Investigating the Relationship Between Social Media and Photo-Editing on Anxiety,

Depression and Self-Esteem

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Acknowledgements

Table of Contents

      Appendix A: Evidence of data and SPSS output

      Appendix B: Demographic questions

      Appendix C: Photo Editing Questionnaire (PHED)

      Appendix D: Social Media Engagement Questionnaire (SMEQ)

      Appendix E: Rosenburg Scale

      Appendix F: Hospital Anxiety and Depression Scale (HADS)

      Appendix G: Information sheet

      Appendix H: Contact information and informed consent

      Appendix I: Debriefing Sheet

Abstract

The present study examined the relationship between social media engagement (SME) and photo-editing frequency and psychological involvement on anxiety, depression and self-esteem. Research has shown increased social media (SM) usage has a negative impact on individuals mental health. It has been suggested that appearance-related content and societal pressures typically seen on SM may play a role in the negative impacts it can cause. In recent years, photo-editing has become a popular behaviour for SM users to do before posting an image online. The potential effects photo-editing may cause to those using or viewing it are under-researched. A total of 325 participants aged 18-69 years old completed this study. The questionnaires measured their anxiety, depression and self-esteem levels, social media engagement, photo-editing frequency, and psychological involvement/attitudes. Findings from Spearman's correlation analysis found small, positive effects between SME and photo-editing frequency and psychological involvement on depression and low self-esteem. A small, positive relationship was found with SME and higher levels of anxiety. A moderate, positive relationship was found with higher levels of psychological involvement with photo editing and higher anxiety levels. Follow up multiple regression analysis revealed that psychological involvement with photo-editing was significantly predictive of higher anxiety and depression levels and lower-self-esteem levels. The multiple regression analysis also revealed SME was significantly predictive of lower self-esteem levels. Implications and limitations of this study and recommendations of future research are discussed.

Introduction

Social media (SM) websites such as Instagram and Facebook have rapidly become a part of young people's everyday life. In 2005, just 5% of American adults used a social media platform, and today 72% of the public use some form of social media (Internet & Technology, 2019). SM in recent years has become widely used for school settings and work industries. SM has changed the way people communicate, as now the current generation spends more time communicating with friends through social media than in person. Figures suggest that approximately 90-97% of adolescents use social media regularly; specific SM sites such as Twitter, Instagram and Facebook appear to be the most common among the younger generation (Thapa & Subedi, 2018; Woods & Scott, 2016). Social media can be defined as "a group of internet-based applications that allow the creation and exchange of user-generated content" (Thapa & Subedi, 2018). During the last decade, SM has become an intrinsic component of communication, with family and friends sharing personal content and a method of entertainment.

The popularity of social media has led to 'selfies' becoming a popular cultural phenomenon worldwide. Selfie refers to a photograph someone has taken of themselves, typically on a smartphone or a webcam (Oxford Dictionaries, 2013). Recently, there has been a dramatic increase in selfie-taking. Searching the hashtag 'selfie' on Instagram will provide more than 337 million selfies, and every week more than 17 million are uploaded to social media (Instagram, 2018; Winter, 2014). However, the behaviour that comes before posting the selfie has been under-researched; this is photo editing. Photo editing in this paper refers to the use of smartphone or computer applications that edit or change a picture from its original state (e.g. using filters on social media accounts; using applications like Facetune to smoothen skin, enlarge eyes, amongst many other editing features). An online survey discovered that 50% of people who post photos on social media, edit the images before

posting; 48% of the same group enhance their looks by removing blemishes or adding a filter to make them appear more tanned (Afraid To Be Your Selfie? Survey Reveals Most People Photoshop Their Images, 2014; Chae, 2017).

According to Toma and Hancock (2010), self-presentation is the "adjusting and editing the self during social interactions to create a desired impression on the audience". This behaviour's motivation may be related to a desire to make a more favourable impression on others online (Toma & Hancock, 2010). Photo-editing gives social media users the option to present themselves to others in a flattering way by minimising imperfections or flaws Anderson et al., 2012; Bell, Cassarly, & Dunbar, 2018; Pounders et al., 2016). These photos rarely portray an accurate depiction of an individual's actual physical appearance (Toma & Hancock, 2010). Previous research on the psychological effects social media may cause has generally focused on social media usage affecting body image or mental well-being. However, social media has multiple uses, which may account for the conflicting results throughout the literature. Therefore, more research on the specific self-presentation strategies that social media users engage with, needs to be investigated.

Body image literature has generally accepted that women viewing images of thin, attractive females leads them to negative feelings about their bodies (Evans, 2003). The new photo editing phenomena have made this risk greater, as now people are comparing themselves to others and comparing themselves against edited 'perfect' pictures of themselves. Any feature a person does not like about themselves can be changed in a matter of a few moments, and this action can create unrealistic expectations of what way they should look. There have been differences between girls who regularly share selfies on social media and girls who do not share them as often. The girls who share selfies more frequently reported higher over-evaluation of body shape and weight, dietary restraint, body dissatisfaction and internalisation of a thin ideal. In this study, the girls who posted more also

had a higher engagement in photo editing, posing a possible link between photo editing and these adverse outcomes (McLean, Paxton, Wertheim & Masters, 2015).   These findings are concerning as high body dissatisfaction among women is correlated with depression (Meier & Gray, 2014; Tiggemann & Miller, 2010). Depression has the highest Disability-Adjusted Life Year (DALY) amongst mental illnesses and is highly prevalent in today's society (Thapa & Subedi, 2018). Recently there have been increases in the prevalence of depression (Twenge, Joiner, Rogers & Martin, 2017). There have been numerous factors that have been proposed to contribute to depression. Recently, research has begun to be interested in SM's potential effects on depression rates in society.

One significant contributor to depression is sleep deprivation (Alfano, Zakem, Costa, Taylor, & Weems, 2009; Espinoza & Juvonen, 2011). This can be caused or worsened by SM (Banjanin, Banjanin, Dimitrijevic & Pantic, 2015). 60% of teens reported in a study that they are frequently on their phones one hour before bed. Compared to those who do not use their phones before bed, they get on average, one hour less sleep a night. This may be due to the blue light exposure from our mobile phones interfering with sleep, or that being on SM is not a sleep-inducing or relaxing activity (Fyller, Lehman, Hicks & Novick, 2017). Primack et al (2017) investigated the influence that the quantity of SM platforms has, on adults. Even when controlling the time spent on SM, there was evidence to support that the use of more SM accounts (7-11), is independently associated with symptoms of depression. This is in contrast to adults who used 0-2 SM platforms (Primack et al., 2017).

The correlation between SM use and depression seems more than coincidental, because a rise in depression co-occurred with smartphone use. A study on over half a million teenagers found that the number of teens experiencing increased levels of depressive symptoms rose by 33% between 2010 and 2015. During the same period, there was an increase in suicide rates in girls by 65%. By 2015, 92% of teenagers and young adults owned

a smartphone; as smartphones were only introduced in 2007, this is a large increase. When smartphone adoption and the increase in depressive symptoms are matched year by year, a correlation can be found between the two (Twenge, Joiner, Rogers & Martin, 2017).

Lin et al (2016) found interesting differences when studying 1,787 adults regarding SM use and depression. Results indicated that adults who spent more time on SM had significantly increased chances of depression than the adults who spent less time on SM. Overall, research on depression and social media seem to show a correlation, not causation. The directionality of the correlation is not absolute. One reason being people with depression may use SM more than individuals who don't have depression. On the contrary, individuals who spend more time on SM may develop depression (Thapa & Subedi, 2018).

Another possible explanation for the link between depression and SM use could be related to what people are not doing due to more time being spent on SM, instead of partaking in various activities such as physical exercise, learning new skills, talent development and other leisure activities, which give individuals a sense of accomplishment. These activities can also help reduce stress and anxiety, build confidence and feel connectedness which has been shown to have positive mental health outcomes (Thapa & Subedi, 2018). Human beings are social animals, and therefore, to maintain human well-being, social interaction is crucial. Previous studies have emphasised that humans thrive when they have strong positive relationships (Thapa & Subedi, 2018). There are many benefits of strong social ties, such as the higher likelihood of positive health behaviours; lower likelihood of adverse health behaviours such as drug or excessive alcohol abuse; lowers risks of mental health illness and overall reduces risks of morbidity and mortality (Kawachi & Berkman, 2001; Uchino, 2006).

There is controversy about whether SM use could alleviate or exacerbate conditions such as anxiety and depression. SM platforms such as Facebook and Snapchat may provide

opportunities for connecting with family and friends, which may help depression and anxiety. Nabi et al. showed that individuals with a higher number of Facebook friends showed reduced stress, higher perceived social support and increased overall well-being (Nabi, Prestin & So, 2013). Other researchers have suggested that the quality of social media use could have a larger association with adverse mental health outcomes such as anxiety, instead of the amount of time spent on social media (Feinstein et al., 2013; Vogel, Rose, Okdie, Eckles & Franz, 2015). However, other research has contradicted this, indicating that social media use impact on mental health is far more complex, and a more in-depth analysis of various possible risk factors regarding SM needs to be explored. Most large-scale empiric work suggests that time spent on SM has associations with a decline in subjective well-being and increases symptoms of anxiety, self-esteem and depression (Andreassen et al., 2016; Block et al., 2014; Kross et al., 2013; Lin et al., 2016; Woods & Scott, 2016). It has been suggested in surveys that Instagram is the application chosen most frequently as the SM platform that causes young people to report feelings of depression, anxiety and low self-esteem. Maintaining a seemingly perfect life on SM is unhealthy, for those looking at it and those who appear to be successful. For these individuals, the fear of not being accepted if they fail to maintain these perfected images of lifestyles online has been suggested to negatively impact them (Thapa & Subedi, 2018).

Festinger first proposed the social comparison theory in 1954; the theory suggests that people are motivated to compare themselves against others to either evaluate aspects of themselves or for self-improvement (Festinger, 1954). The process of social comparison theory explains why social media users often compare themselves with other users as they frequently check their social media accounts to see how they are going to be perceived by other users. When upward comparison happens, individuals are more likely to edit their selfies to improve their appearance. If downward comparison happens, an individual is less

likely to edit their selfies as they feel satisfied with their appearance. However, some models and celebrities who are well known for their attractive traits still choose to edit their selfies, indicating that downward comparison may be less common than upward (Chae, 2017). Cross-sectional data has suggested that Facebook use is associated with greater upward social comparison, which has been related to poorer mental health and lower self-esteem (Hannah et al., 2017). Prior research suggests that frequent exposure to social media may result in a drive for thinness, higher levels of weight dissatisfaction and body surveillance, which are suggested to be possible risk factors for anxiety, low self-esteem and depression (Tiggemann & Miller, 2010, Tiggemann & Slater, 2013).

Feminist theorists suggested that the feminine body is constructed as an object 'to be looked at' (Spitzack, 1990). Due to this construction, women learn to view their bodies as outsiders and often judge them on cultural body standards even when these standards are impossible to meet. This experience has also been referred to as objectified body consciousness (McKinley & Hyde, 1996). As a result, the adolescents who are internalising these seemingly perfect ideals are more self-conscious about how other social media users will evaluate them, primarily due to their perception that their appearance is an essential factor in receiving peer acceptance. Consequently, adolescents are likely to spend more time selecting which photos to post as they do not want their peers to view them negatively. Appearance comparisons on social media seem to increase selfie investment and editing, as well as selfie-taking and posting. These findings suggest that social media can negatively influence how adolescents think they must present themselves online (Rousseau, 2020). Due to the popularity of social media & selfies, studies have investigated the effects these have on individuals' mental health. Research has shown that receiving positive feedback on selfies can decrease anxiety, depression, or self-esteem issues, but receiving negative feedback can have

the opposite effect (Bell, Cassarly, & Dunbar, 2018; Valkenburg, Peter, & Schouten, 2006; Woods & Scott, 2016).

Tamir and Mitchell (2012) conducted a study which found that the part of the brain that ignites when taking an addictive substance, also lights up the same way through self-disclosure or receiving positive feedback on social media. This is the reward area in the brain; its chemical pathways affect sensations and decisions. The most prominent social reward theory feature would be the 'like' feature or 'heart' icon on social media accounts. This feedback online has been demonstrated through neuroscience, to affect our brain in a similar way that getting a reward would affect us, due to the brain releasing dopamine when receiving positive feedback or self-disclosure online (Tamir & Mitchell, 2012). Individuals receiving many likes on a photo will increase the likelihood of the individual posting again soon; so if an individual posts an edited selfie of themselves and receives more positive feedback, it could act as a positive reinforcement to do it again (Hilliard, 2020; Montag, Lachmann, Herrlich & Zweig, 2019). Some researchers have reported that individuals may upload selfies more frequently to boost their self-esteem (Pounders et al., 2016).

Most people tend to post the most positive moments of their life; photos where they look their best, and often the way people choose to portray themselves and their life, is not an accurate representation of reality. This can cause others to perceive their life or attractiveness more poorly, as they compare their reality to these seemingly perfect ideals, typically seen on SM. Research has indicated these comparisons to others on SM as a possible contributor to depression and low self-esteem (Appel, Gerlach & Crusius, 2016; Chou & Edge, 2012). A large number of studies have emphasised comparison on SM; mainly, physical appearance comparisons can lead to the loss of self-esteem. Low self-esteem is also suggested to be a risk factor for depression and anxiety (Appel, Gerlach & Crusius, 2016; Chou & Edge, 2012).

Previously, researchers focused on exposure to appearance-related content on television or magazines. During this time, photoshop was mainly used only by those in the public eye.

However, currently, photo-editing applications such as Facetune are among the most popular app store applications. Often people compare their real lives to what they perceive to be other peoples' lives through social media, often subconsciously disregarding the fact that the majority of social media posts are showing off the best parts of peoples' lives rather than the reality of them. A recent trend on Instagram consists of two images side by side, both of the same person, but one showing a more realistic photo and the other showing the typical type of edited and unrealistic photos that people see on Instagram. The identification of this trend was via the hashtag or caption 'Instagram vs reality'. This trend seeks to expose the falseness expressed on social media platforms, but specifically Instagram, as it is well known for being the platform where users post their 'best' photos. These contrasting images remind people that social media is not a realistic portrayal of peoples' lives, and that everyone has flaws. This trend's logic appears to dissuade people from comparing themselves to people online, to preserve their body satisfaction and self-esteem. The aim of the Instagram vs reality trend showed an impact in one study, as exposure to both photos or just the reality picture alone resulted in lower body dissatisfaction than the women who viewed the edited typical Instagram photo (Tiggemann & Anderberg, 2019).

The Current Study

Previous research has focused on social media as a one-dimensional construct. However, the connection between psychological health and SM use is very complicated due to the different ways in which individuals can use the SM (Banjanin, Banjanin, Dimitrijevic, & Pantic, 2015). Primarily focusing on SM use alone is not taking into account other possible variables, which may contribute to the harmful effects caused by SM, such as photo-editing. Most of the past literature primarily focuses on time spent on SM and has found a

relationship between this and adverse mental health outcomes such as lower body dissatisfaction or anxiety (Andreassen et al., 2016; Thapa & Subedi, 2018). Although this is an important factor and has helped provide potential answers to the harm SM can cause, it still leaves many unanswered questions. Many questions regarding what factors in SM are harmful and which are positive remain to be addressed. For example, in current times, many people rely on SM for work and may spend a lot of time on SM for this purpose. YouTube is also classified as a SM platform that many people use for educational or entertainment purposes. Individuals who use SM for these reasons may have a completely different perspective on social media effects than a person who spends most of their time on social media on a platform like Facebook or Instagram, posting images and looking at appearance-related content for hours daily. The latter has been suggested to be associated with a negative body image, lowered self-esteem, anxiety and depression. (Meier & Gray, 2014; Valkenburg, Peter, & Schouten, 2006).

Therefore, the current study aims to provide a greater understanding of social media and photo-editing usage effect on anxiety, depression and self-esteem. There has been no validated scale made, to date, to measure photo-editing, so a novel scale is used for this study. This photo-editing scale has two sub-scales: photo-editing usage/frequency and the other to measure psychological involvement/attitudes with photo-editing. These aims produce the following research questions and hypotheses:

Research question 1: Does social media and photo-editing use have an effect on depression outcomes? The hypothesis for research question 1: higher levels of depression will be associated with increased social media and photo-editing usage. According to the hypothesis, the more time spent on social media and the frequency or psychological involvement one has with photo-editing, increases one's risk of higher levels of depression.

Research question 2: Does social media and photo-editing use have an effect on anxiety levels? The hypothesis for research question 2: Higher anxiety levels will be associated with increased social media and photo-editing usage levels. According to the hypothesis, the more time spent on social media and the frequency or psychological involvement one has with photo-editing, increases one's risk of higher anxiety levels.

Research question 3: Does social media and photo-editing use have an effect on self-esteem levels? The hypothesis for research question 2: lower levels of self-esteem will be associated with increased social media and photo-editing usage. According to the hypothesis, the more time spent on social media and the frequency or psychological involvement one has with photo-editing increases one's risk of lower self-esteem.

Before COVID-19, people had more opportunities to engage in social activities which kept them off social media for longer. Up to now, there have been strict lockdowns worldwide for the first time. This is the first global pandemic of the digital age, and this has significantly changed how pandemics can be handled. However, this has prevented people from going to cinemas, pubs, gyms and visiting beloved family members and friends, due to nations advising people to stay at home and to restrict social gatherings with friends and family in person. Communication through SM has been the way that the majority of people have kept in touch with others. Humans are social animals who need contact to maintain their psychological well-being; therefore further research on SM needs to thoroughly investigate and evaluate social media's different factors, to preserve peoples' mental health, now more than ever. Without it, people would be unable to work or study from home, so it has proven useful, but in turn, the time spent on social media has increased significantly.

Methodology

Participants

The research sample within the current study consisted of 325 adult participants

(Females: n = 273; Males: n = 51; Prefer not to say: n =1). A G*Power analysis was

conducted to calculate the sample size for a multiple regression analysis, therefore the

minimum sample size had to be 68 (Faul, Erdfelder, Buchner & Lang, 2009). Participants

were required to be at least 18 years of age to participate, in line with ethical considerations.

Participants ranged in age from 18 to 69 years, with an average age of 25 (SD = 10.62; Mean

= 25.42). The study implemented a non-probability convenience sampling strategy to recruit

participants. Participants were recruited on the researcher's social media accounts, ensuring

all participants in the sample were social media users (Facebook and Instagram). General

demographic information such as age and gender were collected from participants' but other

demographic questions were not required for the current study, which was an exploratory

analysis that sought to examine social media and photo editing's effect on anxiety, depression

and self-esteem.

Materials

This study questionnaire contained two demographic questions and four distinct

scales which were combined using Google Forms, a survey builder. The software package

IBM SPSS was used to calculate data (see appendix A). The demographic questions were

included to gain a general profile of the participants in this study, regarding participants age

and gender (see appendix B).

Photo-editing questionnaire (PHED) is a novel scale which was created by the

researcher to measure participants' frequency and psychological involvement with photo

editing, as there is no standardised scale to measure this variable (see appendix C). It is a

12-item scale with two sub-scales: photo-editing frequency (PHEDF) and psychological

involvement (PHEDI). Each sub-scale has 6 questions included. Each item uses 5 response choices ranging from 'never' to 'always'. Questions 1,2,4,9,10 and 12 are regarding photo editing frequency. Question 2 is reverse scored in this sub scale compared to the other questions which are scored as '*0 = never*' to '*4 = always*'. The remaining questions 3,5,6,7,8 and 11 are regarding the psychological involvement subscale. Question 8 is reversed scored in this scale and the remaining questions are scored as '*0 = never*' to '*4 = always*'. Each score per subscale can be calculated by adding up the answers to all six items. The highest possible score for each subscale is 24 and the lowest possible score is 0. Sample items include "how often do you post completely unedited or unchanged photos on social media?" or "Do you think editing your photos means that you are not happy with how you look already?". Higher scores on the frequency subscale indicate higher usage of photo editing. Higher scores on the psychological involvement subscale indicate that these participants have higher levels of psychological involvement in relation to photo-editing. A Cronbach's alpha was conducted to test both subscales reliability, for PHEDF α =0.84; for the PHEDI it was α =0.61.

Social Media Engagement Questionnaire (SMEQ) was developed by Przybylski, Murayama, DeHaan, & Gladwell (2013). It is a 5-item scale designed to measure the extent of an individual's social media usage during key daily activities. Each item is measured using 7 response choices ranging from '0 = Not one day' to '7 = Every day'. Each score can be calculated by adding up the answers to all five items. Higher scores indicate more time spent on social media platforms. The lowest possible score is 0 and the highest score is 35 (see Appendix D). Previous research has indicated this scale to have good reliability (α = 0.81-.89) (Al-Menayes, 2015). The Cronbach's alpha for this specific sample was α =0.80, which indicates a high level of internal consistency.

Rosenburg Self-Esteem Scale (RSES) was developed by Morris Rosenburg in 1965 and was used to assess participants' levels of self-esteem. The Rosenberg Self-Esteem scale is a 10 item Likert scale type test, with items answered on a four-point scale ranging from 1 "strongly agree" to 4 "strongly disagree". Sample items include "I feel I do not have much to be proud of" and "I am a person of worth" (see appendix E). Total scores range from the lowest of 10 to the highest possible score of 40 with higher scores indicating higher self-esteem levels. Previous research indicates the RSES to have good reliability indicating a range of Cronbach's alpha scores between α=.77-.88 (Blascovich & Tomaka, 1991; Wongpakaran T & Wongpakaran N, 2012). The scale demonstrates predictive, concurrent and construct validity (Rosenberg, 1979). This scale had excellent reliability within the current study ($\alpha = 0.91$).

The Hospital Anxiety and Depression Scale (HADS) was created by Zigmond and Snaith (1983) to measure anxiety (HADS-A) and depression (HADS-D). The questionnaire accumulates 14 items which are scored on a 4-point Likert scale type test, ranging from 0-3. Sample items include "I feel tense or wound up" or "I feel as if I am slowed down" (see appendix F). There are 7 questions to measure anxiety and 7 to measure depression. Each of these subscales are scored separately with the lowest possible score per scale being 0 and the highest per scale being 21. For both scales, scores less than 7 are indicators of non-cases, scores between 8-10 are mild cases, 11-14 are moderate cases and 15-21 are severe cases (Stern, 2014). Previous research has indicated the HADS scale to have good validity with the Cronbach's alpha for HADS-A ranges from .68 to .93 (mean .83) and the HADS-D varying from .67 to .90 (mean .82) (Bjelland, Dahl, Haug & Neckelmann, 2002; Stern, 2014). This scale had good reliability within the current study for HADS-A ($\alpha = 0.84$; and acceptable reliability for HADS-D (α =0.76).

Design:

The study implemented an experimental cross-sectional, within-groups research design and adopted a quantitative approach. The predictor variables (PVs) were: social media engagement, and photo-editing frequency and involvement. The three criterion variables (CVs) were anxiety, depression and self-esteem. Participants were recruited through simple random sampling.

Procedure:

The pilot study was run prior to the data collection, and there were no changes made to the study following the pilot study. Due to the novel questionnaire, the pilot study ensured it was both easily understood and gave an estimated completion time for the scale. All of the participants in the study were recruited through social media platforms to participate in an anonymous, self-report questionnaire. The questionnaire was uploaded to Instagram, Snapchat and Facebook. Some were recruited by mutual friends when the questionnaire link was shared on Facebook. Once the link was opened the participants were given a description of the study's background, aims and information regarding the consent to withdraw at any point in the survey and an estimated time frame for completion of the study (see appendix A). The questionnaire takes approximately 20 minutes to complete but there was no time limit and participants were given their own time to complete it. The survey was done on a safe, well-accredited platform to provide safety and security for participants. Information about this platform and the confidentiality terms were explained in detail along with the potential risks and benefits of taking part in the study (see appendix A). This information was followed with the researcher and supervisor's contact details and informed consent items which were needed to confirm participants were above 18 years of age (see appendix B). Participants were then asked to click the "yes" box confirming that they have read the questionnaire and that they consented to and understood the terms, and agreed to work collaboratively. Once

this had been established, they were able to continue to the questionnaire. Participants'

gender and age were collected in the first section. They were then required to complete the

Hospital Anxiety and Depression Scale, The Rosenburg Scale, followed by the Social Media

Engagement Questionnaire, and lastly the Photo Editing Questionnaire. Once they had

completed these five sections in the questionnaire there was a debriefing form where the

researcher's contact details and those of her supervisor were provided for the benefit of

participants, for any inquiries or concerns they may have had. Mental health helplines were

provided for participants to access on the debriefing sheet such as the Samaritans, along with

mental health based applications such as Calm (see Appendix I for full details).

Ethical considerations

All data was collected in accordance with the ethical guidelines of NCI. The ethical

principles were followed throughout this study to minimise any risk to participants. These

included respect for a person's rights and dignity; beneficence; justice; competence;

responsibility and integrity. The risks and benefits of partaking in the study were clearly

outlined, along with participants' informed consent. There was no incentive to take part in the

study and participants were informed that once the thesis has been completed, that it will be

available to read, but that it would not be completed until around March 2021. This was

explicitly stated on the debriefing form. Helplines such as the Samaritans and useful apps

such as Headspace were provided for those who felt distress due to taking part in the study.

Results

Descriptive Statistics

The current data is taken from a sample of 325 participants (*n*=325). This consisted of 84% females (*n*=273), 15.69% males (*n*=51) and 0.31% prefer not to say (*n*=1). Descriptive statistics were performed for all variables, including social media engagement, photo editing frequency and psychological involvement in photo-editing, depression, anxiety and self-esteem. Means (M), Standard Deviations (SD), Medians (MD) and Range (Minimum and Maximum scores) were obtained and are displayed in table 1.

Table 1

Descriptive statistics and reliability of all continuous variables

	Mean	Median	SD	Skewness	Kurtosis	Minimum	Maximum
HADS-A	11.23	12	4.34	-.203	-.514	.00	21
HADS-D	6.60	6	3.67	.360	-.235	.00	17
SMEQ	26.87	29	8.82	-.957	.103	.00	35
Rosenburg	27.38	28	2.30	.129	.271	21	34
PHEDI	8.77	9	4.61	-.080	-.875	.00	19
PHEDF	8.56	7	6.05	.594	-.475	.00	24
Age	25.42	21	10.62	2.008	3.248	18	69

Inferential statistics

Spearman's Rho

Tests of normality and preliminary analyses were performed on the data set, and this indicated the variables in the study were non-normally distributed therefore, a Spearman's Rank Order Correlation was needed. The relationships between anxiety, depression and self-

esteem with social media engagement (SME) and photo-editing (psychological involvement and frequency) was investigated using Spearman's Rank Order correlation coefficient. There was a small, positive correlation between SME and anxiety (r_S = .102, n = 325, p =.066).

Results indicate that higher levels of social media engagement have a weak association with higher levels of anxiety. There was a medium, positive correlation between PHEDI and anxiety (r_S= .367, n=325, p<.01). Results indicate that higher levels of psychological involvement with photo editing have a moderate impact on higher anxiety levels. There was a small, positive correlation between PHEDF and anxiety (r_S=.173, n=325, p<.01). Results indicate that photo-editing frequency has a weak association with higher anxiety levels (see table 2).

There was a small, positive relationship between SME and depression (r_S=.129, n=325, p<.01). Results indicate that SME has a weak association with higher levels of depression. There was a small, positive correlation between PHEDI and higher levels of depression (r_S=.277, n=325, p<.01). Results indicate that higher levels of psychological involvement with photo editing have a weak association with higher levels of depression. There was a small, positive association with PHEDF and higher levels of depression (r_S=.201, n=325, p<.01). Results indicate that higher photo-editing frequency levels have a weak association with higher depression levels (see table 2).

There was a small, positive correlation between SME and self-esteem (r_S=.215, n=325, p<.01). Results indicate that social media engagement has a weak association with lower levels of self-esteem. There was a small, positive correlation between PHEDI and self-esteem (r_S=.278, n=325, p<.01). Results indicate that psychological involvement with photo-editing has a weak association with lower self-esteem levels. There was a small, positive

relationship between PHEDF and self-esteem levels (r_s=.162, n=325, p<.01). Results indicate

a weak relationship between photo-editing frequency and lower levels of self-esteem (see

table 2).

Table 2

Correlations between all continuous variables.

Variables	1	2	3	4	5	6
1. SMEQ	1					
2. PHEDI	0.283**	1				
3. PHEDF	0.211**	0.597**	1			
4. HADS-A	0.102	0.367**	0.173**	1		
5. HADS-D	0.129*	0.277**	0.201**	0.565**	1	
6. Rosenburg	0.215**	0.278**	0.162**	.251**	0.159**	1

*Note: *p<.05,**p<.01; ***p < .001*

Three multiple regression analyses were performed to determine how well anxiety,

depression, and self-esteem levels could be explained by two variables: social media

usage/engagement and photo editing. Photo-editing was split into two subscales photo-editing

frequency and photo-editing involvement. Preliminary analyses were conducted to ensure no

violation of the assumptions of normality, linearity, and homoscedasticity. Tests for

multicollinearity also indicated that all Tolerance and VIF values were in an acceptable

range. These results indicate that there was no violation of the assumption of multicollinearity

and that the data was suitable for examination through multiple linear regression analysis.

Since no a priori hypotheses had been made to determine the order of entry of the predictor

variables, a direct method was used for the analysis. The three predictor variables explained

13.8% of variance in anxiety levels ($F(3, 321) = 17.17$, $p < .001$). One of the three variables

were found to predict anxiety levels to a statistically significant level uniquely: PHEDI ($\beta =$

.379, $p < .001$) (see Table 3 for full details).

Table 3

Standard multiple regression model predicting HADS-A total scores.

Variable	R^2	B	SE	β	t	p
HADS- A	.138					
SMEQ		.015	.027	.030	.552	.582
PHEDI		.357	.063	.379	5.687	.000
PHEDF		-.023	.046	-.033	-.505	.614

Note. R^2 = R-squared; β = standardized beta value; B = unstandardized beta value; SE =
Standard errors of B; N = 67; Statistical significance: *$p < .05$; **$p < .01$; ***$p < .001$

The three predictor variables explained 8% of variance in depression levels ($F(3, 321)$

$= 9.29$, $p < .001$). One of the three variables were found to uniquely predict depression levels

to a statistically significantly level: PHEDI ($\beta = .173$, $p < .001$) (see Table 4 for full details).

Table 4

Standard multiple regression model predicting HADS-D total scores.

Variable	R^2	B	SE	β	t	p
HADS-D	.080					
SMEQ		.022	.024	.052	.924	.356
PHEDI		.138	.055	.173	2.510	.013
PHEDF		.072	.040	.118	1.776	.077

Note. R^2 = R-squared; β = standardized beta value; B = unstandardized beta value; SE =
Standard errors of B; N = 67; Statistical significance: *$p < .05$; **$p < .01$; ***$p < .001$

The three predictor variables explained 9.8% of variance in self-esteem levels (F(3, 321) = 11.58, p < .001). Two of the three variables were found to uniquely predict self-esteem levels to a statistically significantly level: SME (β = .150, p < .001) and PHEDI (β = .260, p < .001) (see Table 5 for full details).

Table 5

Standard multiple regression model predicting Rosenburg total scores.

Variable	R^2	B	SE	β	*t*	*p*
Rosenburg	.098					
SMEQ		.039	.015	.150	2.675	.008
PHEDI		.130	.034	.260	3.803	.000
PHEDF		-.022	.025	-.057	-.865	.388

Note. R^2 = R-squared; β = standardized beta value; B = unstandardized beta value; SE = Standard errors of B; N = 67; Statistical significance: *p < .05; **p < .01; ***p < .001

To summarise, the Spearman's Rho correlation found a significant, moderate relationship between high levels of psychological involvement with photo-editing and higher levels of anxiety. The remaining relationships were all found to have a small, positive relationship in the Spearman's correlation. The multiple regression analyses indicate higher levels of psychological involvement with photo-editing had a significant effect on all three criterion variables, anxiety, depression, and self-esteem and indicated that social media engagement had a significant effect on self-esteem scores.

Discussion

The current study aimed to investigate the relationship between social media engagement and photo-editing frequency and psychological involvement with depression, anxiety and self-esteem. This study aims to provide a greater understanding of why SM may cause these adverse outcomes by researching photo-editing, which is typically not examined in the prior literature. Previous findings have indicated that social media engagement, especially on platforms such as Instagram and Facebook, has been associated with various mental health concerns. These include anxiety, body dissatisfaction, depression, low self-esteem and SM addiction **(**Appel, Gerlach & Crusius, 2016; Chou & Edge, 2012; Kross et al., 2013). Prior research found comparing oneself negatively to another person or, in other words, upward comparison is linked to low self-esteem issues, which can later progress into depression symptoms (Appel, Gerlach & Crusius, 2016; Chou & Edge, 2012). Previously, researchers focused on social media engagement effects alone. However, photo editing's impact on mental well-being has been under-researched. Due to technological advances in recent years, there have been dramatic differences in how people can change and edit photos. Throughout this research, three hypotheses were formulated to address the aims of the study.

It was hypothesised, from prior literature, that (H1) there would be a relationship between social media engagement, photo-editing and anxiety. This was explored using a correlation analysis and multiple regression. In support of the first hypothesis, results showed that social media engagement and photo-editing frequency had a small, positive correlation with anxiety. There was a moderate, positive relationship between psychological involvement with photo-editing and anxiety. The multiple regression also found a significant effect on PHEDI and anxiety levels, indicating that of the three variables, the psychological involvement with PHEDI seemed to affect anxiety scores to a more substantial level. These findings are consistent with numerous studies that have found a relationship between social

media usage and higher anxiety levels (Andreassen et al., 2016; Block et al., 2014; Kross et al., 2013; Lin et al., 2016; Woods & Scott, 2016). This also accords with our earlier observations, which showed that viewing edited photos may cause lower body dissatisfaction than unedited images (Tiggemann, Brown & Anderberg, 2019). Also, social media applications such as Instagram, which is well known for being a platform associated with photo-editing, has been suggested to contribute to feelings of anxiety (Thapa & Subedi, 2018).

For H2, a correlation and multiple regression analysis were employed to investigate whether social media engagement and photo-editing affected levels of depression. The second hypothesis was also supported. Results indicated depression levels had a small, positive correlation with SME, PHEDI and PHEDF. The multiple regression found a significant effect for PHEDI and depression scores, showing that PHEDI had the most significant impact on depression levels of all three variables. These results are in line with those of previous studies, and as such, has suggested higher levels of SM use and exposure to appearance-related content increases depression symptoms (Thapa & Subedi, 2018; Tiggemann & Miller, 2010).

Lastly, in support of H3, results showed that higher levels of social media engagement and photo-editing are associated with lower self-esteem levels. Small, positive correlations were found between lower self-esteem levels and SME, PHEDI and PHEDF. The multiple regression found SME and PHEDI significantly affected lower self-esteem levels, indicating these two had the most considerable effect on self-esteem levels. These results match those observed in earlier studies which suggests time spent on SM has an association with self-esteem levels (Andreassen et al., 2016; Block et al., 2014). The social comparison theory may partly explain these relationships; prior studies have indicated SM use can contribute to greater upward comparison, which has been related to lower self-esteem (Hannah et al.,

2017).   Although our results differ considerably from those of Veldhuis et al (2018) that higher engagement levels with filters and other editing techniques had no association with self-esteem levels; however, they had an association with higher self-objectification levels. This provides evidence as to why studies on social media effects can be so ambiguous; there are many possible contributors that could impact psychological concerns such as mood, body dissatisfaction, and self-esteem. However, based on the above findings, hypothesis 1, 2 and 3 can be accepted.

A growing body of literature on social media usage has shown both positive and negative results (Mills, Musto, Williams & Tiggemann, 2018). While social media use has benefits, it provides a valuable and convenient method of communicating with others. This has been demonstrated to an increased sense of well-being (Tiggemann & Miller, 2010). In contrast, a growing body of literature indicates an excessive usage amount may lead to an increased focus on physical appearance, which can lead to engagement with photo-editing (Cohen, Newton-John & Slater, 2017). To my knowledge, no prior studies have examined SM usage and photo-editing's effects together on anxiety, depression and low self-esteem. Due to a lack of literature on photo-editing's negative effects on psychological health, we will also be reviewing the literature on SM, and exposure to appearance-related content on body dissatisfaction, as these have been associated predictors of depression, anxiety and lower self-esteem issues. As has been previously reported in the literature, an increased focus on physical appearance may contribute to lowered self-esteem (de Vries, Peter, Nikken & de Graaf, 2014). Meier and Gray (2014) found that Facebook use was not related to having a negative body image; however, exposure to appearance-related content was. Although it is well known, SM use has increased significantly in recent years. There has been little research to examine the possible negative implications this may cause to investment in appearance and appearance-changing strategies. Previously, these factors were examined concerning

television shows and magazines' potential impact, as these platforms often show people who fit into the societal perceptions of beauty ideals, and advertise appearance-changing strategies (Daniel & Bridges 2010; Levine & Murnen, 2009). A correlation has been suggested between the degree to which individuals experience appearance pressures, and the desire to engage in risky and costly appearance changing strategies such as cosmetic surgery (de Vries, Peter, Nikken & de Graaf, 2014).

Prior literature examining SM uses effect on the desire to have cosmetic surgery, has suggested that a relationship exists between higher social media usage and a higher desire to undergo cosmetic surgery. This may also indicate that people who spend longer time on SM are less happy with their physical appearance and therefore may lack self-esteem compared to individuals who spend less time online (de Vries, Peter, Nikken & de Graaf, 2014). This has possible adverse impacts if individuals, especially young adults and adolescents, whose bodies are still developing, decide to undergo surgeries due to appearance-related pressures caused by social media. Further research on these effects should be implemented to ensure individuals who want to undergo cosmetic surgery are doing it for the right reasons and not due to excessive exposure to edited photo content on SM which may have negatively impacted their mental health. Instagram faced immense scrutiny over the cosmetic surgery filters it previously offered on its platform, which depicted realistic cosmetic surgery. Due to this extensive concern, they announced that they would ban filters that promote cosmetic surgery in 2019; however, other applications have not followed (de Vries, Peter, Nikken & de Graaf, 2014). Although Instagram has prohibited this type of filter use, the option to post edited selfies is still there, and other filters which alter facial features such as slimming nose shape, are still available. Therefore, edited photos are still visible in thousands of photos posted on Instagram each week (Rex, 2019).

Research has begun to investigate the effects of photo-editing behaviours on social media due to 90% of young adults being active daily (Perrin, 2015). After women viewed two sample images regarding the 'Instagram vs Reality' trend, a significant finding was that exposure to both pictures or the reality photo decreased body dissatisfaction. The women also reported interpreting the message successfully (Tiggemann & Anderberg, 2019). A small amount of other research supports that viewing more realistic photographs online has a positive benefit and evokes less appearance-related concern (Fardouly and Rapee, 2019; Kleemans et al., 2018). This indicates that there may be possible interventions, such as education in schools, about the falseness of what is typically seen on SM which may help reduce the impacts photos viewed online typically have on those who see them.

Although there is a gap in the literature regarding males SM usage and body image concerns, there is a small body of literature to support that social comparison is associated with body dissatisfaction in males as well as females. These social comparisons have been investigated on the SM platform Instagram which has proposed that males exposed to muscular type physiques on Instagram, had an increased likelihood of engaging in social comparison. This can contribute to lower self-esteem and increased depression symptoms (Olivardia et al., 2004; Peng et al., 2019;). There are negative implications for individuals who engage in social comparisons online, due to these unrealistic beauty standards changing frequently. In the past, the societal physique standard for women was a thin physique. In recent years this has changed into promoting a curvier 'hourglass' figure for females and a muscular physique for males. Celebrities and influencers are typically viewed as role-models for these beauty expectations and ideals (Anderson-Fye, 2004; Swami, 2015; Viladrich, Yeh, Bruning & Weiss, 2009).

The most popular female Instagram accounts belong to two members of the Kardashian-Jenner family, with number four being Kylie Jenner who has 213.26 million

followers and number seven being Kim Kardashian with 202.77 million followers (Tankovska, 2021). This family is well known for their physical appearance, cosmetic surgeries and setting fashion and beauty trends. Furthermore, the most followed person on Instagram is Cristiano Ronaldo, with 358.69 million followers. He is a footballer with an athletic, muscular body and is a typical beauty standard for males. Another example is Dwayne Johnson, with 215.02 million followers. He is the fourth most-followed account on Instagram and is an actor who has an extremely muscular physique (Tankovska, 2021). This is concerning due to the research which indicates that both males and females who are exposed to these societal appearance pressures were more likely to engage in social comparison, which assists in adverse health outcomes such as depression, body image issues, and low self-esteem (Olivardia et al., 2004; Peng et al., 2019). This emphasises how important it is to be mindful and to monitor who we choose to follow, as there are possible detrimental impacts on psychological well-being.

Although research has intensely focused on comparisons to celebrities on social media, there has been evidence reported that SM users have said that appearance-related comparisons to celebrities are not realistic, but comparisons with friends are. They also noted that comparisons with friends make them feel more negatively toward their appearance, and view likes and comments as a form of validation from society (Bagautdinov, 2018; Hosie, 2018). One particular piece of research indicates that one of the most important motivators for sharing images online is to show their body image at its best, according to socially constructed standards (Maharani, Hawa & Devita, 2020). Exposure to manipulated Instagram photos has been associated with lowered body image (Kleemans, 2018). Photo-editing seems normal for the younger generations, especially when it is edited within reasonable limits, however, this may be addictive. If individuals become used to editing their photos too much,

it may lead to negative body related issues such as body dysmorphic disorder (Maharani, Hawa & Devita, 2020).

The social reward theory also provides insight into how social media and photo-editing usage can be addictive. Having a lot of emotional investment and the use of SM, specifically at night-time, is strongly related to poor sleep and anxiety at not being on social media and missing out, as they are not able to be continuously connected (Fredriksen, Rhodes, Reddy & Way, 2004). Internet addiction has also been proposed to associate with depression (Orsal, Orsal, Unsal & Ozalp, 2013). The same addictive feeling may also apply to individuals receiving positive feedback on their edited selfies, which may motivate them to continue engaging in photo-editing applications. Social media has also had implications on the dating industry, as a recent study showed that 57% of teens in the study began relationships online. If teens view social media as a platform to find a partner, looking more desirable online would become very important for those individuals, explaining how editing photos for social media is becoming a social norm (Lenhart, Smith, Anderson, Duggan & Perrin, 2015).

Limitations

This study identifies several limitations. First, the entirety of the scales relied on self-report measures, which may have impacted scores due to the possibility of participants being in denial, or embarrassed by the intensity of their social media engagement and mental health. Utilising self-report scales may compromise the answers due to self-selecting bias, meaning that the answers may only represent how the participant felt when taking part in the study and not their overall feelings about the variables being measured. Research in a controlled laboratory design may provide a more reliable measure. More experimental and longitudinal studies are needed. A more specific focused type of analysis regarding SM would be beneficial because, as mentioned previously, certain aspects of social media use, such as

exposure to appearance-related content, appears to have a negative impact in a large amount of literature.

Secondly, one concern with the findings of this study was that the data collection took place during strict lockdowns. This left many individuals out of work, school and most other social activities. This would have a large impact on the engagement participants had with SM, while taking part in this survey, as SM has been the primary source of connecting with friends and family members throughout these unprecedented times. This may also be a contributing factor to people's depression and anxiety levels due to the significant changes that have occurred. The majority of participants in this study were between the ages of 18 and 25, and there was also an uneven gender ratio in this study, as over 80% of participants were female. This will reduce the generalisability of the results for the entire adult population. In future research, investigating older adult populations and adolescents might prove important in concluding protective factors for SM usage and photo-editing for all age groups.

Thirdly, a social media engagement questionnaire was used for this study, which measures SM engagement, and to what extent (Przyblski et al., 2013). Perhaps developing a questionnaire that measured usage for specific applications may help assess which factors incorporated with SM use are the most harmful. This would further highlight which platforms are most associated with increased anxiety and depression symptoms, body dissatisfaction and low self-esteem. Previous beneficial research that investigated SM alone had mixed results, yet most research on appearance-related content exposure had negative impacts on psychological well-being. This indicates that specific platforms may pose more risks to users in comparison to others. Furthermore, a novel questionnaire was used in this study to measure photo-editing frequency and psychological involvement. Further research on the development of a standardised measure for photo-editing may help provide a more accurate assessment of the role that photo-editing and appearance-related exposure has on self-esteem, body image

and depression concerns. The psychological involvement/attitudes having the most significant effect in this research was not surprising however, the Cronbach's alpha for this sub-scale was α =0.61 which indicates a poor reliability, this scale had the lowest reliability of all scales used in this study.

These results findings support the idea that both viewing and seeing photo-edited content may cause negative effects for individuals. Typically, SM is not an accurate representation of reality, and therefore if individuals are constantly comparing their lives and their appearance based on these everchanging societal pressures that appear on SM, it can be incredibly destructive. These findings may help others to explain why the research on SM usage on mental health has mixed results, it is possible users who are on more appearance focused SM platforms may be more likely to experience negative impacts than people who are on social media purely for work or social purposes. Incorporating social media education into education curriculums could be beneficial in advising students of the potential risks and benefits and to not spend excessive time on SM. This will help them use social media more carefully. This is especially important for the younger generations, as they are growing up in this digital era and may not realise the extent of how unrealistic what we see online may be. Future research needs to explore all possible outcomes that SM and photo-editing have on users, due to the growing use and availability of these resources. This could ensure that the Health Service Executive can construct appropriate guidelines regarding the negative influence that social media and photo-editing have on anxiety, depression and self-esteem. There should also be more awareness to the influences' appearance related content exposure and photo-editing has for cosmetic surgery and future research needs to examine the influence photo-editing on SM has on individuals wanting to undergo cosmetic surgery.

Conclusion

In the limited research on the effects of social media engagement on anxiety, depression and self-esteem there has been mixed results. However, social media has multiple uses, which may account for the conflicting results throughout the literature. Therefore, more research on the specific self-presentation strategies that social media users engage with, needs to be investigated in future research. This study examined both frequency and psychological involvement with photo-editing on anxiety, depression and self-esteem. Throughout our extensive search throughout the literature, a study like this has not been found. Due to technology advancing at a more rapid pace throughout the last few decades, it has proven difficult to keep up to date in researching all the possible risks associated with these large societal changes. Social media has changed how we communicate, date and even our past times. Research on Facebook use, in particular, showed that overall, it was negatively associated with psychological well-being (Kross et al., 2013). New reports have shown the damage that excessive use of websites, such as Facebook, has on anxiety and depression, especially on those susceptible to depression (Valkenburg, Peter, & Schouten, 2006; Woods & Scott, 2016). This suggests that individuals who suffer from these disorders may benefit from reducing their time spent online; therefore, educating people on the possible risks may reduce symptoms of depression. Now that most people have smartphones, they have the option to be continuously connected. When lots of individuals have been away from their social media accounts for longer than usual, the fear of missing out (FOMO) impacts them. Excessive SM usage has been associated with lack of concentration, poor sleep quality and anxiety (Elhai, Gallinari, Rozgonjuk & Yang, 2020).

Pre-COVID, the current generation already spent less time socialising with their friends in person as more time was spent talking through SM. However, communicating through SM instead of face to face is less emotionally satisfying and can leave individuals feeling socially isolated (Primack et al., 2017). As a result of COVID-19, research is needed

to explore all the potential contributors of both positive and negative effects entailed in being a SM user. It is important, now more than ever, to inform the public of the risks associated with SM and photo-editing usage. Due to governments advising to reduce physical communications and keep in touch through SM, face to face interactions are now more limited than ever before. This leaves social media as a primary source of communicating with family and friends. The present study lays the groundwork for future research into social media and photo-editing having an impact on mental health. It also provides insight on why research about the effects of SM should not only focus on SME but also another factor that is related to being a SM user such as photo-editing or exposure to appearance related content on SM.

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Appendices

Appendix A

Evidence of data and SPSS output (full data file available upon request)

	Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align	Measure	Role
1	ID	Numeric	40	0		None	None	11	Right	Scale	Input
2	Gender	Numeric	2	0	Please select t...	{1, female}...	None	12	Right	Nominal	Input
3	age	Numeric	3	0	Please enter yo...	None	None	12	Right	Scale	Input
4	HADS1A	Numeric	2	0	I feel tense or '...	{0, not at all...	None	12	Right	Ordinal	Input
5	HADS2D	Numeric	2	0	I still enjoy the ...	{0, definitely...	None	12	Right	Ordinal	Input
6	HADS3A	Numeric	2	0	I get a sort of fri...	{0, not at all...	None	12	Right	Ordinal	Input
7	HADS4D	Numeric	2	0	i can laugh and...	{0, as much...	None	12	Right	Ordinal	Input
8	HADS5A	Numeric	2	0	Worrying thoug...	{0, only occ...	None	12	Right	Ordinal	Input
9	HADS6D	Numeric	2	0	I feel cheerful	{0, most of t...	None	12	Right	Ordinal	Input
10	HADS7A	Numeric	2	0	I can sit at eas...	{0, definitely...	None	12	Right	Ordinal	Input
11	HADS8D	Numeric	2	0	I feel as if I am ...	{0, not at all...	None	12	Right	Ordinal	Input
12	HADS9A	Numeric	2	0	I get sort of a fri...	{0, not at all...	None	12	Right	Ordinal	Input
13	HADS10D	Numeric	2	0	I have lost inter...	{0, i take ju...	None	12	Right	Ordinal	Input
14	HADS11A	Numeric	2	0	I feel restless a...	{0, not at all...	None	12	Right	Ordinal	Input
15	HADS12D	Numeric	2	0	I look forward w...	{0, as much...	None	12	Right	Ordinal	Input
16	HADS13A	Numeric	2	0	I get sudden fe...	{0, not at all...	None	12	Right	Ordinal	Input
17	HADS14D	Numeric	2	0	I can enjoy a g...	{0, often}...	None	12	Right	Ordinal	Input
18	ROSENBU...	Numeric	2	0	I am a person o...	{1, strongly...	None	12	Right	Ordinal	Input
19	ROSENBU...	Numeric	2	0	I have a number...	{1, strongly...	None	12	Right	Ordinal	Input
20	ROSENBU...	Numeric	2	0	I am inclined to...	{1, strongly...	None	12	Right	Ordinal	Input
21	ROSENBU...	Numeric	2	0	I am able to do ...	{1, strongly...	None	12	Right	Ordinal	Input
22	ROSENBU...	Numeric	2	0	I felt I do not ha...	{1, strongly...	None	12	Right	Ordinal	Input
23	ROSENBU...	Numeric	2	0	I take a positive...	{1, strongly...	None	12	Right	Ordinal	Input
24	ROSENBU...	Numeric	2	0	I am satisfied w...	{1, strongly...	None	12	Right	Ordinal	Input
25	ROSENBU...	Numeric	2	0	I wish I could h...	{1, strongly...	None	12	Right	Ordinal	Input
26	ROSENBU...	Numeric	2	0	I certainly feel u...	{1, strongly...	None	12	Right	Ordinal	Input

Data View   Variable View

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.283[a]	.080	.071	3.53272

a. Predictors: (Constant), TotalPHEDIF, TotalSMEQ, TotalPHEDI
b. Dependent Variable: TotalHADSD

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	347.689	3	115.896	9.287	.000[b]
	Residual	4006.108	321	12.480		
	Total	4353.797	324			

a. Dependent Variable: TotalHADSD
b. Predictors: (Constant), TotalPHEDIF, TotalSMEQ, TotalPHEDI

Coefficients[a]

Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.	95.0% Confidence Interval for B Lower Bound	Upper Bound	Correlations Zero-order	Partial	Part	Collinearit Tolerance
1	(Constant)	4.196	.658		6.377	.000	2.901	5.490				
	TotalSMEQ	.022	.024	.052	.924	.356	-.025	.068	.136	.052	.049	.889
	TotalPHEDI	.138	.055	.173	2.510	.013	.030	.245	.261	.139	.134	.604
	TotalPHEDIF	.072	.040	.118	1.776	.077	-.008	.151	.233	.099	.095	.645

a. Dependent Variable: TotalHADSD

Appendix B

Demographic questions

Please select the option you identify with

Response anchor

Female (1)

Male (2)

Prefer not to say (3)

Other (4)

Please enter your age (this question required a typed response of age)

Example: 21

Appendix C

Photo Editing Questionnaire (PHED)

Novel Questionnaire

This is the final section for the questionnaire (excluding the debriefing sheet), containing

12 questions on photo editing attitudes and behaviours. This scale has two subscales, one

for photo editing frequency and the other for psychological involvement with photo

editing. There are 6 questions per sub-scale, and each have one question which is reverse

marked. The questions measuring photo editing frequency are 1,2,4,9,10 and 12, number 2

is reverse marked here. The questions measuring psychological involvement are 3,5,6,7,8

and 11, number 8 is reverse marked here.

Items

1. How often do you apply photo editing techniques before posting selfies on social

   media? i.e. smoothening skin, adjusting contrast, using filters

2. How often do you post completely unedited or unchanged photos onto social media?

3. How often do you compare your selfies on social media to Instagram models/ influencers?

4. Would you feel the need to edit your photos before posting it online?

5. Does editing photos make you feel better about yourself?

6. Does editing your photos make you feel worse about yourself?

7. Do you think editing your photos means you are not happy in how you look already?

8. Would you judge someone for editing their photos for social media?

9. Do you edit photos to correct features you are insecure about?

10. Do you edit photos to correct features you feel other people would judge?

11. Do you post photos on Instagram to attract other people's attention or approval?

12. Do you feel the need to edit your photos when you see other people edit their selfies?

Response anchors for questions which are not reverse scored

Never = 0

Occasionally = 1

Sometimes= 2

Often = 3

Always= 4

Response anchors for questions which are reverse scored

Never = 4

Occasionally = 3

Sometimes= 2

Often = 1

Always= 0

Appendix D

Social Media Engagement Questionnaire: SMEQ

Przybylski, Murayama, DeHaan, & Gladwell (2013)

Items

1. How often did you use social media in the 15 minutes before you go to sleep?

2. How often did you use social media in the 15 minutes after you wake up?

3. How often did you use social media when eating breakfast?

4. How often did you use social media when eating lunch?

5. How often did you use social media when eating supper?

Response Anchors

Not one day | 0

One day | 1

Two days | 2

Three days | 3

Four days | 4

Five days | 5

Six days | 6

Every day | 7

Appendix E

Rosenburg Scale

The Rosenburg Self-Esteem Scale is a 10-item self-report measure of global self-esteem. It

consists of 10 statements relating to overall feelings of self-worth or self-acceptance.

Items

1. I am a person of worth

2. I have a number of good qualities

3. I am inclined to think that I am a failure

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

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

6. I take a positive attitude toward myself

7. I am satisfied with myself

8. I wish I could have more respect for myself

9. I certainly feel useless at times

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

Response anchors

Strongly agree

Agree

Disagree

Strongly disagree

Calculating Individual Scores

Questions 1,2,4,6 and 7 were scored as:

Strongly agree= 1

Agree= 2

Disagree=3

Strongly disagree=4

Questions 3,5,8,9 and 10 were scored as:

Strongly agree= 4

Agree= 3

Disagree=2

Strongly disagree=1

To get total score, add up all items.

Appendix F

Hospital Anxiety and Depression Scale (HADS)

Zigmond & Snaith (1983)

The HADS scale is often used by medical doctors in assessing depression and anxiety being experienced in patients. This section contains 14 questions on two sub scales, anxiety and depression. Please tick the box that is closest to how you have been feeling in the past week. (Questions 1,3,5,7,9,11 and 13 are part of the anxiety sub-scale and questions 2,4,6,8,10,12 and 14 are part of the depression subscale). Some questions in the HADS scale are reverse marked, the number beside each response anchor represents the mark each response is worth.

Items- Response Anchor

1. I feel tense or 'wound up'

Most of the time (3)

A lot of the time (2)

From time to time, occasionally (1)

Not at all (0)

2. I still enjoy the things I used to enjoy

Definitely as much (0)

Not quite so much (1)

Only a little (2)

Hardly at all (3)

3. I get sort of a frightened feeling as if something awful is about to happen

Very definitely and quite badly (3)

Yes, but not too badly (2)

A little, but it doesn't worry me (1)

Not at all (0)

4. I can laugh and see the funny side of things

As much as I always could (0)

Not quite so much now (1)

Definitely not so much now (2)

Not at all (3)

5. Worrying thoughts go through my mind

A great deal of the time (3)

A lot of the time (2)

From time to time, but not too often (1)

Only occasionally (0)

6. I feel cheerful

Not at all (3)

Not often (2)

Sometimes (1)

Most of the time (0)

7. I can sit at ease and feel relaxed

Definitely (0)

Usually (1)

Not often (2)

Not at all (3)

8. I feel as if I am slowed down

Nearly all the time (3)

Very often (2)

Sometimes (1)

Not at all (0)

9. I get sort of a frightened feeling like 'butterflies' in the stomach

Not at all (0)

Occasionally (1)

Quite often (2)

Very often (3)

10. I have lost interest in my appearance

Definitely (3)

I don't take as much care as I should (2)

I may not take quite as much care (1)

I take just as much care as ever (0)

11. I feel restless as if I have to be on the move

Very much indeed (3)

Quite a lot (2)

Not very much (1)

Not at all (0)

12. I look forward with enjoyment to things

As much as I ever did (0)

Rather less than I used to (1)

Definitely less than I used to (2)

Hardly at all (3)

13. I get sudden feelings of panic

Very often indeed (3)

Quite often (2)

Not very often (1)

Not at all (0)

14. I can enjoy a good book or radio or tv program

Often (0)

Sometimes (1)

Not often (2)

Very seldom (3)

Calculating Individual scores

Individual scores for each sub-scale can be calculated by summing up all 7 items.

Appendix G

Information sheet

You are being invited to take part in a research study. Before deciding to participate please read the following information as it describes why the research is being conducted and your involvement in the process. This is a research project being conducted by Denisha O'Neill, an undergraduate psychology student at National College of Ireland. As part of our degree, we must carry out an independent research project. I have been supervised by Dr. Andrew P. Allen throughout this study. To take part you must be a social media user and above the age of 18 as informed consent is necessary to participate in the study. The purpose of this research project is to investigate the relationship that social media and photo editing has on depression, anxiety and self-esteem.

No individual results can be provided and the scores will not be used for any diagnostic purposes. Before deciding whether to take part, please take the time to read this document, which explains why the research is being done and what it would involve for you. If you have any questions about the information provided, please do not hesitate to contact me.

Do I have to take part?

Your participation in my research study is entirely voluntary. The data you provide will be beneficial for my research. If you decide to participate in this research survey, you will be given the option to withdraw up until you agree to submit your data after completion of the study. Once you have completed the survey, you will be reminded that after this stage, it will be impossible to withdraw as all data will be non -identifiable.

What happens to the information I provide?

The purpose of this research project is to investigate the relationship that social media and photo editing has on depression, anxiety and self-esteem. The procedure involves completing an online survey that will take approximately 20 minutes. The questionnaire is anonymous; it is not possible to identify a participant based on their responses to the questionnaire. All data collected for the study will be treated in strictest confidence. All the data is stored in a password protected electronic format. To help protect your confidentiality, the surveys will not contain information that will personally identify you. Responses to the questionnaire will be stored securely in a password protected/encrypted file on the researcher's computer. Only the researcher and their supervisor will have access to the data. Data will be retained for five years per the NCI data retention policy. The results of this study will be used for scholarly purposes only and may be shared with the National College of Ireland representatives.

Potential risks and benefits

This research has been reviewed according to the National College of Ireland and the PSI's procedures for research involving human subjects. A summary of the results will be readily available once the study has been completed upon request. There are no direct benefits to you for taking part in this research. However, the information gathered will contribute to research that helps us to understand if social media and photo editing usage has an affect depression, anxiety and self-esteem. There is a small risk that some of the questions contained within this survey may cause minor distress for some participants. If you feel distressed or upset for any reason during the survey, you are free to take a break or stop the survey altogether. Contact information for relevant support services is also provided at the end of the questionnaire.

Appendix H

Contact Information and informed consent (to proceed on from this section both boxes must be clicked)

If you require any additional information, please feel free to contact Denisha O'Neill.

Email: denishaoneill@gmail.com

Furthermore, you can contact my thesis supervisor Dr. Andrew P. Allen

Email: andrew.allen@ncirl.ie

Informed Consent (to proceed on from this section both boxes must be clicked)

_ I am eighteen years or older.

_ I have fully read and understood the information attached to this questionnaire

Appendix I

Debriefing Sheet

Thank you so much for your participation in my study. The purpose of this study was to investigate the relationship between social media and photo editings' effect on depression, anxiety and self-esteem. Thank you again for your participation it will be a great help for me completing my undergraduate degree and please do not hesitate to email me of any inquiries you might have!

Once the thesis is published, a copy can be given to any participants curious about the results. My contact details and my supervisors will be provided on this sheet and also helplines for any participants who might have felt upset or distressed while completing the survey. I will also offer apps that can be useful to help calm and put participants at ease after completion.

Contact Details

Name of researcher: Denisha O'Neill

Email: x18402714@student.ncirl.ie

Affiliation: National College of Ireland

Support Services: Samaritans: 116 123; Pieta House: 1800 247 247;

https://www.bodywhysbodyimage.ie/). Applications: headspace, calm & smiling mind

Supervisor's details: Dr Andrew Allen

Email: andrew.allen@ncirl.ie