**Does Instagram make us feel better or worse?**

How Upward Social Comparisons on Instagram Influences Young Adults' Psychological Well-being

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**Abstract**

The social media platform Instagram is one of the most popular social media platforms worldwide. The platform enables its users to capture photos and videos and share those with their friends and followers. One of the main reasons for Instagram users to use the social network site is to see what others are posting. When looking at other people's posts, social comparisons likely take place. Recently, there is much attention when it comes to the well-being of SNS users. Most of this attention is negative as there are many news articles and blogs on how bad SNS sites are for their users. However, there are also positive emotions that can happen on Instagram, which can increase the psychological well-being of its users. This study examined the effect of upward social comparisons on Instagram on young adults' psychological well-being. To measure this effect, an online questionnaire study was conducted on a total of 152 respondents. The characteristics of the sample were that they were between the age of 18 to 25, have an Instagram account and are active on this account. In this online questionnaire, the respondents were given statements about upward social comparisons they experience on Instagram and their psychological well-being. These statements were answered using a 7-point Likert scale. The results of this study showed that upward social comparisons on Instagram harm young adults' psychological well-being. Moreover, the study showed that upward social comparisons on Instagram have a positive effect on young adults' feelings of envy. The findings explain that young adults who are confronted on Instagram with superior people might evoke negative emotions, that consequently lower their psychological well-being. Also, young adults who socially compare themselves to superior others on Instagram tend to experience more feelings of envy towards these people. The findings of this research can be used as a starting point for more research on negative and positive emotions that are caused by upward social comparisons on Instagram. Moreover, the findings from this research can be useful for the SNS Instagram to improve its application, which can diminish the effects that potentially deteriorate Instagram users' psychological well-being, by decreasing the amount of upward social comparisons that happen within the application. Also, the findings from this research can help improve Instagram users' psychological well-being through awareness and campaigns. Campaigns can assist people whose psychological well-being decreases significantly because of upward social comparisons that happen on Instagram.

*Keywords: upward social comparisons, psychological well-being, feelings of envy, feelings of inspiration*

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# 1. Introduction

In the last couple of years, Instagram surpassed roughly 1 billion monthly active users, which makes the social media platform one of the most used social media networks worldwide. Many of its users are between the age of 18 to 25 and are generally called young adults (Furlong, 2016; Statista, 2022). According to Fullwood et al. (2016), this young adulthood is a crucial time in the development of self-concept. Currently, there is growing interest in the influence of social media usage on psychological well-being (Lin et al., 2016).

Research from Huang and Su (2018) found that looking at what others are posting is one of the main reasons for young people to be active on Instagram. Accordingly, because of the urge to look at what other people are posting and Instagram giving fertile ground for social comparisons to take place, users are constantly comparing themselves to others (Verduyn et al., 2020). Comparing oneself with others is called *social comparison.* As defined in a recent study by Meier and Johnson (2022) social comparison is "the process of thinking about information about one or more other people in relation to the self." Comparing oneself with others is a fundamental human cognition and it helps humans to provide them with information about their relative standing within social groups, thus helping them navigate through these groups. Comparisons happen or unfold spontaneously and effortlessly, often carried out with standards irrelevant to the moment or task at hand (Baldwin & Mussweiler, 2018; Blease, 2015).

Despite the benefit of social comparison to provide the people with information about their relative standing, *upward social comparisons* (USC) – comparing oneself with those who are doing 'better' – have been recognized as potentially problematic (Gerber et al., 2018). Moreover, social comparison on social network sites predicts a decrease in well-being with a medium-sized effect (Verduyn et al., 2020). This decrease in well-being can be explained by upward comparisons on social media, as users show a positively-biased version of themselves, thus making social comparisons on these platforms more harmful and frequent.

*Psychological well-being* (PWB) can be explained by components in which someone feels good, based on having a sense of purpose in life, having positive relationships with other people, self-acceptance, autonomy, environmental mastery and personal growth (Ryff & Keyes, 1995). Moreover, well-being can be explained by the level of life satisfaction, self-esteem, loneliness and depression (C. Huang, 2017). Studies explain that the passive use of Instagram, such as scrolling and browsing through friends' or others' posts is harmful to well-being (Verduyn et al., 2015), and often social comparisons are seen as an underlying psychological mechanism (Appel et al., 2016). A meta-analysis from 61 publications found

that there is a negative mean correlation between time spent on social media and psychological well-being (r = -0,07). Moreover, current studies explain difficult and complex conclusions about social comparison and well-being on social media, as the relationship between social comparison and well-being is often difficult to measure and has many other factors that influence the results, among which envy (Bayer et al., 2020; Krause et al., 2019; Kross et al., 2021).

As mentioned before, a variable that can impair someone's psychological well-being is envy (Wenninger et al., 2021). *Feelings of envy* (FE) is described as the pain caused by someone else's good fortune (Meier & Johnson, 2022). Given that envy is an unpleasant feeling and emotion toward oneself, upwards social comparisons that are mediated by envy might lead to a decreased psychological well-being of SNS users (Park & Baek, 2018). Moreover, according to Smith and Kim (2007), efforts to deal with envy may cause a chronic focus on their inferiority, which might worsen their well-being by exacerbating depression and shame. On the other hand, upward social comparisons might lead to positive feelings, such as *feelings of inspiration* (FI) (Meier & Johnson, 2022). As defined by Meier et al. (2020), inspiration is "a motivational state elicited by an evocative stimulus and can result from upward comparisons" (p. 2). Inspiration can be considered a crucial positive outcome of upward comparisons during the passive use of Instagram, as it gives people ideas for new possibilities (e.g., travelling, cooking, working out), thus being highly conducive to well-being (Meier et al., 2020).

Recently, there is much attention when it comes to the psychological well-being of SNS users. Most of this attention is negative as there are many news articles and blogs discussing depression and other negative emotions that arise from SNS usage. A recent study by Mackson et al. (2019) studied the association between the social media application Instagram and the psychological well-being of its users. The study found that social comparisons were associated with general depression among Instagram users. As this study measured the relationship between social comparisons and general depression, it excluded positive effects that can come from social comparisons on Instagram. The same study mentioned this gap of knowledge about social comparisons and suggested that future research should further dive into the topic of social comparisons, to find the positive effects that can arise from upward social comparisons. This research aims to fill this research gap, by researching more on the topic of upward social comparisons and psychological well-being there will be a deeper understanding of the relationship between the two, and what variables might influence this relationship. Moreover, this research will focus on the general

relationship between upward social comparisons and psychological well-being, yet it will also keep the emotions feelings of inspiration and envy, that arise from upward social comparisons, into account and examine how these emotions impact *social network sites* (SNSs) users' psychological well-being. Moreover, the research will provide a model that can serve as a foundation for further research on the topic of upward social comparisons within SNSs. Future research can use the findings on the emotions feelings of inspiration and envy and further dive into these relationships, and what exactly causes the emotions to arise. Also, this research can be used for practical uses, such as changes within the Instagram application to increase the psychological well-being of its users or provide organizations with new knowledge that can help them aid individuals that suffer from bad psychological well-being, caused by social media usage. Therefore, this research aims to answer the following questions:

(1) "How do upward social comparisons on Instagram affect young adults' psychological well-being?"

(2) "To what extent is the relationship between upward social comparisons on Instagram and young adults' psychological well-being mediated by the emotions feelings of inspiration and envy?"

(3) "To what extent does gender moderate the relationships between upward social comparisons on Instagram and young adults' psychological well-being and feelings of inspiration and envy?"

## 2. Theoretical framework

For this research, the main concepts of psychological well-being, upward social comparisons, feelings of inspiration and feelings of envy will be explained. Moreover, the proposed hypotheses for this research will be introduced.

### 2.1 Psychological well-being

The concept of psychological well-being has already been visible in early research. Formerly, many sociologists argued about the question; "what does it mean to be well psychologically?". According to Ryff and Keyes (1995), it can be questioned if older studies correctly captured the key features of human well-being. Previously, the concept of psychological well-being was not much theory-guided. In this early research, positive functioning was seen as an indicator of psychological well-being. The instruments used to measure positive functioning were serendipitous findings as they were meant for other purposes. Still, these instruments became the standard instruments to define positive functioning.

Many studies continued using such conceptions to serve as outcome variables to identify well-being. Ongoing studies that aim to define the basic structure of well-being follow multivariate analyses that come from these older studies. Nonetheless, older research misses out on important aspects of positive functioning. Moreover, although previously much research used positive functioning to define psychological well-being, nowadays the concept has rarely been used to measure psychological well-being (Ryff, 1989).

A more recent study by Ryff (1989) argued that the previous perspectives, despite their loose conceptualizations, can be used in a parsimonious summary. That is because when one reviews the characteristics of positive psychological functioning from these previous perspectives, it becomes apparent that they use similar features of positive psychological functioning. This convergence in the previous research constitutes the key dimensions of alternative formulation defined by Ryff (1989).

Numerous articles describe the concept of psychological well-being within the literature (Diener et al., 1999; Dodge et al., 2012; Fleuret & Atkinson, 2007; Gennings et al., 2021) however, scholars still cite the concept of well-being as 'elusive' (Bharara et al., 2019.

More recently, research from Ryff and Keyes (1995) generated a multidimensional model that served as a proposed theoretical structure of psychological well-being. This model consisted of six distinct components of psychological well-being; purpose in life, environmental mastery, positive relations with others, personal growth, self-acceptance and

autonomy (Ryff, 1989).

 *Self-acceptance.* Self-acceptance is the most recurrent criterion of well-being evident within the previous literature. It is defined as a central feature of mental health, as well as positive functioning, self-actualization, and maturity. Self-acceptance is a positive evaluation of oneself and one's life (Ryff, 1989; Ryff & Keyes, 1995).

 *Positive relations with others.* Many of the previous pieces of literature mention the importance of warm and trusting relations between people. Being able to love is seen as a central component of mental health. Many theories about conceptions of psychological well-being repeatedly stress the importance of positive relations with others (Ryff, 1989; Ryff & Keyes, 1995).

 *Autonomy.* Autonomy is a sense of self-determination (Ryff & Keyes, 1995). In the prior literature, there is considerable emphasis on qualities like independence, self-regulation, and behavioural regulation from within (Ryff, 1989).

 *Environmental mastery.* The ability of an individual to choose or create environments that suit his or her psychic conditions is defined as a component of mental health. The concept of environmental mastery is found to be an important part of a framework of positive psychological functioning (Ryff & Keyes, 1995).

 *Purpose in life.* In the definition of mental health beliefs that give someone a feeling that there is meaning to and purpose in life. An individual who functions positively has intentions, goals and a sense of direction, which all contribute to the feeling that life is purposeful (Ryff & Keyes, 1995).

 *Personal growth.* Positive functioning does not only require one to achieve the prior characteristics but also that one is able to develop one's potential, to expand and grow as a person. The feeling of personal growth is a commonly mentioned theme within prior studies on mental health (Ryff & Keyes, 1995).

 These components were found to be key indicators of psychological well-being (Ryff, 1989). Moreover, the study by Ryff and Keyes (1995) concluded that the multidimensional and broad concept of psychological well-being goes beyond the feelings of happiness and life satisfaction, and is a combination of these six components. Therefore it can be concluded that psychological well-being is multidimensional and broad (Gennings et al., 2021).

**2.2 Upward social comparisons**

Consequently, social comparisons appear to affect psychological well-being. As Festinger (1954) describes, individuals have the urge to acquire information to be able to evaluate themselves through social comparison. A recent study by Meier and Johnson (2022) defined social comparison as "the tendency to think about information about one or more people in relation to the self" (p.1). The phenomenon is a fundamental human cognition, that occurs across cultures, which enables humans to navigate in social settings, providing them with information that explains their relative standing within these settings (Meier & Johnson, 2022). Online platforms, such as Instagram, facilitate social connections, thus having the potential to stimulate the tendency of humans to compare themselves to one another, which can consequently affect psychological well-being. Moreover, a study from Festinger (1954) describes that there are two empirically interrelated, yet separable, social comparison orientations: opinions and abilities.

Firstly, there is ability-based social comparison, which is typically connected to self-esteem, such as self-enhancement or self-improvement (Park & Baek, 2018). For instance, humans that have a strong ability-based social comparison orientation, intentionally compare themselves to others with whom they desire to resemble in their life to work on self-improvement. Secondly, there is opinion-based comparison, which is typically connected to motives of self-evaluation. In this case, people perform social comparisons to evaluate whether their opinions are socially acceptable or accurate (Park & Baek, 2018). It can be said that this orientation explains that people use "what other people think" to better understand certain situations and to know what would be socially acceptable, appropriate or considered "normal" (Gibbons & Buunk, 1999).

Accordingly, these orientations are conceptually different. As Park and Baek (2018) described, studies on the psychological well-being of social network sites' users should differentiate between the two orientations, as they could result in different or even contrasting psychological consequences. It can be argued that people with a strong ability-based orientation tend to see their comparison as a "competitor", as they see look whether they are superior to their comparison. If they are so-called "superior" to the other, this can maintain or improve their psychological well-being. Conversely, if they perceive themselves as "inferior" to the comparison, this can harm their psychological well-being. Whereas someone whose social comparison orientation is strongly opinion-based will be likely to see someone else as an opinion-holder who they can consult concerning an issue (Park & Baek, 2018). In this case, the 'superior' can give help and therefore the psychological well-being of the consulter

may not suffer from this social comparison, whereas the ability-based orientation would.

The feeling of superiority or inferiority has to do with upward and downward social comparisons. Upward social comparisons, often linked to the negative effects of passive social media usage on well-being, are elicited by a target who is superior on a certain comparison criterion. On the other hand, downward social comparisons are elicited by a target who is inferior. Upward social comparisons recently gained popularity as the main theoretical reason for the negative effects of passive SNS usage on well-being (Meier et al., 2020). Research that found significant effects of upward social comparisons on other SNSs and psychological well-being found negative relationships. Nonetheless, on Instagram, this effect might be different. According to R. H. Smith's (2000) research, there are emotions caused by upward social comparisons, that can have a positive effect on the well-being of SNSs users, such as feelings of inspiration. It can be that users of Instagram feel more positive emotions on Instagram than on other SNSs, resulting in higher psychological well-being.

Though, research from Batenburg and Das (2015) explains that social comparisons play an important role in the SNS users' negative self-perceptions, depression, negative mood, and a decline in life satisfaction, which decreases psychological well-being., it is expected that upward social comparisons that happen on Instagram have a negative effect on the psychological well-being of young adults on Instagram. Therefore, the following hypothesis is proposed.

*H1: Upward social comparisons on Instagram negatively affect young adults' psychological well-being.*

## 2.3 Mediating effects on well-being

Research from Smith (2000) describes that there is a variety of emotions that arise from social comparisons. Some of these emotions can be pleasant for the self, such as inspiration or pride. In contrast, other emotions can be unpleasant for the self, like feelings of envy, depression fear. Most of the research to date focuses heavily on the unpleasant feelings like envy and depression when it comes to upward social comparisons on SNSs (Lin et al., 2016; Lin et al., 2020; Meier & Johnson, 2022; Verduyn et al., 2015; Wenninger et al., 2021). Though, there are also positive effects possible from upward social comparisons, like feelings of inspiration.

Upward social comparisons are typically connected to negative effects on the self, whereas downward comparisons are connected to positive effects on the self. Neither of these directions concretely determine positive or negative effects, as explained in Smith's model

about social comparison-based emotions. So far, research focused mostly on the negative side of upward social comparisons, among which mainly;  feelings of envy. This study will measure the negative side of upward social comparisons, as well as the positive side of these comparisons, which is feelings of inspiration.

### *2.3.1 Inspiration*

Inspiration can be conceptualized as a complex motivational state and can occur in various situations in life. The concept consists of three components, which define the experience of inspiration. The first component is transcendence and refers to becoming aware of new or better possibilities (e.g., learning an instrument because a friend plays it). Second, there is evocation and this clarifies that inspiration is a passive and suddenly evoked experience. Lastly, inspiration elicits the approach motivation. Once someone becomes inspired, he or she becomes active and brings a new idea into existence (Meier & Schäfer, 2018).

As a social media platform, Instagram is a highly inspirational platform flooded with pictures and videos on various topics (eg., sports, travelling, food, lifestyle, art). The content on the platform is typically aesthetic and pleasing and optimized for self-presentation (Meier & Schäfer, 2018). Research from Ouwerkerk and Johnson (2016) found that inspiration is one of the main motives for SNSs users to follow other people, especially on Instagram. The same study found that time spent on Instagram as well as the number of followings on Instagram are significantly related to inspiration. In addition, a study by Smith (2000) explains that upward social comparisons are essential for feelings of inspiration to take place. Instagram gives its users the space to make upward social comparisons. Therefore, the following hypothesis is proposed.

*H2: Upward social comparisons on Instagram positively affect young adults' feelings of inspiration.*

Furthermore, it is expected that feelings of inspiration influence the well-being of SNS users (Meier et al., 2020). Previous research mostly measured the negative effects on well-being, such as feelings of envy, while there is potential that upwards social comparisons cause inspiration, which can positively affect the well-being of SNSs users. Moreover, according to Park and Baek (2018, p. 85), inspiration is desirable for humans' psychological well-being. Previous studies on online support communities found that well-being increases when humans feel inspired by other people's recovery (Batenburg & Das, 2015; van der Zee et al., 2000).

Although this is a particular case, SNSs like Instagram might elicit the same feeling of inspiration. Therefore, the following hypothesis is proposed.

*H3: Feelings of inspiration mediate the relationship between upward social comparisons on Instagram and young adults' psychological well-being.*

### 2.3.2 Envy

Envy can be explained as the pain that is caused by the better fortune of someone else. Moreover, envy is a prototype of social comparison-based emotions and needs social comparisons in order to take place (Smith, 2000). The unpleasant feeling of envy can arise when people compare themselves unfavourably with others (Smith & Kim, 2007). On Instagram, users are constantly confronted with other people, making upward social comparisons likely to take place Therefore, the following hypothesis is proposed.

*H4: Upward social comparisons positively affect young adults' feelings of envy.*

As earlier explained, envy evokes a feeling of pain. Moreover, it can be seen as unpleasant emotions for the self, possibly affecting the well-being. Moreover, Smith and Kim (2007) describe envy as "an unpleasant, often painful emotion characterized by feelings of inferiority, hostility, and resentment produced by an awareness of another person or group of persons who enjoy a desired possession" (p. 47). In addition, Smith and Kim found that envy is in a group of related emotions (such as jealousy, indignation, and relative deprivation), which are characterized by negative affective reactions to other peoples' superior fortunes. Instagram offers fertile ground for these social comparisons to take place, which might lead to feelings of envy resulting in negative affective emotions. In addition, Meier and Johnson are in line with this suggestion and describe (p. 1) that the feeling of envy can impair well-being. Therefore, the following hypothesis is proposed.

*H5: Feelings of envy mediate the relationship between upward social comparisons on Instagram and young adults' psychological well-being.*

### 2.4 Moderating role of gender

A study by Matud et al. (2019) describes that so far studies on differences between women's and men's well-being have not yet found consistent outcomes. Some studies report differences between women and men, though these differences often vary depending on other variables such as age or culture. However, another study explains that women show lower self-confidence when socially comparing themselves with someone superior. Thus, this

implies that women are more likely to let social factors influence the perception of their own abilities (Pulford et al., 2018), which can influence their psychological well-being. Furthermore, there is no existing literature that found differences in the moderating role of gender on the mediator effect inspiration. Therefore, the following hypotheses are proposed. In addition, Research by Ding et al. (2017) examined the moderating role of gender on the mediator effect of envy. The research showed that envy threatens females' well-being more seriously.

*H6a: Gender will moderate the relationship between upward social comparison and psychological well-being.*

*H6b: The mediating effect of inspiration will not be moderated by gender.*

*H6c: The mediating effect of envy will be moderated by gender.*

Figure 1 shows a conceptual model that takes all the previously mentioned hypotheses into account and it visualizes the relationships between the variables.

**Figure 1**

*A Hypothesized Model of the Relationship Between Upward Social Comparisons and Psychological Well-being*
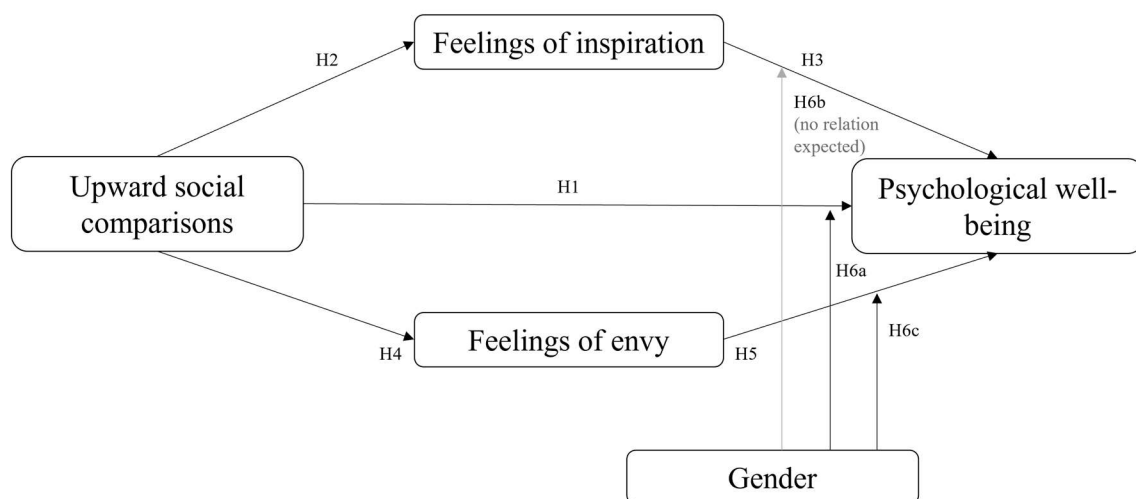
**3. Methods**

This section will explain the recruitment of the participants as well as the method used for the online questionnaire.

**3.1 Research design**

To find out what effects upward social comparisons on Instagram have on the well-being of young adults, a quantitative study was done. A quantitative study was chosen for this research as a quantitative approach allows for a higher sample size, making the sample approximate the population more closely. It also This quantitative study was done by conducting a questionnaire. According to Jones et al. (2008) questionnaires have the advantage of being low-cost for data collection and processing. It is also easy to distribute the questionnaire to participants as it can be shared through social media platforms like Instagram and Whatsapp. The results of the questionnaire can give insights into effects, as well as measure mediating or moderating effects. These are the aims of the study and therefore this method fits well.

**3.2 Recruitment of participants**

The recruitment of the participants for this study was based on multiple criteria. First, this research aims to research young adults. Young adults are generally between 18 to 25 years old, thus the participants have to be in this age range to participate in the study (Furlong, 2016). Second, as the research focuses on social comparisons that occur on Instagram, the participants are required to have an Instagram account and be active on this account. Furthermore, both males and females are included in the study, to examine whether there is a difference in results between both genders. Furthermore, there is no specific nationality that will be focused on within this research.

Gathering the participants of the study will be done through convenience sampling. In other words, friends, family and other connections that fit the description of the research population will be asked to participate in the study. Fricker and Schonlau (2002) explain that convenience sampling allows for an efficient and effective way to gather participants for the survey. The recruitment will be done mostly through the use of social media, such as Whatsapp, Messenger, Instagram itself or Facebook. The message sent will include a direct link to the study. To be able to reach the number of participants for the study more easily, the sampling method snowball sampling will be used. This method includes that participants of the study themselves will be asked to find new possible participants to participate in the study, that fit within the research population.

**3.3 Participants**

      The final sample of the online questionnaire included a total of 152 respondents. The ages of the participants ranged from 18 to 25 with an average of 21.3 (SD = 1.8). Furthermore, out of the total 152 participants of the online questionnaire, 82 participants identified as male, 69 participants as female and one participant as non-binary/third gender. The distribution of nationalities is unequally distributed, with 73 Dutch, 50 German and 29 respondents with another nationality. Nevertheless, this unequal distribution does not limit this research as it does not aims to detect differences between nationalities. The distribution highest finished level of education among the respondents of the online questionnaire has an unequal distribution, with 79 of the respondents being high school graduates. Though, it can be that the level of education this research does not aim to measure the differences in outcomes within the different educational levels (see table 1).

**Table 1**

*Demographics of the Online Questionnaire Sample*

| Characteristics | n | % |
|---|---|---|
| Gender | | |
|   Male | 82 | 53.9 |
|   Female | 69 | 45.4 |
|   Non-binary/third gender | 1 | 0.7 |
| Nationality | | |
|   Dutch | 73 | 48.0 |
|   German | 50 | 32.9 |
|   Other | 29 | 19.1 |
| Highest level of education | | |
|   Less than high school degree | 5 | 3.3 |
|   High school graduate | 84 | 55.3 |
|   Some college but no degree | 26 | 17.1 |
|   Bachelor's degree in university | 28 | 18.4 |
|   Master's degree | 6 | 3.9 |
|   Doctoral degree | 1 | 0.7 |
|   Professional degree | 2 | 1.3 |

*Note.* N = 152. Participants were on average 21.3 years old (SD = 1.8)

**3.4 Procedure**

The data collection of this questionnaire took place from the 29th of May until the 6th of June, 2022. The first page of the questionnaire consisted of information considering the survey and research. There was a brief explanation of the topic of the study, including the general terms (upward social comparisons and psychological well-being). The participants were also informed about the duration of the study and that the study has been approved by UT's ethics committee. Furthermore, the participants of the study were informed that their participation in the study was completely voluntary and that they could withdraw from the questionnaire at any moment. Also, the participants of the study were informed that their given data would be treated anonymously and confidentially. Lastly, at the bottom of the page, the participants were asked if they agreed with the following statements; (1) "I am voluntarily taking part in this research, and I am aware that I can stop the research at any time", (2) "I don't expect to receive any benefit or payment for my participation", (3) "I understand that I am free to contact the researchers with any questions I may have in the future" and (4) "I am between the age of 18 to 25". Then, the questionnaire had four pages that consisted of items regarding the four main variables (e.g. upward social comparisons, psychological well-being, feelings of inspiration, and feelings of envy) (See Appendix B).

**3.5 Instrument**

All the items within the questionnaire used the 7-point Likert scale (1 = strongly disagree, 7 = strongly agree). The 7-point Likert scale was chosen as the 7-point scale may perform better than the 5-point scale due to that it provides more options, which in turn increases the chance of meeting the respondents' objective reality (Joshi et al., 2015). The following section will discuss the items of the questionnaire as well as their origins (see Appendix A).

*3.5.1 Upward Social Comparisons on Instagram*

Upward social comparisons on Instagram was measured by taking items from four different studies. The first two items were based on a scale used by de Vries and Kühne (2015, p. 219). These items were in turn adopted from a previous study by Lee (2014). Furthermore, the next item came from Liu et al. (2017), who modified his item from a study by Gibbons and Buunk (1999), which was then modified to be specifically about Instagram. Two more items in this survey came from Gibbons and Buunk, and one from Park and Baek (2018), which as well have been modified to fit this exact research. An example item of this construct is: "When I see Instagram posts of others I often think they have better lives than I do".

### 3.5.2 Psychological Well-being

Psychological well-being (PWB) was measured using a satisfaction with life (SWL) scale. This scale was originally made by Diener et al. (1985), and more recently used by Park and Baek (2018). An example item of this construct is: "The conditions of my life are great".

### 3.5.3 Feelings of Inspiration

Feelings of inspiration (FI) were measured using the Inspiration scale by Thrash and Elliot (2003) which has been modified by Meier and Schäfer (2018). This scale is shown to be reliable and valid (Thrash & Elliot, 2003). Also, there was another item added from Meier and Schäfer's (2018) scale. An example item of this scale is "I feel inspired by posts I see from others on Instagram".

### 3.5.4 Feelings of Envy

Feelings of envy (FE) were measured using a Facebook envy scale formed by Tandoc et al. (2015), and a scale by Lim and Yang (2019). Three items of the scale by Tandoc et al. scale were taken and modified, to fit the context of this study. Furthermore, the item from Lim and Yang has been adopted and modified to be more understandable and fit the context of the study. An example item of the construct feelings of envy is "I wish I can travel as much as other people I see on Instagram".

## 3.6 Pre-tests

For the questionnaire, pre-tests have been conducted to measure how much time participants need to finish the survey, ensure the questions and statements were understandable, troubleshoot potential problems considering the survey and find potential improvements. The pre-tests were performed by participants that fit the research population (aged between 18 to 25). They were asked to fill in the survey and write down the suggestions or problems they find while doing so. The first pre-test, performed by three participants, resulted in suggestions to adjust the first (introductory) page, consequently making it more readable. For instance, deleting headlines to make the first page shorter, which increases the chance people are able to properly read it on their phone or laptop. The first pre-test also showed that the questionnaire took ten minutes at most.

The second pre-test was performed by three other participants. This pre-test aimed to check whether the improved version was now clear and understandable for the participants and ready to be distributed and gather data for the research. The second pre-test indicated that the improved survey was clear and understandable.

**3.7 Data Preparation**

The analyses of the data from the online questionnaire were done by using IBM SPSS 28 statistics software. Participants who did not complete the entire questionnaire, who did not meet the research population requirements and who pressed the same answers for all statements were deleted. Out of the total 162 initial responses to the questionnaire, ten responses were deleted. Among these, three responses were deleted as the respondents did not meet the research population characteristics, and six responses were deleted due to incomplete responses. Before checking boxplots of every construct, already one response has been deleted as this response filled in every item with 7 (strongly agree) and would be an outlier on every individual construct. Moreover, a box plot of every construct has been created to check for other outliers, though there were outliers, it was decided to leave them in the dataset as they appeared to be natural outliers. Additionally, one item "I do not compare myself to people that do better on Instagram" was reverse coded as the item was negatively worded.

*3.7.1 Factor analysis*

A factor analysis was performed to find out if there are items that do not load to the expected constructs. It was decided to exclude item FE3 as it did not load in the expected construct (FE). The results of the factor analysis indicated that the four constructs explained 62.6% of the variance in the sample. Then, a second factor analysis was performed, with item FE3 excluded. This factor analysis was conducted to measure the internal structure, the dimensionality and the validity of the questionnaire's constructs. The Kaiser-Meyer-Olkin Measure (KMO) of Sampling Adequacy showed a result of .80, which is higher than the required value of .5. This indicated that the data is suitable for a factor analysis.

The same analysis was conducted to acquire the eigenvalue for each of the factors. This analysis showed that there are four components with eigenvalues above Kaiser's criterion of 1. This explains that four dimensions can be found in the data. After removing item FE3, the results of the second factor analysis indicated that the four constructs explained 64.7% of the variance in the sample. The items that cluster in the rotated component matrix on the same factor suggest that factor 1 explains upward social comparisons, factor 2 feelings of inspiration, factor 3 psychological well-being and lastly factor 4 feelings of envy. The component loadings range from .522 to .931, which is above the salient scores of .4 (Guadagnoli & Velicer, 1988). The item FE1 scored respectively low (.522). Nevertheless, it was decided to keep all items in for further analyses as they all loaded above the criterion value of .4.

### 3.7.2 Reliability analysis

After the constructs were created, a reliability analysis was performed that measured the Cronbach's alpha of the four constructs. Three constructs scored a Cronbach's alpha of higher than .7, which is considered an acceptable level of reliability, whereas one construct scored .664, which is considered questionable (Cortina, 1993). Moreover, the analysis showed that there was no need to delete items from the constructs to improve the reliability of that construct (see table 2).

**Table 2**

*Factor Loadings and Cronbach's Alpha of the Online Questionnaire*

| Construct | Item | | Cronbach's alpha | Factor loading | Explained Variance[a] |
|---|---|---|---|---|---|
| Upward social comparisons | USC3 | On social network sites, I always like comparing myself with others who are better off | .826 | .812 | 20.6 |
| | USC1 | When I see Instagram posts of others I often think they have better lives than I do | | .773 | |
| | USC6R | I do not compare myself to people that do better on Instagram (reverse coded) | | .673 | |
| | USC5 | I often think other people have accomplished more in life than me | | .664 | |
| | USC2 | Other people on Instagram are doing better than I am | | .640 | |
| | USC4 | When I am active on Instagram, I pay a lot of attention to how I do things compared to others | | .638 | |
| Feelings of Inspiration | FI4 | When I am on Instagram, I experience or encounter things that inspire me | .926 | .931 | 18.8 |
| | FI2 | I feel inspired by posts I see from others on Instagram | | .904 | |
| | FI1 | I often experience inspiration on Instagram | | .903 | |
| | FI3 | Others' posts often inspire me to do something | | .865 | |
| Psychological well-being | PWB2 | I am satisfied with my life | .752 | .814 | 13.9 |
| | PWB1 | In most ways my life is close to ideal | | .738 | |
| | PWB4 | The conditions of my life are great | | .731 | |
| | PWB3 | So far, I've gotten the important things I want in life | | .695 | |
| Feelings of envy | FE4 | I feel bitterness towards people I envy on Instagram | .664 | .809 | 10.2 |
| | FE2 | I feel inspired by posts I see from others on Instagram | | .649 | |
| | FE1 | I often experience inspiration on Instagram | | .522* | |

[a] Explained variance in percentage

# 4. Results

For this study, the proposed hypotheses were tested by performing a linear regression analysis, a mediation analysis and a moderated mediation analysis. The results of these analyses are discussed below.

## 4.1 Descriptive analysis

To get an insight into the sample of the questionnaire, a descriptive analysis was performed to measure the descriptive statistics (see table 1). For the numeric variable age, the minimum, maximum, mean and standard deviation was calculated. Similarly, for the categorial variables nationality, gender and level of education, the minimum, maximum and frequencies were calculated.

## 4.2 Linear Regression Analysis

Prior to the linear regression analysis, the assumptions of linear regression were checked (see Appendix C). The histogram to check for normality showed a shape that suggested normality. Furthermore, the dots in the Q-Q and P-P plots are close to the comparison lines. Therefore, the assumption of normality was met. In the scatterplot of residuals, there was no systematic relationship visible between the residuals and the observation order. Therefore, the assumption of linearity and homoscedasticity were met. Lastly, the Durbin-Watson test was performed to check for independence. The Durban-Watson value was 1.859, meaning the assumption of independence was met.

A Univariate analysis of Variance (ANOVA) was conducted with psychological well-being as the dependent variable and upward social comparisons as the independent variable. The univariate analysis of variance was performed to test hypothesis H1 by testing if upward social comparisons explained variance within psychological well-being.

The model was significant $F(1,150) = 20.5$, $p < .001$, and it explained 12% of the variance on psychological well-being. Further analysis showed that there is a significant main effect of upward social comparisons on psychological well-being, $b = -.286$, $t(150) = -4.53$, $p = <.001$. Consequently, the null hypothesis that upward social comparisons do not affect psychological well-being can be rejected. These results are in line with H1 ("*Upward social comparisons on Instagram negatively affect young adults' psychological well-being*").
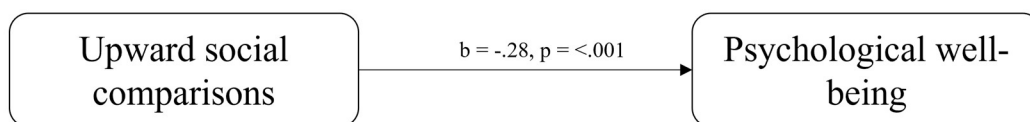
**Table 3**

*Regression analysis Summary for Upward Social Comparisons*
*Predicting Psychological Well-being*

| Variable | B | 95% CI | ß | t | p |
|---|---|---|---|---|---|
| (Constant) | 6.215 | [5.699 6.731] | | 23.799 | <0.001 |
| Upward Social Comparison | -0.286 | [-4.11 -.161] | -0.347 | -5 | <0.001 |

*Note.* R$^2$ adjusted = .114

**Figure 2**

*The Significant main effect of Upward Social Comparisons on Psychological Well-being*



**4.2 Mediating analysis**

　　To perform a mediating analysis, Andrew Hayes' PROCESS extension for SPSS 28 was used. Within the extension, model 4 was used as that model represents a mediating model. The mediating analysis was performed to test the hypotheses H2, H3, H4 and H5.

*4.2.1 Feelings of Inspiration*

　　There was a positive insignificant effect of upward social comparisons on feelings of inspiration (b = .129, p < .118) (which is not in line with H2: *"Upward social comparisons on Instagram positively affect young adults' feelings of inspiration"*). Moreover, there was a small non-significant effect of upward social comparisons on psychological well-being through feelings of inspiration, b = .002, 95% CI [-.023; .028]. Therefore the null hypothesis that feelings of inspiration do not mediate the relationship between upward social comparisons and psychological well-being cannot be rejected. Thus, these results do not support H3: "*Feelings of inspiration mediate the relationship between upward social comparisons on Instagram and young adults' psychological well-being*"

**Figure 3**

*Direct and Indirect Effect of Upward Social Comparisons through Feelings of Inspiration on Psychological Well-being*



Feelings of inspiration

b = .129, p <.118                                    b = .017, p = .793

Upward social comparisons

Direct effect: b = -.315, p <.001
Indirect effect: b = .002, 95% CI [-.023; .028]

Psychological well-being
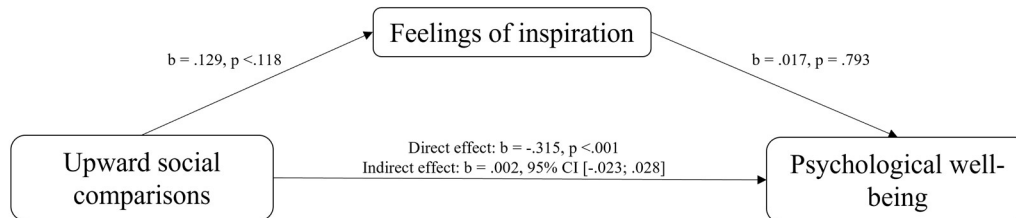
### 4.2.2 Feelings of Envy

There was a positive significant positive effect of upward social comparisons on feelings of envy (b = .487, p < .001) (which is in line with H4: *"Upward social comparisons positively affect young adults' feelings of envy"*). Nevertheless, there was a non-significant effect of upward social comparisons on psychological well-being through feelings of envy, b = .027, 95% CI [-.045; .100]. Therefore the null hypothesis that feelings of envy do not mediate the relationship between upward social comparisons and psychological well-being cannot be rejected. Thus, these results do not support H5: *"Feelings of envy mediate the relationship between upward social comparisons on Instagram and young adults' psychological well-being"*.

**Figure 4**

*Direct and Indirect Effect of Upward Social Comparisons through Feelings of Envy on Psychological Well-being*



Feelings of envy

b = .487, p <.001                                    b = .050, p = .481

Upward social comparisons

Direct effect: b = -.315, p <.001
Indirect effect: b = .027, 95% CI [-.045; .100]

Psychological well-being
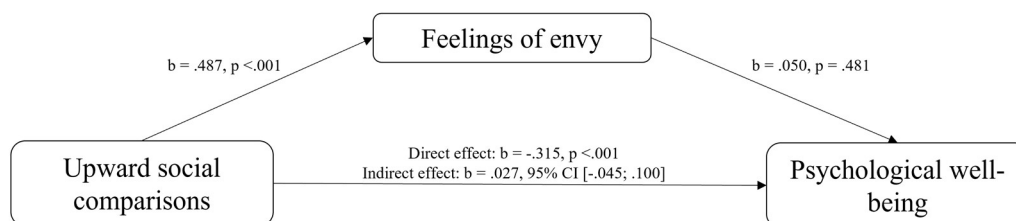
**4.3 Moderated Mediation Analysis**

To perform a moderated mediation analysis, again Andrew Hayes' PROCESS extension for SPSS 28 was used. Within the extension, model 15 was used as that model represents a moderated mediation model. The mediating analysis was performed to test the hypotheses H6a, H6b and H6c.

*4.3.1 Interaction of gender*

There was an insignificant interaction of gender in the relationship between upward social comparisons and psychological well-being (b = -.05, SE = .17, t(152) = -.30, p = .765). Hence, the null hypothesis that gender does not moderate the relationship between upward social comparisons and psychological well-being cannot be rejected.

Moreover, there was an insignificant interaction of gender in the relationship between the mediating effect of feelings of inspiration on psychological well-being (b = .09, SE = .14, t(152) = .65, p = .515) (which is in line with H6b: "*The mediating effect of inspiration will not be moderated by gender")*. Therefore, the null hypothesis that gender does not moderate the mediating effect of feelings of inspiration on psychological well-being cannot be rejected.

Lastly, there was an insignificant interaction of gender in the relationship between the mediating effect of feelings of envy and psychological well-being (b = .04, SE = .16, t(152) = .25, p = .802) Therefore, the null hypothesis that gender does not moderate the mediating effect of feelings of envy on psychological well-being cannot be rejected.

**4.4 Summary of the Findings**

To summarize, the analysis showed that upward social comparisons on Instagram are significantly related to young adults' psychological well-being. In this relation, upward social comparisons have a significant negative effect on psychological well-being. Moreover, the mediation analysis showed a significant positive relation between upward social comparisons and feelings of envy. Nevertheless, the mediation analysis showed a small non-significant effect of upward social comparisons on psychological well-being through both feelings of inspiration and envy. Lastly, the moderated mediation analysis showed a non-significant interaction of gender in the relationships between psychological well-being and; (1) upward social comparisons, (2) feelings of inspiration and (3) and feelings of envy. Figure 5 shows the model of upward social comparisons and psychological well-being, feelings of inspiration and envy, and gender, with all results found.

**Figure 5**

*Model of the Relationship Between Upward Social Comparisons and Psychological Well-being*
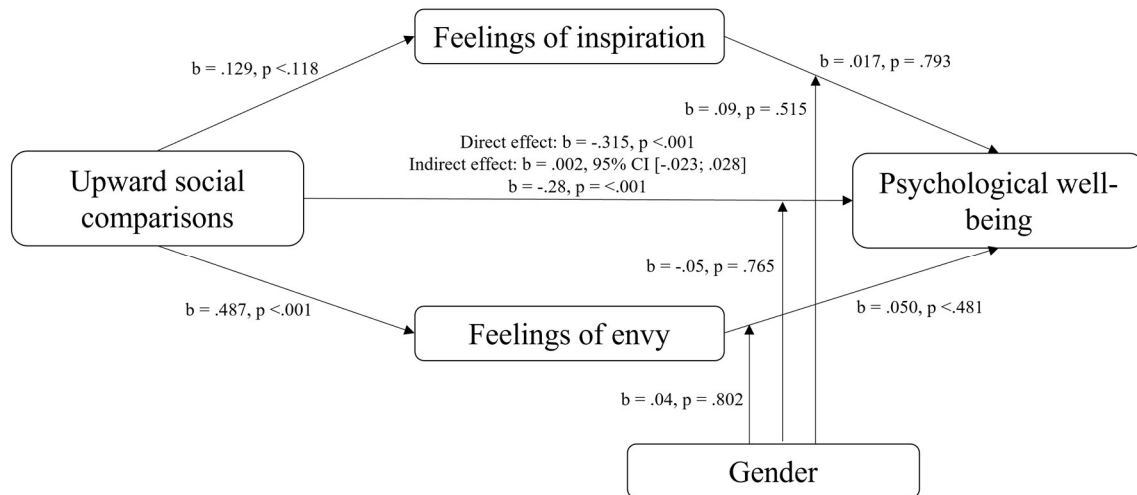
## 5. Discussion

In this part, the findings will be discussed and explained. These findings aimed to answer the following three research questions:

(1) "How do upward social comparisons on Instagram affect young adults' psychological well-being?"

(2) "To what extent is the relationship between upward social comparisons on Instagram and young adults' psychological well-being mediated by the emotions feelings of inspiration and envy?"

(3) "To what extent does gender moderate the relationships between upward social comparisons on Instagram and young adults' psychological well-being and feelings of inspiration and envy?"

To answer these research questions, a survey was performed. The research aimed to find more insights into the upward social comparisons that happen on Instagram in specific, as former research covered other SNSs considering this topic, and how feelings of inspiration and envy happen within the platform. Moreover, it aimed to examine how these feelings of inspiration and envy influence young adults' psychological well-being and the relationship between upward social comparisons on Instagram and psychological well-being. Also, this study examined whether gender influences these relationships.

The results of the analysis found that upward social comparisons on Instagram cause young adults to experience lower psychological well-being. This finding is in accordance with the model and research from Festinger (1954) as it explains that individuals have the urge to acquire information in order to evaluate themselves through social comparison. As social network sites like Instagram give fertile ground for social comparisons, SNS users experience social comparisons. These social comparisons play an important role in SNS users' negative self-perceptions, depression, negative mood, and a decline in life satisfaction, decreasing their psychological well-being (Batenburg & Das, 2015). The finding that from upward social comparisons on Instagram the psychological well-being decreases adds to the current literature that claims that this effect happens on other SNSs like Facebook.

Furthermore, the analyses found that upward social comparisons on Instagram lead to more feelings of envy among young adults. This indicates that young adults who socially compare themselves to superior others on Instagram show higher feelings of envy. This is consistent with what has been found in previous research from Smith (2000) who explains that social comparison-based emotions like envy need social comparison in order to take

place. As Instagram enables its users to make these social comparisons on the platform, it is likely that they will experience higher feelings of envy. Though, the rest of this research question cannot be answered given the results from the analyses.

Researchers claimed that feelings of inspiration are desirable for human psychological well-being and that well-being increases when this emotion is experienced (Batenburg & Das, 2015; Park & Baek, 2019; van der Zee et al., 2000). Nonetheless, the claims of these studies could not be supported in this study. This could be explained by respondents of the study who gave dishonest answers in the survey, as it could be considered a sensitive topic.

Moreover, research from Smith (2000) explained that envy evokes feelings of pain, which can be seen as an unpleasant emotion for the self, possibly affecting well-being. Moreover, Meier and Johnson (2022) are in line with this as they described that the feeling of envy can impair well-being. Nevertheless, contrary to the research of Smith (2000) and Meier and Johnson (2022) these claims could not be supported in this research. According to (Vésteinsdóttir et al., 2018) sensitive questions can lead to dishonest answers due to participants that are unwilling to give undesirable answers. This could be the case for the results in this study due to the topic of feelings of envy, which might make people feel bad about themselves, resulting in dishonest answers given by respondents.

Lastly, the results of the analyses show that there are no differences between gender within the model. Prior research from Matud et al. (2019) described that so far differences between women's and men's psychological well-being have not yet found consistent outcomes. Some studies report differences between women and men, though these differences often vary depending on other variables such as age or culture. Hence, this could explain why there are no differences between gender visible in the results.

## 6. Limitations

This part will discuss the limitations of this study, as well as future research recommendations. For this study, several limitations can be noted. First, the sample of this study showed an unequal distribution considering nationality. Over 80 per cent of the respondents hold a Dutch or German nationality. Therefore, it can be said that the results from this study might not represent all young adults on Instagram, instead, it mostly represents Dutch or German Instagram users, making the findings more applicable to this group. Future research can use a sample with respondents from more countries, to get a better representation of the overall Instagram users.

Moreover, this study mainly used convenience sampling to recruit its participants.

This recruitment method brings its limitations. Among others, due to sampling of easily accessible participants (e.g. friends, family, followers), the results of the questionnaire cannot be generalized to the population as a whole as the non-random selection might not be representative of the whole population. In addition, there is a possibility with convenience sampling that the data under- or over-represents the population, in this case, likely under-representing the population. Similarly to convenience sampling, with snowball sampling, the sample's representativeness is not guaranteed. Moreover, there can be sampling bias when using this recruitment method. Initial subjects are likely to nominate people who they know well. For this reason, the subjects may have the same characteristics and traits, therefore, it is possible that the sample of the research consists of a small sub-group of the whole population.

Furthermore, it can be said that questionnaires rely on the self-reporting of the participants. There are several limitations to online questionnaires. Among which are dishonest answers (Vésteinsdóttir et al., 2018). As the topic of upward social comparisons, feelings of envy and psychological well-being can be sensitive or confronting, the respondents might give dishonest answers. Also, it can be that respondents between themselves interpret the items and questions differently, leading to inconsistent answers.

Also, the factor loading of item FE1 (I generally feel inferior to others on Instagram) was relatively low compared to the other ones. This low factor loading has potentially limited the validity of the construct feelings of envy.

In addition, the reliability analysis of the online questionnaire showed that the construct envy had a relatively low Cronbach's alpha. This score is considered a questionable score. This construct therefore might have resulted in unreliable data.

Additionally, future research should elaborate on the findings of this research concerning the emotions by examining what types of emotions that arise from social comparisons based on Smith's social comparisons model (2000) influence the relationship between upward social comparisons and psychological well-being the most. Furthermore, future research could examine other emotions that arise from upward social comparisons on Instagram, and how these emotions influence psychological well-being.

Moreover, as TikTok gained in popularity in the last few years, upward social comparisons should be researched on this particular social media platform, and how these upward social comparisons influence the psychological well-being of TikTok users. Also, future research should examine different types of people or groups (e.g. age, personality, interests or nationality) on how they differ when it comes to social comparisons on Instagram and its users' psychological well-being.

## 7. Practical implications

From the findings of this research, some practical implications can be proposed. Among other things, Instagram can improve its application to lower the amount of upward social comparisons to happen. For instance, pictures with close-to-ideal bodies work well in the social media's algorithm as this algorithm is mostly based on likes, comments and views. One way to have this type of content shown less to young adults (or other groups) on Instagram is to alter the algorithm to be less based on factors like comments, likes and views. By doing so, Instagram users are less likely to socially compare themselves to superior others, which can diminish effects that potentially deteriorate their psychological well-being.

Also, the findings of this research can be used to bring awareness to the negative effects that come from upward social comparisons on Instagram. This way campaigns can be set up to help people that experience these emotions or negative effects on Instagram. That way they feel seen and they might find a way to improve their psychological well-being that is being deteriorated by their Instagram usage. Moreover, within campaigns on mental health, this research can be used to identify underlying problems of decreased psychological well-being of people, as Instagram can be a factor in this decrease. For instance, the campaigns can find out what makes people feel inferior to others in certain posts, and how this evokes negative emotions like feelings of envy. By findings these characteristics and causes, mental health campaigns can narrow down and focus on certain posts' aspects shown on Instagram, to better understand the reason behind the diminished psychological well-being. This knowledge will allow them to be able to better improve the mental health of people that experience this diminishment.

## 8. Conclusion

This research found that upward socially comparisons on Instagram negatively affect young adults' psychological well-being. This is because young adults are often being confronted on Instagram with superior people which evokes negative emotions, that consequently lower their psychological well-being. Moreover, the research found that upward social comparisons on Instagram have a positive relationship with young adults' feelings of envy. This implies that young adults who socially compare themselves to superior others on Instagram tend to experience more feelings of envy towards these people.

This research suggests further research in the field of mental health on Instagram, especially addressing effects coming from upward social comparisons on the platform. In

addition, other theoretical and practical implications are given. These focus on how Instagram can improve its application to decrease upward social comparisons to occur, and mental health campaigns that aim to improve the psychological well-being of Instagram users who experience diminished psychological well-being.

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**Appendix**

**Appendix A – Table of the Final Items in the Online Questionnaire and their origins**

**Table 4**

*Overview of the Final Items in the Online Questionnaire and their origins*

| Construct | Final Item | Origin of Item |
|---|---|---|
| Upward social comparisons | USC1. When I see Instagram posts of others I often think they have better lives than I do | From a scale used by Vries and Kühne (2015), which is from a study by Lee (2014) |
| | USC2. Other people on Instagram are doing better than I am | From a scale used by Vries and Kühne (2015), which is from a study by Lee (2014) |
| | USC3. On social network sites, I always like comparing myself with others who are better off | Based on an item used by Liu et al. (2017), modified from a study by Gibbons and Buunk (1999) |
| | USC4. When I am active on Instagram, I pay a lot of attention to how I do things compared to others | From a scale used by Gibbons and Buunk (1999) |
| | USC5. I often think other people have accomplished more in life than me | From a scale used by Gibbons and Buunk (1999) |
| | USC6. I do not compare myself to people that do better on Instagram (reverse coded) | From a scale used by Park and Baek (2018) |
| Psychological Well-being | PWB1. In most ways my life is close to ideal | From the SWL scale by Diener et al. (1985), which was more recently used by Park and Baek (2018) |
| | PWB2. I am satisfied with my life | From the SWL scale by Diener et al. (1985), which was more recently used by Park and Baek (2018) |
| | PWB3. So far, I've gotten the important things I want in life | From the SWL scale by Diener et al. (1985), which was more recently used by Park and Baek (2018) |
| | PWB4. The conditions of my life are great | From the SWL scale by Diener et al. (1985), which was more recently used by Park and Baek (2018) |

| | | |
|---|---|---|
| Feelings of Inspiration | FI1. I often experience inspiration on Instagram | From the Inspiration scale by Thrash and Elliot (2003), modified by Meier and Schäfer (2018) |
| | FI2. I feel inspired by posts I see from others on Instagram | From the Inspiration scale by Thrash and Elliot (2003), modified by Meier and Schäfer (2018) |
| | FI3. Others' posts often inspire me to do something | From the Inspiration scale by Thrash and Elliot (2003), modified by Meier and Schäfer (2018) |
| | FI4. When I am on Instagram, I experience or encounter things that inspire me | From a scale by Meier and Schäfer (2018) |
| Feelings of Envy | FE1. I often experience inspiration on Instagram | Adopted and modified from the Facebook envy scale by Tandoc et al. (2015) |
| | FE2. I feel inspired by posts I see from others on Instagram | Adopted and modified from the Facebook envy scale by Tandoc et al. (2015) |
| | FE3. I feel bitterness towards people I envy on Instagram | Adopted and modified from a study by Lim and Yang (2019) |

**Appendix B – Online Questionnaire**

**Page 1**

Hello, thanks for the willingness to enrol in this study, which is part of my Bachelor's Thesis. This study aims to research the effect of upward social comparisons on Instagram on the psychological well-being of young adults.

This study is a quantitative research project, approved by the UT's ethics committee. You are asked to fill in a questionnaire that consists of multiple questions or statements concerning different topics. I kindly ask you to respond truly. The survey is expected to take 5-10 minutes maximum.

Within the study, you have the right to stop or withdraw at any time without stating your reasons.

The data of the questionnaire will be saved by the programme Qualtrics (which you are on right now) and then transmitted to me (the researcher). The data will be limited to only the researcher and supervisor of this study. The anonymous answers given will be analysed and used for further research in the article. All the content that will be published will be anonymised and therefore your information can't be traced back to you (the respondent), and the information will be handled with care to make sure it is handled confidentially.

If there are questions concerning the study or the questions in this survey, feel free to contact the researcher of this study. You can contact Dani Mouris by sending an email to d.j.mouris@student.utwente.nl.

Please check the button below if you agree to the following statements.

1. I am voluntarily taking part in this research, and I am aware that I can stop the research at any time.

2. I don't expect to receive any benefit or payment for my participation.

3. I understand that I am free to contact the researchers with any questions I may have in the future.

4. I am between the age of 18 to 25.

Do you agree to participate in this study?

O Yes

O No

**Page 2**

What gender do you identify as?

O Male

O Female

O Non-binary / third gender

O Other

What is your age?

[………]

Where are you from?

O The Netherlands

O Germany

O Other

[………]

What is the highest level of school you have completed or the highest degree you have received?

O Less than high school degree

O High school graduate (high school diploma or equivalent including GED)

O Some college but no degree

O Bachelor's degree in university

O Master's degree

O Doctoral degree

O Professional degree

**c**

Upward Social Comparisons

The following part of this survey will consist of statements. Please indicate how much you agree with each statement (strongly disagree to strongly agree).

### When I see Instagram posts of others I often think they have better lives than I do

| Strongly disagree | Disagree | Slightly Disagree | Neither agree or disagree | Slightly Agree | Agree | Strongly agree |
|---|---|---|---|---|---|---|
| O | O | O | O | O | O | O |

### Other people on Instagram are doing better than I am

| Strongly disagree | Disagree | Slightly Disagree | Neither agree or disagree | Slightly Agree | Agree | Strongly agree |
|---|---|---|---|---|---|---|
| O | O | O | O | O | O | O |

### On social network sites, I always like comparing myself with others who are better off

| Strongly disagree | Disagree | Slightly Disagree | Neither agree or disagree | Slightly Agree | Agree | Strongly agree |
|---|---|---|---|---|---|---|
| O | O | O | O | O | O | O |

### When I am active on Instagram, I pay a lot of attention to how I do things compared to others

| Strongly disagree | Disagree | Slightly Disagree | Neither agree or disagree | Slightly Agree | Agree | Strongly agree |
|---|---|---|---|---|---|---|
| O | O | O | O | O | O | O |

### I often think other people have accomplished more in life than me

| Strongly disagree | Disagree | Slightly Disagree | Neither agree or disagree | Slightly Agree | Agree | Strongly agree |
|---|---|---|---|---|---|---|
| O | O | O | O | O | O | O |

### I do not compare myself to people that do better on Instagram

| Strongly disagree | Disagree | Slightly Disagree | Neither agree or disagree | Slightly Agree | Agree | Strongly agree |
|---|---|---|---|---|---|---|
| O | O | O | O | O | O | O |

## Page 4

Psychological well-being

### In most ways my life is close to ideal

| Strongly disagree | Disagree | Slightly Disagree | Neither agree or disagree | Slightly Agree | Agree | Strongly agree |
|---|---|---|---|---|---|---|
| O | O | O | O | O | O | O |

### I am satisfied with my life

| Strongly disagree | Disagree | Slightly Disagree | Neither agree or disagree | Slightly Agree | Agree | Strongly agree |
|---|---|---|---|---|---|---|
| O | O | O | O | O | O | O |

### So far, I've gotten the important things I want in life

| Strongly disagree | Disagree | Slightly Disagree | Neither agree or disagree | Slightly Agree | Agree | Strongly agree |
|---|---|---|---|---|---|---|
| O | O | O | O | O | O | O |

The conditions of my life are great

| Strongly disagree | Disagree | Slightly Disagree | Neither agree or disagree | Slightly Agree | Agree | Strongly agree |
|---|---|---|---|---|---|---|
| O | O | O | O | O | O | O |

## Page 5

Feelings of envy

I generally feel inferior to others on Instagram

| Strongly disagree | Disagree | Slightly Disagree | Neither agree or disagree | Slightly Agree | Agree | Strongly agree |
|---|---|---|---|---|---|---|
| O | O | O | O | O | O | O |

It is so frustrating to see some people always having a good time on Instagram

| Strongly disagree | Disagree | Slightly Disagree | Neither agree or disagree | Slightly Agree | Agree | Strongly agree |
|---|---|---|---|---|---|---|
| O | O | O | O | O | O | O |

I wish I can travel as much as other people I see on Instagram

| Strongly disagree | Disagree | Slightly Disagree | Neither agree or disagree | Slightly Agree | Agree | Strongly agree |
|---|---|---|---|---|---|---|
| O | O | O | O | O | O | O |

| Strongly disagree | Disagree | Slightly Disagree | Neither agree or disagree | Slightly Agree | Agree | Strongly agree |
|---|---|---|---|---|---|---|
| O | O | O | O | O | O | O |

## Page 6

Inspiration

I often experience inspiration on Instagram

| Strongly disagree | Disagree | Slightly Disagree | Neither agree or disagree | Slightly Agree | Agree | Strongly agree |
|---|---|---|---|---|---|---|
| O | O | O | O | O | O | O |

I feel inspired by posts I see from others on Instagram

| Strongly disagree | Disagree | Slightly Disagree | Neither agree or disagree | Slightly Agree | Agree | Strongly agree |
|---|---|---|---|---|---|---|
| O | O | O | O | O | O | O |

Others' posts often inspire me to do something

| Strongly disagree | Disagree | Slightly Disagree | Neither agree or disagree | Slightly Agree | Agree | Strongly agree |
|---|---|---|---|---|---|---|
| O | O | O | O | O | O | O |

When I am on Instagram, I experience or encounter things that inspire me

| Strongly disagree | Disagree | Slightly Disagree | Neither agree or disagree | Slightly Agree | Agree | Strongly agree |
|---|---|---|---|---|---|---|
| O | O | O | O | O | O | O |

**Page 6**

We thank you for your time spent taking this survey. Your response has been recorded.

**Appendix C – Checking Assumptions of Multivariate Linear Regression**

*Assumption of Normality*

       The assumption of Normality was tested for the dependent variable by creating and examining a histogram, P-P plot, and Q-Q plot (See figures 6, 7 and 8). For the dependent variable Psychological Well-being, the Histogram showed a shape that suggests normality. Furthermore, the dots in the Q-Q and P-P plots are close to the comparison lines. Therefore, it can be said that the Assumption of Normality is met for the dependent variable Psychological Well-being.

**Figure 6**

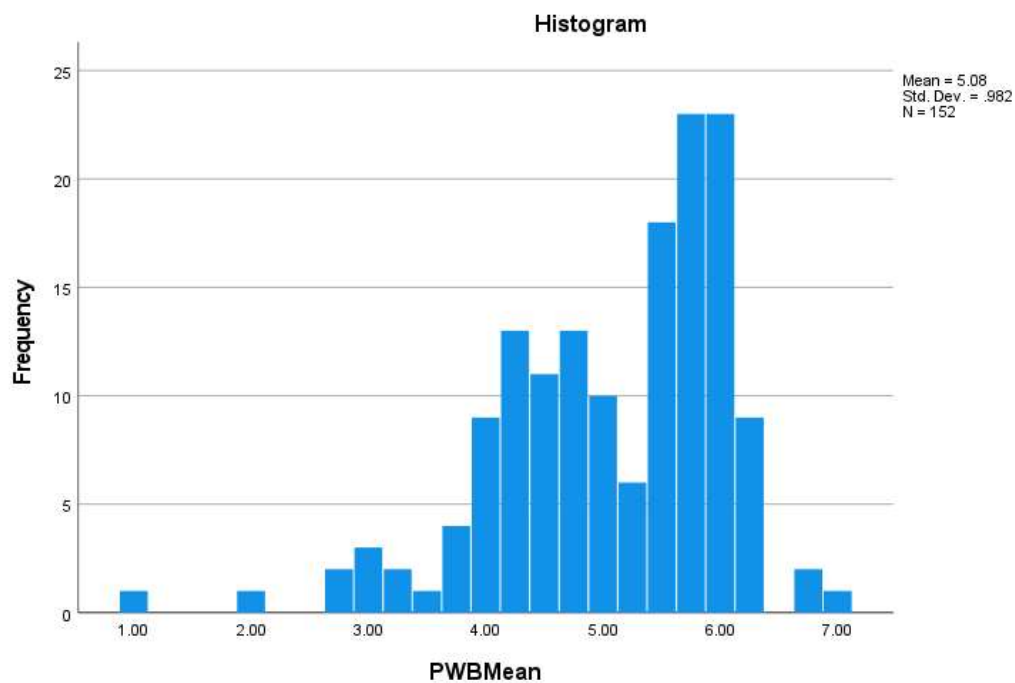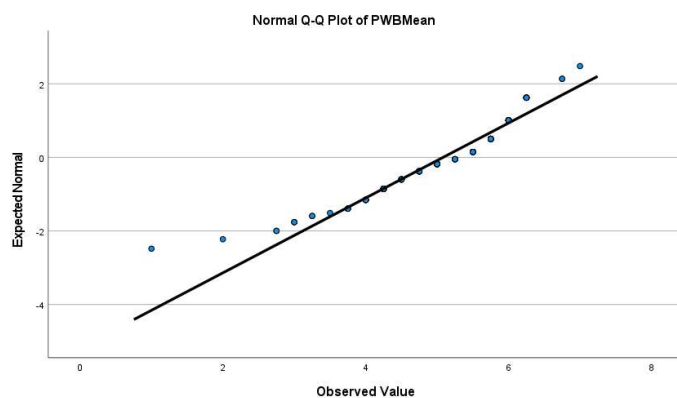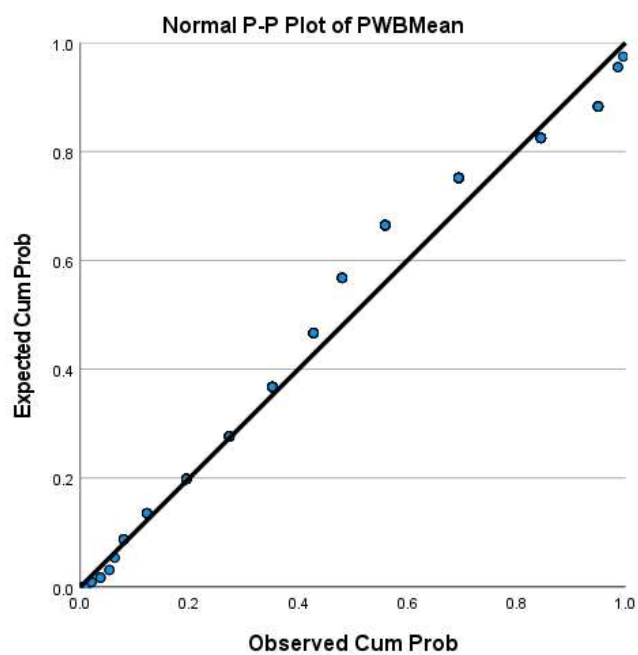*Histogram of Psychological Well-being to check for Normality*

**Figure 7**

*Q-Q plot of Psychological Well-being*



**Figure 8**

*P-P plot of Psychological Well-being*

***Assumption of Linearity and Homoscedasticity***

        The assumptions of linearity and homoscedasticity were both checked using a scatterplot of the residuals against the observation order. There was no systematic relationship visible in the scatterplot (see figure 9) between the residuals and the observation order, therefore both the assumption of linearity and homoscedasticity are met.

**Figure 9**

*Scatterplot to check Linearity and Homoscedasticity for Psychological Well-being*
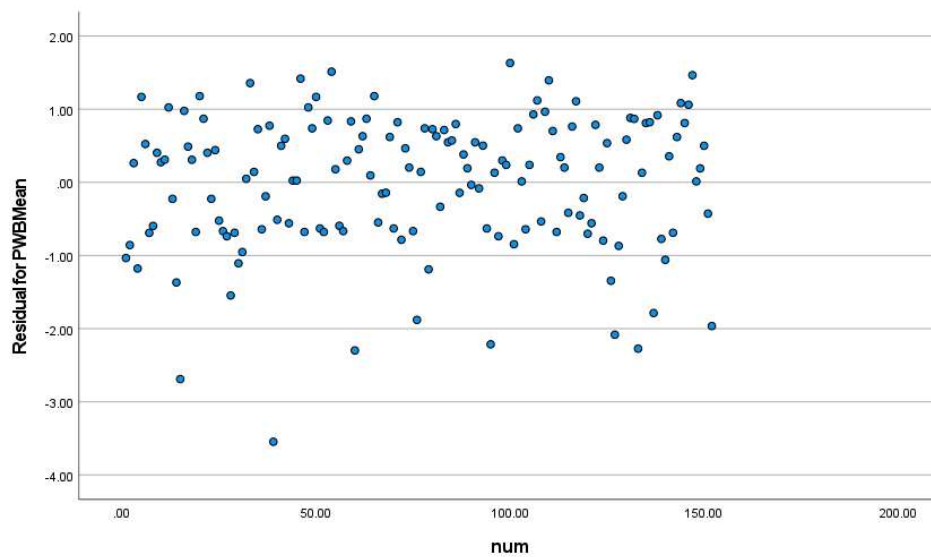


***Assumption of Independence***

        To check the assumption of independence, the Durbin-Watson test was performed. The Durbin-Watson value was 1.859, which is between 1 and 3, meaning the assumption is met.