**Understanding the Role of Personality and Impression Management within Instagram on Feelings of Social Anxiety in Adolescents**

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# Lay Summary

## Introduction

Social anxiety (SA) is a fairly common human experience which involves fear of negative evaluation from others and feelings of anxiety around social or performance situations. Social interactions are increasingly taking place online, particularly amongst adolescents. This thesis explores the relationships between adolescents’ feelings of SA and the use of Social Networking Sites (SNS). The systematic review focuses on exploring the potential benefits and risks of using SNS sites and the link with adolescent SA levels. The empirical study explores whether adapting images and self-presentation tactics (whether individuals presented the true self more often, the false self more often, or an ideal self more often) on Instagram can predict individual differences in adolescent SA levels, and if narcissism (i.e., the excessive interest in oneself) affects these relationships.

## Systematic Review

Individuals with SA may manage feelings of anxiety by avoiding social situations due to feeling negatively judged by others. It has been suggested that online communication may provide alternative spaces for social interaction for those with SA, which may reduce feelings of anxiety. Day-to-day social interactions, particularly for adolescents, have increasingly begun to take place on online SNS. I carried out a systematic review to gather and review research evidence of the potential risks and benefits of SNS use for adolescent SA levels.

 Research studies were identified through a systematic online search of databases, using terms related to SA, SNS and adolescence. After screening 1478 studies, 10 studies met the inclusion criteria for this review. One study identified that a benefit of SNS is that they can fulfill social needs and help to strengthen offline relationships, which may be associated with reduced feelings of SA. The remaining studies identified risks (associated with higher adolescent SA levels) relating to SNS use, including: problematic SNS use, increased passive Facebook use, and ongoing feelings of anxiety whilst using SNS sites. One study did not find that SNS use was related to SA, but they did find that SNS use was linked with an increase in body-image dissatisfaction.

This review highlights things that are important for professionals to consider. With adolescents using SNS globally, clinicians working with adolescents with SA may consider the potential benefits and risks of SNS use in their work. Clinicians may consider including how adolescents manage using social media when developing anxiety management strategies, especially since individuals with SA may find it easier to do certain things online, rather than face-to-face. Importantly, clinicians should consider that the use of social media might be a defence or protection (i.e., safety behaviour) for someone with SA so that they can avoid seeing people face-to-face, which might keep or increase their symptoms of SA.

Throughout the review, limitations were raised that impact the conclusions that can be drawn. For instance, the majority of studies were conducted at one-time point meaning that we cannot be sure whether risky SNS use causes higher SA or whether higher SA causes risky SNS use. Additionally, it was identified that there is a need to have more research evaluating the potential benefits of SNS use with adolescent levels of SA.

## Empirical Study

To address a gap in our understanding of how SNS use may be related to SA, an empirical project was carried out. Past research mainly focuses on Facebook; yet, Instagram is becoming increasingly popular with adolescents at a time when they are concerned with the image that they are creating of themselves. This study aimed to establish whether changing images and adolescents’ presentation of themselves on Instagram can predict individual differences in SA levels. As people with SA often experience depression too, depression was taken into account to make sure it did not affect the results. This study also aimed to establish whether narcissism affected these relationships.

From the general population, 249 13- to 18-year-olds completed an online set of questionnaires which included measures of SA, online self-presentation tactic use (whether individuals present the true self more often, the false self more often, or an ideal self more often), Instagram image manipulation, narcissism, and depressive symptoms. Statistical tests assessed which measures can be used to predict SA levels. Results demonstrated that those who used false self-presentation tactics more often had higher levels of SA. None of the other measures predicted SA. Results are discussed as supporting the suggestion that false self-presentation tactics are used as a safety behaviour for those experiencing SA.

The findings of this study help to inform what treatment could help those who experience SA. With social interactions increasingly taking place on social media, clinicians working with those with SA may wish to consider Instagram use in therapy. As negative thoughts, safety behaviours, and impression management are thought to maintain SA, consideration should be given to how these factors may also interact to maintain SA during online communication.

## Dissemination, Integration & Impact

The systematic review topic and the empirical project are closely linked and currently relevant given the increase of SNS use amongst adolescents.

This thesis has impacted on me both personally and professionally. In my work as a clinician and a researcher, I became more aware of my own SNS use and the SNS use of others. As outlined above, the findings also impact on clinicians working with people with SA, encouraging consideration of SNS use in their work. Additionally, it has shown that researchers need to consider doing research over a period of time, and not just at one time point, and should incorporate individuals diagnosed with Social Anxiety Disorder (SAD) in their future work. As we have seen an increase in individuals using image based SNS sites, further research may be needed in considering the motivation for changing images, particularly on image based SNS sites.

Given the importance of SNS in adolescent lives and the relationships between SNS use and SA levels, this work will be shared widely to reach teachers, schools, practitioners, and researchers. Findings have been shared with participants and clinical psychology trainees at Royal Holloway. Both the systematic review and empirical project will be submitted for publication and a lay summary will be posted on the Social Development Lab website.

# Systematic Review

# Evaluating the Potential Benefits and Risks of Social Media Use and the Association with Adolescent Social Anxiety Levels: A Systematic Review.

## Abstract

Online social networking sites (SNS) provide an alternative method of communicating with others and are a particularly popular method of communication for adolescents. There are likely to be both benefits and risks of using SNS. The aim of this systematic review was to gather and review the evidence of the potential benefits and risks of SNS use and the association with adolescents’ levels of social anxiety (SA). A systematic literature search of databases and reference lists identified ten studies which met inclusion criteria. These studies suggested that individuals with higher levels of SA may use SNS to fulfil their social needs. However, the majority of the studies within this review explored the potential risks of social media use and the association with adolescent levels of SA. Potential risks of social networking use on adolescent levels of SA included problematic social media use, passive social media use and feelings of anxiety whilst using SNS which were all associated with higher levels of SA. Some studies exploring the link between SA and the use of SNS have found that when including body image in the model, SA was not a predictor. Since SNS use is an almost ubiquitous part of adolescent life, clinicians working with adolescents with SA may wish to consider the potential benefits and risks of SNS use for these individuals. Future research needs to focus on exploring both the potential benefits and risks of SNS use and the association with SA, and more longitudinal research is required.

## Introduction

### Social Networking Sites

Online Social Networking Sites (SNS) such as Facebook, YouTube, Snapchat, Instagram and Twitter, support social interaction, alongside providing opportunities for social comparison and feedback from peers (Boyd & Ellison, 2007). SNS sites are used for individuals to post their thoughts and feelings, share pictures of life events, share memes and react to posts made by others. Furthermore, individuals, particularly in adolescence, use SNS sites to make new friends and networks, but also to maintain offline friendships. SNS have become increasingly popular, with 70% of over 16-year-old internet users reporting SNS use in 2020 (ONS, 2020); this has increased from 53% of over 16-year-old internet users reporting SNS use in 2013 (ONS, 2013). Research has indicated that SNS use accounts for 25% of the total time spent online (Comscore, 2011) and that its popularity is particularly evident amongst adolescents (Lenhart, 2015; Statista, 2017). In the UK, 97% of 16- to 24-year-old internet users have reported using SNS (ONS, 2020) and on average 15- to 16-year-olds spend 118 minutes per day online (O’Neill et al., 2011). Until more recently, Facebook was considered the most popular SNS (Lenhart, 2015), however YouTube, Instagram and Snapchat have become more frequently used amongst 16- to 24-year-olds (Pew Research Centre, 2018). Smartphone ownership has become an almost ubiquitous element of teen life with 95% of adolescents reporting access to a smartphone and 45% of 13- to 19-year-olds reporting being online and using SNS on an almost constant basis (Pew Research Centre, 2018).

Given these statistics and the rising use of SNS, it is important to understand how SNS use may be related to feelings about the self. Seeing that SNS are used for social connection, a key question remains about how establishing new and maintaining existing social connections through online interactions may relate to feelings of social anxiety (SA).

### Adolescence and Social Anxiety

SA is anxiety or fear of being judged, negatively evaluated, or rejected by others in a social or performance situation. SA is a fairly common human experience (Morrison & Heimberg, 2013). Experiences of SA are thought to exist on a continuum, ranging from the complete absence of social fear through ‘ordinary’ shyness and mild levels of SA, to more intense levels of SA, which may be functionally impairing, which may be diagnosed as social anxiety disorder (SAD; Kashdan, 2007; Morrison & Heimberg 2013). Individuals with SAD experience intense fear and anxiety around social or performance situations and worry that in such situations they may do or say something to embarrass themselves or that their anxiety will be visible in some way (e.g., blushing, stumbling over words; American Psychiatric Association, 2013). The estimated lifetime prevalence of SAD is 12.1% (Ruscio et al., 2008); however, it is thought that approximately 10% of people have subthreshold symptoms of SA, which are not severe enough to meet the criteria for diagnosis (Fehm et al., 2005).

Age-of-onset data points towards adolescence as a developmentally sensitive period for the emergence of the condition, at a time where peer groups become increasingly important (Leigh & Clark, 2018). More specifically previous literature has demonstrated that SA may emerge from the age of five (Egger & Angold, 2006; Cartwright-Hatton et al., 2006) and has a peak age of onset of between 11 to 13 (den Boer, 2000; Kessler et al., 2005; Stein & Stein, 2008).

Research has demonstrated that mental health difficulties often emerge during adolescence (Kessler et al., 2005). According to the 2017 Children’s Mental Health Report, nearly one in three adolescents will meet criteria for an anxiety disorder by the age of 18 (Child Mind Institute, 2017). During adolescence significant developmental and psychological changes occur at the same time as increasing educational, social (Steinberg & Morris, 2001), and sexual pressures (Russell, 2005); it is also during this time that individuals begin to develop a sense of self, and through exploring identity that individual differences may lead to peer bullying, reported by over half of adolescents (Wang et al., 2009). Consequently, this increases the risk of low self-esteem, SA, depression (Brown & Larson, 2009), and suicide attempts (Kim & Leventhal, 2008; Vander Stoep et al., 2011).

Supportive friendships become increasingly important for adolescents’ psychological development throughout adolescence (Manago et al., 2012). As children age, social relationships become more complex, social status becomes more important (Brown & Larson, 2009), and peer relationships gradually displace relationships with parents (Ophir et al., 2019). Peer friendships increase adolescents’ perception of emotional support (Bokhorst et al., 2010), which may increase wellbeing (Oh et al., 2014) and thus protect against SA (Rueger et al., 2010). SNS offers opportunities for adolescents to widen their social networks, build social capital (the network of relationships we have with those within the systems in which we live) and seek social support. Social support-seeking seems to be a common adolescent coping strategy (Zimmer-Gembeck & Skinner, 2011) and maintaining relationships with peers is an essential component of their positive wellbeing (Carroll et al., 2014).

### Adolescence and SNS Use

The increasing availability and popularity of technology and SNS has substantially changed the ways in which adolescents communicate, with much more interaction now taking place online (Reich et al., 2012). SNS is used by adolescents for self-presentation purposes (i.e., to create or maintain desired impressions of the self in others; Lee et al., 1999) and for emotional self-disclosure (Manago et al., 2012; Ophir, 2017), and for increasing their popularity and self-image (i.e., the specific image demonstrated to others; Zywica & Danowski, 2008). Communicating with peers via SNS may be viewed as beneficial for adolescents as they are able to think about how to present the self and choose what they decide to disclose, researchers have suggested that for this reason contact via SNS may be preferred to face-to-face interactions (Leung, 2011). Although this preference is understandable, this behaviour could increase vulnerability to SA (Erwin et al., 2004).

Adolescence is also a period of identity formation (Subrahmanyam & Smahel, 2011), which can be influenced by the ability to control self-presentation on SNS. Individuals may choose to disclose more intimate information on private messenger on Facebook, rather than through the more public SNS features (Utz, 2015), but the latter can reach larger audiences, increasing the frequency of supportive feedback (Bazarova et al., 2015). It is important to understand how online behaviours link with feelings of SA in adolescents.

### Linking SNS use and SA

Previous research with adults has demonstrated that those with SA often report being more comfortable interacting online than in face-to-face settings (Lee & Stapinski, 2012). However, research has demonstrated that this feeling of comfort is likely linked with having more time to consider how to present the self, how to respond to others and to consider how others may have reacted to them (Leung, 2011). Therefore, this feeling of comfort with interacting online could be a maintaining factor for SA. This reinforces the importance in understanding the risks and benefits of online SNS use and links with feelings of SA.

Several studies have reported associations between increased time spent on SNS and heightened levels of SA (Banjanin et al., 2015; Barry et al., 2017; Pantic et al., 2012 & Woods & Scott., 2016), particularly among females (Viner et al., 2019). The link between social media use and mental health is often also evidenced in news articles with headlines such as ‘Social Media Linked to Rise in Mental Health Disorders’ (Charles, 2019). However, other studies contest connections between adolescent social media use and associations with SA, depression and generalised anxiety. For example, recent meta-analyses suggest that the link between adolescent social media use and mental health is mixed or tenuous at best (Best et al., 2014; Huang, 2018). However, previous research focused on the link between SNS use and mental health/wellbeing more broadly. Given that we know socially anxious people may prefer online interactions, it is important to evaluate the risks and benefits of SNS use and the association with levels of SA in adolescence.

*Risks of SNS Use*

There are several theories that attempt to explain the association between social media use and mental health difficulties during adolescence which likely contribute to various benefits and risks of SNS use. The displacement hypothesis (Lin, 1993) suggests that social media use may displace other more important activities that might be protective for mental health, such as sleep (Scott & Woods, 2018), or face-to-face time with friends (Twenge, 2017). This theory suggests that more time spent on social media might be related to subsequent increased mental health issues, such as SA.

Furthermore, research has suggested that individuals with SA may use the internet as a way to avoid face-to-face interactions (Lee & Stapinski, 2012). Lee and Stapinski (2012) have suggested that because individuals with SA feel more comfortable online, they will likely perceive that they have more success in their online interactions compared to face-to-face interactions. However, where success is attributed to factors related to the online environment, rather than personal attributes, the confidence levels of individuals with SA will further reduce and lead to feeling less able to interact in real life settings, thus leading to greater avoidance of face-to-face interactions (Lee & Stapinski, 2012; Prizant-Passal et al., 2016; Saunders & Chester, 2008). Research has demonstrated that a preference for online interaction was associated with increased avoidance of real-life social situations, in individuals with higher levels of SA. This supports the displacement hypothesis which suggests that time spent online will impact on the time available to spend offline, and thus have a negative impact on feelings of SA.

It has been suggested that increased avoidance of face-to-face interactions and a move to more frequent online communication will lead to problematic internet use (Lee & Stapinski, 2012). Problematic internet use refers to the experience of cognitive and behavioural symptoms related to using the internet, for example obsessional thoughts about the internet and the inability to cease use, along with associated negative social, academic and professional consequences (Davis, 2001; Caplan, 2007). Research in samples of adults has suggested that problematic internet use is associated with higher levels of SA (Aladwani & Almarzouq, 2016; Caplan, 2007; Cuhadar, 2012; Lee & Stapinski, 2012; van den Eijnden et al., 2008). Caplan (2007) found that the link between SA and problematic internet use was mediated by preference for online social interaction, suggesting that adults with SA who prefer communicating online are more likely to develop problematic internet use. Therefore, it is important to review whether this finding is consistent amongst the adolescent population.

*Benefits of SNS Use*

Conversely, uses and gratifications theory (Katz et al., 1974) suggests that poor mental health might predict heightened social media use in the future (Bulut & Dogan, 2017; Quan-Hasse & Young, 2010). In line with the uses and gratification theory, it has been suggested that people actively choose to use SNS to meet psychological and sociological needs (Diddi & LaRose, 2006). The uses and gratification theory implies that users deliberately choose media that will satisfy their given needs, and assumes that audience members are not passive consumers of media. Rather, the audience has power over their media consumption and assume an active role in interpreting and integrating media into their lives (Diddi & LaRose, 2006). Research has suggested that one of the main common motives for SNS use was for bridging and building social capital behaviours; maintaining existing social networks (Boyd & Ellison, 2007) or for building new social networks. One motivation for using social media involves escapism and diversion from everyday life (Coyne et al., 2013). Therefore, an adolescent who is feeling socially anxious may turn to social media to try to relieve these symptoms by trying to connect with others online in a way they feel to be less threatening. Alternatively, they may turn to social media as a form of escapism, to perhaps numb feelings of distress.

Different gratifications on SNS may have different psychological effects; for example, entertainment and socialising may contribute to improved mood states (Apaolaza et al., 2014), and sharing and seeking information on SNS can reduce stress and levels of SA through increasing a perceived sense of connection (George et al., 2013). A reduction in stress levels and an improvement in general emotional wellbeing, will in turn reduce the likelihood of experiencing SA. Research suggests that socially competent individuals use SNS primarily to maintain existing relationships, whereas socially isolated individuals may use SNS to initiate new relationships (Lee, 2009). Online communication allows users to control what they present, and when and how to respond to others (Walther, 1996). The control over self-presentation (information portrayed about the self to create and manage impressions on others; Caplan, 2005) lets adolescents present what they believe to be the most positive aspects of their identity (Manago et al., 2008). This control (Trepte & Reinecke, 2012), and the privacy options (Holleran, 2010) can lead to greater self-disclosure and intimacy (Nguyen et al., 2012; Tidwell & Walther, 2002), which can enhance friendships (Lenhart & Madden, 2007; Valkenburg & Peter, 2007a;). Although reduced contextual, visual, auditory and non-verbal cues can be helpful for self-disclosure online, this may limit effective emotional support-seeking through reduction of cues available to the users’ contacts (Frison & Eggermont, 2015a); at the same time, it may make communicating more comfortable for those with poor social skills or for those experiencing feelings of SA (McKenna & Bargh, 2000).

It is thought that certain aspects of the online environment allows socially anxious individuals to overcome the anxiety and distress that they experience in face-to-face situations, thus allowing them to develop more extensive social networks online (Indian & Grieve, 2014; Valkenburg et al., 2005; Zywica & Danowski, 2008). Indian and Grieve (2014) found that for those with higher levels of SA, Facebook social support explained a significant amount of increased variance in subjective wellbeing; however, for those with lower levels of SA Facebook social support did not explain any variance in well-being. Indian and Grieve (2014) suggested that there are possible implications of the utility of social media for individuals with SA. For example, online communication allows the possibility of complete anonymity, and physical appearance and visual cues are not present during the conversation, unlike communication that takes place in face-to-face settings. This means that the individuals do not have to pay attention to cues, such as eye-contact and facial expressions, which can increase feelings of anxiety (Green et al., 2016; McKenna & Bargh, 2000; Peter & Valkenburg, 2006). In addition, in online settings individuals have more time to think about and edit what they want to present about themselves and how they want to say certain things (Green et al., 2016; McKenna & Bargh, 2000; Valkenburg et al., 2005; Zywica & Danowski, 2008). This allows greater control over self-presentation, which may be valued by individuals with SA, as there may be a perceived lower risk of making negative impressions on others in online contexts (Caplan, 2007).

Furthermore, individuals with higher levels of SA also tend to report valuing the aspects of online communication that have been hypothesised to reduce their feelings of anxiety, such as having the opportunity to listen rather than talk, having more time to think about what and how they want to say things, reducing the likelihood of visible signs of anxiety being seen by others, and being able to hide their identity (Erwin et al., 2004; Lee & Stapinski, 2012; Peter & Valkenburg, 2006; Shepherd & Edelmann, 2005; Young & Lo, 2012). Erwin et al. (2004) found that those with the most severe social interaction anxiety, who spent the most time interacting on the internet, endorsed positive effects of internet use, for example, making connections with with others online. Thus, it appears that some aspects of the online environment may contribute to individuals with SA feeling less anxious and finding it easier to communicate in the context of being online.

These different hypotheses suggest different directions of the effects in terms of the relationship between social media use and SA symptoms, however the wealth of this research has been conducted with an adult population. Adolescents, during a time where they are focusing on peer relations and creating positive impressions, may experience similar, but also different, risks and/or benefits of SNS use. And, in particular at a time where creating positive impressions and friendships is so important, it may be linked to greater impact for those adolescents with greater feelings of SA than for adults. Thus, highlighting the importance of investigating risks and benefits for adolescents with feelings of SA within this systematic review.

### Aim of this Review

Prior research, which has mostly been conducted with adults, has demonstrated both beneficial and detrimental aspects of SNS use and the association with SA levels. The focus of this review was to evaluate the research which has focused on the risks and benefits of SNS use and SA in an adolescent population, and to review and summarise the findings to date.

## Method

### Study Eligibility

The criteria for including studies in this review were that the study: a) was written or translated into English; b) design used qualitative or quantitative methodology (e.g., experimental, non-experimental); c) included human participants of adolescent age (10-25 years); d) was an empirical study which presented original data; e) was published in a peer-review journal and was not a dissertation or conference presentation; f) used a validated measure of SA; and g) measured potential benefits and/or risks of using SNS. Of note, a validated social media use questionnaire was not required for study inclusion in this review. This decision was taken due to the focus being on risks and benefits of use, where ‘use’ may be defined differently depending on the SNS site and if it was behaviour or motivation explored, on levels of SA.

### Selection of Studies

Studies were identified through a systematic online search of PsycINFO and Web of Science databases. Searches were not restricted by year. Searches were conducted in October 2020. The reference lists of eligible studies were also searched for further relevant articles.

### Search Strategy

Searches were conducted using the following terms:

1. Terms relating to SNS (Instagram, Twitter, SnapChat, YouTube, WhatsApp, TikTok, Social Networking Sites, SNS, social media), combined using the Boolean operator ‘OR’
2. Terms relating to SA (Social anx\*, social phobi\*, socially anx\*, socially phobi\*, SAD), combined using the Boolean operator ‘OR’
3. Terms relating to adolescent age range (adolescen\*, teen\*, young people, child\*, youth), combined using the Boolean operator ‘OR’

The Boolean operator ‘AND’ was used to combine the terms relating to SNS, SA and adolescence. Searches were conducted in ‘All Fields/All Text’, where the database allowed, or were searched for in ‘Topic’, where it was not possible to search all text. Of the papers included within the review, reference lists were also viewed to establish whether there were any further relevant papers.

### Data Collection

The author screened all online titles and abstracts for eligibility. Articles considered relevant were retrieved in full text and then assessed for eligibility. Data extraction was carried out by one reviewer, using data extraction forms specifically designed for the current review. A second reviewer screened 20% of all identified articles to assess the validity of screening, in which there was a 97% level of inter-rater reliability. Any discrepancies were resolved through discussion.

### Methodological Quality Assessment

The criteria for evaluating cross-sectional analytic studies from the Mixed Methods Appraisal Tool (MMAT; Pluye et al., 2011) was used to evaluate the methodological quality of the studies included within this review. The MMAT has been shown to be an efficient and reliable quality assessment tool for reviewing the methodological quality of a variety of qualitative and quantitative designs, including cross-sectional (Pace et al., 2012; Souto et al., 2015). For the current review, the MMAT was adapted to include a rating for each area of quality criteria (see Appendix A). Studies were rated as “strong”, “medium” or “weak” in each area, based on the rating scale used in the Effective Public Health Practice Project quality assessment tool for quantitative and qualitative studies (Thomas et al., 2004). This assessment tool was used as most of the studies included within this review had a cross-sectional design. Methodological quality assessment was carried out by the author and a second reviewer verified the quality assessment for 40% of the studies, in which there was an 85% level of inter-rater reliability. Any discrepancies were resolved by discussion.

## Results

A total of 10 studies were included in the systematic review. In line with PRISMA guidelines, the process for selecting studies is summarised in a flowchart in Figure 1. The literature search yielded 1539 articles, of which 72 were duplicates. After removing duplicate articles, the titles and abstracts of 1478 studies were screened, which included 11 studies identified through reference lists. Papers were screened for those focusing on SNS use and SA within the adolescent population and 157 relevant papers were identified for full-text screening. Of these, 29 were excluded because they investigated internet use in general, but they did not explore the use of SNS. Sixteen studies were excluded because they did not explore the potential benefits and/or risks of using SNS. Forty-three studies were excluded as they did not measure or report specifically on SA as an outcome. Seven studies were excluded as they did not use a validated measure of SA. Forty-nine studies were excluded as participants did not fall within the specified age range or the age range was not reported. And finally, three studies were excluded as they were not written and/or translated into English. This left a total of 10 articles to be included in the systematic review.

The details of included studies are summarised in Table 1.

### Figure 1.

***PRISMA diagram***

Records identified through database searching
(*n = 1539*)

Additional records identified through reference lists
(*n = 11*)

Records after duplicates removed
(*n = 1478*)

Records excluded
(*n = 1321*)

Titles and abstracts screened
(*n = 1478*)

Full-text articles excluded
(*n = 147*)

Did not explore use of SNS (*n=29*)

Did not explore benefits/risks of SNS use (*n = 16*)

Not written/translated into English (*n* = 3)

Did not specifically measure or report on social anxiety levels (*n =* 43)

Did not use validated measure of social anxiety (*n = 7*)

Participants were not in age range (*n =* 49)

Full-text articles assessed for eligibility
(*n = 157*)

Studies included in qualitative synthesis
(*n = 10*)

### Table 1.

***Participant and study characteristics and results of studies investigating the potential benefits and risks of social media use on adolescent social anxiety levels.***

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Author (year) | Design | Recruitment | Setting | Participants (n)Age (mean (SD), range)Gender (male n, %)Ethnicity (n, %) | Relevant Measures | Key Findings |
| Pumper & Moreno (2012) | Mixed Methods Qual & QuanCross-Sectional; questionnaire | College students, in person interview | North America | **Participants:** 72**Age:** 18-19yrs**Gender:** male n = 40 (55.6%)**Ethnicity:** Not reported | * Liebowitz Social Anxiety Scale (SAS)
* Interview asking about views of Facebook and its effects on offline social interaction and walking the researcher through their overall Facebook use.
 | * Most participants viewed Facebook as having a positive influence on social interactions offline. A trend suggested that participants who viewed Facebook negatively were less likely to have SA.
* Participants who viewed Facebook as having a positive influence or who were unsure about the influence and met the criteria for moderate or higher social anxiety disorder were likely to report high use.
 |
| Lee-Won et al. (2015) | Cross-sectional; online questionnaire | College students, recruited via email | North America | **Participants**: 243**Age**: 19.69 (1.12), 18-24yrs.**Gender**: male n = 69 (28.4%)**Ethnicity**: White 223 (91.8%); African/African American 4 (1.6%); Asian/ Asian American 5 (2.1%); Hispanic American 3 (1.2%); Native American 3 (1.2%); multiracial 5 (2.1%). | * Social Anxiety Scale
* Need for Social Assurance Scale (NSA)
* Problematic Facebook Use Scale
 | * SA and NSA were both significantly positively associated with problematic Facebook use
* NSA moderated the relationship between SA and problematic Facebook use. The positive association between SA and problematic Facebook use was significant for medium and high NSA but not for low NSA.
 |
| Shaw et al. (2015) | Cross-sectional; questionnaire | Undergraduate psychology students, participated for course credit | North America | **Participants**: 75**Age**: 19.2 (1.27), 17-24yrs.**Gender**: male n = 33 (44.8%)**Ethnicity**: Caucasian (65.8%); American Indian/Alaskan Native (1.3%); Asian (6.6%); African American (5.3%); Hispanic/Latino (13.2%); other (7.9%) | * Social Phobia Scale (SPS)
* Facebook Activity Measure (3 subscales: passive use; content production; interactive communication)
* Ruminative Response Scale (brooding subscale)
 | * Relationship between passive Facebook use and SPS scores was significant. When controlling for the mediator brooding, this relationship decreased although remained significant.
* Passive Facebook use significantly positively associated with higher SPS scores
 |
|  Van Rooij et al. (2017) | Cross-sectional; questionnaire | Secondary school students, questionnaire shared in class setting | Netherlands | **Participants:** 3945**Age:** 12-15**Gender:** male n = 1973 (50%)**Ethnicity:** Not reported | * Three 6-item versions of the CIUS to assess problematic Internet use, problematic social media use, and problematic gaming
* Two subscales of a social anxiety scale; dealing with social avoidance and distress in new situations and generalised social avoidance and distress.
 | * Greater problematic use of Internet/games/social media was associated with higher levels of SA.
 |
| Muzaffar et al. (2018) | Cross-sectional; survey | Adolescents attending suburban safety-net hospital | North America | **Participants:** 102**Age:** 15.1 (1.70), 12-20yrs**Gender:** male n = 44 (43.1%)**Ethnicity:** Caucasian (9.8%); South Asian (3.9%); African American (25.5%); Hispanic (60.8%) | * The Facebook Behaviour Scale and the Facebook Repetitive Behaviour Scale.
* The Leibowitz Social Anxiety Scale for Children and Adolescents.
 | * No significant association between SA symptoms and Facebook behaviours or repetitive Facebook behaviours.
 |
| Vannucci & Ohannessian(2019) | Longitudinal; questionnaire | Secondary school students | North America | **Participants:** 1205**Age:** 12.73 (0.69), 11-14yrs**Gender:** male n = 590 (49%)**Ethnicity:** Non-Hispanic White (51%); Hispanic (21%); African American (9%); Asian (3%); Multi-Racial (15%) | * The Technology Use Questionnaire, adapted to include contemporary social media platforms.
* The Screen for Childhood Anxiety Related Disorders (SCARED; one of the five subscales measures is the social anxiety disorder subscale)
 | * No significant differences between social media subgroups (low social media use; high Instagram/Snapchat use and; high social media use) in social anxiety disorder symptoms at Time 2 (6 months later).
 |
| Yurdagül et al. (2019) | Cross-sectional; questionnaire | Secondary school students; questionnaires shared in class setting | Turkey | **Participants:** 491**Age:** 15.92 (1.07), 14-20yrs**Gender:** male n = 203 (41.4%)**Ethnicity:** Not reported | * Bergen Facebook Addiction Scale (adapted for Instagram)
* Social Anxiety Scale Short Form (SAS-A)
 | * Problematic Instagram Use (PIU) was positively associated with SA among males. Among females PIU was associated with social anxiety when mediated by body-image dissatisfaction.
 |
| Durak (2020) | Cross-sectional; questionnaire | Secondary school and high school; purposeful sampling | Turkey | **Participants:** 451**Age:** 13-17y/o**Gender:** male n = 237 (52.5%)**Ethnicity:** Not reported | * Problematic Internet Use Scale (PIUS)
* Social Anxiety Scale for Adolescents (SASA)
 | * Positive relationship between SA and problematic internet use.
 |
| Fardouly et al. (2020) | Cross-sectional; questionnaire | Recruited via flyers distributed in schools, sports clubs and medical centres | Australia | **Participants:** 528**Age:** 11.19 (0.55), 10-12yrs**Gender:** male n = 269 (50.9%)**Ethnicity:** Caucasian (81.8%); Asian (6.5%); Middle Eastern (1.5%); ‘Other’ (10.2%) | * Participants were asked a comparison frequency question, a comparison direction question. Participants were asked 5 questions assessing the extent to which they improve their appearance on social media and how often they post images of themselves.
* Social Phobia Subscale of the Spence Children’s Anxiety Scale
 | * Users of YouTube, Instagram, and Snapchat reported more body image concerns and eating pathology than non-users of these sites, but did not differ on depressive symptoms or SA.
 |
| Hawes et al. (2020) | Cross-sectional; questionnaire | Recruited via high schools and university students | Australia | **Participants:** 763**Age:** 17.7 (1.80) 12-25yrs**Gender:** male n = 305 (41%)**Ethnicity:** *High School Students:*Caucasian/white Australians (80%); Asian Australian (15%); Australian first peoples/Torres Strait Islander/Pacific Islander (<1%); mix of other backgrounds (5%). *University Students:* White Australian (84%); Asian Australian (12%); Australian first peoples/Torres Strait Islander/Pacific Islander (3%); mix of other backgrounds (9%). | * Appearance-related (AR) social media preoccupation
* Time spent on social media
* Intensity of Social Media use
* Maladaptive Social Media Use (adapted from Maladaptive Facebook Scale (MFS))
* Social Anxiety Scale for Adolescents (SAS-A)
 | * 22% of the variance in SA symptoms was accounted for the combination of time spent on social media, intensity of social media use, and maladaptive social media use. Maladaptive social media use was significantly positively associated with SA symptoms; however, time spent on social media and intensity of social media use were not.
 |

### Participant and Study Characteristics

The studies included within this review were published between 2012 and 2020. Eight of the 10 studies had a cross-sectional, quantitative design and used a questionnaire design. One study had a mixed methods quantitative and qualitative design, and used a cross-sectional questionnaire design. And the other study had a longitudinal, questionnaire design. Five of the included studies were conducted in North America, two in Turkey, two in Australia, and one in the Netherlands.

The included studies had a total sample of 7,875 participants, with the sample size ranging from 72 to 3,945 participants (median: 471; mean: 788). Where the age of participants was reported, ages ranged from 10 to 25 years old (median: 13.5 years; mean: 14.18 years). The majority of studies used a convenience sample (a type of nonprobability sampling in which participants are sampled because they are ‘convenient’ sources of data for researchers), except one which used a purposeful sample (the intentional selection of participants based on their ability to elucidate a specific theme or concept) and one which used a randomly selected sample. Four of the included studies recruited a sample of secondary school students, two studies recruited a sample of college students, one study recruited a sample of undergraduate university students, and one study recruited a sample of adolescents attending a safety-net hospital. One study recruited a mixed sample of high school and university students and another study recruited adolescents by sharing flyers at schools, sports clubs and medical centres. All studies were conducted with non-clinical samples.

### Measurement of Social Anxiety

All studies used self-report measures of SA. Two studies used the Liebowitz Social Anxiety Scale (Pumper & Moreno, 2012; Muzaffar et al., 2018), one used the Screen for Childhood Anxiety Related Disorders (SCARED) where one of the five subscales measured SA (Vannucci & Ohannessian, 2019), one used the Social Phobia Scale alone (Shaw et al., 2015), one used the Social Phobia Subscale of the Spence Children’s Anxiety Scale (Fardouly et al., 2020), one used the Social Anxiety Scale (Lee-Won et al., 2015), and three used the Social Anxiety Scale for Adolescents (Durak, 2020; Hawes et al., 2020; Yurdagül et al., 2019). One study used two subscales of a social anxiety scale; dealing with social avoidance and distress in new situations and generalised social avoidance and distress (Van Rooij et al., 2017).

### Measurement of the Benefits and Risks of Social Media Use

Numerous different measures were used across the studies to measure the benefits and risks of social media use. One study used a qualitative interview asking about views on Facebook and its effects on offline social interaction (Pumper & Moreno, 2012). The nine other studies used self-report questionnaire measures. One study used the Problematic Facebook Use Scale (Lee-Won et al., 2015), one used 3 subscales of the Facebook Activity Measure (passive use; content production; and interactive communication; Shaw et al., 2015), and another used three 6-item versions of the Compulsive Internet Use Scale (CIUS) to assess problematic internet use, problematic social media use and problematic gaming (Van Rooij et al., 2017). One study used the Facebook Behaviour Scale and the Facebook Repetitive Behaviour Scale (Muzaffar et al., 2018), one used the Technology Use Questionnaire (adapted to include contemporary social media platforms (Vannucci & Ohannessian, 2019) and another used the Bergen Facebook Addiction Scale (adapted for Instagram; Yurdagül et al., 2019). One study used the Problematic Internet Use Scale (PIUS; Durak, 2020), one study used a maladaptive social media use scale, appearance related social media preoccupation scale and an intensity of social media use scale (Hawes et al., 2020) and another study used frequency and direction of appearance comparison scales (Fardouly et al., 2020).

### Consideration of Mediators or Moderators

 The studies included in the review varied with regard to the comprehensiveness of the variables considered in the analyses. Where potential mediators or moderators (e.g., age, gender) were controlled for in the analysis, this is discussed in the confounders section below. In terms of exploring mediators or moderators, seven studies did not explore possible mediators or moderators of the relationship between benefits/risks of using SNS and SA (Durak, 2020; Fardouly et al., 2020; Lee-Won et al., 2015; Muzaffar et al., 2018; Pumper & Moreno, 2012; Van Rooij et al., 2017; Vannucci & Ohannessian, 2019). One study considered appearance related (AR) preoccupation as a possible moderator of the relationship between social media use and appearance anxiety and appearance rejection sensitivity (RS). They also used gender as a possible moderator in the associations of AR social media preoccupation and each of depression, SA, appearance anxiety and appearance-RS (Hawes et al., 2020). One study considered brooding as a possible mediator of the relationship between SA and passive Facebook use (Shaw et al., 2015), and one study explored the mediating role of body image dissatisfaction and the moderating role of gender (Yurdagül et al., 2019).

### Overall Quality Assessment.

Quality assessment ratings of the studies included within this review are shown in Table 2.

**Selection bias*.*** Only one study used random sampling (Van Rooij et al., 2017), one study used purposeful sampling (Durak, 2020) and the remaining eight studies used convenience sampling. One study recruited via flyers distributed in schools, sports clubs and medical centres (Fardouly et al., 2020) and one study recruited adolescents attending a suburban safety-net hospital (Muzaffar et al., 2018).

### Table 2.

***Quality assessment of studies investigating the potential benefits and risks of social media use on adolescent social anxiety levels***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Author (year) | Selection bias | Appropriate measurements | Confounders | Complete outcome data/response rate | Overall quality rating\* |
| Pumper & Moreno (2012) | Weak | Weak | Weak | Weak | Weak |
| Lee-Won et al. (2015) | Medium | Strong | Strong | Strong | Strong |
| Shaw et al. (2015) | Medium | Medium | Medium | Weak | Moderate |
| Van Rooij et al. (2017) | Strong | Strong | Weak | Medium | Moderate |
| Muzaffar et al. (2018) | Weak | Strong | Medium | Weak | Weak |
| Vannucci & Ohannessian (2019) | Medium | Strong | Strong | Strong | Strong |
| Yurdagül et al. (2019) | Medium | Strong | Weak | Medium | Moderate |
| Durak (2020) | Medium | Strong | Medium | Weak | Moderate |
| Fardouly et al. (2020) | Medium | Weak | Medium | Strong |  Moderate |
| Hawes et al. (2020) | Medium | Strong | Medium | Strong | Strong |

\*Overall quality rating: strong = no weak ratings; moderate = one weak rating; weak = two or more weak ratings (Thomas et al., 2004)

**Appropriate measures.** All ten studies (Durak, 2020; Fardouly et al., 2020; Hawes et al., 2020; Lee-Won et al., 2015; Muzaffar et al., 2018; Pumper & Moreno, 2012; Shaw et al., 2015; Van Rooij et al. 2017; Vannucci & Ohanessian, 2018 & Yurdagül et al., 2019) used measures with a clear origin. One study (Shaw et al., 2015) used only the Social Phobia Scale to measure SA, however this scale is intended to be used as a companion measure alongside the Social Interaction Anxiety Scale (Mattick & Clarke, 1998). One study used two subscales of the social anxiety scale: dealing with social avoidance and distress in new situations and generalised avoidance and distress (Van Rooij et al., 2017). Most of the measures used appeared to have face validity and had been assessed for reliability.

**Confounders.** In terms of controlling for confounders in their design and/or analysis, one study controlled for age, gender and class level (Durak, 2020), one study controlled for depression and anxiety (Shaw et al., 2015), one study controlled for age, sex, race/ethnicity and place of birth (Muzaffar et al., 2018), one study controlled for age, sex, ethnicity, household income, agreeableness, conscientiousness, extraversion and neuroticism (Lee-Won et al., 2015), one study controlled for age, gender, ethnicity and socioeconomic status (Vannucci & Ohannessian, 2019), one study controlled for social media activity, sex and BMI (Fardouly et al., 2020) and four studies did not control for any confounders (Hawes et al., 2020; Pumper & Moreno, 2012; Van Rooij et al., 2017, Yurdagül et al., 2019).

**Complete outcome data/response rate.** One study reported a response rate of 87.3%, however complete outcome data/missing data was not reported on (Van Rooij et al., 2017). One study had a good initial response rate (84.6%) and retention rate at time 2 (six months later; 88%), however complete outcome data was not explicitly described (Vannucci & Ohanessian, 2018). And, one study had a medium response rate (77%), with outcome data not explicitly reported on (Yurdagül et al., 2019). One study reported <2% missing data for all study variables, but the response rate was not explicitly reported on (Fardouly et al., 2020). Two studies included sufficient information to determine response rates; Lee-Won et al., (2015) had a >60% response rate and Hawes et al., (2020) had a 96.6% response rate. The remaining studies did not give sufficient information to determine response rate (Durak 2020; Muzaffar et al., 2018; Pumper & Moreno, 2012; & Shaw et al., 2015).

**Overall quality rating.** The overall quality of two studies was rated as weak (Pumper & Moreno, 2012; & Muzaffar et al., 2018), five studies were rated as moderate (Durak 2020; Fardouly et al., 2020; Shaw et al., 2015; Van Rooij et al., 2017; Yurdagül et al., 2019) and the overall quality of three studies was rated as strong (Hawes et al., 2020; Lee-Won et al., 2015; & Vannucci & Ohannessian, 2019).

### Study Outcomes

**Benefits.** One study explored the potential benefits of SNS use on adolescent levels of SA.

***Use of SNS to fulfil social needs****.* In a weak quality study set in North America, Pumper and Moreno (2012) found that participants viewed Facebook as having a positive influence on social interactions offline. However, a trend suggested that participants who viewed Facebook negatively were less likely to have SA. Whilst participants who viewed Facebook positively or neutrally and met the criteria for moderate or higher levels of SA, were more likely to report high levels of Facebook use (Pumper & Moreno, 2012).

 **Risks***.* Nine studies explored the potential risks of SNS use on adolescent levels of SA.

***Problematic SNS use****.* Five studies explored associations between SA and problematic SNS use. In a strong quality study set in North America, Lee-Won et al. (2015) found that whilst SA was significantly positively associated with problematic Facebook use, this significantly interacted with a need for social assurance (this refers to the tendency to rely on others for affiliation and companionship as a way to maintain a sense of belonging). This study suggested that the positive association between SA and problematic Facebook use was significant for those with medium and high levels of need for social assurance but not for those with a low need for social assurance. In a moderate quality study set in the Netherlands, Van Rooij et al. (2017) found that problematic internet/gaming/social media use was significantly positively associated with higher levels of SA; however, whilst this is the case they found that only problematic gaming, not problematic internet use or social media use, was associated with a decrease of connection to others.

In a moderate quality study set in Turkey, Yurdagül et al. (2019) found that problematic internet use was directly associated with SA among males, whilst amongst females, problematic internet use was indirectly associated with SA when mediated by body-image dissatisfaction (Yurdagül et al., 2019). In another moderate quality study set in Turkey, Durak (2020) found that there is a significant positive relationship between problematic social media use and SA. It was suggested that adolescents isolate themselves from the real world and take refuge in social media environments to avoid negative evaluation that might come from others (Durak, 2020).

In a strong quality study set in Australia, Hawes et al. (2020) found that 22% of the variance in SA symptoms were accounted for by the combination of time spent on social media, intensity of social media use, and maladaptive social media use. They found that maladaptive social media use was significantly associated with SA symptoms, however time spent on social media and intensity of social media use were not (Hawes et al., 2020).

***Passive versus active SNS use.*** One study explored the association between SA and types of Facebook use. In a weak quality study set in North America, Shaw et al. (2015) found that higher levels of SA were significantly positively associated with passive Facebook use. When controlling for the mediator brooding, the relationship between levels of SA and passive Facebook use decreased, but still remained significant (Shaw et al., 2015).

***SNS use and changes in feelings of anxiety.*** Two studies explored adolescent Facebook behaviours and associated levels of SA. In a weak quality study set in North America, Muzaffar et al. (2018) found that total number of Facebook friends, time spent per days on Facebook, and general anxiety arousal symptoms were significant predictors of Facebook behaviour and repetitive Facebook behaviour. However, after accounting for total number of Facebook friends, time spent on Facebook and general anxiety arousal symptoms, SA symptoms were not significantly associated with Facebook behaviour or repetitive Facebook behaviour. In a strong quality, longitudinal study set in North America, Vannucci and Ohanessian (2018) found no significant differences between the three social media subgroups (low social media use, high Instagram/Snapchat use, high social media use) in SAD symptoms at Time 2 (6 months later).

***No significant link with feelings of SA but significant link with body image concerns.*** In a moderate quality study set in Australia, Fardouly et al., (2020) found that users of YouTube, Instagram, and Snapchat reported more body image concerns and eating pathology than non-users, but did not differ on depressive symptoms or SA symptoms.

## Discussion

The aim of this systematic review was to gather and review the evidence on the potential benefits and risks of SNS use on adolescent levels of SA. Ten studies met the criteria for inclusion in the review. Study findings identified a number of potential benefits and risks of SNS use on adolescent levels of SA. One study found benefits for social capital, whilst the other nine studies found risks associated with passive SNS use, problematic SNS use and feelings of anxiety whilst using SNS. These will be explored further throughout the discussion.

### Benefits of SNS use on Adolescent Levels of Social Anxiety

Although findings demonstrating the benefits of SNS use on adolescent levels of SA were limited within this review, one finding of the current review suggested that a potential benefit of using SNS and associated levels of SA in adolescence is that SNS use may provide a space for social needs to be fulfilled and for more positive interactions with others offline. This finding fits with the social compensation hypothesis of online communication, which suggests that the internet may benefit those who find it harder to develop friendships in real life (Valkenburg et al., 2005). The internet may provide an alternate method of building social relationships and communicating with others (Valkenburg et al., 2005), allowing individuals to develop relationships online to then strengthen offline relationships. However, findings also suggested that those who viewed Facebook negatively were less likely to have SA (Pumper & Moreno, 2012). In addition, those who perceived Facebook positively or neutrally and met the criteria for moderate or higher SAD were likely to report high use (Pumper & Moreno, 2012).

Although there may be benefits of deriving online support, research has suggested that deriving social support online could be associated with increased avoidance of face-to-face social interactions, which may perpetuate levels of SA (Indian & Grieve, 2014). Previous research has also demonstrated associations between online social support and SNS addiction (Tang et al., 2016), which may be a disadvantage of using SNS to fulfil social needs, particularly when relating to levels of SA. It has been suggested that an increased avoidance of face-to-face interactions and a move towards an increased desire to communicate with others online may lead to SNS addiction and problematic internet use (Lee & Stapinski, 2012). Research in samples of both adults and adolescents has suggested that problematic internet use is associated with higher levels of SA (Caplan, 2007). This may provide an explanation as to why previous research has focused mainly on the risks of SNS use, as demonstrated within this review.

### Risks of SNS use on Adolescent Levels of Social Anxiety

This review also suggested some risks of SNS use and associated levels of SA in adolescence. Five studies suggested an association between problematic SNS use and higher levels of SA in adolescents; specifically, higher SA levels were associated with spending prolonged time on SNS, an inability to control how often SNS is used, losing sleep, and procrastination of important tasks due to SNS use (Durak, 2020; Hawes et al., 2020; Lee-Won et al., 2015; Van Rooij et al., 2017; Yurdagül et al., 2019). This fits with previous research suggesting an association between problematic internet use and SA (Aladwani & Almarzouq, 2016; Caplan, 2007; Cuhadar, 2012; Laconi et al., 2015; Lee & Stapinski, 2012; Prizant-Passal et al., 2016; van den Eijnden et al., 2008). One moderate quality study included in the current review found that their correlational results were in line with earlier research and demonstrated associations for all internet, gaming and social media problematic use scales with depressive mood, negative self-esteem, time online, decreased life satisfaction, loneliness and increased SA (Van Rooij et al., 2017). Another moderate quality study demonstrated a positive relationship between problematic social media usage and SA (Durak, 2020). It can be suggested that adolescents may isolate themselves from the ‘real world’ and take refuge in social media environments in order to avoid negative evaluation that might come from others (Alkis et al., 2017).

Within this review several moderate quality studies indicated that SNS use is potentially a risk related to higher levels of SA (Durak, 2020; & Van Rooij et al., 2017). However, most of these studies did not consider gender differences. Given that females tend to have higher levels of SA, there may have been different factors that contribute towards SNS use being a risk or benefit. A moderate quality study included in the current review found that problematic internet use was directly associated with increased levels of SA in males (Yurdagül et al., 2019). In females, problematic internet use was only directly associated with depression, and indirectly associated with general anxiety and SA via body-image dissatisfaction (Yurdagül et al., 2019). Furthermore, it appears that females’ problematic use of Instagram does not lead to them experiencing higher feelings of loneliness, implying that they might find higher social belongingness while interacting with others online.

One strong quality study included in this review suggested that the frequency and intensity of social media use may have small correlates for emotional maladjustment, while social media preoccupation in general with appearance are stronger correlates of depression and SA (Hawes et al., 2020). In fact, Hawes et al. (2020) found that appearance preoccupation was an especially potent risk factor for elevated appearance anxiety and appearance rejection sensitivity. This finding demonstrates that adolescents’ and young adults’ cognitive styles and behaviours have stronger adverse associations with mental health outcomes, such as SA, than the frequency and quantity of social media use (Hawes et al., 2020).

Another strong quality study included in the current review suggested that the need for social assurance may play a role in the development of problematic SNS use, with the association between SA and problematic Facebook use significant only for adolescents with medium and high levels of need for social assurance. Need for social assurance refers to the tendency to rely on others for companionship and affiliation as a way to maintain a sense of belonging and it has been suggested that SNS interactions provide a way through which people can quickly satisfy their needs for social assurance (Lee-Won et al., 2015). Importantly, it is thought that the quick access to interactions which fulfil needs for social assurance via Facebook may lead to problematic Facebook use in some individuals (Lee-Won et al., 2015). In fact, researchers have identified that problematic internet use is associated with negative social and academic consequences for adolescents, such as isolation from friends and family and reduced engagement in pleasurable activities (Caplan, 2007; Davis, 2001). Given the similarities between Facebook and other SNS sites, it is possible that problematic Facebook use may suggest that the use of other SNS sites would have similar negative outcomes. Therefore, given the association between high levels of SA and problematic Facebook use, those with SA may be at risk for some of the risks associated with problematic internet use (Lee-Won et al., 2015).

Importantly, there is limited exploration of the long-term negative outcomes of problematic SNS within this review, and this could be an area for further research. One strong quality longitudinal study included within this review demonstrated no significant differences between three social media subgroups (low social media use, high Instagram/Snapchat use and high social media use) in the number of SAD symptoms at Time 2 (6 months later; Vannucci & Ohanessian, 2018). However, with regards to social functioning, the high social media use subgroup predicted the experience of more frequent family conflict, low perceived family support, and the lowest levels of perceived friend support. The displacement hypothesis (Kraut et al., 1998) may partially account for these findings, as early adolescents in this subgroup may develop more frequent conflict with family and may feel increasingly isolated because their extensive social media use replaces quality time spent with family and interferes with family activities (Dworkin et al., 2018). It is important to consider that this may also relate to findings where there are SNS benefits; where SNS are used in moderation, adolescents may be able to create a balance between maintaining quality time spent with family, whilst also developing an element of connectedness online.

Research has suggested that excessive social media use patterns may be a primary source of frequent family conflict in the form of struggling to negotiate over rules and boundaries of technology use (Dworkin et al., 2018). The transformation framework (Nesi et al., 2018) suggests that frequent social media use across many platforms can lead to a decreased perceived support from friends because of the lack of interpersonal cues and also that asynchronicity of responses negatively impacts conflict resolution skills, intimacy and support seeking. Research has also suggested that it is possible that frequent use of many social media platforms may amplify unrealistic expectations that friends should be constantly accessible to the extent that early adolescents become concerned, or have uncertainty, about their friendships if they do not get immediate responses; research has demonstrated that these experiences can increase levels of SA in adolescents (Nesi et al., 2018). Furthermore, the technology overload hypothesis (Lee et al., 2016) suggests that social media multitasking demonstrated by youth may interfere with in-person interactions due to frequent distractions and interruptions by mobile devices resulting in decreased perceived friend and family support (Van dur Schuur et al., 2015).

In one weak quality study, Muzaffar et al. (2018) demonstrated that having a greater number of Facebook friends, spending more time per day on Facebook, and increased anxious arousal symptoms were each significantly associated with increased Facebook behaviour (e.g., posting photo, reacting/liking another’s photo/status, sent a message via the app) and increased repetitive Facebook behaviour (measured whether users did any of the Facebook behaviours several times). Importantly, no association between Facebook behaviours or repetitive Facebook behaviors and SA symptoms were found, demonstrating no significant risk or benefit of SNS use was associated with adolescent SA levels. Previous research has demonstrated that increased SNS use, problematic SNS use and SNS addiction is associated with increased adolescent SA (Lee, 2015; Moreau et al., 2015; Shaw et al., 2015). However, Muzaffar et al.’s (2018) findings were inconsistent with these results. This discrepancy could be due to how Facebook behaviours were measured and that their study was largely comprised of younger aged adolescents (12-14 year olds). This implies that younger age adolescents may not have an association between increased SNS use and increased SA (Muzaffar et al., 2018).

The research included in the current review suggested a significant association between increased passive SNS use and higher levels of SA (Shaw et al., 2015). There was also a significant relationship between social SNS use and higher levels of SA; however, this was only in the context of moderation by levels of anxiety on Facebook, such that individuals with high SA and high anxiety on Facebook engage in social Facebook use more frequently than people with low SA (McCord et al., 2014). This finding is thought to be consistent with the idea that people with SA may use Facebook to fulfil their social needs due to the discomfort they experience in face-to-face social interactions, since high SA may motivate social Facebook use even when anxiety is experienced on Facebook (McCord et al., 2014). Indeed, the research included in the current review suggested an association between SA and anxiety on Facebook, perhaps indicating that interacting on Facebook does not completely reduce the anxiety that individuals with SA experience during social interactions with others.

One moderate quality study suggested that the time spent on social media, regardless of the platform used, may be less important for mental health than the activities (e.g., changing their appearance or comparing their appearance with others) that the user engages in on said platforms (Fardouly et al., 2020). Similar to the suggestion by Brailovskaia and Margraf (2016), the social support received from others and the ability to control one’s self-presentation online may reduce any negative influence of potentially harmful online activities (e.g., comparison with others) on a user’s SA and depressive symptoms. Fardouly et al. (2020) found that engaging more in appearance comparisons with others and perceiving others to be more attractive than oneself on social media were each unique predictors of poorer body satisfaction, more eating pathology, and higher SA amongst preadolescent males and females. This highlights the importance of appearance comparisons as a potential driving mechanism through which social media may harm mental health, even among pre-adolescents. There was limited evidence of this demonstrated by the studies included within this review, with the exception of where gender differences were found; therefore, further research may be required in this area.

According to the social comparison theory (Festinger, 1954), people have an innate drive to evaluate their progress and compare themselves to others to achieve this aim. Previous research has demonstrated that physical appearance is a central aspect of many young people’s self-worth (de Vries et al., 2014), particularly among females, which may motivate them to engage in appearance comparisons. Social media provides vast opportunities for appearance comparisons and users may be motivated to use social media to make appearance comparisons or they may passively engage in comparisons as a result of being exposed to images on social media; thus, this could impact on SA levels (Fardouly et al., 2020).

### Summary of Findings

In summary, the current review identified both potential benefits and risks of SNS use that are linked with adolescent levels of SA. The potential benefits included using SNS to fulfil social needs and strengthening offline relationships. The potential risks of using SNS and the association with adolescent levels of SA included increased likelihood of problematic Facebook use, avoidance of face-to-face interactions, increased passive SNS use, increased anxiety relating to image and feelings of anxiety when using SNS. Overall, the studies included within this review highlighted more risks, than benefits of SNS use and the link with adolescent levels of SA. This could demonstrate that there are increased risks of SNS use and the association with SA; however, it could also demonstrate that researchers continue to focus on the negative outcomes of SNS use and not enough is known about the benefits of SNS use.

### Implications

Many of the findings presented in this review are from studies with moderate to strong quality assessments, with just two of the studies having a weak quality assessment. From the findings there is some evidence that there are advantages (albeit from a ‘weak quality’ study) of SNS use on adolescent levels of SA. However, many more studies identified and explored the risks and found links between how social media is used and SA. This information may have implications for how adolescents are educated about internet safety and social media use.

Importantly, the finding presented here may have implications on the treatment of SAD for adolescents. Since social media use has become somewhat ubiquitous for adolescents, clinicians working with adolescents with SA may wish to consider the potential benefits and risks of SNS use for these individuals. Furthermore, since individuals with SA appear to value particular aspects of social media communication, which may be associated with reduced anxiety, individuals with high levels of SA may find it easier to carry out exposure exercises on SNS than in face-to-face settings. However, clinicians should also consider that online interactions may serve as a form of safety behaviour through which individuals with SA can avoid threatening face-to-face interactions, which may then lead to problematic internet use and a maintenance of SA symptoms (Lee & Stapinski, 2012). Thus, caution is needed when including internet communication as an exposure exercise in therapy, or when delivering any therapy via the internet. The goal of therapy for SAD should always be to decrease SA in the context of face-to-face interactions (Yen et al., 2012). In addition, individuals with SA should be encouraged to achieve a healthy balance between social interactions on SNS and face-to-face (Lee-Won et al., 2015). Furthermore, it may also be important for clinicians to promote awareness of the potential risks of SNS use for adolescents and the implications on mental health, particularly SA, since the use of SNS has now become widespread in society.

### Limitations and Future Research

When considering the findings of this review it should be noted that the included studies had a number of limitations which could potentially affect the interpretation and generalisability of the findings. Most of the included studies had a cross-sectional design; therefore, the direction of causality between adolescent levels of SA and the potential benefits and risks of Facebook use cannot be determined. Many conclusions about causality are focusing on this type of study, and to understand the true nature of the relationship between SA and SNS use in adolescents (i.e., whether higher SA leads to poor SNS use or whether poor SNS use leads to higher SA) one needs to carry out longitudinal research and randomised controlled trials (RCTs). Only one longitudinal study was included within this review, and this study had only two time points. More longitudinal research would be required to further clarify the potential benefits and risks of SNS on adolescent levels of SA over time.

Furthermore, in this systematic review two studies had a weak quality rating, five had a moderate quality rating and three had a strong quality rating. Therefore, further strong quality research projects are needed in order to allow confident conclusions to be drawn regarding the potential benefits and risks of SNS use on adolescent levels of SA. Additionally, researchers continue to focus on the negative outcomes of SNS use and not enough is known about the benefits of SNS use. Further high quality research and RCTs are needed within this area.

Throughout this review it was noted that the included studies used a number of different self-report tools to measure SA and the diversity in measurements potentially raises questions about whether the construct of SA was accurately measured across all studies. Some scales, such as the Social Interaction Anxiety Scale and the Social Phobia Scale, have been shown to have weaknesses and inconsistencies in their underlying factor structures (Wong et al., 2016). Additionally, some literature has suggested that self-report measures of SA for both adults and adolescents need to be updated to be consistent with DSM-5 diagnostic criteria (Wong et al., 2016). Furthermore, one study included in this review used only the Social Phobia Scale to measure SA (Shaw et al., 2015). This scale is designed to be used as a companion measure alongside the Social Interaction Anxiety Scale (Mattick & Clarke, 1998), since the Social Phobia Scale only assesses the domain of performance fear in SA (Dobrean & Păsărelu, 2016). Finally, all studies included in the review used self-report measures of SA and nine studies used self-report measures of the benefits and risks of Facebook use. There are a number of potential validity problems associated with self-report data, for example poor introspective ability and response bias (Barker et al., 2016), which may have affected the validity of these measures.

Another important consideration is that many of the studies included within this review explored Facebook use only. Facebook use is declining amongst the adolescent population, with Ofcom (2020) reporting that whilst most adolescents still do have a Facebook account, other SNS, such as Instagram, Snapchat and TikTok, are growing in popularity and tend to be checked more often. Thus, it would be important for research to look at SNS use more broadly, including looking at image based apps which are becoming more prevalent within the adolescent population.

Further to the above, several key design points were noted which future research could address, thus strengthening their work. Firstly, the majority of the studies included within this review used convenience sampling, therefore the samples recruited may not have been representative of the population of adolescent SNS users as a whole. Secondly, within this review, adolescents were grouped with a wide age range, when it would be beneficial to understand differences in younger and older adolescents. Thirdly, all studies used a non-clinical sample, therefore we can only hypothesise about findings for adolescents who may already be experiencing high levels of SA.

Whilst the studies included in the current review have a number of limitations, this systematic review itself also has some limitations, which may affect the conclusions that can be drawn. A literature search was conducted of just two electronic databases which consist mainly of published journal articles, and only peer-reviewed empirical articles were included in the review. Grey literature, such as dissertations or conference presentations, were not discussed; hence, it is likely that the results of this systematic review were affected by publication bias.

### Conclusions

 In conclusion, the aim of this systematic review was to gather and review the evidence on the potential benefits and risks of SNS use and the association with adolescent levels of SA. Ten studies were identified for inclusion in the review. Findings suggest that there are both benefits and risks of SNS use associated with adolescent levels of SA. The potential benefits of SNS use include using SNS to fulfil social need, to help create more positive interactions offline and having an element of control of what information is shared/self-presentation online. The potential risks of SNS use included increased likelihood of problematic Facebook use, avoidance of face-to-face interactions, increased passive Facebook use and feelings of anxiety (particularly anxiety relating to body image) when using SNS sites. However, the studies included in this review had a number of limitations, which may affect the interpretation and generalisability of the findings, including that most were cross-sectional and of a moderate quality, most recruited participants through convenience sampling and using self-report measures, and only published studies were included. Furthermore, strong quality, longitudinal research which explores the potential benefits and risks of SNS use on adolescent levels of SA is required. Due to the current omnipresence of social media in everyday life, particularly for adolescents, it seems important that clinicians working with adolescents consider SNS use in their work and the implications of SNS use on mental wellbeing particularly levels of SA, since the results of the current review suggest that there may be some significant benefits and risks of SNS use on adolescent levels of SA.

# Empirical Study

# Understanding the Role of Personality and Impression Management within Instagram on Feelings of Social Anxiety in Adolescents.

## Abstract

Prevalence of anxiety disorders are on the rise, particularly social anxiety (SA), as is the use of Social Networking Sites (SNS), with greater focus now being applied to how adolescents are using SNS. Previous research has focused primarily on Facebook use. However, we know that Instagram is becoming increasingly popular with adolescents at a time when adolescents are concerned with the image that they are creating of themselves. We also know that SNS use may be moderated by one’s personality. This research aims to look at if the use of image manipulation and impression management tactics (whether individuals present the true self more often, the false self more often, or an ideal self more often) on Instagram and if personality (specifically narcissism) can predict individual differences in adolescent SA levels after accounting for levels of comorbid depressive symptoms. A non-clinical sample of 249 adolescents completed five questionnaires which measured: SA, online self-presentation tactics (real, ideal and false self), Instagram image manipulation, narcissism and depressive symptoms. The study assessed which predictors improve the ability to predict SA through the use of a hierarchical regression. The results demonstrated a significant relationship between the use of false self-presentation tactics and higher levels of SA. There was no significant relationship between image manipulation and SA or between ideal or real self-presentation tactics and SA. There were also no significant results indicating that narcissism moderates findings with impression management. Results may suggest that false self-presentation tactics are used as a safety behaviour for those experiencing SA.

## Introduction

### Social Anxiety

Social anxiety (SA) is anxiety or fear of being judged, negatively evaluated, or rejected by others in a social or performance situation (Clark & Wells, 1995). SA is a fairly common human experience (Morrison & Heimberg, 2013) with SA being the fourth most common mental health condition (Kessler et al., 2005). Experiences of SA are thought to exist on a continuum, ranging from the complete absence of social fear through ordinary shyness and mild levels of SA, to more intense and functionally impairing SA, which may be diagnosed as social anxiety disorder (SAD; Kashdan, 2007; Morrison & Heimberg 2013). The DSM-V criteria for SAD includes: persistent, intense fear or anxiety about specific social situations because one believes that they may be judged negatively, embarrassed or humiliated; avoidance of anxiety-producing social situations or enduring them with intense fear or anxiety; excessive anxiety that is out of proportion to the situation; anxiety or distress that interferes with one’s daily living; and fear or anxiety that is not better explained by a medical condition, medication or substance abuse (NICE, 2013). Individuals with SAD experience intense fear and anxiety around social or performance situations and worry that in such situations they may do or say something to embarrass themselves or that their anxiety will be visible in some way (e.g., blushing, stumbling over words; American Psychiatric Association, 2013). The estimated lifetime prevalence of SAD is 12.1% (Ruscio et al., 2008); however, it is thought that approximately 10% of people have subthreshold symptoms of SA, which are not severe enough to meet the criteria for diagnosis (Fehm et al., 2005). Therefore, as SA exists on a continuum, many individuals experiencing symptoms of SA are never diagnosed. Hence, it is beneficial to consider experiences of SA in a non-clinical sample.

Age-of-onset data points towards adolescence as a developmentally sensitive period for the emergence of the condition, at a time where peer groups become increasingly important (Leigh & Clark, 2018). Research has demonstrated that SA may emerge from the age of five (Egger & Angold, 2006; Cartwright-Hatton et al., 2006) and has a peak age of onset of between 11 to 13 (den Boer, 2000; Kessler et al., 2005; Stein & Stein, 2008). SA is reported to affect significant numbers of children and adolescents with studies reporting that youth rates range from 1.1% to 3.7% in the general population (Benjamin et al., 1990; Verhulst et al., 1997) and from 14.9% to 30% in clinical populations (Last et al., 1992; Strauss & Last, 1993). Additionally, SAD is associated with significant impairment in functioning for youths and it is reported that it is likely to interfere with normal relationships (Ballenger et al., 1998) and can result in school avoidance or refusal (Strauss & Francis, 1989).

Cognitive models of SA have been used to provide theoretical frameworks to understand the key maintaining processes in SA (Clark & Wells, 1995; Rapee & Heimberg, 1997). These models suggest that dysfunctional beliefs, biased processing of social information, safety behaviours and avoidance of anxiety provoking situations contribute to the development and maintenance of SA (Clark & Wells, 1995; Rapee & Heimberg, 1997). Rapee and Heimberg’s (1997) model of SA, suggests that socially anxious individuals attach significant importance to being socially evaluated by others, yet they assume that any evaluation will be inherently negative. When a socially anxious event is perceived or experienced, it is suggested that an individual with SA will create a mental representation of themselves as would be seen by a social other, created by memories of past experiences, internal cues (e.g., physiological anxiety symptoms), and external cues (e.g., perceived indicators of negative evaluation; Rapee & Heimberg, 1997). It is suggested that the content of pre- and post-event rumination is the expectation of a negative outcome. Individuals may generate a negative, internal mental representation of the self as seen by an audience in anticipation, during and after a social event. Unlike Clark and Wells’ (1995) model, which postulates that attentional resources are allocated to one’s internal representation, Rapee and Heimberg (1997) argue that the individual’s attentional resources are split to monitor both the self-image and potential external signs of threat simultaneously (e.g., signs of disinterest). This self-image is then compared to a perceived standard of audience expectation. The higher the discrepancy between the self-image and the perceived standard, the greater the likelihood that the individual will anticipate negative social outcomes in terms of probability and cost, which in turn results in behavioural, cognitive, and physical symptoms of anxiety. Anxiety symptoms and any external indicators of threat are perceived and reintegrated into the mental representation of the self, resulting in the maintenance of the SA and ruminative cycle (Rapee & Heimberg., 1997). Given the public nature and ability to reach more people, with more evaluation of the self, it is important to explore what happens in online social interactions, via SNS.

Clark and Wells’ (1995) cognitive model suggests that individuals who experience SA are more likely to perceive social events as threatening due to cognitive biases that they hold about themselves, others, and the world. Individuals with SAD may also hold conditional beliefs concerning social evaluation, such as ‘if I make mistakes then others will reject me’ (Clark & Wells, 1995). These beliefs are the result of a biased assumption that ‘What (I think) others think of me, must be the truth’. These stringent rules for interactions provoke anxiety and activate the expectation of negative social evaluation and rejection from others. Individuals with SAD are thought to have negative beliefs about themselves, which are conditional on specific situations and are more marked in social situations, compared to situations that they perceive as less threatening, such as being with close friends (Clark & Wells, 1995). Therefore, individuals who experience SA may feel ‘safer’ online, where they can take time with SNS posts and reactions and with how they choose to portray the self for positive evaluation from others.

Importantly, individuals with SAD are known to engage in safety behaviours (Kim, 2005; Wells et al., 1995), which can either involve overt behaviours (e.g., avoidance) or internal mental processes (e.g., rehearsing what to say next). These safety behaviours maintain SAD in four ways: social success may be attributed to the safety behaviour, rather than the inference that the situation was less threatening than originally perceived; the individual’s fears may be exacerbated; safety behaviours direct attention to the self, which exhausts cognitive capacity that may be used to process objective information; and safety behaviours could produce the feared result (Clark & Wells, 1995). In relation to this project, a further example of a safety behaviour may be to change how one presents the self with the aim to create a positive impression on others (e.g., using impression management techniques).

### Self-Presentation Model of SA

Previous research has demonstrated that individuals use self-presentation tactics in order to create positive impressions of the self within another person (Schlenker & Leary, 1982). Additionally, we know that people like to be perceived positively. More specifically, in adolescence there is particular pressure for positive social evaluation, and therefore adolescents are likely motivated to use self-presentation tactics (Michikyan et al., 2015).

The self-presentational model of SA suggests that SA arises when people are motivated to make a preferred impression on real or imagined audiences but doubt that they will do so, and thus perceive or imagine unsatisfactory evaluative reactions from subjectively important audiences (Schlenker & Leary, 1982). Where individuals experience this, they may use self-presentation tactics, as a safety behaviour (e.g., rather than presenting the real self they may choose to present what they perceive to be the ideal self or present a false self), when interacting with others to manage feelings of SA (Michikyan et al., 2015). Using self-presentation tactics as a safety behaviour may maintain SA, as social success may be attributed to the safety behaviour (e.g., if one presents the false self and receives positive feedback, the positive feedback may be explained by having demonstrated a false version of the self). Researchers have suggested that the options of using social networking sites (SNS) over face to face interactions may be preferred for some types of contact as individuals possess increased levels of control over disclosure and the use of self-presentation tactics (Joinson, 2001; Leung, 2011). Although this preference is somewhat understandable, this behaviour could increase vulnerability to SA (Erwin et al., 2004).

### Self-Presentation

Previous research has demonstrated that from the age of eight years old children are interested in creating positive evaluations of the self within others (Watling & Banerjee, 2007). Through friendship groups children learn about social norms and begin to understand the use of self-presentation. Research suggests that between the ages of eight and 11 children may begin to understand and consciously use self-presentation tactics (Watling & Banerjee, 2007). Previous research had demonstrated that from the age of 13, adolescents may engage in self-presentation tactics, which has been defined as the use of behaviour to present information about the self to others in order to manage impressions that others form of the self (Baumeister, 1986). Brown (2007) has suggested that individuals engage in different kinds of self-presentation as an attempt to create, as well as modify, self-relevant images before an imagined or real audience. The present study considers three main self-presentation tactics, exploring the extent to which individuals present the real self, the ideal self and the false self when using Instagram.

The presentation of the real self encompasses presenting to others one’s authentic or true feelings and this form of self-presentation appears to be motivated by internal attributes (Harter et al., 1996). The presentation of the ideal self is understood in terms of ideal attributes (e.g., aspirations, hopes, wishes) and may involve both negative and positive versions of the self (Higgins, 1987; Markus & Nurius, 1986). For instance, if a person’s real self does not match the ideal self the person may experience negative self-image and dejection-related emotions (e.g., depression and SA). Finally, the presentation of the false self entails acting in ways that are not true to the self and may occur for different reasons such as deception, exploration, and impressing others (Harter et al., 1996). When one uses false self-presentation tactics and it gets ‘liked’, it can create an internal feeling or belief that our real self is not good enough. Or for those with SA who use false self-presentation tactics as a safety behaviour, it can lead to feeling that they need to continue to present a persona that is not true to their authentic self in order to create positive impressions with others. Those with higher levels of SA may be more likely to present a false self more often.

Young people’s offline and online worlds are psychologically connected, often connecting online to continue to develop and maintain relationships with those who they also interact with offline (Subrahmanyam & Smahel, 2011) and also using SNS sites to develop new relationships and extend connections further afield. Research has demonstrated that adolescents engage in self-presentation tactics within online settings, such as SNS, in order to maintain existing relationships and to create new connections (Michikyan & Subrahmanyam, 2012). On sites such as MySpace and Facebook, college students use photographs, status updates and wall posts to present different aspects of themselves (Michikyan & Subrahmanyam, 2012).

 Previous research has proposed that identity, self-esteem, depressive symptoms, and SA symptoms may determine the extent of the use of self-presentation tactics (Weary & Williams, 1990). Researchers have found a link between more positive psychological wellbeing and behaviours when individuals present the self in a way that they view to be consistent with the real self, and between poor psychological wellbeing and behaviours when individuals present the self in a way that that they see as the false self (Badanes & Harter, 2007). For instance, those with low self-esteem reported presenting their false self to a greater extent (Elliott, 1982), and those with greater depressive or SA symptoms have been found to be more strategic in their self-presentations so as to avoid further perceived losses in self-esteem or psychological wellbeing (Weary & Williams, 1990).

Self-presentation tactics have traditionally been explored in face-to-face interactions, but more recent interest is to explore the use of online self-presentation tactics. Research with college students has suggested a link between psychosocial variables such as identity, self-esteem, SA, depression, and self-presentation on Facebook (Moreno et al., 2011). For instance, Mehdizadeh (2010) found that college students with low self-esteem engaged in self-presentation tactics (e.g., enhanced their photos) on Facebook to create positive impressions in others. Therefore, evidence with adults suggests that using false or ideal self-presentation tactics more frequently may be related to higher levels of SA and depression, while using real self-presentation tactics more frequently may be related to increased psychological wellbeing and lower levels of SA and depression.

### Presentation of the Self Online

 With SA on the rise, adolescents are looking to create positive impressions in others and online SNS platforms allow for different kinds of social interactions with others. When individuals communicate via SNS sites, they are able to take time to think about how to present themselves, unlike in live conversations. There is also the opportunity to manipulate images of the self, particularly if and/or when interacting with others who do not know the ‘real self’. SNS platforms allow users to express differing aspects of the self, and with the reactions and feedback of others this may impact their own internal representations of the self (Michikyan et al., 2015).

Furthermore, when exploring online SNS use, researchers often talk about the amount of time spent online and how SNS sites are used. Research has demonstrated that personality may play a role in how individuals use SNS sites; specifically, those higher on narcissism tend post more frequently and use SNS more often, with a demonstrated link to levels of SA (Akehurst & Thatcher, 2010). Narcissistic personality has been described as self-absorbed and self-aggrandizing, displaying characteristics of condescending superiority, lack of empathy, and preoccupation with others’ admiration (Morf & Rhodewalt, 2001). It is suggested that individuals with higher levels of narcissism may enjoy exhibitionism, opportunities for self-enhancement and that they excel when others are evaluating them (Wallace & Baumeister, 2002). Furthermore, individuals higher in levels of narcissism may use self-presentation tactics more often to gain attention and recognition for their deeds (Akehurst & Thatcher, 2010). Those scoring higher for levels of narcissism may have a resilient positive self-appraisal (Wallace et al., 2005), confidence, exhibitionism and focus on self-enhancement opportunities, all of which may act as mechanisms that reduce experiences of anxiety, threat and self-doubt.

In a world now where high proportions of adolescents use social media for hours a day, creating impressions with images, it is important to understand how online self-presentation and personality may be predictive of SA. As Instagram is an increasingly used, image based SNS, it is important to consider whether impression management on Instagram through self-presentation tactics can predict individual differences in SA levels. In using Instagram, we know that people edit photographs before posting, however it is unknown whether image manipulation is about creating impressions in others, or whether is it about systematically improving the image (e.g. making the image brighter, removing shadows etc.).

### Instagram

Research has demonstrated that adolescence is a period of time where individuals begin to care about how they are being evaluated by others, and social relationships become increasingly important (Leigh & Clark, 2018). Furthermore, one key method of interacting for adolescents is online, using SNS, with one of the most popular SNS sites for adolescent daily use being Instagram (Anderson & Jiang, 2018).

Currently, the existing research exploring social media use focuses primarily on Facebook use (Liu et al., 2016; & Verduyn et al., 2017); conversely, image-based sites, including Instagram, remain largely under researched. The launch of Instagram in 2010 introduced a new chapter in the evolution of social media, as large numbers of users began engaging with image-based social networking platforms to not just connect with members of their social networks but also to visually engage with them through online pictures (Trifiro, 2018). Data from the Pew Center’s 2015 survey indicates that 71% of teenagers reported using Facebook on a daily basis, with no other platform being used by a clear majority of teens at the time (52% reported using Instagram and 41% using Snapchat). However, there appears to have been a shift in how SNS sites are being used, particularly amongst adolescents. In 2018, the Pew Research Center gathered data which suggested that image and video based SNS sites, such as Instagram and Snapchat, had become the most popular amongst teenage users. Anderson and Jiang (2018) found that 72% of 13- to 17-year-old respondents were reporting using Instagram, whereas only 51% of 13- to 17-year-olds reported using Facebook. This represents a dramatic change in the social media landscape over the past few years, and whilst there appears to be a significant change in which SNS sites adolescents are using on social media, existing research does not appear to reflect these changes. This demonstrates a need for research to explore the relationship between Instagram use and social-emotional outcomes; thus, here the link with SA is investigated to provide helpful information for clinicians when working with individuals who experience SA.

Instagram is a mobile application where users can post photos and videos with attached captions. In response to these posts, others are encouraged to like, comment, and engage with one another. Instagram is one of the fastest growing social media platforms (Anderson & Jiang, 2018). Instagram differs greatly from other forms of SNS, the literature indicates that the ‘centrality of images’ on Instagram sets it apart from other forms of text-based SNS, such as Facebook and Twitter (Johnson & Knobloch-Westwerwick, 2016). Therefore, Instagram is a good platform to create and maintain desired impressions of the self within others.

Previous research amongst adult populations has demonstrated that image-based social media posts have demonstrably different effects on users’ moods than text-based social media posts (Johnson & Knoblock-Westerwick, 2016). Lup et al. (2015) found that Instagram posts tend to be positively biased, as users engage in positive forms of self-presentation and select positive aspects of their lives to display. While literature is limited, Lup et al. (2015) suggest that Instagram posts are generally more positively biased than text-based SNS, which, while strongly populated by positive images, are also used to post status updates sharing negative feelings. Research has suggested that this is likely the result of photo editing and enhancing features that create a culture of polishing and perfecting among users (Trifiro, 2018). The current literature, while sparse, provides a conceptual basis for understanding the relationship between image-based social media use and mental health.

### The Current Study

This study aims to establish whether image manipulation (manipulations without motive considerations) and use of impression management — self-presentation tactics (whether individuals present the true self more often, the false self more often, or an ideal self more often) — whilst using Instagram can predict individual differences in adolescents’ SA levels. Image manipulation may be the ‘norm’ on Instagram. Therefore, image manipulation is being included within the model to see whether it can independently predict SA, when also exploring self-presentation tactic usage. In summary, the main aim of the study is to explore the role of self-presentation tactics in predicting SA, however image manipulation may not be about having a self-presentation motivation, therefore an image manipulation scale is included within the study, as it is particularly prevalent on Instagram.

Furthermore, research has demonstrated that those higher in narcissism, may have increased awareness of self-enhancement opportunities, particularly in domains in which self-worth is contingent on external sources such as, physical appearance and outdoing others (Collins & Stukas, 2008). Consequently, it is proposed that narcissists are likely to exhibit high motivation to present the self in a way to create desired impressions in others, based on their inflated self-perception and are likely to have high efficacy in their ability to construct these desired impressions, therefore are likely to frequently use self-presentation tactics. These self-presentational components suggest that narcissists are less likely to exhibit SA (Akehurst & Thatcher, 2010). Previous research has demonstrated that narcissism moderates the relationship between self-presentation in exercise (impression motivation and construction) and SA (Akehurst & Thatcher, 2010). It has been demonstrated that individuals with narcissistic personality styles may present the false self on SNS’s to gain recognition from others, through likes and comments (Balick, 2014). Therefore, this study aims to establish whether narcissism will moderate the relationship between impression management and SA. Importantly, these relationships will be explored whilst controlling for depression, as comorbidity between SA and depression has been reported in several studies (Alpert et al., 1994; Schatzberg et al., 1998; Parker et al., 1997).

A non-clinical sample was used to establish if use of image manipulation and use of self-presentation on Instagram predicts levels of SA, and the role that narcissism plays in moderating these relationships. Given that SA has an early median age of onset (13 years), with only about half of those with the disorder ever seeking treatment, and those who do seek treatment generally only do so after 15-20 years of symptoms (NICE Guidelines, 2013), it is likely that there are adolescents who are undiagnosed with high levels of SA. Tillfors and Furmark (2007) have estimated a prevalence of SA to exist in 16% of a university student population. It is therefore expected that findings can be taken from the non-clinical sample, and applied to clinical samples in future research.

The following hypotheses were investigated, whilst controlling for depression:

1. Those presenting their real self on Instagram will report lower levels of SA.
2. Those presenting an ideal self on Instagram will report higher levels of SA.
3. Those presenting a false self on Instagram will report higher levels of SA.
4. Those using image manipulation when posting on Instagram to a greater extent will report higher levels of SA.
5. It is expected that narcissism will moderate the relationship between image manipulation and impression management with reported levels of SA (e.g., those higher in narcissism, who present an ideal self or false self may experience increased levels of SA).

## Method

### Participants

A non-clinical sample of 248, 13-18 year olds with Instagram accounts participated in the online study. The age range of 13-18 years was decided upon as 13 years of age is the minimum legal age for children to use Instagram. Furthermore, research suggests that age-of-onset for social anxiety is around 11-13 years (den Boer, 2000), at a time where adolescents are just starting to use Instagram. Children were recruited from schools in the UK, either to participate at home (schools forwarded information to parents who after consenting passed the link on to the child) or to participate during class time. Participants were recruited from schools with differing social economic status (SES), as indicated by percentage of free school meals. This ensured a wide demographic from varying SES are represented. A total of 338 participants took part in the study, however 86 participants were excluded based on the exclusion criteria requiring participants to have: provided consent for their data to be included within the final sample (61 participants excluded), completed more than 90% of the questionnaire (5 participants excluded), and answered appropriately to the two attention check questions (83 participants excluded). Three further participants were excluded for having omitted more than 50% of questions in any specific measure.

Participants were recruited until the number of participants required to have a strong power to detect a small to medium effect was met. Akehurst & Thatcher (2010) found, when assessing narcissism as a moderator of the relationships between exercise self-presentation and SA, that the change in variability accounted for in the model with inclusion of an interactive predictor of self-presentation with narcissism was .05 (R2 change); this was used as an indicator of the size of effect one would expect in the hierarchical multiple regression analysis. To determine the required number of participants in the current study, this was estimated using the largest block (where five predictors are added) to understand if they significantly improve the model. G\*Power calculations showed that for a DF=5, number predictors in model =10, effect of .053, α=.05, and Power at .80 (high), a final sample of 248 participants was required. This ensured there was enough power to sufficiently explore impression management, as self-presentation and image manipulation were the variables of main interest. However, there may have been a risk of not being fully powered to do the moderation analysis which could increase the likelihood of a Type-II error.

Of the final sample of 249 participants who met the inclusion criteria, there was a mean age of 15.54 years old (SD = 1.67, range 13-18 years), 64.3% of participants were female and 75.9% of the final sample considered themselves to be White British (see a full breakdown of ethnicity, and participant characteristics in Table 3). Research shows that 83% of 12-16 year olds have access to their own smartphone (Ofcom, 2018). Therefore, these inclusion criteria did not rule out children from low SES backgrounds. Despite this, of the 67.1% of parents who reported household income, 22.9% reported earning more than £80,000 per annum.

Ethical approval for this research was granted by the Royal Holloway Research Ethics Committee, Approval Code: 2072 (See Appendix B for ethics approval, information sheets, consents forms and debrief.)

### Table 3.

### *Participant Characteristics*

|  |  |
| --- | --- |
| Number of Participants | *N =249* |
| Ethnicity (N=249): n (%) | White British: 189 (75.90%)African: 13 (5.20%)Mixed Race: 12 (4.80%)Other: 12 (4.80%) Caribbean: 6 (2.40%)Indian: 6 (2.40%)Pakistani: 5 (2.00%)Chinese: 4 (1.60%)Arab: 1 (0.40%)Irish: 1 (0.40%) |
| Instagram Followers (N=249): mean (sd) | 686.87 (800.81) |
| Instagram Account (N=249): public n (%) | 80 (32.10%) |
| Data Collected at Home or School (N=249): home n (%) | 173 (69.50%) |
| Income (n=173): n (%) | Less than £10000: 5 (2.00%)£10000-£20000: 11 (4.40%)£20001-£40000: 39 (15.70%)£40001-£60000: 32 (12.90%)£60001-£80000: 23 (9.20%)More than £80000: 57 (22.90%)Not reported: 82 (32.90%) |

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### Setting

The study was conducted within a non-clinical sample of adolescents in UK secondary schools. Secondary schools were contacted by the researcher to establish willingness to take part and to obtain consent. Children were then recruited via two avenues depending on whether children were learning virtually or whether children were attending school in person as this has been changeable depending upon the lockdown restrictions relating to the Covid-19 Pandemic.

During times when children were attending school virtually, schools were asked to send a text message or email to parents/carers with the Qualtrics link which provided the parent/carer with information on the study. Following reading the information, the parent/carer was provided with a consent form. Once providing consent for their child to participate, the parent/carer was then given an individual code and another weblink to pass on to their child. The adolescent was directed to the Qualtrics platform, where they were required to put the individual code into the survey, and then viewed information on the study and were asked if they consented to participating. Parent and child codes were then matched to ensure full parental and adolescent consent. Of the total number of participants, 69.8% of participants completed the study in this way.

During times when children were attending school in person, schools were asked to send parent/carers information sheets home to gain opt-out consent. Adolescents with parental consent were invited to participate and were asked to provide their own informed consent. Those who consented, completed the Qualtrics questionnaire in a classroom setting where they had access to their own computer or smartphone.

Upon completion of the Qualtrics questionnaire, participants had the opportunity to anonymously enter into a prize draw for the chance to win one of seven £10 Amazon vouchers.

### Design

The current, quantitative study has a correlational design. Participants were required to complete a questionnaire. There are five predictor variables: image manipulation on Instagram, online self-presentation tactic use for the real self, ideal self and false self, and narcissism. Social anxiety was the outcome variable. Level of depression was included as a control variable.

### Materials and Measures

Participants were required to complete five established questionnaires at a single time point that was presented as a single survey on the Qualtrics platform. Questionnaires measured: severity of SA symptoms, extent of image manipulation for Instagram, online self-presentation tactic use (real self, ideal self and false self), levels of narcissism and severity of depression symptoms. All questionnaires were uploaded on to the Qualtrics platform, with questions being set to request response (so that items could be left off if participants did not want to answer certain questions but were reminded of a missing response if a question was skipped by mistake). Participants completed questionnaires on individual computers or smartphones. Response data was stored on Qualtrics until the end of data collection where it was extracted to a SPSS file.

**The Social Anxiety Scale for Adolescents (SAS-A).** SA was assessed using the 22-item SAS-A (Appendix F; LaGreca, 1998). The SAS-A assesses three dimensions including: fear of negative evaluation (FNE; eight items; e.g., ‘I worry what others think of me’); social avoidance and distress in new situations (SAD-New; six items; e.g., ‘I get nervous when I talk to peers I don’t know very well’); social avoidance and distress – general (SAD-General; four items; e.g., ‘I feel shy even with peers I know well’) and four filler items. Scores were calculated based on a Likert scale of 1 to 5, where 1 indicated ‘strongly disagree’ and 5 indicated ‘strongly agree.’

Responses to the 18 scale items were summed to give a total SA score. A higher score implies higher levels of SA and scores can range between 18 and 90. The internal consistency (Cronbach’s Alpha) of the subscales in the original study ranged from 0.69 to 0.91 (La Greca & Lopez, 1998). Within this study the internal consistency (Cronbach’s Alpha) was calculated at 0.94. Research has suggested that the construct validity of the measure holds across age, different ethnicities, different genders and different adaptations of the SAS-A (Ingles et al., 2010).

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**The Self-Presentation on Facebook Questionnaire (SPFBQ).** The SPFBQ (Appendix E; Michikyan et al., 2014) is a 17-item scale that measures varying degrees of presentation of the self on Facebook. The questionnaire assesses the degree in which an individual expresses facets of the real (5 items), ideal (2 items), and false self (10 items) on Facebook with a 5-point Likert scale (1 strongly disagree, to 5 strongly agree). Given indivduals may use the three types of self-presentation whilst engaging with Instagram, and that the use of self-presentation have different relationships with feelings of self, we assess each separately (in line with the intention of the original scale). For the purpose of this study, a version of the scale that was adapted by Jackson and Luchner (2017) was used to measure self-presentation on Instagram. An example statement from the real self-presentation subscale is, ‘The way I present myself on (Instagram) is how I am in real life.’ The ideal self-presentation subscale consisted of statements like, ‘I post things on my (Instagram) to show aspects of who I want to be.’. The false self-subscale is split into three areas of false self-presentation: false self-deception, false self-exploration and false self-impress/compare. Within this study, these three false self-presentation subscales are combined to get an overall score for false self-presentation. An example from the false self-deception subscale is, ‘I post information about myself on my (Instagram) that is not true.’ A statement from the false self-exploration subscale is, ‘On (Instagram) I can try out many aspects of who I am much more than I can in real life.’ A statement from the false self-impress/compare subscale is, ‘I only show aspects of myself on (Instagram) that I know people would like.’

For this measure, the subscale score for each dimension will be used to look at each type of self-presentation tactic (real, false and ideal). Scores were calculated by summing the item scores within each of the three self-presentation subscales: degree of presentation of the real self (range 5-25), ideal self (range 2-10), and false self (range 10-50). A lower score indicates less frequent presentation of the real, ideal or false self. The internal consistency was also calculated for each of the three self-presentation dimensions; real self-presentation Cronbach’s Alpha was calculated at 0.69, ideal self-presentation Cronbach’s Alpha was calculated at 0.69 and, false self-presentation Cronbach’s Alpha was calculated at 0.83.

**Self-Photo Manipulation Scale.** The Self-Photo Manipulation Scale (Appendix C; McLean et al., 2015) is a 10-item scale that measures the extent to which adolescents manipulate or edit photos prior to sharing. This scale was amended to be specific about photo manipulation on Instagram. Participants were asked “Before you post on Instagram, do you make any image adjustments? How frequently do you perform the following activities before posting on Instagram?”. Participants respond to each item using a 5-point Likert scale (range 1-5), with the following judgements: never (0% of the time), rarely (25% of the time), sometimes (50% of the time), often (75% of the time), or always (100% of the time). Example items are ‘edit or use apps to smooth skin’ and ‘make yourself look skinnier’. Total scores were calculated by summing the item scores (range from 10 to 50), where higher scores reflect more frequent image manipulation. Within this study the internal consistency (Cronbach’s Alpha) was calculated at 0.83.

**The Children’s Depression Inventory – Short (CDI-S).** The CDI-S (Appendix D; Kovacs, 1992) is a 20-item questionnaire, with 10 filler questions, that was designed to be used in children from 7-17 years of age. The CDI-S asks respondents to rate the severity of different symptoms of depression. Each symptom is presented as a series of three phrases, and the respondents are asked to select the phrase that best represents how they feel (e.g., ‘I am sad once in a while’, ‘I am sad many times’, ‘I am sad all the time’). Responses are scored with lower frequency of each depressive symptom being awarded a 1, moderate frequency a 2, and high frequency a 3. Item scores for the 10 symptoms are summed (range 10 – 30). Higher scores indicate more depressive symptomatology. The CDI-S has shown excellent psychometric properties and has been shown to have a good internal consistency (Sun & Wang, 2014; Cronbach’s alpha ≥ 0.80) in studies with schoolchildren (Caqueo-Urizar et al., 2014) and adolescents with fibromyalgia (de la Vega et al., 2016; Libby & Glenwick, 2010). Within this study the internal consistency (Cronbach’s Alpha) was calculated at 0.87.

**The Narcissism Scale for Children (NS-C).** The NS-C (Appendix G; Derry et al., 2018) is a 15-item scale, adapted from the (adult) Narcissism Scale. The scale is developed for children from the ages of 8-17 years. Whilst personality-based diagnoses are not appropriate before the age of 18 years, this scale includes questions about personality traits related to narcissism, rather than diagnosable narcissism. This scale assesses grandiose narcissism and vulnerable narcissism. This scale uses items that closely mirror items from the Narcissism Scale but have been adapted to be more developmentally appropriate for children and adolescents (e.g., ‘I have always known I am more special than most kids’ instead of ‘I have always known that I am gifted’). Items are scored on a 4-point Likert scale (1= Not at all like me; 2 = Not very like me; 3 = A little like me; 4 = Really like me). Responses to the 15 scale items were summed to give a total narcissism score (range 15-60). Within this study the internal consistency (Cronbach’s Alpha) was calculated at 0.79.

### Pilot Study

 Prior to the study being made available to participants, four adults and three adolescents (one 15-year-old, and two 17-year-olds) piloted the Qualtrics questionnaire to ensure that the survey was working appropriately, was not too long and to gain qualitative feedback (regarding any improvements that could be made). As a result, practical amendments were made within Qualtrics for ease of use (e.g., ensuring numbers of Instagram followers could be recorded). Qualitative feedback indicated that in addition to checking the general survey format and length, that it was of interest (adult feedback: “Really interesting and important project, I am aware how much my daughter uses Instagram and I would be curious about the findings.”) and that it had benefits for the participants (adolescent feedback: “It made me think more about how I use social media, and I think that is really important.”).

### Analysis

Results were analysed using hierarchical regression to address the aforementioned hypotheses. The outcome variable is SA, depression is a control variable and there are nine predictor variables: the three self-presentation tactics (real self, false self and the ideal self), image manipulation, narcissism, and the four interactive predictors (narcissism and real self-presentation, narcissism and false self-presentation, narcissism and ideal self-presentation, and narcissism and image manipulation).

## Results

To explore hypotheses 1 to 5 a hierarchical multiple regression analysis was run with SA as the outcome variable. Results demonstrated whether self-presentation tactic use (real self, ideal self and false self), image manipulation, and narcissism explain a statistically significant amount of variance in SA, whilst controlling for depression. And, in the final block it is explored whether narcissism moderates the relationship between self-presentation use and image manipulation use with SA. In the regression model there were a total of ten predictors and three blocks outlined below:

* In block 1 depressive symptoms scores were entered to control for the comorbidity with SA.
* In block 2 image manipulation and self-presentation tactics were entered to understand if the addition of the four predictors (image manipulation and self-presentation tactics; real self, false self and ideal self) significantly improve the model.
* In the third block, narcissism and the interactive predictors with each self-presentation measure (narcissism and real self-presentation; narcissism and ideal self-presentation and; narcissism and false self-presentation) and image manipulation (narcissism and image manipulation) were entered to assess if the addition of these predictor variables significantly improved the model. These variables were entered into block three as research has identified that narcissism may moderate relationships between self-presentation (for exercise) and SA (Akehurst & Thatcher, 2010).

### Multiple Regression Analysis

Multiple regression assumptions were checked as outlined in Field (2005). One case was identified as a potential outlier and was investigated further. This case displayed an erratic pattern of scores that suggested potential invalidity and was more than three standard deviations from the residual. Consequently, this case was removed leaving a final sample of 248 participants. Although this can lead to a loss of power and increase the likelihood of a Type 2 error (Bakker & Wichert, 2011), the sample size already met the requirements of the power calculations, so this decision was considered necessary and justifiable. The values of the Durbin-Watson test fell close to 2, suggesting independent residuals. Observation of the regression plots suggested that assumptions of homoscedasticity, linearity, and normally distributed residuals were met sufficiently for the analysis to be considered reliable. Multicollinearity statistics were explored for each of the main predictors. All correlations between the main predictors fell below r < .90 (Table 4), all values of VIF for the main predictors fell below 3 (range: 1.00 – 1.92) and tolerance above 0.10. suggesting no significant problems with multicollinearity.

For a full summary of the regression analyses and the findings, please see Table 5.

The first block in the model, where depression was added as a predictor, was significant and explained 35.3% of the variance in SA. Depression was significantly independently associated with SA, with higher depression associated with greater levels of SA (B = 2.10).

In the second block, in which image manipulation on Instagram and self-presentation tactic use (real self, false self and ideal self) were added as predictors, there was a significant increase in the amount of variance explained. Adding image manipulation and self-presentation styles to Block 2 of the model explained an additional 2.6% of the variance in SA. The presentation of a false self made a significant contribution to explaining increased levels of SA. Image manipulation, ideal self-presentation and real self-presentation did not make significant contributions to explaining levels of SA. Therefore hypothesis 3 was supported, where (after controlling for depression) those presenting with false self-presentation tactics more often also experience higher levels of SA. However, hypothesis 1, 2 and 4 were not supported; whist controlling for depression, the degree of presenting their real self on Instagram and their ideal self on Instagram, as well as how often they use image manipulation on Instagram was not significantly associated with levels of SA.

In the third block of the model, in which narcissism and the interactive predictors with each self-presentation measure and image manipulation (narcissism and image manipulation; narcissism and real self-presentation; narcissism and ideal self-presentation and; narcissism and false self-presentation) were entered as predictors, there was not a significant increase in the amount of variance explained. Therefore, hypothesis 4 was not supported, narcissism did not appear to significantly moderate findings with impression management. The final accepted model is model 2 and is significantly better than chance, F(5,242) = 29.66, p<.001, and accounts for 37.9% of the variability in SA scores.

### Table 4.

### *Descriptive statistics: Measure means (SDs) and zero-order correlations*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Mean (SD) | 2 | 3 | 4 | 5 | 6 | 7 |
| 1. Social Anxiety | 55.75 (15.61) | .595\*\*\* | .182\*\* | -.273\*\*\* | .323\*\*\* | .043 | .081 |
| 2. Depression | 15.56 (4.43) |  | .229\*\*\* | -.355\*\*\* | .338\*\*\* | -.021 | .200\*\* |
| 3. Image Manipulation | 16.31 (6.36) |  |  | -.008 | .439\*\*\* | .299\*\*\* | .181\*\* |
| 4.Real self-presentation | 16.82 (3.60) |  |  |  | .071 | .403\*\*\* | .156\*\* |
| 5. False self-presentation | 25.13 (7.27) |  |  |  |  | .509\*\*\* | .447\*\*\* |
| 6. Ideal self-presentation | 6.03 (1.84) |  |  |  |  |  | .312\*\*\* |
| 7. Narcissism | 33.28 (7.21) |  |  |  |  |  |  |

\*p<.05, \*\*p<.01, \*\*\*p<.001

|  |  |
| --- | --- |
| **Table 5.*****Summary of regression analysis predicting levels of social anxiety*** |  |
|  | *Predictor Statistics* |  *Block Change Statistics* |  |
|  | *Standardised β* | *t* | *p* | *Significance* | *Total R2* | *Adjusted R2*  |
| Block 1 Depression | .595 | 11.60 | .001\*\*\* | F(1, 246) = 134.51, p<.001\*\*\* | .353 | .351 |
| Block 2 Depression  Image Manipulation  Real Self-Presentation False Self-Presentation Ideal Self-Presentation | .506-.008-.115.150.026 | 8.54-0.14-1.912.240.40 | .001\*\*\*.889.057.026\*.689 | F(4, 242) = 2.58, p=.038\* | .380 | .367 |
| Block 3 Depression  Image Manipulation  Real Self-Presentation False Self-Presentation Ideal Self-Presentation Narcissism Narc\*Image Manipulation Narc\*Real Self-Presentation Narc\*False Self-Presentation Narc\*Ideal Self-Presentation | .519-.011-.100.186.034-.099-.605-.009-.055.195 | 8.73-0.20-1.672.660.52-1.73-.1.73-0.02-0.120.41 | .001\*\*\*.842.098.008\*\*.601.085.085.980.901.680 | F(5, 237) = 1.28, p=.274 | .396 | .371 |

\*p<.05, \*\*p<.01, \*\*\*p<.001

##  Discussion

The aim of the current study was to explore whether one can explain individual differences in adolescents’ SA levels depending on their posting behaviour on Instagram and their narcissism levels. Consistent with previous research (Alpert et al., 1994; Schatzberg et al., 1998; Parker et al., 1997), results from the hierarchical regression demonstrated high levels of comorbidity between SA and depression. The main findings of the study demonstrated that presentation of a false self made a significant contribution to explaining increased levels of SA. This was consistent with the hypothesis that, after controlling for depression, the more frequent use of false self-presentation tactics on Instagram is associated with higher levels of SA. Image manipulation, ideal self-presentation and real self-presentation did not make significant contributions to explaining levels of SA, these findings were not consistent with the hypotheses. Furthermore, narcissism did not appear to significantly moderate findings with impression management, which was not consistent with the hypothesis.

The current study demonstrated links between impression management behaviours online and SA. This finding is consistent with previous research conducted with children when exploring self-presentation use in children’s face-to-face social interactions (Banerjee & Watling, 2010). However, Banerjee and Watling (2010) focused on broader tactics (ingratiation, self-promotion, disclaimers and, excuses) to create and maintain impressions, rather than focusing on the presentation of representations of the real, ideal, and false selves to create impressions in others. Therefore, the findings from this study about online behaviour with adolescents are novel and in line with Michikyan and colleagues’ findings (2015) which was within an adult population and within the context of Facebook use.

The findings from the current study may build further the evidence base for models of SA where impression management (e.g., presenting the false self) may be a form of safety behaviour. It may be that those with higher levels of SA may present the false self more often but also that those who present the false self more often later have higher SA; both of these conclusions would support that the presentation of a false self to manage the impressions that others form of the self is a safety behaviour (contributing to the cycle of SA). However, this study cannot make causal inferences due to the cross-sectional nature of the analyses, therefore one can hypothesise that false self-presentation could be a safety behaviour but we cannot assume that this is the case. The self-presentational model of SA suggests that SA arises when people are motivated to make a preferred impression on real or imagined audiences but doubt they will do so, and they perceive or imagine unsatisfactory evaluative reactions from subjectively important audiences (Schlenker & Leary, 1982). Therefore, when adolescents are using Instagram they may use false self-presentation tactics as a safety behavior, in order to manage feelings of SA and to attempt to create a desired impression on others (Michikyan et al., 2015). However, using false self-presentation tactics may maintain SA, as online social success may be attributed to the use of the safety behaviour (i.e., the false self-presentation tactic). More work is needed to assess pathways within this model.

Interestingly, findings within the current study demonstrated that there was no significant link between use of real self-presentation and ideal self-presentation tactics and SA. This finding may differ to previous findings as the ways individuals use Instagram may differ from other SNS sites (particularly Facebook), where there is likely more text disclosure and space to express thoughts and feelings (Johnson & Knobloch-Westwerwick, 2016). This may lead to questions about whether, due to the nature of Instagram being an image-based site, further research may focus on body image perceptions rather than SA. Furthermore, findings from the current study demonstrated that image manipulation was not a significant predictor of SA. Importantly, the image manipulation measure used within this study did not assess the motivation behind the use of image manipulation. It could be that individuals manipulate images to remove imperfections, but this may be done irrespective of SA levels. Therefore, image manipulation may not be done with a self-presentation motive in mind, or with thoughts around social evaluation. Further research may be required to establish the motivation behind image manipulation (e.g., is this simply to improve picture quality, rather than for impression management) and how this motive may relate to levels of SA. Despite this, findings remain important in considering how online behaviour may relate to SA; for example, whether false self-presentation tactics are used as a safety behavior to manage feelings of SA and to attempt to create a perceived preferred impression in others (Michikyan et al., 2015).

Furthermore, findings within the current study demonstrated that narcissism did not appear to be an independent predictor of SA nor a moderator of the relationship between impression management and SA, after accounting for the other variables. This finding is inconsistent with previous research that has been conducted with adult participants (Akehurst & Thatcher, 2010). Previous research has consistently distinguished two dimensions of narcissism: grandiose narcissism and vulnerable narcissism (Derry et al., 2018). It could be that the full-scale score of the NS-C was used within the current study, rather than subscale scores detailing both expressions of narcissism: grandiose and vulnerable. Previous research has demonstrated that within an adolescent sample vulnerable narcissism is positively associated with preference for online social interactions (POSI) which indirectly predicted problems for social self-efficacy and social anxiety; whereas in contrast, grandiose narcissism was only directly and positively associated with social self-efficacy, and negatively with social anxiety (Ksinan & Vazsonyi, 2016). Furthermore, within an adolescent sample it is possible that accounting for the motives with self-presentation tactics is more important when thinking about links with SA. Narcissism may be linked more closely to use and number of posts, which could create more exposure on the internet. Given that we know that there tends to be a high degree of SNS use amongst adolescents, it could be less about the role of personality, and more about the motives for posting.

### Summary of Findings

In summary, the findings of this research suggested that whilst controlling for depression, adolescents who use false self-presentation tactics more often on Instagram were significantly more likely to experience higher levels of SA. However, the use of real self or ideal self-presentation tactics were not significantly associated with higher or lower levels of SA. Additionally, more frequent use of image manipulation was not significantly associated with higher or lower levels of SA. And the relationship between impression management and SA was not significantly moderated by levels of narcissism.

### Limitations

 The current study has a number of limitations which limit the conclusions that can be drawn. The cross-sectional design means that the direction of causality between the predictor variables and SA cannot be determined. For example, from the current results it is difficult to determine whether self-presentation, particularly false self-presentation tactics, lead to increased feelings of SA or whether increased feelings of SA lead someone to alter the aspects of themselves that they present. More specifically, one may suggest that those with higher levels of SA may present the false self more often (which would be in line with the use of safety behaviours). However, this study cannot make causal inferences due to the cross-sectional nature of the analyses; therefore, one can hypothesise that false self-presentation could be a safety behaviour but we cannot assume that this is the case. Future, longitudinal research could explore the factors that contribute to self-presentation tactics and SA over time, which would allow understanding of which factors influence SA longitudinally, and allow for causal assumptions to be drawn. Furthermore, self-report data was used within this study, which may limit the generalisability of the findings as responses remain subjective. Personality and SA are often measured using self-report data. Given that the use of social media is available to check, observable measures could have been used, however it is only the individual who could confirm if images are a presentation of the true, ideal, or false self. Given that feelings of SA and a sense of whether one presents the true, ideal, or false self are both something that are assessed internally, one would expect that if the self-reports were answered honestly that findings would be generalisable; however one of the main challenges with asking for subjective judgements it that they may be open to confirmation bias, or untruthful responses to keep one in a positive light.

 Additionally, presentation of the false self has three different potential motives; false self-deception, false self-exploration and false self-impress/compare (Michikyan, et al., 2014). Within the current study these three motives were combined to create a total score for the false self-presentation tactics subscale. It could be important to understand if one of these motives was more important than the others in driving the use of false self-presentation tactics. Therefore, future research may need to focus on exploring the three different motives of false self-presentation tactics.

 Most of the measures used within this study were well-known and had good reliability and validity; however, the internal consistency of the ideal self-presentation on Instagram measure and of the real self-presentation on Instagram measure were questionable, which may be due to the smaller number of questions (Pallant, 2011). Previous research has suggested that Cronbach alpha values are quite sensitive to the number of items in a scale, with it being common for short scales (e.g., scales with fewer than ten items) to have relatively low Cronbach alpha values (i.e., five; Pallant, 2011). Therefore, it may be helpful to consider other measures that explore these types of self-presentation tactics further. Furthermore, The Self-Presentation on Facebook Questionnaire, was adapted to measure self-presentation on Instagram. In this study a version of the scale that was adapted by Jackson and Luchner (2017) was used, which could have impacted on the construct validity of this measure; although, given that the reliability of our scale and the original are comparable this is unlikely. It is possible that factors relating to self-presentation tactics on Facebook and Instagram differ somewhat due to the differences in how the SNS’s are used more generally.

In terms of the sample used, a non-clinical sample was chosen as there are likely to be high levels of undiagnosed SA in non-clinical populations (Stein & Stein, 2008). However, it is possible that different results may have been found had these associations been investigated in a clinical sample of individuals diagnosed with SAD. Based on previous research one may have expected to find increased use of impression management tactics within a clinical sample of individuals diagnosed with SAD (Michikyan et al., 2015). Furthermore, the sample was comprised of adolescents, who were mostly of white ethnicity and female. Therefore, this raises issues about the generalisability of the findings.

Furthermore, due to the social distancing restrictions relating to the Covid-19 pandemic, people (particularly adolescents) were using social media more frequently to keep in touch with friends and family, this may have meant that individuals were using social media in different ways compared to how it was used pre-pandemic. Additionally, due to the Covid-19 pandemic, the initial plan for recruiting by going into schools was unable to go ahead; therefore, the majority of participants were recruited by schools sending out information about the study to parents. This meant that researchers relied on parents to attend to the information, which may have meant that a less representative sample of participants were recruited.

### Implications

In spite of the limitations,this research demonstrates important findings in how online behaviours may relate to SA. More specifically, findings have suggested that false self-presentation tactic use may be associated with higher levels of SA. It may be important to consider the function behind using false self-presentation tactics online and whether impression management is used as a safety behaviour.

These findings may also have implications for the treatment of those with SA. Often online behaviours are not considered in clinical practice as being safety behaviours, and there is research that indicates that online SNS interactions may be beneficial due to increased levels of comfort and time to decide on how to present the self online (Leung, 2011). However, research has now demonstrated that individuals higher in SA may be presenting the false self more often. Therefore, this may be a safety behaviour, and a factor that maintains SA. Social interactions are increasingly taking place on social media (Baker & Jeske, 2015; Eraslan-Capan, 2015); thus, clinicians working with clients who are experiencing SA may wish to consider Instagram interactions in therapy. Since negative cognitions, safety behaviours and impression management are thought to maintain SA (Clark, 2001; Clark & Wells, 1995), consideration could be given to how these variables may also interact to maintain SA during online communication, and how these behaviours may need to be adapted when attempting to manage symptoms of SA. For example, if false self-presentation tactics are used as a safety behaviour, clinicians may need to incorporate reducing the use of self-presentation tactics into exposure hierarchies and behavioural experiments (Erwin et al., 2004).

Additionally, for those with SA who feel comfortable communicating on SNS sites, they may feel more comfortable reducing the use of self-presentation tactics online initially, before exposing themselves to face-to-face interactions. However, therapists should continue to ensure regular exposure to face-to-face interactions to provide corrective learning experiences and reduce avoidance (Lee & Stapinski, 2012).

Furthermore, given the current context and how our social world has adapted since March 2020 due to the Covid-19 pandemic and the associated social restrictions, there may have been shifts in how individuals have used SNS’s. Particularly, given that face-to-face contact was limited, and individuals were connecting more frequently online via SNS sites. Additionally, adolescents were having to engage with education online, requiring them to spend increased hours using computers or smart phones. It is likely that this had an impact on how they were using SNS sites, including Instagram, and the information that they chose to appraise. Furthermore, for individuals experiencing higher levels of SA, this may have created more opportunity for avoidance of face-to-face social situations, which may have reduced perceived opportunities for negative evaluation.

### Conclusion

In conclusion, the findings of the current research suggested that increased use of false self-presentation tactics are associated with higher levels of SA. However, there was no significant interaction between real self-presentation tactics and SA, ideal self-presentation tactics and SA, and Instagram image manipulation and SA. Since social interactions are increasingly taking place on social media, clinicians may wish to consider Instagram interactions and impression management tactics when treating SA in therapy. There were a number of limitations to this research, for example the cross-sectional design and non-representative sample. Furthermore, longitudinal research is required before firm conclusions can be drawn about whether image manipulation and impression management tactics on Instagram are associated with adolescent SA levels.

# Integration, Impact and Dissemination

### Integration

The overall aim of this thesis was to explore the relationships between the use of social networking sites (SNS) and feelings of social anxiety (SA) in adolescents. The systematic review explored the potential benefits and risks of using SNS sites and the association with adolescent SA levels, whilst the empirical study explored whether the use of image manipulation and self-presentation tactics (whether individuals present the real, ideal or false self) on Instagram can predict individual differences in adolescent SA levels, and if levels of narcissism moderates these relationships.

The close links between the systematic review and the empirical project allowed findings to give an overview of the risks and benefits of SNS use and the association with adolescent levels of SA. Whilst the majority of the findings from the systematic review demonstrated risks related to how SNS is used (e.g., that problematic SNS use and passive SNS use is associated with higher levels of SA in adolescents), findings from the systematic review also demonstrated that there are some benefits to using SNS for building and maintaining social networks. The empirical project capitalises on this desire to build and maintain social networks and to have online relationships where individuals present themselves in a way that they would like to be perceived (through the use of impression management techniques). Whilst building social capital is beneficial, the empirical project demonstrated that there may also be a potential cost as results have demonstrated that utilising false self-presentation tactics more frequently is associated with higher levels of SA. This may suggest that false self-presentation tactics are used as safety behaviours to manage potential feelings of SA and could also suggest that the use of safety behaviours maintain symptoms of SA. This is likely to link in with the different mechanisms into the motivation to use self-presentation tactics to create positive impressions on others. Whilst we are unable to comment on causality, the findings here are particularly relevant when considering SA, as we know that socially anxious individuals attach significant importance to being socially evaluated by others, yet they assume that any evaluation will be inherently negative (Rapee & Heimberg, 1997). The motivation behind self-presentation tactics online and the association with feelings of SA in adolescents is something that needs to be researched further. Additionally, from the systematic review findings, it became apparent that the benefits of SNS use and the associations with adolescent levels of SA remain under researched.

Furthermore, whilst an image manipulation measure was included within the empirical project, image manipulation did not appear to predict SA when included with a measure of self-presentation tactics. Whilst previous research has demonstrated some of the different mechanisms into the motivation to use self-presentation tactics (Michikyan et al., 2014), the motivation to use image manipulation remains unknown and was not asked or established in the image manipulation measure that was used within the empirical project. It would be important to understand motivation for the use of image manipulation (if this is not for self-presentation purposes). This may lead one to question whether image manipulation is used to simply improve picture quality, rather than as an attempt to create preferred impressions in others. As the systematic review has shown some findings that suggest that links between SNS and SA may be more about body image, further research could explore the impact for other disorders such as eating disorders amongst adolescence. For example, Fardouly et al. (2020) found that engaging more in appearance comparisons with others and perceiving others to be more attractive than oneself on social media were each unique predictors of poorer body satisfaction, more eating pathology, and higher SA amongst adolescent males and females. This highlights the importance of appearance comparisons as a potential driving mechanism through which social media could be harmful to adolescents’ mental health. SA is about the concern of not being evaluated positively, thus this may be separate from body image concerns, and more about how the self is perceived by others. Furthermore, as Instagram is an image based SNS, it could be helpful for future research to focus on the relationship between Instagram use and body-image.

Having never conducted a systematic review previously, I found this a challenging component of the thesis. However, I am pleased to have had the opportunity to develop my skills in this area, and I feel that should I complete a systematic review again in the future that my confidence levels have increased. Whilst I am aware that the systematic review may have contained some limitations that affected the conclusions that could be drawn including: the literature search only including published journal articles or peer-reviewed empirical articles which may have been affected by publication bias; and for practicality reasons, a second reviewer reviewed 20% of all identified articles to assess the validity of screening, however best practice is considered to having at least two reviewers involved in this process (Petticrew & Gilbody, 2004). Furthermore, it is possible that there was still an element of selection bias, perhaps meaning that some relevant studies were missed or not included, which may have impacted on the conclusions that could be drawn from existing work. Despite this, the process of synthesising and reviewing research in the area of the systematic review was useful in identifying gaps in research, and areas for future research. Thinking back to when I designed my empirical project, SA and impression management was a relatively new area to me, and I found it difficult to develop a specific research question to explore. On reflection, had I have developed my empirical question after having explored my systematic review question, I feel that this would have opened avenues for areas to investigate in the empirical project.

One outcome of the systematic review demonstrated that further longitudinal research is required in this area. However, I decided to complete a cross-sectional study due to limited research previously looking into 13-18 year old’s presentation of the self on Instagram. Furthermore, as data was collected during the Covid-19 pandemic, access to participants was more challenging, making the opportunity for a longitudinal research project more difficult. I would be interested to see the findings of a research project with a similar aim, carried out longitudinally.

When considering this thesis topic within the broader context, it seemed to integrate well within recent changing attitudes to SNS use, and the increase in SA and SNS use amongst adolescents. Furthermore, I conducted my thesis during the Covid-19 Pandemic, where individuals were encouraged to connect with friends and family online due to social distancing restrictions, and adolescents spent a lot of the time engaging with learning online. Research has demonstrated that 32% of adolescents were spending more than 4 hours per day online prior to the Covid-19 Pandemic, whilst 62% of adolescents were spending more than 4 hours online per day since the Covid-19 Pandemic (Statista, 2020). I am curious as to how this may have adapted how adolescents were using social media, and their motivation to use SNS sites. I am curious whether the findings in the empirical project would remain consistent had we have been in a different societal context regarding the Covid-19 Pandemic.

### Impact

**Personal impact.** Whilst writing this thesis I noticed an impact on my own social media use. I was more mindful of the risks and benefits of SNS use which led me to consider my own use and what some of the risks might be. I was also more mindful of my motivation to use SNS sites, and whether this involved the use of any image manipulation and impression management tactics. I became more aware of the information that I sought out and what I chose to appraise. Given that I became more mindful of how I was using SNS sites at a time where face-to-face social contact was somewhat restricted due to the Covid-19 Pandemic I was also aware of how increased contact via SNS sites affected my own emotional wellbeing; and, I noticed how sometimes it was beneficial for me to take a step back from social media use and to engage in outdoor activities.

**Professional impact.** There was also an impact of conducting this thesis on my clinical practice. I worked with some clients during the course of my clinical training with whom I actively made an effort to consider the benefits and risks of their social media use. One client identified a perceived need to use impression management tactics and to present a false version of herself online. Whilst I am aware that during this thesis I focused on the use of self-presentation tactics, rather than development of the self, I was able to incorporate SNS use and false self-presentation tactics into our exposure hierarchy when focusing on managing symptoms of SA. Exploring SNS use within therapy was not something that I would have necessarily considered had I not been completing this thesis work and had I not been aware of evidence regarding impression management motivation of individuals with SA. Since social media use has become almost ubiquitous amongst adolescents, and within society as a whole, I will continue to consider social media use and the impact of this on individuals.

I have also been aware of an impact of completing this thesis on my practice as a researcher. At the start of my training, I hoped to complete a research project that would allow me to develop the necessary confidence and competence to function autonomously as a researcher in future practice. Prior to clinical training, whilst I had completed a BSc and an MSc, I had fairly limited experience with conducting research and I had never conducted a systematic review. I therefore found the process of designing and undertaking a research project and a systematic review somewhat challenging. I found access to research supervision invaluable and necessary throughout, alongside access to written guidance, books and support from peers. I feel that my confidence in reviewing, critically appraising, designing and conducting research has grown throughout this process.

Whilst my long-term plan is not to work within a specific research setting, I feel that completing this thesis has helped me to develop my skills and my confidence in being able to critically appraise and review existing research evidence; I would feel confident being involved in research in the future, alongside my clinical practice. Having worked in the NHS for several years, I am aware that it can be a challenge for clinical psychologists to maintain their research practice due to service pressures. However, the scientist-practitioner model suggests a need for clinical psychologists to be involved in both research and clinical practice post qualification (Overholser, 2015). I would like to continue to remain aware of ongoing research within my local trust, and small-scale research and audits within my local service (e.g., the collection of routine outcomes). I also endeavor to remain aware of current research that may be able to inform my practice, which is supported by the scientist-practitioner model (Overholser, 2015).

**Impact on study participants.** Individuals (both adults and adolescents) were used at the initial stages of the design of the empirical project. Including individuals at this stage of the process felt important to ensure relatability amongst adolescents during participation. Individuals who were involved in the process of piloting the survey were able to provide qualitative reflections, which included reflections on the relevance and importance of this project. I received feedback from adults (e.g., *“Really interesting and important project, I am aware how much my daughter uses Instagram and I would be curious about the findings.”*) and adolescents (e.g., *“It made me think more about how I use social media, and I think that is really important.”*) which reflected on the value of this project work.

After having completed the study, three participants contacted me directly to comment on how interested they were in the research and how it had impacted on them. All three expressed that they had noticed how SNS use had impacted on their mood and acknowledged how this study had encouraged them to think about their own and other people’s SNS use. Comments included:

* “*Very interesting survey. I would love to see the results to consider how Instagram use affects the way we think and feel.*”
* *“This survey was really interesting and very current. I am thinking about whether to take a step back from Instagram because of how much we have used it, especially during the pandemic*”
* “*I don’t think we consider how we use social media enough. It was really helpful to think about some of these things during the questionnaire*”

Therefore, it appears as though for some participants there was a personal impact of completing the research, in that it made them think more about their own and other people’s social media use, particularly in the current context.

**Broader clinical impact.** As the prevalence of SA is increasing, and SNS use is almost ubiquitous, particularly amongst adolescents, clinicians may wish to consider incorporating both benefits and risks of SNS use into their work with individuals who experience SA. Using SNS discussions in therapy, may facilitate the benefits to be optimised and the risks to be reduced which will likely be beneficial for individuals experiencing SA. For example, one may encourage individuals to use SNS for social connection. Particularly since some individuals with SA may feel more comfortable interacting online, therefore online interactions could be considered in the development of exposure hierarchies (Erwin et al., 2004).

It would, however, also be important for clinicians to remain aware of the potential risks of SNS use and the association with SA. Clinicians should remain aware of how SNS use may be associated with the use of safety behaviours, through which face-to-face interactions remain avoided, thus maintaining symptoms of SA (Lee & Stapinski, 2012). Additionally, the results from the empirical project support this finding in suggesting that impression management tactics may be used as a safety behaviour during online interactions. The ultimate aim for clinicians would be to reduce feelings of SA in the long term; therefore, individuals may need to be supported in reducing the use of impression management tactics online and in increasing face-to-face engagement.

It may also be important for clinicians to consider social media use with clients with other mental health diagnoses. There are likely to be risks and benefits of SNS use for SNS users who do not have significant SA (Shakya & Christakis, 2017). As we know that the use of image-based SNS sites is increasing, particularly amongst the adolescent population, it may be important to consider the risks and benefits of image based sites on presentations that focus specifically on one’s image.

**Impact on future research.** Both the systematic review and the empirical project have contributed to advancing research in this area. The systematic review was the first in the area to review the potential benefits and risks of using SNS sites and the association with adolescent SA levels. The empirical project was the first in the area to explore whether the use of image manipulation and the use of online self-presentation tactics (whether individuals present the real, ideal or false self) on Instagram can predict individual differences in adolescent SA levels, and if narcissism moderates these relationships. The majority of previous research into the risks and benefits of SNS use and associations with SA has explored this within an adult population and within Facebook.

The systematic review and the empirical project also identified areas for future research in relation to SNS use and SA. The majority of research in this area has been cross-sectional, which makes it difficult to determine causality between variables. There is a need for further longitudinal research exploring risks and benefits of SNS use and the association with levels of SA in an adolescent population. Furthermore, there is a need for research exploring these associations in clinical samples of individuals diagnosed with SAD. There is a need for further research to be conducted with an adolescent population as much previous research has been considered amongst adults. Additionally, much previous research exploring SNS use and associations with SA has focused on Facebook. However, as we know image-based sites are becoming more popular, particularly amongst adolescents, further research is needed in this area. Considering image-based SNS sites are used differently to sites which involve more text disclosure, it may be that future research focuses on associations with body-image perceptions. The motivation behind the use of image manipulation also currently remains unknown, and therefore future research may establish whether the use of image manipulation on image based SNS sites relates to a desire to create positive impressions in others (i.e., impression management tactics) or whether it is more related to the systematic improvement of images. This may have an impact on whether image manipulation is related to how individuals think and feel about themselves.

Additionally, The National Institute for Health and Care Excellence guidelines (NICE; 2013), currently do not recommend internet-delivered CBT treatment for SAD, however they have previously recommended internet-delivered CBT for depression, panic and GAD (Kaltenthaler et al., 2006). Therefore, exploring the potential risks and benefits of online interactions more generally for those with SA may contribute to discussions around the benefits and risks of delivering CBT for SAD online.

### Dissemination

The empirical study was disseminated via a presentation to the three clinical psychology training cohorts at Royal Holloway. I also disseminated a summary of the results of the research to schools that participated, to be shared with parents and pupils. Participants were invited to give feedback on the results of the research and their feedback was invaluable in gaining new insights into how to interpret the findings, shaping some of the discussion points for the empirical article and considering potential areas for future research.

There is also a plan to submit both the systematic review and empirical study to a journal for publication. Most research in the area of SNS use and mental health tends to be published in journals related to technology use and behaviour, thus the systematic review and empirical study will be submitted to either the Computers and Human Behaviour Journal or the Cyber Psychology, Behaviours and Social Networking Journal. There is also a plan to write an overview of the findings for the Social Development Lab website that provides information to schools, teachers and parents about recent research.

### Summary and Final Conclusions

In conclusion, this thesis explored relationships between SNS use and feelings of SA in adolescents, and the systematic review and empirical project integrated well. The systematic review explored the potential benefits and risks of using SNS sites and the association with adolescent SA levels, whilst the empirical study explored whether image manipulation and self-presentation tactics (whether individuals represent the real, ideal or false self) on Instagram can predict individual differences in adolescent SA levels and if levels of narcissism moderates these relationships. The thesis topic seemed to integrate well with recent growth of SNS use amongst adolescents.

In terms of the impact of the thesis, there were impacts on myself both personally and professionally, in my work as a clinician and a researcher. There was also an impact of completing the research on some study participants, as it appeared to encourage them to consider their own social media use. This thesis may also have broader clinical and research impacts, in terms of encouraging clinicians to consider SNS use in their work with adolescent individuals with SA. Furthermore, it may also encourage researchers to consider areas where future research is required. Longitudinal research and research with individuals diagnosed with SAD is needed. Additionally, as we have seen an increase in individuals using image based SNS sites, further research may be required in considering the motivation for the use of image manipulation (e.g., is this related to systematically editing photographs to improve quality, or does this relate to impression management tactics to create positive impressions in others) and how image-based SNS use is associated with body-image perceptions.

The results of the research were disseminated to participants and to clinical psychology trainees at Royal Holloway. There is also a plan to submit the systematic review and empirical study to a journal for publication, and to write a piece for a psychology website. Since SNS use is so widespread in society, particularly amongst adolescents, it is important that clinicians are aware of the relationships between SNS use, impression management and SA.

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# Appendices

## Appendix A: Methodological quality assessment tool.

Adapted methodological quality assessment tool based on criteria for evaluating cross-sectional analytic studies from the Mixed Methods Appraisal Tool (Pluye et al., 2011) and ratings based on those used in the Effective Public Health Practice Project Quality Assessment Tool for Quantitative Studies (Thomas et al., 2004).

|  |  |
| --- | --- |
| **Methodological Quality Criteria** | **Rating** |
| **SELECTION BIAS***Are participants recruited in a way that minimises selection bias?**Consider whether the sample is representative of the population* | **Strong**: The selected individuals are very likely to be representative of the target population (e.g., consecutive or random sampling used) **and** there is greater than 80% participation. **Medium**: The selected individuals are at least somewhat likely to be representative of the target population **and** there is 60-79% participation. **Weak**: The selected individuals are not likely to be representative of the target population **or** there is less than 60% participation **or** selection is not described, and the level of participation is not described.  |
| **DATA COLLECTION METHODS***Are measurements appropriate (clear origin, or validity known, or standard instruments; and absence of contamination between groups when appropriate) regarding the exposure/intervention and outcomes?**Consider whether (a) the variables are clearly defined and accurately measured; (b) the measurements are justified and appropriate for answering the research question; and (c) the measurements reflect what they are supposed to measure.**For non-randomized controlled trials, the intervention is assigned by researchers, and so consider whether there was absence/presence of a contamination. E.g., the control group may be indirectly exposed to the intervention through family or community relationships.* | **Strong**: The data collection tools have been shown to be valid (e.g., clear origin, or validity known, or standard instrument) **and** reliable (Cronbach’s alpha reported at a .7 or above; Field, 2005)**Medium**: The data collection tools have been shown to be valid **and** the data collection tools have not been shown to be reliable **or** reliability is not described**Weak**: The data collection tools have not been shown to be valid **or** both reliability and validity are not described |
| **CONFOUNDERS***In the groups being compared (exposed vs. non-exposed; with intervention vs. without; cases vs. controls), are the participants comparable, or do researchers take into account (control for) the differences between these groups?**Consider whether (a) the most important factors are taken into**account in the analysis; (b) a table lists key demographic information comparing both groups, and there are no obvious dissimilarities between groups that may account for any differences in outcomes, or dissimilarities are taken into account in the analysis.**The following are examples of confounders: race, sex, marital status, age, SES, education, health status* | **Strong**: Most relevant confounders were controlled for (>80%) **or** there were no important differences between groups prior to the analysis. **Medium**: Some relevant confounders were controlled for (60-79%)**Weak**: Few relevant confounders were controlled for (<60%) **or** control of confounders was not described |
| **COMPLETE OUTCOME DATA***Are there complete outcome data (80% or above), and, when applicable, an acceptable response rate (60% or above), or an acceptable follow-up rate for cohort studies (depending on the duration of follow-up)?* | **Strong**: At least 80% of outcome data is complete and, if applicable, a response rate of 60% or above**Medium**: 60-79% of outcome data is complete**Weak**: Complete outcome data is less than 60% or complete outcome data/response rate is not described |

## Appendix B: Ethical Approval, Information Sheets, Consent Forms and Debrief.

**Result of your application to the Research Ethics Committee (application ID 2072)**

Ethics Application System <ethics@rhul.ac.uk

PI: Dawn Watling
Project title: Understanding the role of impression management (self-presentation style and image manipulation) on Instagram in predicting social anxiety in adolescents.

REC ProjectID: 2072

Your application has been approved by the Research Ethics Committee.
Please report any subsequent changes that affect the ethics of the project to the University Research Ethics Committee ethics@rhul.ac.uk

### Information for Parents

Relationships between how we think, feel, and use Instagram

My name is Harriet Norcott and I am a Trainee Clinical Psychologist at Royal Holloway, University of London. I am contacting you as we are about to start a research project which involves investigating how young people use Instagram and whether this is connected to how they think and feel. We are contacting you as we would like to invite your child to take part in this project. To help you understand more about what this would involve, I have outlined the key information below. Please read the following information carefully to find out more about our project and what we will be asking your child to do. You may contact the researcher (details below) if you have any questions before agreeing for your child to be invited to take part, or at any time after your child takes part.

**What is the purpose of this study?**

The use of social networking sites is on the rise. Much previous research has focused on the use of Facebook. However, we know that Instagram is becoming increasingly more popular with adolescents at a time that they are establishing friendships and gaining a sense of who they are. Therefore, the purpose of this project is to find out more about how young people are using Instagram and if this is related to how they think and feel.

**Does your child have to take part?**

No, your child may choose whether they would like to take part in the study or not. If your child does decide to take part in the study, they are not obliged to answer any questions that they do not want to answer and are free to quit the study at any time (by shutting their browser or by clicking the “withdraw” button at the bottom of each screen). No explanation will be needed if this is the case.  Note that if they do click on the “withdraw” button they will be prompted as to whether they are happy for us to keep their responses that they completed that far or if they would like us to delete their responses from our anonymous database.

**What will your child do if they take part?**

Your child will be asked to complete an online questionnaire. We will provide you with the link to this if and when you consent to your child taking part. This questionnaire will ask your child questions about how they are using Instagram and about how they think and feel in different social situations or more generally. This research involves approximately 15 minutes of your child’s time on one occasion. Your child will complete this questionnaire on a smart phone, tablet or computer. Your child will be informed of all aspects of the study, including that all responses will be used for research purposes only. Your child’s individual responses will not be shown to teachers, nor parents/guardians (including yourself). It is important to stress that the focus is on overall data as a whole, not on individual children and all data will be anonymous, meaning that we will not be able to identify individual children.

**Are there any disadvantages or risks to taking part?**

There are no identifiable risks or disadvantages for your child to take part in this study. This study has been approved by the Royal Holloway Research Ethics Committee.

**Are there any benefits to taking part and what will happen to the results?**

Importantly, through taking part your child will have an opportunity to think about how they use Instagram. Their anonymous data will be combined with other young peoples. We will be looking for trends in the data and the findings from this study will be written up and may be published in a peer review journal. Once our study is completed and we examine our data findings, we will provide schools with access to a summary of these findings.

Additionally, if your child does choose to take part, once they have completed the questionnaire they will have the opportunity to enter a prize draw for the chance to win one of seven £10 Amazon vouchers.

**What are the safeguarding procedures?**

This study has been reviewed and approved through the Royal Holloway Research ethical committee, and the Headteacher of your child’s school has offered their support of this project. We have requested that schools pass on this information to all parents with children in the age range of interest; through this method of recruitment we can ensure that parental consent was provided. All of our surveys are widely used and validated for children within this age group, however we acknowledge that with time to reflect on some issues children may have question. At the end of the survey, we provide a list of help lines in case any questions lead your child to become concerned.

**What will happen to my child’s data?**

All of the information and data collected from your child will be confidential and anonymous. We will not ask for their name or contact details.

Royal Holloway, University of London is the sponsor for this study and is based in the UK. We will be using information from your child in order to undertake this study and will act as the data controller for this study. This means that we are responsible for looking after your child’s information and using it properly. Any data provided during the completion of the study will be stored securely on password protected local servers.

Royal Holloway is designated as a public authority and in accordance with the Royal Holloway and Bedford New College Act 1985 and the Statutes which govern the College, we conduct research for the public benefit and in the public interest. Royal Holloway has put in place appropriate technical and organisational security measures to prevent personal data from being accidentally lost, used or accessed in any unauthorised way or altered or disclosed. Royal Holloway has also put in place procedures to deal with any suspected personal data security breach and will notify you and any applicable regulator of a suspected breach where legally required to do so.

To safeguard your child’s rights, we will use the minimum personally identifiable information possible that is linked to their data (i.e., age, ethnicity). The lead researcher will keep the anonymous data gathered from the study for 10 years after the study has finished. Qualified individuals, with an approved purpose (e.g., data quality and analyses checking) may be permitted to view the anonymised data file. If the study is published in a relevant peer-reviewed journal, the anonymised data may be made available to third parties to allow other researchers to evaluate the conclusions drawn from the data. The people who analyse the information will not be able to identify your child.

You can find out more about your rights under the GDPR and Data Protection Act 2018 by visiting https://www.royalholloway.ac.uk/about-us/more/governance-and-strategy/data-protection/ and if you wish to exercise your rights, please contact dataprotection@royalholloway.ac.uk.

Please keep this part of the sheet yourself for reference. Please feel free to ask any questions before you the consent form below. You may wish to print a copy of the consent form, or may contact the researchers for a word version of this information. This study has been approved by the Royal Holloway Research Ethics Committee.

**Who can I contact about the study?**

If you have any questions about the study, please contact us using the details below:

|  |  |
| --- | --- |
| Harriet Norcott | Harriet.Norcott.2018@live.rhul.ac.uk |

**The supervisor for this teaching project is Dawn Watling:** dawn.watling@rhul.ac.uk

**I would like to see a version of what my child would be responding to.**

**We totally understand this desire. It is important, if you consent to your child participating, that you do not look over your child’s shoulder as they complete the survey. In our experience, when children are observed responding to surveys they try to respond in a way that they believe the perceiver my want them to, rather than their true thoughts and feelings. If you would like to see the types of questions your child will be responding to, please contact the researcher directly.**

**I am happy for my child to be involved in this study. What next?**

Please click the link here <https://tinyurl.com/rhulconsenthn> This will take you to a screen online where you may provide your consent.

Once you provide your consent you will be shown an anonymous id code and a link to our survey. Your child will require this code in order to complete the survey. We have done this to ensure that children have parental consent (so that a child does not pass the survey to another child who does not have consent). We will only be able to use a child’s data where their code matches that of a parent who has provided consent.

In addition to providing consent, it would be helpful to have a bit of information from you so that we may understand the diversity within our sample and how we may generalise our findings. Specifically, we request information on ethnicity and household income.

### Information for Participants

Relationships between how we think, feel, and use Instagram

You are invited to take part in a research study as part of my degree at Royal Holloway, University of London. Before you agree to take part, please read the following information carefully and let me know if you have any questions.

**What is the purpose of this study?**

The use of social networking sites is on the rise. Much previous research has focused on the use of Facebook. However, we know that Instagram is becoming increasingly more popular with young people so we are interested in finding out more about how people are using Instagram and if this is related to how one thinks and feels.

**Do I have to take part?**

No. You may choose whether you would like to participate or not. If you do choose to take part, you are not obliged to answer any questions that you do not want to answer; you may skip any question and move to the next question. You are also free to quit the study at any time (by shutting your browser or by clicking on the “withdraw” button at the bottom of each screen). No explanation will be needed if this is the case. Note that if you do click on the “withdraw” button you will be prompted as to whether you are happy for us to keep your responses that you completed that far or if you would like us to delete your responses from our anonymous database. We really do hope that you will take part, as we are interested in gaining your views.

**What would taking part involve?**

If you do decide to take part, you will fill in a set of five short questionnaires on a phone, tablet or computer. The survey should take around 15 minutes to complete.

**Are there any disadvantages or risks to taking part?**

There are no identifiable risks or disadvantages for you to take part in this study. This study has been approved following Royal Holloway Research Ethics Committee procedures.

**Are there any benefits to taking part and what will happen to the results?**

Importantly, through taking part you will have an opportunity to think about how you use Instagram. Your anonymous data will be combined with other young peoples. We will be looking for trends in the data and the findings from this study will be written up and may be published in a peer review journal.

**Will my information remain confidential?**

All of the information and data collected from you will be confidential and anonymous. We will not ask for your name or your contact details. Therefore, we will also not be providing information on individual responses to teacher, parents or guardians.

**Who can I contact about the study?**

If you have any questions about the study, please contact us using the details below:

|  |  |
| --- | --- |
| Harriet Norcott | Harriet.Norcott.2018@live.rhul.ac.uk |

**The supervisor for this teaching project is Dawn Watling:** dawn.watling@rhul.ac.uk

**If you are happy to participate, please complete the consent form.Consent form**

Relationships between how we think, feel, and use Instagram

**You have been asked to participate in a study exploring Instagram use, impression management and feelings of social anxiety which is being carried out by Harriet Norcott.**

**Have you:**

|  |  |  |
| --- | --- | --- |
| **Read the information provided above about the study?** | **Yes** | **No** |
| **Understood that the data you provide will be anonymous?** | **Yes** | **No** |
| **Understood that you may skip questions if you do not want to answer them?** | **Yes** | **No** |
| **Understood that you're free to withdraw from the study at any time, without giving a reason?** | **Yes** | **No** |
| **Understood that you're free to withdraw from the study at any time without it affecting your education (if applicable)?** | **Yes** | **No** |
| **Do you agree to take part in the study?** | **Yes** | **No** |

**NB: Consent will be obtained online before participants begin the survey. Agreeing to take part (clicking yes to the final question) will be taken as consent.**

### DEBRIEF SHEET

Thank you for participating in this study. I designed and ran this study as part of my clinical psychology doctorate course. Your contribution is vital in furthering research and contributing to improving knowledge and understanding of the relationship between how young people use Instagram, and importantly how use may differ depending on what people are thinking (if they wish to manage impressions others may form of the self or not) and how they feel in social situations.

Past research has shown that some individuals prefer interacting on social media because they are shy in face-to-face situations, but others prefer it because it allows them to form new connections (“friends”, “followers”) and to strengthen existing relationships. We see that some people are more likely than others to react to posts and to comment on posts, as well as to post their own images and status updates, but others are less like to take part in these activities. Past research indicates that personality and our feelings when in social situations may be related to how we use social media. In addition to this, research has shown that young peoples’ motivations for using social media will impact how they use it. Importantly, much of this work has taken place looking at Facebook use. With Instagram being one of the fastest growing apps in popularity within your age group, we wanted to understand how all of these variables were related.

You have now completed all the aspects of this experiment. The data collected here from you and others will now be used to understand how young people are using Instagram and how different patterns of use may be explain young peoples’ thoughts and feelings in social situations. To really understand this we will consider personality, mood, and the types of information young people post.

Taking part in this study posed no risks or disadvantages to you. However, if you do feel that any questions have made you reflect on your mood and/or your internet behaviour, and you believe that you may be experiencing low mood or anxiety, or that your internet behaviour may be interfering with your daily life you should contact your GP or you can contact the Samaritans who are a confidential listening service by calling 116 123.

The data that you provided for this study will be kept anonymous and confidential at all times. If you have any questions about this study, you should first contact the researchers who ran the study that you participated in.

If you have any further questions, please contact the researcher using the details below.

Once again, thank you for your participation in this research.

|  |  |
| --- | --- |
| Harriet Norcott | Harriet.norcott.2018@live.rhul.ac.uk |

If you have any further questions about this study, please contact Professor Dawn Watling, my supervisor: dawn.watling@rhul.ac.uk

Many thanks for participating in this study and contributing to my research project.

## Appendix C: Self-Photo Manipulation Scale

Self-Photo Manipulation Scale (McLean et al., 2015)

Instructions: For photos of yourself that you post online or share via mobile, how often do you do the following to make the photos look better

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Never** | **Rarely** | **Sometimes** | **Often** | **Always** |
| Get rid of red eye | 1 | 2 | 3 | 4 | 5 |
| Make yourself look larger | 1 | 2 | 3 | 4 | 5 |
| Highlight facial features, e.g., cheekbones or eye colour/brightness | 1 | 2 | 3 | 4 | 5 |
| Use a filter to change the overall look of the photo, e.g., making it black and white, or blurring and smoothing images | 1 | 2 | 3 | 4 | 5 |
| Make yourself look skinnier | 1 | 2 | 3 | 4 | 5 |
| Adjusting the light/darkness of the photo | 1 | 2 | 3 | 4 | 5 |
| Edit to hide blemishes like pimples | 1 | 2 | 3 | 4 | 5 |
| Whiten your teeth | 1 | 2 | 3 | 4 | 5 |
| Make specific parts of your body look larger or look smaller | 1 | 2 | 3 | 4 | 5 |
| Edit or use apps to smooth skin | 1 | 2 | 3 | 4 | 5 |

## Appendix D: Children’s Depression Inventory - Short

Children’s Depression Inventory—Short (Kovacs, 1992)

Instructions:

In this section you will see three sentences. Each sentence will be read aloud to you. After you have listened to the three sentences we want you to decide which sentence is most true for you. Then click on that sentence.

There are no right or wrong answers, so just choose the sentence which is most true for you. Now click on the arrow to try an example.

Example:

Which sentence is most true for you?

I read books all the time.

I read books once in a while

I never read books.

1. Which sentence is most true of you?

I am sad once in a while.

I am sad many times.

I am sad all the time.

2. Which sentence is most true of you?

I do not like painting.

I like painting a bit.

I like painting a lot.

3. Which sentence is most true of you?

Nothing will ever work out for me.

I am not sure if things will work out for me.

Things will work out for me OK.

4. Which sentence is most true of you?

I listen to music many times.

I listen to music once in a while.

I never listen to music.

5. Which sentence is most true of you?

I do most things OK.

I do many things wrong.

I do everything wrong.

6. Which sentence is most true of you?

I do not like football.

I like football a bit.

I like football a lot.

7. Which sentence is most true of you?

I do not like myself at all.

I do not like myself.

I like myself.

8. Which sentence is most true of you?

I cycle a lot.

I cycle a bit.

I never cycle.

9. Which sentence is most true of you?

I feel like crying every day.

I feel like crying many days.

I feel like crying once in a while.

10. Which sentence is most true of you?

I never play computer games.

I play computer games once in a while.

I play computer games many times.

11. Which sentence is most true of you?

Things bother me all the time.

Things bother me many times.

Things bother me once in a while.

12. Which sentence is most true of you?

I do not like swimming.

I like swimming a bit.

I like swimming a lot.

13. Which sentence is most true of you?

I look OK.

There are some bad things about my looks.

I do not like the way I look at all.

14. Which sentence is most true of you?

I listen to the radio many times.

I listen to the radio once in a while.

I never listen to the radio.

15. Which sentence is most true of you?

I do not feel alone.

I feel alone many times.

I feel alone all the time.

16. Which sentence is most true of you?

I like chocolate a lot.

I like chocolate a bit.

I do not like chocolate.

17. Which sentence is most true of you?

I have plenty of friends.

I have some friends but I wish I had more.

I do not have any friends.

18. Which sentence is most true of you?

I run a lot.

I run a bit.

I never run.

19. Which sentence is most true of you?

Nobody really loves me.

I am not sure if anybody loves me.

I am sure that somebody loves me.

20. Which sentence is most true of you?

I watch TV many times.

I watch TV once in a while.

I never watch TV.

## Appendix E: Self-Presentation on Facebook Questionnaire adapted for Instagram

Self-Presentation on Facebook Questionnaire (SPFBQ) adapted for Instagram (Michikyan, Subrahmanyam, & Dennis, 2014)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Strongly Disagree** | **Disagree** | **Neither Agree nor Disagree** | **Agree** | **Strongly Agree** |
| 1. On Instagram I can try out many aspects of who I am much more than I can in real life
 | 1 | 2 | 3 | 4 | 5 |
| 1. I change my photos on my Instagram profile to show people the different aspects of who I am
 | 1 | 2 | 3 | 4 | 5 |
| 1. I feel like I have many sides to myself and I show it on my Instagram profile
 | 1 | 2 | 3 | 4 | 5 |
| 1. I compare myself to others on Instagram
 | 1 | 2 | 3 | 4 | 5 |
| 1. I have a good sense of who I am and many of the things I do on my Instagram profile is a way of showing that
 | 1 | 2 | 3 | 4 | 5 |
| 1. Who I am online is similar to who I am offline
 | 1 | 2 | 3 | 4 | 5 |
| 1. I have a good sense of what I want in life and using Instagram is a way to express my views and beliefs
 | 1 | 2 | 3 | 4 | 5 |
| 1. The way I present myself on Instagram is how I am in real life
 | 1 | 2 | 3 | 4 | 5 |
| 1. I like myself and am proud of what I stand for and I show it on my Instagram profile
 | 1 | 2 | 3 | 4 | 5 |
| 1. I post things on my Instagram to show aspects of who I want to be
 | 1 | 2 | 3 | 4 | 5 |
| 1. I try to impress others with the photos I post of myself on my Instagram profile
 | 1 | 2 | 3 | 4 | 5 |
| 1. I sometimes try to be someone other than my true self on Instagram
 | 1 | 2 | 3 | 4 | 5 |
| 1. I am a completely different person online than I am offline
 | 1 | 2 | 3 | 4 | 5 |
| 1. Who I want to be is often reflected in the things I do on my Instagram profile (e.g. status posts, comments, photos, etc.)
 | 1 | 2 | 3 | 4 | 5 |
| 1. I post information about myself on my Instagram profile that is not true
 | 1 | 2 | 3 | 4 | 5 |
| 1. I only show the aspects of myself on Instagram that I know people would like
 | 1 | 2 | 3 | 4 | 5 |
| 1. Sometimes I feel like I keep up a front on Instagram
 | 1 | 2 | 3 | 4 | 5 |

## Appendix F: The Social Anxiety Scale for Adolescents

The Social Anxiety Scale for Adolescents (SAS-A) (La Greca, 1998)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Strongly Disagree** | **Disagree** | **Neither Agree nor Disagree** | **Agree** | **Strongly Agree** |
| 1. I worry about doing something new in front of others
 | 1 | 2 | 3 | 4 | 5 |
| 1. Filler item
 | 1 | 2 | 3 | 4 | 5 |
| 1. I worry about being teased
 | 1 | 2 | 3 | 4 | 5 |
| 1. I feel shy around people I don’t know
 | 1 | 2 | 3 | 4 | 5 |
| 1. I only talk to people I know really well
 | 1 | 2 | 3 | 4 | 5 |
| 1. I feel that peers talk about me behind my back
 | 1 | 2 | 3 | 4 | 5 |
| 1. Filler item
 | 1 | 2 | 3 | 4 | 5 |
| 1. I worry about what others think of me
 | 1 | 2 | 3 | 4 | 5 |
| 1. I’m afraid that others will not like me
 | 1 | 2 | 3 | 4 | 5 |
| 1. I get nervous when I talk to peers I don’t know very well
 | 1 | 2 | 3 | 4 | 5 |
| 1. Filler item
 | 1 | 2 | 3 | 4 | 5 |
| 1. I worry what others say about me
 | 1 | 2 | 3 | 4 | 5 |
| 1. I get nervous when I meet new people
 | 1 | 2 | 3 | 4 | 5 |
| 1. I worry that others don’t like me
 | 1 | 2 | 3 | 4 | 5 |
| 1. I am quiet when I’m with a group of people
 | 1 | 2 | 3 | 4 | 5 |
| 1. Filler item
 | 1 | 2 | 3 | 4 | 5 |
| 1. I feel that others are making fun of me
 | 1 | 2 | 3 | 4 | 5 |
| 1. If I get into an argument, I worry that the other person will not like me
 | 1 | 2 | 3 | 4 | 5 |
| 1. I’m afraid to invite others to do things with me because they might say no
 | 1 | 2 | 3 | 4 | 5 |
| 1. I feel nervous when I’m around certain people
 | 1 | 2 | 3 | 4 | 5 |
| 1. I feel shy even with peers I know very well
 | 1 | 2 | 3 | 4 | 5 |
| 1. It’s hard for me to ask others to do things with me
 | 1 | 2 | 3 | 4 | 5 |

## Appendix G: The Narcissism Scale for Children

The Narcissism Scale for Children (NS-C) (Derry, Bayliss & Ohan, 2018)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Not at all like me** | **Not very like me** | **A little like me** | **Really like me** |
| 1. I get jealous if other kids get more than me
 | 1 | 2 | 3 | 4 |
| 1. When other people don’t notice me, I feel like I’m worth nothing
 | 1 | 2 | 3 | 4 |
| 1. No one understands when I get upset
 | 1 | 2 | 3 | 4 |
| 1. I would rather be alone than not get what I want
 | 1 | 2 | 3 | 4 |
| 1. I think I deserve to be treated better
 | 1 | 2 | 3 | 4 |
| 1. Sometimes I avoid people because I know they’ll disappoint me
 | 1 | 2 | 3 | 4 |
| 1. I have enough to do without having to do things for others
 | 1 | 2 | 3 | 4 |
| 1. I feel angry and ashamed when I get told off
 | 1 | 2 | 3 | 4 |
| 1. I have always known I am more special than most kids
 | 1 | 2 | 3 | 4 |
| 1. I can talk my way out of anything
 | 1 | 2 | 3 | 4 |
| 1. It’s easy for me to get other kids to do what I want
 | 1 | 2 | 3 | 4 |
| 1. I am a powerful kid
 | 1 | 2 | 3 | 4 |
| 1. I am probably going to be rich one day
 | 1 | 2 | 3 | 4 |
| 1. I can tell what adults are thinking
 | 1 | 2 | 3 | 4 |
| 1. I like to show off all the things that I do well
 | 1 | 2 | 3 | 4 |