked to answer some sets of questions concerning your personality and other psychological factors. Please note, that there are no right or wrong answers as this survey intends to measure your own experiences. Please read the questions carefully and answer them honestly.

#### **Data acquisition**

Your participation in this study is voluntary. You have the right to withdraw at any time without giving any reason. Your response will be anonymous and cannot be traced back to you. Your data will be treated as confidential and only used for academic purposes. There are no known risks expected from the participation in this study.

#### **Contact**

If you have any questions or concerns, please contact one of the following:

Louisa Albermann, l.albermann@student.utwente.nl (researcher)

Cara Strieckmann, c.strieckmann@student.utwente.nl (researcher)

Cathlyn Lee Ivy, cathlynleeivy@student.utwente.nl (researcher)

Vince Lammerink, v.lammerink@student.utwente.nl (researcher)

Ronja Sauter, r.j.sauter@student.utwente.nl (researcher)

Maria Scapim, m.l.scapim@student.utwente.nl (researcher)

Johanna Bucker, j.bucker@student.utwente.nl (researcher)

Antonia Schaffert, a.schaffert@student.utwente.nl (researcher)

Roman Hartlieb, r.hartlieb@student.utwente.nl (researcher)

Karla Duarte, k.d.duarte@utwente.nl (supervisor)

For questions about the ethical approval and your rights as a participant, you can reach any of the researchers or the ethicscommittee-bms@utwente.nl. This study is approved by the ethical committee of the Behavioural, Management and Social Sciences (BMS) of the University of Twente.

#### End of Block: Information sheet

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#### Start of Block: Informed consent

Q32 I have read and understood the study information.

- Yes (1)
- No (2)
- 

Q33 I consent voluntarily to be a participant in this study and understand that I can refuse to answer questions and withdraw from the study at any time, without having to give a reason.

- Yes (1)
- No (2)
- 

Q34 I understand that participating in this study involves filling out an online questionnaire and involves questions about my demographics, social media usage, mental health and other psychological factors.

- Yes (1)
- No (2)
- 

Q35 I understand that my responses will be used for academic purposes and are part of the bachelor theses at the University of Twente.

- Yes (1)
- No (2)

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Q36 I understand that the collected information cannot be traced back to my identity and is not shared with people outside the study team.

Yes (1)

No (2)

---

Q37 I give permission for the anonymized answers to be archived in the University of Twente Research repository so it can be used for future research and learning.

Yes (1)

No (2)

---

Q64 I understand that there are no known risks expected from participating in this study and that the survey was approved by the ethics committee of the University of Twente.

Yes (1)

No (2)

---

Q38 I hereby declare that I am at least 18 years old and voluntarily participate in this study.

Yes (1)

No (2)

**End of Block: Informed consent**

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**Start of Block: Demographics**

What is your nationality?

- German (1)
- Dutch (2)
- Other (3) \_\_\_\_\_
- 

How old are you? How old are you? (Please enter only the number)

\_\_\_\_\_

---

With which gender do you identify most?

- Female (1)
- Male (2)
- Diverse (3)
- Intersex (4)
- Transgender (5)
- Non-binary (6)
- Other (7) \_\_\_\_\_
- Prefer not to say (8)

**End of Block: Demographics**

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**Start of Block: Instagram Use**

Q71 Please be aware that the following questions solely concern your **Instagram use**.

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Q111 Before, you were asked to indicate how much you use all social media actively and passively. Now, we ask you to consider only Instagram. Please indicate how much you use Instagram passively. Passive use is defined as browsing content, viewing others' posts, reading comments.

- not passively at all (1)
  - very little passively (2)
  - little passively (3)
  - a moderate amount passively (4)
  - very passively (5)
  - extremely passively (6)
  - only passively (7)
- 

Q107 If you are paying attention, please select "strongly disagree"

- Strongly agree (1)
- Agree (2)
- Neither agree nor disagree (3)
- Disagree (4)
- Strongly disagree (5)

**End of Block: Instagram Use**

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**Start of Block: Satisfaction with Life**

Below are five statements that you may agree or disagree with. Indicate your agreement with each item by tapping the appropriate box, from strongly agree, to strongly disagree. Please be open and honest in your responding.

	Strongly agree (1)	Agree (2)	Slightly agree (3)	Neither agree nor disagree (4)	Slightly disagree (5)	disagree (6)	Strongly disagree (7)
In most ways my life is close to my ideal. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The conditions of my life are excellent. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am satisfied with my life. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
So far I have gotten the important things I want in life. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I could live my life over, I would change almost nothing. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Satisfaction with Life

Start of Block: INCOM

INCOM Most people compare themselves from time to time with others. For example, they may compare the way they feel, their opinions, their abilities, and/or their situation with those of other people. There is nothing particularly 'good' or 'bad' about this type of comparison, and some people do it more than others. We would like to find out how often you compare

yourself with other people. To do that we would like to ask you to indicate how much you agree with each statement below.

	I disagree strongly (1)	I disagree (2)	I neither agree nor disagree (3)	I agree (4)	I agree strongly (5)
I often compare myself with others with respect to what I have accomplished in life (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I want to learn more about something, I try to find out what others think about it (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I always pay a lot of attention to how I do things compared with how others do things (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often compare how my loved ones (boy or girlfriend, family members, etc.) are doing with how others are doing (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I always like to know what others in a similar situation would do (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am not the type of person who compares often with others (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I want to find out how well I have done something, I compare what I have done with how others have done (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



I often try to find out what others think who face similar problems as I face (8)

I often like to talk with others about mutual opinions and experiences (9)

I never consider my situation in life relative to that of other people (10)

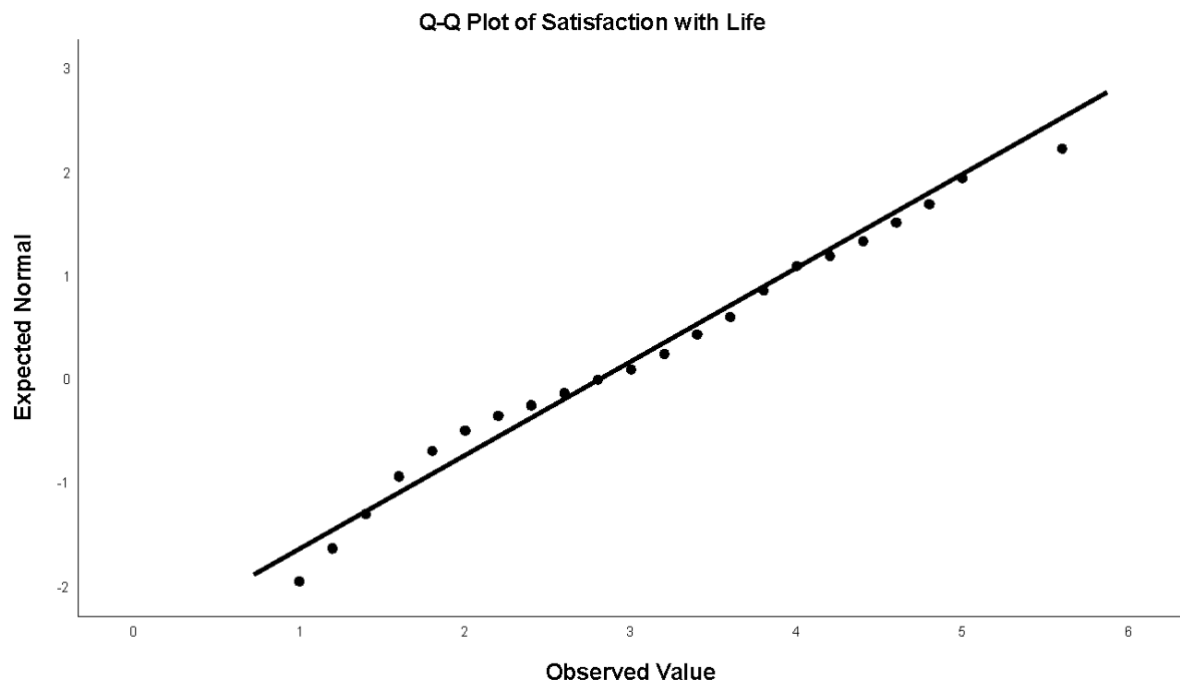
I often compare how I am doing socially (e.g., social skills, popularity) with other people (11)

End of Block: INCOM

---

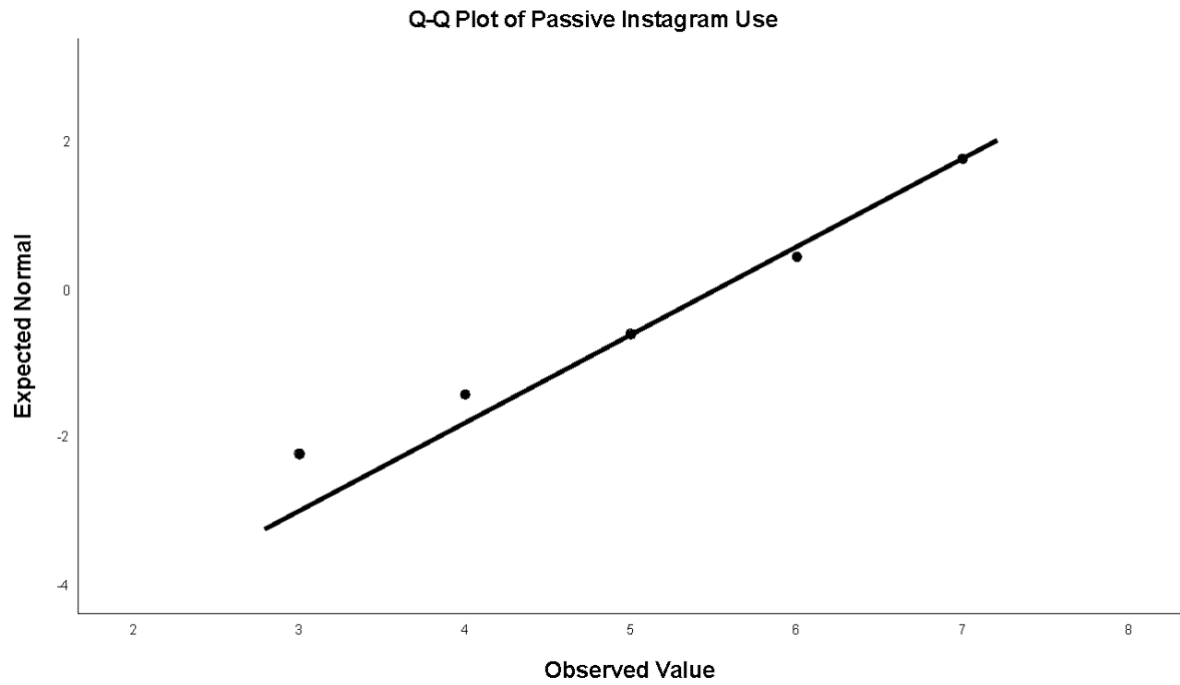
## Appendix B

### Q-Q plot of the variable Satisfaction with Life



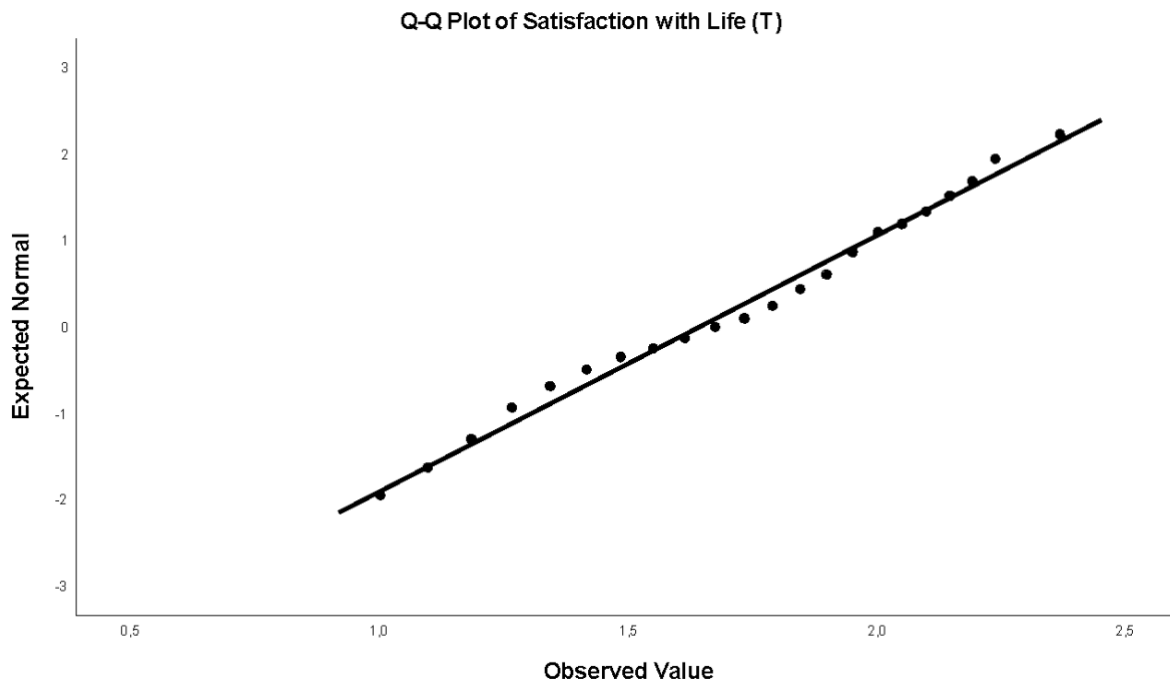
## Appendix C

### Q-Q plot of the variable Instagram Use



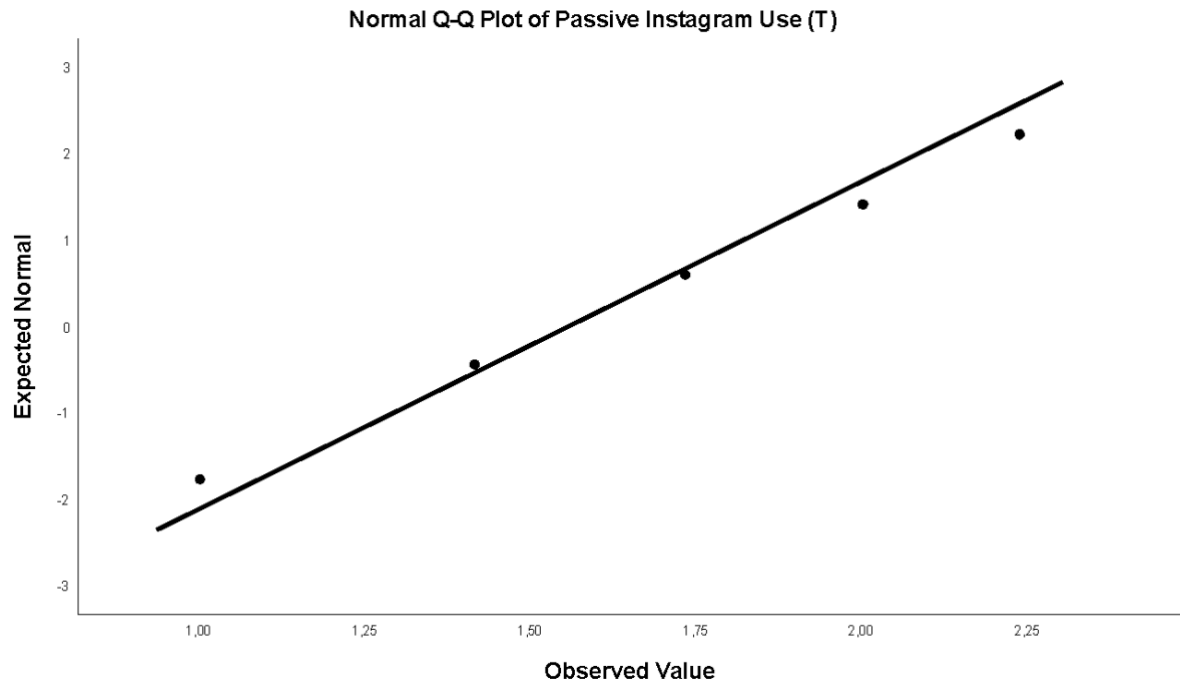
## Appendix D

### Q-Q plot of the variable satisfaction with life after transformation



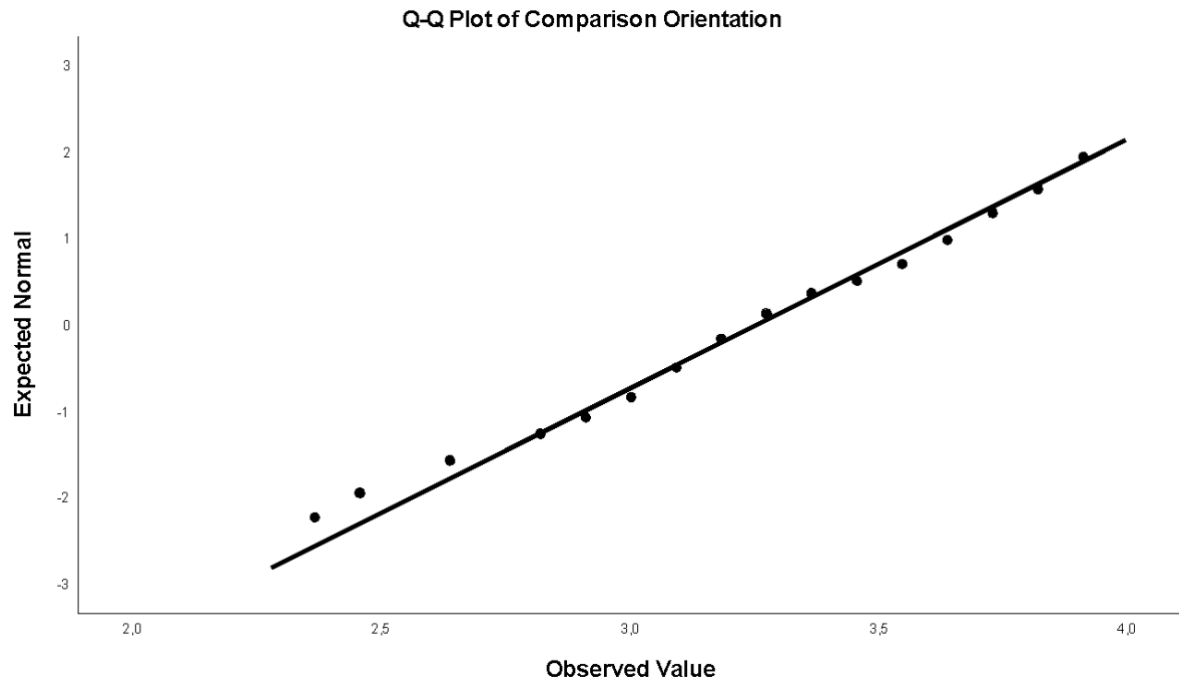
## Appendix E

### Q-Q plot of the variable Instagram use after transformation



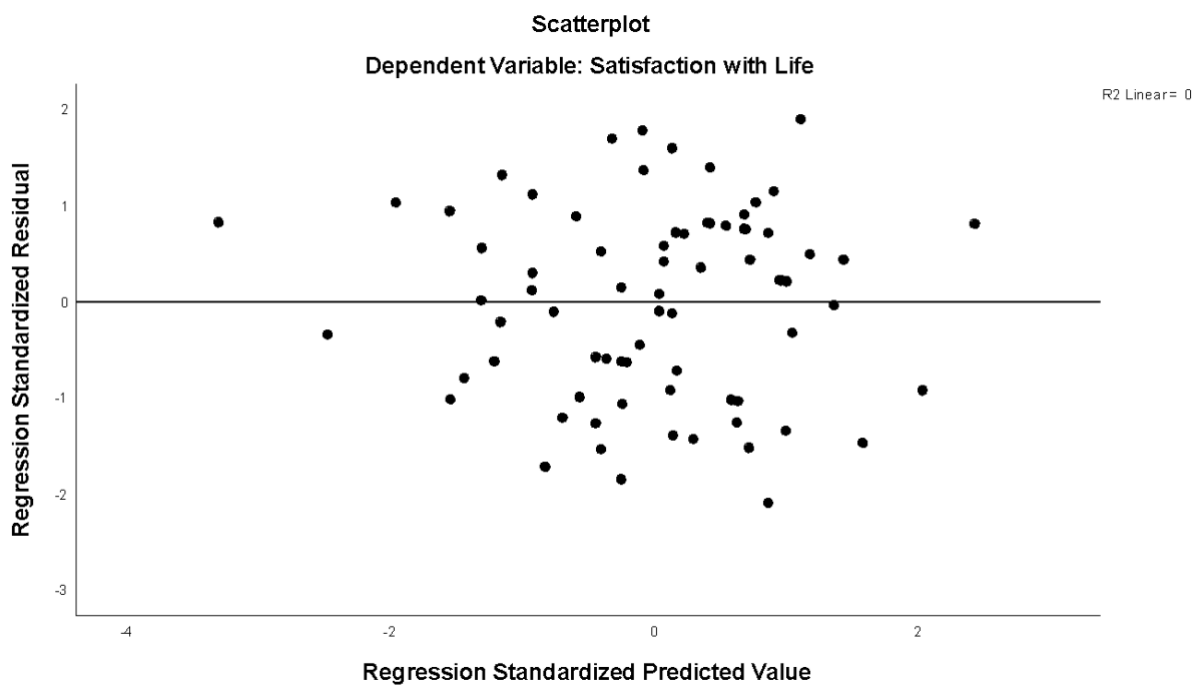
## Appendix F

### Q-Q plot of the variable comparison orientation



## Appendix G

### Scatterplot of the residuals



## Appendix H

### Q-Q plot of the residuals

