Understanding how Social Networking Sites influence adolescent body image, wellbeing, and psychosocial functioning.

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Abstract

Social networking sites (SNS) are used by a significant proportion of the population. A large body of literature has highlighted the relationship between SNS use and increased body image concerns, decreased wellbeing, and a diverse range of offline behaviours. However, the majority of existing research has focused on exploring these relationships in young adults, with fewer studies focusing on adolescents and preadolescents.

The current body of work utilised a multi-method approach to explore the relationship between adolescent and preadolescent SNS use and body image concerns, wellbeing, and psychosocial functioning, while accounting for changes in adolescents' environment. Taken together, the studies add knowledge to our understanding of the complex topic of SNS use, body image concerns, wellbeing, and psychosocial functioning. This is achieved by exploring possible moderators and mediators that are important in these relationships for adolescents. In addition to this, the research within this thesis also seeks to understand how and why adolescents found the COVID-19 pandemic a difficult time, how they found enjoyment, and some of the ways they benefitted from the changing environment. In addition to this, this work adds further evidence to the call for social media literacy lessons in schools, and extends this by highlighting the importance of starting these lessons in primary school. Finally, this body of work also adds evidence for examining the collective impact of SNS when exploring their potential impact on individuals.

The initial study (Chapter 4) furthered current literature by examining SNS use and wellbeing in boys and girls aged $10 - 11$ years old ($N = 199$). The cross-sectional study highlighted a number of novel findings including that preadolescents aged 10-11 years old are frequently engaging with SNS, spending on average nearly two hours per day, and that by this age, there are already negative associations between aspects of general SNS use and wellbeing and psychosocial functioning, and positive associations between SNS use and body image concerns. The results highlight the need to focus research attention on preadolescent SNS use, and the importance of further exploring these relationships so interventions can be created to target the key mechanisms in these associations.

These findings were built on in the following study (Chapter 5), which extended the findings to a larger and older sample of 1,295 adolescents aged $11 - 15$ years old. The previous study was expanded by testing mediators and moderators for the relationship between SNS use and body image, wellbeing, and psychosocial functioning. Peer comparison was found to mediate the relationship between SNS use and wellbeing for boys and girls, and perceived social norms were

found to mediate the relationship between SNS use and psychosocial functioning for boys and girls. Finally, body surveillance was found to mediate the relationship between SNS use and body image concerns for boys and girls, and photo manipulation was also found to moderate this pathway for boys. These novel findings have built on previous evidence by testing the associations in a younger sample, and extending these findings to boys.

Following this research, Chapter 6 qualitatively explored adolescents' experiences of the COVID-19 pandemic, along with their use of SNS during this time. Adolescents aged 12-15 years old (*N* = 30) took part in a fully-structured online survey or a semi-structured one-to-one virtual interview. The thematic analysis produced novel findings in relation to adolescents' experience of this time, providing in-depth accounts of how and why adolescents found it difficult to adjust to the pandemic and associated lockdown. Adolescents reflected on a number of positives of using SNS during the pandemic, for example the ability to connect with others and learn new skills and hobbies, yet they also reflected on a number of negative implications which made this time more challenging, for example noticing increased appearance related content and the way this impacted their own view of their body. The results support the implementation of social media literacy techniques, highlighting adolescents' experiences of utilising their learning from media literacy lessons, and also suggest some of the areas adolescents may need further support as they move out of the pandemic.

Finally, Chapter 7 assessed adolescent experiences of SNS use and the associations between body image, wellbeing, and psychosocial functioning at two distinct timepoints; pre-COVID-19, and during COVID-19. This study (*N* = 365) aimed to further explore how SNS use is associated with body image concerns, wellbeing, and psychosocial functioning by quantitatively exploring the experiences of adolescents aged 11 – 16 over two distinct timepoints. The results demonstrated novel yet mixed findings regarding the impact of COVID-19 on adolescents, with internalisation of muscular ideals increasing over time for boys, whereas drive for thinness decreased over time for boys. Findings for girls were mixed, with loneliness increasing over time, but negative affect decreasing, highlighting the complexity of this time for adolescents. Additionally, the models that were tested in Chapter 5 were retested, although these models remained relatively stable over the two timepoints these findings highlighted some of the ways these relationships vary during different social environments, in general there were stronger mediation effects at Time 2 (during COVID-19), compared to Time 1.

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Research outputs

Meechem, S., Halliwell, E., Morey, Y., Slater, A. (2019). Adolescent Development in a World of Social Media. Oral presentation at the UWE Postgraduate conference, Bristol, England

Meechem, S., Morey, Y., Halliwell, E., Bray, I., Slater, A. (2021). "It needed to be there, or we wouldn't have been able to cope": Adolescents experiences of COVID-19 lockdown, and the influence of social media. Oral presentation at the PsyPag conference, online

Meechem, S., Morey, Y., Halliwell, E., Bray, I., Slater, A. (2021). "It needed to be there, or we wouldn't have been able to cope": Adolescents experiences of COVID-19 lockdown, and the influence of social media. Oral presentation at the BPS Developmental Section Conference, online

Meechem, S., Halliwell, E., Bray, I., Morey, Y., Slater, A. (2021). Doing it for the 'gram: The associations of social media and selfies on pre-adolescent body image, wellbeing and problem behaviour. Oral presentation at the BPS Developmental Section Conference, online

Meechem, S., Halliwell, E., Bray, I., Morey, Y., Slater, A. (2021). Doing it for the 'gram: The associations of social media and selfies on pre-adolescent body image, wellbeing and problem behaviour. Oral presentation at the BPS Cyberpsychology conference, online

Meechem, S., Morey, Y., Halliwell, E., Bray, I., Slater, A. (2021) "My content is trying to tell me to do more makeup looks": Adolescents experiences of COVID-19 lockdown, and the influence of social media. Oral presentation at the Appearance Matters conference, online

Parnell, J., Craddock. N. (Hosts), Meechem, S (Guest). (2022, March). Being a Teen with Social Media During COVID-19 (No. 89) [Audio Podcast episode]. In Appearance Matters: the podcast! Soundcloud. https://soundcloud.com/appearance-matters/being-a-teen-with-social-media-during-covid-19

Meechem, S., Morey, Y., Halliwell, E., Bray, I., Slater, A. [under review]. "It needed to be there, or we wouldn't have been able to cope": Adolescents' experiences of COVID-19 lockdown, and the perceived influence of social media. Current Psychology.

Table of Contents

Chapter 1: General introduction

This chapter will introduce the research problem and cultural context, the motivation for study, key language and terms which will be used throughout the thesis, the approach to the research, the overall research questions and aims of the thesis, and the format of the thesis.

Research problem

Social networking sites are prolific in society and are used extensively by (pre)adolescents. Therefore, it is important to fully understand how they are used and how this is associated with possible positive and negative indicators of psychological wellbeing. Much research has focused on these associations in adult populations, however it is particularly important to explore these relationships in (pre)adolescent populations as they are growing up surrounded by this technology, and their developmental stage highlights the importance of peers, fitting in and identity formation. Previous research has highlighted that SNS usage is associated with increased body image concerns as well as decreased wellbeing and psychosocial functioning. However, to date there has been very little consideration of these associations in younger samples, or in samples that include boys.

During the duration of this PhD, the world experienced an unprecedented pandemic which led to international borders closing, countries entering lockdown, and many restrictions placed on the population in order to reduce the spread of the virus. For many, this brought with it an increased amount of time spent indoors, and a great deal of worry and uncertainty. While this was a difficult time for all individuals, of particular interest was adolescents, a group whose stage in life is so incongruent with the restrictions put in place. It was particularly important to explore how adolescents experienced this time, along with the role of SNS during this time.

Motivation for study

Growing up in a time when SNS platforms became ubiquitous contributed to my interest in this topic. I had always been resistant to technology – refusing to get a phone until my parents got me one so I could let them know when I arrived somewhere safely. In a similar vein, I resisted SNS until my school requested it for a French exchange trip as it was the easiest way of communicating with our French pen pals. Having resisted SNS while my peers were starting to use them gave me an outsider's perspective of the way SNS could impact and influence my peers. This interest in the role of SNS remained after I started using these platforms, as I found it particularly interesting to see how

my friends presented themselves online, the different ways they used SNS, and their personal thoughts and experiences of using SNS. In spring/summer 2018 I came across this PhD which was advertised as exploring "The impact of social media on adolescent health and wellbeing" and given my interest throughout my adolescence and beyond, I felt like this was a subject I would welcome the opportunity to explore in depth.

Terms used

It is important to first situate a number of key terms which will be used within this thesis. A recent review has highlighted the lack of clarity around definitions for 'social media' and 'social networking sites' (Aichner et al., 2021). The term 'social media' has been defined as an umbrella term for various online technologies and platforms that allow individuals to share, and create content, communicate with others, and allows different levels of interactions (Kapoor et al., 2017). This can include a wide range of platforms from WhatsApp and Facebook Messenger (which mainly facilitate private conversations between two or more people), to Instagram and TikTok (which allow the sharing of images and videos to either selected individuals, or with the public). The term 'Social Networking Sites' (SNS) encompasses platforms and online mediums whereby individuals can create profiles, create and join online communities, and share and receive information by connecting with others (Boyd & Ellison, 2007). In some senses these terms can (and have been) used interchangeably – Social media platforms are synonymous with SNS platforms, however, in this thesis SNS are conceptualised as one type of social media where the aim is to create a space or community where information can be shared two ways. Throughout this thesis, the focus has been on SNS use in a two-way format, as this is one interesting aspect which differentiates SNS from other forms of media (for example TV or blogs). The terms 'SNS use' and 'SNS usage' will be used throughout the thesis as an umbrella term when more than one measure is being used to explore how someone uses SNS, as well as when the exact measure used in past literature is unknown.

The term 'SNS engagement' will be used as an umbrella term to refer to the measures of general SNS use within these studies (these are: number of SNS used, time on SNS, and SNS activity, all of which are detailed further in Chapter 4).

The term 'active use' will refer to online behaviours which facilitate direct exchange with others using the platform, for example communicating with others, commenting on posts, creating posts, and uploading 'stories' (Verduyn et al., 2017). Conversely, the term 'passive use' will refer to

engagement with SNS which indicates monitoring of others' creations without engaging in exchanges, for example scrolling through newsfeeds (Verduyn et al., 2017).

The term 'image focused user' will be used to refer to a subgroup of individuals who reported using Instagram, Snapchat, TikTok, or Facebook, as these platforms have a heavy focus on posting and viewing images.

The term 'body image' will be used throughout the thesis as an umbrella term for individuals own perception and evaluation of their appearance (particularly their body) and how this makes them feel (Cash, 2012). The term 'wellbeing' will be conceptualised as the emotional quality of an individual's everyday experiences, including both the frequency and intensity of both positive and negative emotions (Kahneman & Deaton, 2010). The term 'psychosocial functioning' will be used as an umbrella term for problematic behaviour (a more age-appropriate measure than risky behaviour) and functioning, which encompasses an individual's psychological and social competency in day-to-day life. The term 'mental health' refers to one's psychological and emotional wellbeing (Galderisi et al., 2015). Wellbeing, body image, and psychosocial functioning are all aspects of one's mental health, and therefore during this thesis the term 'mental health' will be used when referring to multiple aspects of one's psychological and emotional wellbeing.

The term 'preadolescents' will be used to refer to individuals up to the end of year 6 age in the UK (i.e., up to and including 11 years old), whereas 'adolescents' will denote individuals of UK secondary school age (age 11 – 18 years). Although there is a slight overlap in these ages, this decision has been made based on the different key stages which are examined during this thesis.

The term 'strength of the evidence' will be used to replace arbitrary p values and thus move away from the terms 'significant' or 'not significant' due to the growing body of literature which highlights the problems with the arbitrary p = 0.05 cut off (Mcbride et al., 2014; Rao et al., 2022).

Overall research questions and aims of the thesis

Researchers have demonstrated a link between media influences and body image (Tiggemann & Slater, 2014), wellbeing (Tiggemann & Mcgill, 2004), and psychosocial functioning (Irwin & Gross, 1995), and more recently researchers have started to evaluate the role that SNS may play in these facets (Cookingham & Ryan, 2015; Fardouly & Vartanian, 2016; Huang, 2017). However, very little research has focused on adolescents, despite the majority of mental health problems

starting during adolescence (Kessler et al., 2007), and adolescent risky health behaviours (one element of psychosocial functioning) shaping adult behaviours (Kipping et al., 2012). Additionally, little research has focused on possible mediators for these relationships. If the aspects of SNS that contribute to these relationships can be better understood, recommendations can be made to help enhance user experience when using SNS.

Therefore, this PhD is guided by the following research questions:

RQ1: How do (pre)adolescents use SNS, and how is this associated cross-sectionally with body image, wellbeing, and psychosocial functioning?

RQ2: How does a significantly altered environment (global pandemic) influence adolescents' experiences, including their SNS use?

These research questions are broken down into four aims to help develop a deeper understanding of how SNS can influence adolescent experiences and behaviours, and what processes might influence these relationships.

Overall aim: To understand how adolescents use SNS, and how this use affects adolescent body image, wellbeing, and psychosocial functioning.

Aim 1: To understand how adolescents use SNS

Aim 2: To understand the influence of SNS on body image, wellbeing, and psychosocial functioning during adolescence.

Aim 3: To understand some of the factors that may be important in the relationship between SNS use, body image, wellbeing, and psychosocial functioning.

Format for the overall thesis.

Chapter 2 introduces the wider literature around social media use, and why adolescents are of particular importance to explore. During this chapter, developmental theories highlight why research needs to explore adolescents' experiences, and theoretical underpinnings are also explored around body image, wellbeing, and psychosocial functioning. Chapter 3 outlines the methodologies used within the thesis, the ontological and epistemological standpoint, reflexivity and ethical

considerations which were encountered during the PhD. Chapter 4 describes Study 1, which explored the cross-sectional evaluation of preadolescents' SNS use, and the associations with body image, wellbeing, and psychosocial functioning. Chapter 5 presents Study 2, which explored the cross-sectional evaluation of SNS use on adolescents' body image, wellbeing, and psychosocial functioning. This study builds on Study 1 by also exploring potential moderators and mediators in these relationships. Chapter 6 outlines Study 3, which was a qualitative exploration of adolescents' experiences of COVID-19, and how social media use impacted and influenced this period in adolescents' lives. The penultimate chapter (Chapter 7), outlines Study 4 which used longitudinal methodologies to explore, and qualitatively compare, the relationship between SNS use and body image, wellbeing, and psychosocial functioning during two distinct timepoints (timepoint 1: October 2019-February 2020, timepoint 2: February-April 2021). The final chapter includes a summary of the research and reflections on the research methods and research process, along with the general implications of the findings and suggestions for future research. Following this, the references and relevant appendices can be found.

Chapter 2: Literature review

This thesis evaluated how SNS affect adolescents in relation to their body image, their wellbeing, and their psychosocial functioning. This chapter provides a general introduction to the topics, and highlights limitations and gaps in the current literature.

Body image

The concept of 'body image' is the psychological experience of an individual's own body, which includes their own view of their appearance, i.e., how they see their own body, how they feel in their body, their thoughts relating to their body, and their behaviours towards their body (Cash, 1990). A focal point within the body image literature is that relating to body image concerns (Ricciardelli & McCabe, 2001a), which is a level of discontent or distress around how one perceives their own body image. This is an important area of research, due to the associated risks and impact of high levels of body image concern. At a non-clinical level, body image concerns can be associated with substance abuse (Bornioli et al., 2019), anxiety (Barnes et al., 2020), low self-esteem (Duchesne et al., 2017), unhealthy weight control behaviours (Neumark-Sztainer et al., 2006), and decreased academic achievement (Yanover & Thompson, 2008). Although a great deal of research has suggested that women report higher levels of body dissatisfaction compared with men (Muth & Cash, 1997; Shaheen et al., 2016), research has also suggested that body image and appearance concerns are one of the top three concerns of adolescents (Bailey et al., 2016). At a clinical level, body image concerns are the main risk factor for eating disorders (Friederich et al., 2010; Wiederman & Pryor, 1998), and eating disorders affects an estimate of at least 1.6 million individuals in the UK (Joint Commissioning Panel for Mental Health, 2013). For these reasons, exploring the underlying causes, associations, and protective factors for body image concerns is an important area for research to continue to investigate.

There are a number of theories which aim to explain the development of body image concerns, or contributions to negative body image. One theory which has gained a great deal of attention is objectification theory (Fredrickson et al., 1997), which posits that western cultures sexualise the female body, focusing on female physical appearance, rather than internal qualities (Aubrey & Frisby, 2011; Baker, 2005). This in turn leads women to internalise this and thus view their body from an observer's (outside) perspective, and thus evaluate themselves purely on appearance (i.e., treating themselves as an object). This action has been termed 'self-objectification' (Fredrickson

et al., 1997; McKinley & Hyde, 1996). Self-objectification often manifests in body surveillance, which is the persistent monitoring of oneself against idealised bodies (Fredrickson et al., 1997), and this has been associated with body dissatisfaction (Slater & Tiggemann, 2002; Tiggemann & Kuring, 2004) because individuals value their body purely on how it looks, rather than what it is able to do. Objectification theory has been particularly applicable to girls'/women's body image concerns (Groesz et al., 2002) due to boys and men viewing their body as a tool to master their environment, rather than a tool to attract others (Stephens et al., 1994).

Objectification theory is not the only theory which has been used to explain the development of body image concerns. Social comparison theory (Festinger 1954) has also been used to explain the development of body image concerns (Dittmar & Howard, 2004). This theory proposes that as individuals we have an innate need to compare ourselves with others in order to determine how aspects of our lives fair compared to others. This theory posits that when individuals compare themselves and their lived experiences to others (this can include comparing performance, ability, social circle etc.), comparisons can be deemed as either 'upwards' or 'downwards'. An 'upward' comparison occurs if individuals feel the object of comparison is better off than them. This can often lead to an individual feeling like their life is lacking, which can be manifested in a number of ways, for example depression or low self-esteem (Clark et al., 2018). On the other hand, a 'downward' comparison occurs if individuals feel the object of comparison is worse off than them, this can lead to feeling better about oneself (Luo et al., 2018). However, this theory does little to explain how an individual would develop the appearance ideals to which they are comparing themselves and their target of comparison. This is one of the reasons which led to the decision to look at objectification in relation to body image. Objectification theory is able to go further than social comparison theory, as it not only aims to explain why people may choose to compare themselves to others, but also explains how the ideal they are comparing both themselves and others against develops. As well as additional detail around the mechanisms underlying the act of self-objectification, objectification theory is also more explicit in terms of the consequences of self-objectification, such as increased body surveillance due to focusing on bodily appearance, rather than ability. These factors mean that the theory is well suited to being empirically tested and therefore objectification was used as the model underlying body image concerns rather than social comparison theory.

Research has supported the link between objectification and increased body image concerns, for example, an initial experimental study with university students, found that women who were asked to try on a swimsuit, compared to those who were asked to try on a sweater,

reported higher levels of body shame (Fredrickson et al., 1998). The results also suggested that those high in trait self-objectification, who had been assigned to the swimsuit condition, compared to the sweater condition, reported increased levels of body shame (Fredrickson et al., 1998). Furthermore, cross sectional research tested this with a clinical sample of women with eating disorders and found that the relationship between internalised appearance ideals and drive for thinness was partially mediated by self-objectification (Calogero et al., 2005), highlighting the important role of self-objectification in the development of body image concerns. Finally, Grippo and Hill (2008) explored this relationship with a non-clinical sample of women. The cross-sectional study explored self-objectification and self-surveillance and found that both measures were positively correlated with body dissatisfaction in women (Grippo & Hill, 2008).

The relationship between body image concerns and objectification has received countless support through experimental and cross-sectional research, leading researchers to explore environments which may increase, or buffer self-objectification. It is thought that exposure to the media could be one factor which leads to increased levels of self-objectification, due to the fixation the media has on specific appearance ideals. Early studies exploring the relationship between body image, objectification and traditional forms of media have supported this. Experimental research with Australian women found that viewing a magazine advert featuring a thin women led to greater state self-objectification and body dissatisfaction, compared to those who viewed adverts with no women in (Harper & Tiggemann, 2008). Additionally, cross-sectional research with adolescent girls (aged 13-18 years) suggested that viewing sexually objectifying media was associated with internalization of beauty ideals, and that this led to self-objectification and body surveillance (Vandenbosch & Eggermont, 2012). The findings highlight the role that the media has on self-objectification, and body image concerns, and suggests that it is important that newer forms of media are also explored in relation to this. Considering the differences between more modern media (i.e., social media) compared to traditional media, for example it is more easily accessible, yet also easier to control one's own media consumption, it is important to see if these forms of media have similar relationships between objectification and body image concerns.

Wellbeing

Wellbeing, conceptualised as the emotional quality of an individual's everyday experiences, including both the frequency and intensity of both positive and negative emotions (Kahneman & Deaton, 2010), is another area which has gained a great deal of research attention due to its

negative associations and possible risk factors. Low levels of wellbeing are a demonstrated precursor to more detrimental mental health problems like depression (Erzen & Çikrikci, 2018) and anxiety (Nguyen et al., 2019), and are also risk factors for cardiovascular disease (Goosby et al., 2013), substance abuse (Fuentes et al., 2020), and self-harm (Oktan, 2017). With the wide range of possible impacts that low levels of wellbeing may have on individual health, and with 11.2% of individuals aged between 5-15 years having a clinically diagnosed mental health problem (Sadler et al., 2018), the importance of exploring associations and protective factors around this aspect of health are clear.

There are a number of theories aiming to explore the deterioration of individual wellbeing, one of these is social comparison theory (Festinger, 1954). This theory proposes that comparisons to others' body and appearance leads an individual to be dissatisfied with their own appearance if they engage in upward comparison (they feel the target of their comparison fares better than them; Gibbons & Gerrard, 1989), or leads to feeling better about oneself if they engage in downward comparison (feeling like the target of comparison is worse off than them; Gibbons & Gerrard, 1989). This theory is explained in more detail on page 16.

Experimental research conducted with university students replicating an interview scenario highlighted an example of social comparison theory in practice. In this study, participants were randomly assigned to one of two pre-interview conditions, where they encountered a confederate who either exhibited socially desirable or undesirable characteristics (Morse & Gergen, 1970). Encountering the socially desirable confederate resulted in reduced self-esteem for participants, whereas encountering the socially undesirable confederate resulted in enhanced self-esteem for the participants (Morse & Gergen, 1970). Furthermore, a longitudinal diary study conducted with university students explored social comparison over two weeks. Participants were asked to report their own social comparisons each day, alongside a measure of self-esteem. The results from the two-week study highlighted that when participants engaged in upward comparison, their subjective wellbeing decreased, whereas when participants engaged in downward comparison, their reported self-esteem increased (Wheeler & Miyake, 1992).

It is important to explore social comparison theory in relation to the media due to the variety of targets one has to compare oneself to, and the way that media is constructed to highlight the most favourable aspects of an individual's life. For example, early studies exploring the relationship between wellbeing, peer comparison and traditional forms of media found that viewing

magazine adverts which included a thin female model's body elicited lower state mood in women, compared to adverts which only included product images (Tiggemann & Mcgill, 2004). Furthermore, more recently Chae (2018) explored the relationship between blog use and wellbeing with Korean women. This longitudinal study found that higher levels of blog use was associated with higher levels of social comparison at Time 1. Furthermore, higher reported social comparison at Time 1 was associated with lower reported levels of wellbeing (measured through relative happiness) one month later, at Time 2 (Chae, 2018).

Considering the impact of more traditional forms of media on individuals' wellbeing, it is important to explore this with newer forms of media. The role of SNS is particularly relevant as this could increase the individuals that one perceives to be part of their in-group. An in-group refers to a social group that an individual identifies as being part of (Turner et al., 1987), and research has suggested that the identity of the target for comparisons (i.e., in-group member or out-group member) affects the impact of the comparison, such that upward comparisons to in-group members can have more detrimental effects than upward comparisons to out-group members (Major et al., 2016).

Two concepts which are explored within this thesis are particularly intertwined; a great deal of past research has highlighted the link between body image and wellbeing. These two concepts have been shown to influence each other; research has suggested that body satisfaction is associated with self-esteem (Wichstrom & von Soest, 2016) and loneliness (Barnett et al., 2020), and poor body image is a risk factor for depression and anxiety (Brausch & Gutierrez, 2009; Vannucci & Ohannessian, 2018). Due to this, it is therefore unsurprising that the theories used to explain the association between these concepts could overlap, as has been show by previous research (Sherlock & Wagstaff, 2019).

Social comparison theory was chosen to explain the link between SNS use and wellbeing, despite an alternative theory being used to explain body image concerns (as previously discussed on page 16). Social comparison theory has been frequently referenced as the mechanism between these two variables (Myers & Crowther, 2009; Yang, Wei & Tang, 2019) due to the ability for individuals to make upward comparisons when looking at the lifestyle of other individuals, and thus leading them to feel unsatisfied with their own.

Psychosocial functioning

Within this thesis, 'psychosocial functioning' is used as an umbrella term which encompasses problematic behaviour and social competency in day-to-day life. Social competence is conceptualised as adaptive functioning, positive adjustment, and goal attainment (Stepp et al., 2011). Research around psychosocial functioning and its long-term impact is scarce compared to body image and wellbeing, however, research which has been conducted has suggested that early social competence is associated with a wide variety of later outcomes for example reduced antisocial behaviour (Sorlie & Ogden, 2008), substance abuse use (Caplan et al., 1992), delinquency, future morbidity, premature mortality, (Kipping et al., 2012), and increased educational attainment (Stepp et al., 2011). In addition to this, engagement in risky behaviours is frequent in adolescents (Kelley et al., 2004), with boys engaging in higher levels of risky behaviour than girls (Abimbola & Ugbede, 2018). As the brain develops during adolescence the frontal lobe significantly increases its production of grey matter. This increased production of grey matter has been linked to decision making, organisation, self-control, risk-taking behaviours, as well as emotional and impulse regulation (Blakemore & Choudhury, 2006). Considering this, it is important to understand further aspects that influence psychosocial functioning.

There are numerous theories aiming to explore difficulties in psychosocial functioning, one of these is social norms theory (Perkins & Berkowitz, 1986). Social norms theory states that behaviour is influenced by misperception of how peers think and act (Berkowitz, 2004). Individuals tend to believe that certain behaviours and thoughts are more common than they are, thus align their behaviour to these behaviours as to feel part of the group (Perkins & Berkowitz, 1986).

A great deal of research exploring social norms theory has evaluated this in relation to drinking behaviours in university students. With findings highlighting that university students' estimations of average drinking was higher than the average self-reported drinking habits (Baer et al., 2015). Furthermore, research suggested that social norms can be manipulated to reduce drinking habits. One study explored this, through a longitudinal design, whereby university students completed two surveys exploring their drinking habits, roughly a year apart (Perkins & Craig, 2002). Between the two time points a campaign was created to educate university students about peers drinking habits. Following the campaign, (at Time 2) students reported a reduction in drinking habits compared to Time 1, highlighting the role of social norm beliefs in students drinking habits (Perkins & Craig, 2002). Finally, research has also explored social norm beliefs in a younger sample.

Rosenbloom et al. (2012) explored social norms in children in relation to an age-appropriate form of risky behaviour – road crossing behaviour. This study explored children's perceptions of their friends' road crossing attitudes and behaviour, as well as their own road crossing behaviour. The study suggested that not only did children perceive their friends' attitudes to be more negative than their own, and their behaviours to be riskier than their own, but also these factors contributed to the child's own risky road crossing behaviour (Rosenbloom et al., 2012).

Considering the media gives us access to a wide variety of individuals, and thus a large pool to base our social norm belief on, and some forms of media may exaggerate behaviours in order to create more engaging media (for example film and television media such as 'Mean Girls' and 'Riverdale' often depict underaged drinking), it is important to explore how social norms may be impacted by the media. One study exploring social norm beliefs and gaming, explored the role of the media on boys' aggressive behaviour. In this study, boys were assigned to play either an aggressive or non-aggressive video game (Irwin & Gross, 1995). The findings suggested that boys who played the aggressive video game were both more physically and verbally aggressive during subsequent play time. This finding highlights how aggressive behaviour represented in the media could lead young people to alter their social norms and thus align their own behaviours to what they view. Considering the impact of more traditional forms of media on individuals' social norm beliefs, it is also important to explore how this relates to social media, which is both more easily accessible, allows an insight into more aspects of an individual's life, and also presents information about peers.

Clearly, body image concerns, wellbeing, and psychosocial functioning, are important fields to direct research attention to, due to their harmful associations. Research has also highlighted the role that objectification, social comparison, and social norms may play in the development of these facets. Research has also suggested that traditional media can play a role in exacerbating these relationships. However, this chapter has so far, focused solely on traditional media, i.e., magazines and television. Newer forms of media have also gained some attention, however this research has focused predominantly on adults.

Developmental theories

Adolescence is a unique developmental period, where individuals are gaining independence and moving from childhood towards adulthood. Early adolescence, often referred to as ages 10-14 years (SAHRC, 2013b), and middle adolescence, generally agreed to be from 15-17 years (SAHRC, 2013a), are important developmental stages. During (pre) adolescence, both physical and cognitive

changes, as well as pubertal development, are starting to occur (Webb et al., 2017), and by the end of middle adolescence most individuals will have gone through puberty. Some developmental changes during early adolescent include: the ability to apply knowledge to new tasks, and developing a sense of self rather than identifying as an extension of one's parents. Furthermore, peer groups also increase in importance during this time, due to the shift of starting to develop a sense of self (SAHRC, 2013a, 2013b). During middle adolescence, young people start to think abstractly, peer relationships continue to develop (with a strong emphasis on peer groups and alliance to peer groups), and fad behaviours develop in line with peer group membership. This is also a time where individuals start to want more freedom, and parental interference can start to cause disagreements (SAHRC, 2013a). During middle adolescence individuals also start to become more independent, gaining more rights and responsibility. With the legal age in the UK for consent for sexual activity being 16, and the legal age to learn to drive being 17, this is often a time in adolescence with a big change in responsibility. All the change and adjustment that is occurring can bring feelings of confusion and anxiety, with half of all mental health problems starting during early adolescence (WHO, 2017). Developmental theories may shed some additional light on the emergence of mental health conditions at such a young age.

A number of developmental theories have highlighted the turmoil that occurs during adolescence, with it previously being referred to as the "storm and stress" period (Hall, 1904), suggesting why this developmental stage may be particularly prone to the development of increased body image concerns, and decreased wellbeing and psychosocial functioning.

Psychosocial Developmental Theory

One developmental theory which aims to explain individual development during this stage is Erikson's (1963) Psychosocial Developmental Theory, which states that development occurs within a series of stages that are in part biologically determined (see figure 1 for all developmental stages).

Figure 1. Erikson's stages of psychosocial development

Approximate Age	Psycho Social Crisis
Infant - 18 months	Trust vs. Mistrust
18 months - 3 years	Autonomy vs. Shame & Doubt
3 - 5 years	Initiative vs. Guilt
5 -13 years	Industry vs. Inferiority
13 -21 years	Identity vs. Role Confusion
21- 39 years	Intimacy vs. Isolation
40 - 65 years	Generativity vs. Stagnation
65 and older	Ego Integrity vs. Despair

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The theory states at each developmental stage an individual will meet a new 'crisis' and in order to progress from one stage to the next, individuals will emerge either positively or negatively from this (Erikson, 1963). Whether an individual will emerge positively or negatively from each crisis stage is influenced by one's social and cultural environment (Erikson, 1963). If an individual emerges positively, further healthier development will be facilitated; if an individual emerges negatively from the developmental crisis, this will interfere with healthy development (Erikson, 1963). For example, in times of rapid social change, resolving conflicts will be much more difficult than in times when there is relatively little change. The crisis stages during adolescence are stage 4; 'Industry vs. Inferiority', and then stage 5; 'Identity vs. Role confusion' (Erikson, 1963). The 4th stage 'Industry vs. Inferiority' occurs as preadolescents are developing their level of self-awareness and understanding of logical reasoning. During this stage, individuals start to become more competitive, aiming to achieve what peers are able to (Erikson, 1963). At this stage, performing and succeeding in tasks can lead to self-confidence, whereas failing can lead to feelings of inferiority. At this point, individuals may be looking to their peers in order to validate their own ability. In the 5th stage, 'Identity vs. Role confusion', adolescents are starting to think about their individuality and who they are (Erikson, 1963). According to this theory, an individual who emerges positively from this stage will have a good sense of who they are and what they want in the future. However, someone who struggles at this stage will be preoccupied with the opinions of others and may indulge in self-destructive behaviours (Erikson, 1963).

These stages suggest why adolescents may be particularly sensitive to the negative outcomes associated with objectification, social comparison, and social norms. The first stage highlights increased social comparison, as an individual looks to their peers to validate their own ability. The second stage adds extra complexity to objectification theory, considering western society highlights a specific (unrealistic) ideal to aspire to, making it difficult to develop individuality, and thus possibly leading to role confusion. Finally, in line with social norms theory, during the second stage adolescents are developing their own identity and moving away from their parents, during this time they look to peers to help them align themselves with individuals they identify with. These stages also have clear implications for the potential impact of traditional media, and SNS use, considering both forms of media highlight a specific ideal to aspire to, and predominantly show the 'highlights reel' of an individual's life. In doing so, they showcase individuals' successes, and exclude their failures, and allow individuals to access a wider range of identities for them to compare themselves to. Additionally, SNS allow individuals to create online identities which may not be in line with their offline identity, possibly adding to identity confusion.

Ecological Systems Theory

Another theory which aims to explain adolescent development, and may suggest the relationship between adolescence and body image, wellbeing, and psychosocial functioning, is Bronfenbrenner's Ecological Systems Theory (EST; Bronfenbrenner, 1979). This theory focuses on the impact of the environment on an individual's development, rather than looking at development through stages. This theory suggests that there are different levels of influence on individual development (see figure 2).

Figure 2. Bronfenbrenner's Ecological Systems Theory
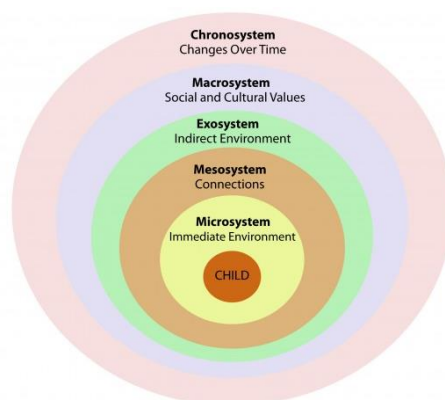
Although Bronfenbrenner later developed this theory into the Bioecological theory (Bronfenbrenner & Ceci, 1994; Bronfenbrenner & Morris, 1998), most research cites the original EST theory (Tudge et al., 2016), therefore this will be focused on first. In this theory, there are five levels of influence on child and adolescent development. These are the 'microsystem' which encompasses their immediate environment, for example their family, their home environment, and their school. The next stage, the 'mesosystem' comprises of the relationship between two or more aspects of the individual's microsystem, e.g., the relationship between their home and school (Bronfenbrenner, 1979). The next stage, the 'exosystem' comprises of environments that the individual is not directly involved with, however influence the individual through aspects of their microsystem. For example, a parent's workplace may not be something the individual is directly involved with, and thus does not influence their development directly, however it may influence their parents, and thus indirectly influence the adolescent's development, through their parents. The 'macrosystem', the penultimate level of influence on the individual, relates to the influence of the established society and culture an individual develops in (Bronfenbrenner, 1979). For example, growing up in a minority world nation would have a different influence compared to growing up in a majority world nation. The final level of influence is the 'chronosystem'. This comprises of aspects of environmental change over one's lifetime. This can include historical events (e.g., wars) as well as transitional periods (e.g., starting/ changing school). The place of both traditional media and SNS may vary within this theory, depending on their form of interaction. For example, both traditional media and SNS may influence an individual through the macrosystem as it contributes to cultural ideologies, these forms of media may also influence individuals through their microsystem (for example by influencing their parents' or peers' moods) and thus fall within the exosystem. However, actively engaging with SNS may also mean it falls into the microsystem. This highlights the importance of exploring not only the different SNS usages, but also suggests that SNS may influence adolescent development in a way that is different to traditional media.

This theory was later developed into the Bioecological developmental theory with the addition of the Process-Person-Context-Time model (Bronfenbrenner & Morris, 1998). The first addition of the new model is 'process', and this related to 'proximal processes' which are interactions, which occur over time, between the individual and their environment (Bronfenbrenner & Morris, 1998). The next aspect of this model is 'person' which relates to the individual's characteristics, for example their disposition, mental resources, i.e., their ability to engage in the proximal processes, and external characteristics (i.e., age, race and physical appearance). The penultimate aspect of the model is 'context' which refers to the previously discussed ecological

systems (i.e., microsystem, mesosystem, exosystem, macrosystem, and chronosystem). Finally, this model also includes 'time', which highlights how one's immediate environment, culture and society changes over time, and how this can influence development (Bronfenbrenner & Morris, 1998).

This theory highlights how adolescents may be particularly sensitive to the negative effects associated with objectification, social comparison, social norms, and the media. It highlights how one's microsystems (e.g., family and peers) and exosystem may reinforce the sexualisation of girls, and thus reinforce objectification (Brown et al., 2020). Bronfenbrenner's focus on proximal processes can highlight how social comparison may occur, i.e., as one's interactions with the environment shapes one's development, with emotional components of the proximal process playing an important part in influencing the individual (Bronfenbrenner & Morris, 1998). Finally, this developmental theory may also highlight adolescents' susceptibility to the negative impact of social norms theory as the immediate environment (i.e., their microsystem) is the strongest environmental factor in their development (Bronfenbrenner, 1979).

Although these competing theories for development highlight influences on development to different extents, clearly, it is likely that one's environment has a large influence. SNS are commonly used during this time, with 72% of adolescents aged 13-17 years stating that they use Instagram, and 69% saying that they use Snapchat (Anderson & Jiang, 2018). Furthermore, research conducted in the Netherlands found that 89% of Dutch children between the ages of 11 and 14 had a SNS profile (Antheunis et al., 2016). Therefore, it is important to evaluate the influence that these forms of media have on this age group, so that we can understand how SNS use adds to this challenging time, and better understand how to support adolescents. Research has started to evaluate the impact that SNS use has on body image, wellbeing, and psychosocial functioning in this age group, however, there are still a number of gaps left in this field. For example, much of the research that has focused on SNS has evaluated Facebook and MySpace, with research more recently starting to look at Instagram and Snapchat. With Facebook and MySpace both very different in nature to the current most popular forms of SNS, it is important research addresses the more popular forms of SNS.

Role of Gender

Within this thesis, a key concept explored is gender. Some of the relationships which are explored within this thesis have previously been explored with mainly female only samples (e.g., the relationship between SNS use and body image; Mingoia et al., 2017). Although societal pressures for males and females differ, there are still specific societal pressures for both genders

(Jones & Crawford, 2006), highlighting the importance of exploring these concepts with both adolescent boys and girls. Furthermore, the level of pressure and forms of pressure have changed and continue to evolve, with more pressures now on male appearance than ever before, and a higher pressure on females to fit a strong and athletic appearance (Bozsik et al., 2018; Donovan & Uhlmann, 2022). These pressures are particularly important to explore during adolescence and pre-adolescence due to the interaction with adolescent developmental stages and biological processes i.e., puberty. Previous research has noted that puberty may move some individuals closer to or further from their gendered 'ideal' (McCabe et al., 2002), this is an important aspect to consider when exploring adolescent body image, as is developmental stage when examining adolescent wellbeing and psychosocial functioning.

Social Networking Sites

SNS, used by 58% of the world's population (Kemp, 2021), are a relatively modern form of media compared to magazines and TV, with the first mainstream SNS (MySpace) gaining notable popularity in 2004 (Ortiz-Ospina, 2019). Since then, SNS have become ingrained in society, with this becoming even more evident during the COVID-19 lockdown when SNS were a haven for entertainment, a way to communicate with those outside of one's home, and an important source for information sharing (Saud et al., 2020; Tkáčová et al., 2021).

There are numerous different SNS platforms, some of the most popular reported SNS for UK children are: YouTube (used by 89% of UK children aged 3-17 years), WhatsApp (used by 53% of UK children aged 3-17 years), TikTok (used by 50% of UK children aged 3-17) and Snapchat (used by 42% of UK children aged 3-17 years; Ofcom, 2022). Most SNS platforms have different elements which facilitate different types of usage, for example YouTube allows the sharing of videos, WhatsApp facilitates communication between two or more people privately, TikTok allows for short video sharing, and Snapchat allows time limited instant messaging (i.e., messages are deleted a specified time after being viewed by the recipient). Research has been focusing on the role of SNS on various aspects of daily life for over a decade (Kalpidou et al., 2011; Kim & Lee, 2011; Moreno et al., 2011; Utz & Beukeboom, 2011), however, there are still numerous gaps within the literature (McCrory et al., 2020; Vandenbosch et al., 2021). The following sections will review the current literature, as well as the gaps which this thesis will aim to address.

SNS and body image

Research exploring the impact of SNS on body image, compared to the role that more traditional forms of media have on body image has highlighted the importance of focusing on this form of media. A self-report questionnaire which was disseminated among girls aged 10-12 years evaluated how body image was impacted by SNS, magazines, and television exposure (Tiggemann & Slater, 2014). The study found that all forms of media were related to increased body surveillance, reduced body esteem, and increased dieting behaviour, although time spent on SNS was positively correlated with body image concerns, more so than overall internet exposure (Tiggemann & Slater, 2014). This research suggests that SNS usage is more strongly associated with body image concerns than traditional forms of media exposure, demonstrating the importance of focusing specifically on the effects of SNS.

The relationship between SNS and body image concerns has been replicated more recently, as a study conducted by de Vries et al., (2016) explored SNS use and body image concerns in adolescent girls (aged 11-18), through longitudinal research methods, and found that general SNS use predicted increased body dissatisfaction. Furthermore, when testing the reverse relationship (i.e., body image concerns predicted increased SNS use) this was not found (de Vries et al., 2016). Although this finding suggested a unidirectional relationship between SNS use and body image, more recent research has suggested that this relationship could be bidirectional. Longitudinal research conducted with Australian boys and girls aged 11 – 15 years suggested that higher photo related SNS use was found to predict lower body satisfaction (through both social comparisons and thin-ideal internalisation), however when testing the reverse relationship lower body satisfaction predicted higher photo related SNS use (through both social comparisons and thin-ideal internalisation; Jarman et al., 2021). Although these findings suggest differences in the directionality of this relationship, they also highlight the importance of a more nuanced measure of this relationship in order to fully understand the relationship.

Considering the associations found between SNS use and body image, and social comparisons (Jarman, McLean, et al., 2021) and objectification (Salomon & Brown, 2019), some research has focused on whether the way that SNS are used could help to explain the relationship between SNS use and body image. One of these is a dichotomous usage split; active use and passive use. Active use refers to SNS usage which facilitates direct exchange with others using the platform, whereas passive use refers to monitoring of others' content without engaging in exchanges (Verduyn et al., 2017). Research which examined the relationship between SNS use and body dissatisfaction with adolescents suggested that passive Facebook use at Time 1 predicted increases in boys'

comparison on Facebook at Time 2 (six months later), which in turn, was associated with more body dissatisfaction at Time 2 (Rousseau et al., 2017). Although this suggests the influence that passive use may have on body dissatisfaction, this did not explore any measure of active use, thus it could be that passive use facilitates comparisons which are associated with body dissatisfaction, alternatively those reporting high levels of passive use could have been engaging in high levels of SNS use in general, not solely passive use.

Another type of SNS use which may be related to body image concerns is photo related behaviours. Meier & Gray (2013) evaluated the relationship between SNS use (Facebook in particular) and body image in female students aged between 12 and 18 years, with a particular focus on photo related behaviours (Meier & Gray, 2013). The research demonstrated that when looking at individuals as either Facebook users or non-Facebook users, Facebook users scored significantly higher on self-objectification and physical appearance comparison. However, when looking more closely at Facebook users, overall Facebook usage was not correlated with any body image related concerns. Instead, increased appearance exposure within Facebook (i.e., increased amount of time spent using Facebook in an appearance focused way, such as looking at others' photos and uploading selfies) was significantly correlated with weight dissatisfaction, drive for thinness, thin ideal internalization, and self-objectification. This research suggested that certain aspects of SNS use may influence adolescent body image concerns, and the relationship between SNS use and body image concerns may be more complex than looking at whether an individual is a SNS user or not. There are some SNS which this may be particularly relevant for, for example TikTok, Instagram, and Snapchat which are all image or video-based platforms. However, as comparatively little research has focused on male body image and SNS, and the pressures surrounding male body image differ to that of girls, more research is vital to fully understand the relationship between SNS use and boys' body image.

Similarly to the previous study, a great deal of cross-sectional research has highlighted the link between SNS use and self-objectification with girls aged 13 – 18 years (Vandenbosch & Eggermont, 2012), however until recently little research had expanded this to include boys. However, Salomon & Brown (2019) explored the relationship between SNS use, objectification, and body image (measured through body shame) with 142 adolescent boys and girls aged 11-14. In particular, they explored how SNS photo-related behaviours (which they deemed "self-objectifying behaviours") related to body image concerns and included gender as a moderator for this analysis. The findings highlighted that increased photo-related behaviours were associated with increased

body image concerns, and this relationship was fully explained through (i.e., fully mediated by) self-objectification (Salomon & Brown, 2019). Clearly, research has started to replicate, and support, the research conducted with adults which has highlighted a link between SNS use, photo related behaviours, objectification, and body image concerns (Grogan et al., 2018; Mabe et al., 2014). However, little research has explored this pathway in a large sample of adolescents, exploring different aspects of gender specific body image concerns with boys and girls. Cultural pressures on body image begin well before adolescence; by the time girls are 13, more than half (63%) are afraid of gaining weight (Micali et al., 2014). Furthermore, body changes through puberty can add to these pressures with physical changes for girls and women being incongruent with the 'thin ideal' appearance pressure, whereas physical changes possibly moving boys closer to the 'muscular ideal' (Voelker et al., 2015). Clearly, research needs to start exploring this relationship in individuals under 13 years, and throughout puberty, and to explore this pathway in a large scale study. Furthermore, considering the different appearance ideals for males and females (Markland & Ingledew, 2007), and how previous research has demonstrated gender differences in body image concerns (Davison & McCabe, 2006; Polce-Lynch et al., 2001), this research needs to look at the relationship between adolescent boys' and girls' SNS use and body image separately to add further nuance to our understanding of SNS use.

SNS and wellbeing

Research has suggested that SNS use is associated with decreased wellbeing in adults (Huang, 2017). Furthermore, experimental research conducted with adults indicated that 20 minutes of Facebook activity led to decreased mood compared to both general internet browsing and no online activity in adults (Sagioglou & Greitemeyer, 2014). Furthermore, research conducted with young men and women who took a one week break from Instagram (experimental condition), compared to young men and women who did not (control condition), found that women who took part in the experimental condition reported significantly higher levels of positive affect than women who kept using Instagram, and this relationship was dependent on comparisons (Fioravanti et al., 2019). Together, these findings suggest that not only is SNS use related to decreased wellbeing in adults, but SNS is inherently different to other online activities, making it worth further investigation. However, although there are many strengths to experimental methodology, for example the ability to control for confounders, further cross-sectional or longitudinal research is needed to support these findings in a real-life scenario. Furthermore, this has not been evaluated in younger ages, and therefore the generalisation of these results to a younger sample is unknown.

Of the research which has been conducted with adolescents, Gross et al., (2002) explored the relationship between instant messaging (which could be considered a precursor to SNS) and wellbeing, and suggested that instant messaging with friends was associated with decreased levels of anxiety and loneliness, whereas instant messaging with strangers was associated with increased levels of anxiety and loneliness (Gross et al., 2002). This is particularly interesting considering engaging with strangers is facilitated by many SNS.

Research has also started to explore the role that social comparison plays in the relationship between SNS use and wellbeing. Qualitative interviews conducted with adults to explore Facebook use has suggested that certain features, for example the quantifiable 'friends', provoke social comparison on Facebook, and this can in turn lead to negative emotion (Fox & Moreland, 2015). This finding has been supported by other research which has utilised cross-sectional design to suggest that adults reported a positive relationship between Facebook intensity and social comparison on Facebook, i.e., those reporting more Facebook use also reported more comparisons on Facebook (Lee, 2014). This study also suggested that there was an association between Facebook comparisons and negative feelings (Lee, 2014), again highlighting this relationship in an adult sample. Additionally, a study exploring different forms of social media (blogs, Instagram, LinkedIn and Twitter) amongst Korean women has suggested that particular forms of social media have different relationships with social comparison (Chae, 2018). In this study, Instagram, LinkedIn, and blog use were positively associated with social comparison, whereas Twitter use was associated with lower levels of social comparison (Chae, 2018), suggesting different elements within social media platforms may lead to a different relationship with social comparison. As of yet, little research has included newer SNS in this examination, for example TikTok which has differences again from previously researched platforms. Finally, longitudinal research, conducted with adolescents aged 12-16 years, has highlighted that the relationship between SNS and comparison is worth exploring in a younger sample as they found that technology-based social comparison (which includes SNS, but is not exclusively SNS) is associated with depressive symptoms (Nesi & Prinstein, 2015). This highlights the importance for further examining the relationship between SNS and wellbeing in adolescents, and extending this to other important facets of wellbeing in order to create a more comprehensive picture of the relationship between adolescents' SNS use and wellbeing.

Contrary to the finding reported earlier by Fioravanti et al., (2019), recent research has highlighted that some types of SNS usage may be associated with positive outcomes (Hanley et al., 2019). In this study, adults' natural type of SNS usage (active or passive) was measured, and then

participants were assigned to either the experimental condition (one week of no SNS use), or the control condition (SNS use as usual). Prior to the experimental manipulation, active SNS use was positively associated with positive affect, whereas passive usage was not. Following the experimental condition, the results suggested that active users who took a break from SNS resulted in lower positive affect, whereas there were no significant effects for passive users. This study suggests that usage type may be an important factor in the relationship between SNS use and wellbeing (Hanley et al., 2019). A cross-sectional study conducted with American college students explored type of Instagram usage (i.e., active or passive), along with Instagram usage intensity (Trifiro & Prena, 2021). The results suggested that higher reported levels of active Instagram use (compared to lower reported levels of active use) were associated with higher levels of wellbeing and self-esteem. The study also highlighted that intensity of Instagram use was an important element as those reporting higher levels of active Instagram use, who also reported higher Instagram intensity reported higher levels of self-esteem, compared to those who used Instagram actively but reported lower levels of Instagram intensity (Trifiro & Prena, 2021). These findings, which suggest the importance of active versus passive SNS use, have also been supported through a diary approach with individuals aged 13-16 years. This study found that active use on Facebook was associated with increased wellbeing (measured by life satisfaction), whereas passive use was negatively associated with wellbeing (Wenninger et al., 2014).

Although research has highlighted the relationship between SNS use and wellbeing, and the role of social comparison and of SNS usage type, little of this research has been expanded to include adolescents. This is despite 11.2% of individuals aged between 5-16 years having a clinically diagnosed mental health problem (Sadler et al., 2018), and a clear relationship being found between SNS use and negative wellbeing, which is a precursor for mental health problems. This gap is an important space which needs exploring to fully understand the relationship between SNS and wellbeing in a younger sample.

Social media and psychosocial functioning

Psychosocial functioning is another aspect of adolescent development that is important to evaluate, although this has received little exploration in regard to SNS use. Despite this, a small number of studies have started to examine the relationship between SNS and risky health behaviours (e.g., smoking and drinking alcohol), and in general concur that SNS use is associated with risky health behaviours (Cookingham & Ryan, 2015). However, considering newer SNS platforms have arisen, it is important to continue expanding this field. Compared to older forms of

SNS (for example Facebook), newer forms of SNS (for example Instagram and TikTok) allow easier connections to a wider variety of people. Furthermore, these platforms also allow a more detailed glimpse into other peoples' lives, highlighting the importance of re-exploring this association.

Although little research has explored the association between SNS usage and psychosocial functioning, research has highlighted how SNS could influence social norm beliefs, and thus impact on psychosocial functioning. A study exploring this experimentally with individuals aged 13-15 years gave participants 40 minutes to view four fabricated Facebook profiles of high school students (Litt & Stock, 2011). Individuals were allocated to one of two conditions; control condition or alcohol user condition. In the control condition, three profiles depicted non-alcohol users, and one showed an alcohol user. In the alcohol condition, three profiles depicted alcohol users and one did not (Litt & Stock, 2011). Participants rated each person's profile on a series of personality traits. The results demonstrated that individuals in the alcohol condition viewed alcohol use as more normative, and reported an increased intention to drink alcohol compared to those in the control condition. This demonstrates how SNS might play a role in the normalisation of risky behaviours, and thus increase individuals' willingness to take part in them, highlighting the role of social norms for adolescents. Another experimental study (Huang et al., 2014) found participants' (aged 15-16 years) exposure to risky pictures (pictures of partying or drinking alcohol) posted by friends on Facebook and MySpace were predictive of the individual's likelihood of increasing or maintaining their smoking levels. Additionally, individuals with friends who drank more were more likely to increase their drinking habits (Huang, et al., 2014). Furthermore, cross-sectional research has demonstrated that 16-25 year olds significantly over-report risk and under-report protective behaviours related to sex of Facebook friends (Black et al., 2013), which suggests online photos can create false social norms. Although this research suggests that SNS can portray certain behaviours as normalised, and thus increase individuals' willingness to take part in them, this research has focused on Facebook and Myspace, SNS which are now less commonly used by adolescents (Anderson & Jiang, 2018). Instagram, the most commonly used SNS by adolescents (Anderson & Jiang, 2018), has a very different nature in that both friends and strangers are frequently 'followed'. Therefore, research needs to evaluate if these findings are still relevant to platforms like Instagram and TikTok. A recent study which has started to explore this looked at Instagram use and perceived peer norms and found that these were positively related to marijuana use (Bergman et al., 2018a). These studies highlight the importance of the content viewed online, and the role of social norms.

The research discussed above has suggested that indivduals assume what they see on SNS are population norms. In line with social norms theory (Perkins & Berkowitz, 1986), individuals will then try to match their behaviour to what they perceive is the social norm in order to be seen as similar to others, and avoid ostracism. This pattern has not been evaluated in adolescents, an age group that is inherently more influenced by their peers (Gardner & Steinberg, 2005). As early adolescence is a time of finding one's identity, and psychosocial functioning in adolescence can shape behaviour in adulthood, it is important to fully evaluate the effects of SNS use on early adolescents. This has important implications for times of social network expansion (for example, as individuals move from primary school to secondary school), as more risky behaviours may be seen on SNS. Additionally, with previous research demonstrating that risky behaviours peak at ages 14-15 years (van Lier et al., 2009), research looking at how SNS affect adolescent psychosocial functioning would also be valuable to help identify underlying influences. Thus, risky behaviour photos on SNS may endorse certain behaviours as 'normal'. A great deal of the research previously conducted within this field is experimental, and although this gives a high level of control and manipulation for the researchers over the conditions being explored, it is particularly prone to bias as randomised control trials do not reflect how people behave in real life, and therefore further cross-sectional research is needed to compliment this.

Together, the studies detailed in the previous sections demonstrate how SNS can impact individuals. It is clear that not only level of SNS use is important to explore, but also the way that an individual engages with SNS is important to examine in order to fully understand these relationships. Currently, there is a vast amount of cross-sectional research exploring SNS use and body image, and the role objectification plays in this relationship. However, less is known about how some of these relationships may be generalised to (pre) adolescence, and more research needs to examine SNS specific to (pre) adolescents, and the specific ways they engage with SNS to fully understand this. Furthermore, research has also highlighted the relationship between SNS use and wellbeing, and the role that social comparison plays in this relationship. However, more cross-sectional and longitudinal research is needed to explore the specific ways that current adolescents, a generation who have grown up surrounded by SNS, navigate SNS and the frequent opportunities for social comparisons these provide. Finally, research has explored the role that social norms may play in the relationship between adolescent SNS use and risky behaviours, however this has focused specifically on substance use (drinking and drug taking) and not on other aspects of problem behaviour which may start earlier (for example rule breaking or fighting). Furthermore, little research has explored the relationships between SNS use and social competency in adolescents, an important avenue to

explore due the associations with a variety of later outcomes. Clearly, there are still many gaps relating to the impact of SNS use in this age group. Considering SNS accounts are often created within this developmental stage (Livingstone et al., 2011) it is vitally important that more research evaluates the initial effects of SNS on body image, wellbeing, and psychosocial functioning.

Environmental change

This PhD set out to specifically explore the impact of SNS use on adolescent body image, wellbeing, and psychosocial functioning. However, halfway through the PhD, the global environment changed drastically with the threat of COVID-19. Considering the importance that developmental theories place on the environment, it was undeniable that this time of environmental change and emotional stress could influence adolescents' body image, wellbeing, and psychosocial functioning. In particular, the UK mandatory lockdown was ordered from March 2020 (Institute for Government, 2022), with individuals unable to socialise (in person) with those outside of their household during this time. This enforced proximity to parents/guardians, alongside the distance from both friends and wider family was likely to impact on individuals, especially adolescents whose developmental stage relies on peer contact (SAHRC, 2013a). Furthermore, the increased uncertainty of their own safety, and that of their loved ones, was a likely emotional burden for adolescents. Additionally, it was possible that these changes could influence SNS use, for example increased time could be spent on SNS, due to a lack of other entertainment/ hobbies. Therefore, it was also important to consider how these factors together could impact on adolescents' body image, wellbeing, and psychosocial functioning. For this reason, it felt important to include this within the PhD, with research highlighting the previous (pre-COVID-19) literature around isolation and SNS detailed below.

Prior to COVID-19, the research evaluating the effect of isolation on adolescents is sparse, however, one study evaluated how participants aged 12-19 years old with cystic fibrosis coped with being put into isolation to reduce cross-infection. The results demonstrated that all participants reported difficulty adjusting to living with isolation (Vines et al., 2018). The isolation was also linked to feelings of loneliness and sadness (Vines et al., 2018). Furthermore, research has suggested that social isolation is associated with an increased risk for depressive symptoms, suicide attempts, and low self-esteem in adolescents (Hall-Lande et al., 2007). This is of particular importance to adolescents, considering research with adolescents experiencing caregiver neglect suggested that isolation from peers is more impactful for rates of depression compared to psychological neglect by caregivers (Christ et al., 2017). This highlights, in line with developmental theories of adolescence,

the importance of peers (Ragelienė, 2016), and is particularly important to consider during a time when many individuals will be with their immediate family, but isolated from peers. This study highlights some of the implications which adolescents may experience from government mandated lockdown. Although individuals are not completely isolated, they were unable to have normal contact with friends, which is an important aspect of adolescent development (SAHRC, 2013a). Furthermore, research has suggested that the perception of being socially isolated and lonely is linked to mental and physical conditions, more so than objective lack of social connection (Primack et al., 2017), therefore it is particularly important to understand how adolescents feel in regards to their perceived isolation. Indeed, cross-sectional research exploring levels of loneliness in three samples of adults in American during the first three months of lockdown suggested that previous findings reported by Vines et al., (2018) and Hall-Lande et al., (2007) could be applicable to experiences during COVID-19 associated lockdowns (Killgore et al., 2020). However, little research has explored adolescents' perceptions of this time and what aspects of lockdown they felt impacted on their wellbeing.

Research examining the effect of a previous pandemic; A/H1N1pdm09 (swine flu) which occurred from 2009-2010, suggests some ways a pandemic can affect the individual. This research, which used thematic analysis to code electronic patient records of individuals attending specialist mental health services, demonstrated that within the first three months of the swine flu outbreak, participants adopted a range of behaviours as a consequence of their fear and worry regarding the pandemic (Page et al., 2011). This pandemic had a particularly large impact on children and adolescents, with children and adolescents under the age of 16 being over-represented in the 'severe/ moderate concerns' category (Page et al., 2011). This demonstrates the particular importance that should be placed on how adolescents cope with these changes and experiences. This research was conducted with a clinical sample, therefore although it suggests some of the ways a previous pandemic has affected individuals, it would be expected that the impact on a non-clinical sample could be lesser. However, considering that at the time of the swine flu not schools, shops, nor restaurants were mandated to close, it is particularly important to explore the specific impact of the COVID-19 pandemic on adolescents, as this could be very different than that of swine flu. Taken together, these findings suggest some of the ways that the COVID-19 pandemic could negatively impact adolescents' wellbeing. Cross-sectional research conducted during COVID-19 has started to support the findings reported by Page et al., (2011). With research conducted with adults in the UK suggesting that adults reported increased rates of distress and anxiety (Smith et al., preprint), similarly to swine flu, worry and fear increased during COVID-19. However, this study was conducted

with adults, and explored aspects of worry particularly applicable to adults (e.g., financial worry), therefore further research is needed to explore adolescent specific experiences during this time.

It is important to consider this pandemic in the current SNS climate, and how social media could interact with some of these associations due to the unique situation. Research looking at the relationship between isolation and SNS use has explored this with detained refugees (Coddington & Mountz, 2014). This research showed how social media can be used to combat isolation (Coddington & Mountz, 2014). The research found that refugees used social media to create online networks that transcend their isolation. This suggests an important role for SNS in helping people maintain social networks when they are otherwise isolated. Furthermore, qualitative interviews with chronically ill hospital patients aged 12-18 years old has shown that Facebook helped patients to feel connected to friends and family, stay up-to-date with their social lives, and escape from their illness (van der Velden & el Emam, 2013). Considering during swine flu the use of SNS was very different; Facebook had 400 million active users (Yahoo! News, 2013), compared to 2.7 billion active users in 2020 (Statista, 2021), this highlights further ways that experiences of COVID-19 may differ to previous experience, for example swine flu as reported by Page et al, (2011). As previously highlighted, adolescence is a developmental period in which individuals are particularly reliant on peers (Curtis, 2015), and it is possible that, similarly to the findings from Coddington & Mountz (2014) and van der Velden & el Emam (2013), SNS could reduce the perception of being socially isolated.

Limitations

There are a number of limitations within the current research field. A research gap which threads through much of the literature around this topic, is the scarcity of research that has explored early/middle adolescents' experiences, with research predominantly focusing on adults and older adolescents (i.e., university students). Considering 70% of 12-15 year olds (Ofcom, 2020b), and 21% of 8-11 year olds (Ofcom, 2020a) have a SNS account, the difference in developmental stage for these cohorts, and the differing environment (i.e., many university students are not living at home), it is important to explore any similarities and differences with a younger sample. Although this is the case with all areas being explored in this PhD, this is particularly relevant to research around psychosocial functioning which contains very few studies exploring adolescents' experiences. Furthermore, another gap in the current literature is boys' experiences of SNS use, body image, wellbeing, and psychosocial functioning. This is particularly pertinent to research around SNS use and body image which has focused predominantly on young girls and women, although is still

relevant to the fields of wellbeing, and psychosocial functioning. Research needs to address these gaps in order to truly understand the effect of SNS on the adolescent population, and in order to create recommendations of SNS use.

An additional critique with the current research, is the focus of specific SNS, for example Facebook or Instagram. With the rapidly evolving online environment, old SNS (for example Myspace and Facebook) are being replaced with new ones (for example Instagram and TikTok) and research that focuses on specific sites can quickly become dated. Instead, it is important to conduct research which explores a variety of SNS, and behaviours associated with different types of SNS use, so that findings can be generalised to future SNS, rather than quickly becoming dated.

Finally, it is clearly important to explore how SNS use may respond to environmental changes, and the 'new normal' of living during an infectious pandemic. Considering the environmental state of our planet, it is unlikely this will be the last widespread pandemic in our lifetime (Gill, 2020; Sridhar, 2021), and therefore exploring the way that individuals respond to the heightened state of stress, how SNS are used, and the usage changes during a pandemic is important, not only to lay the foundations for future similar experiences, but also to suggest how other environmental changes may influence these relationships.

Conclusion

Adolescents experience body image concerns, negative wellbeing, and decreased psychosocial functioning. Considering the established relationship between these outcomes and traditional media, research has started to highlight how SNS may also influence these facets. Developmental theories have highlighted the role that one's environment may play in influencing the individual, therefore more research is needed to explore younger adolescents' unique experiences. This chapter has provided a broad overview of the research surrounding these topics. Clearly, there are gaps and limitations within these fields, with little research exploring both adolescent girls' and boys' experiences of the associations of SNS on body image, wellbeing, and psychosocial functioning. Only once we focus the research attention on this sample, can we identify the possible impacts of SNS on mental health, and understand the underlying pathways for any negative associations.

Chapter 3: Methodology

This chapter will start by covering the ontological and epistemological standpoint for this thesis. Following this, the various methodological techniques utilised within the PhD will be outlined and justified. The final sections of this chapter will cover reflexivity and ethical considerations.

Ontological and epistemological standpoint

An ontological standpoint refers to the assumptions made regarding the nature of reality (Braun & Clarke, 2022a). One position, realism, argues that knowledge can be uncovered both accurately and objectively. This argues that what we discover through research is independent of any external influences, for example the way the research is conducted or the researcher's mind (Braun & Clarke, 2022b). This approach can be particularly problematic when conducting qualitative research, or when exploring individuals' perceptions due to its view on 'mind-independent truths', which does not allow recognition of the contextual influences (Braun & Clarke, 2022b). Realists are often criticised of confusing their interpretation of reality with reality (Pilgrim, 2013). Alternatively, critical realism posits that knowledge is viewed as socially influenced and thus reflects a separate reality that we can only ever partially access (Braun & Clarke, 2013). With critical realism, in order to produce knowledge that is worthwhile and could make a difference, we need to be able to base this on some 'authentic' reality that exists (Stainton Rogers & Stainton Rogers, 1997). Therefore, although critical realism maintains there is one singular truth, it also argues that there are different perspectives and representations of this truth (Braun & Clarke, 2022b). Alternatively, relativism argues against one singular truth, instead this position focuses on the consequences and implications of the realities shown through the data, rather than focusing on an ultimate truth (Braun & Clarke, 2022b). Therefore, relativism does not aim to show the 'truth', but what the accounts in the data mean, and why that is important. The ontological standpoint for this study was critical realism. This was used over realism, as this does not allow for variation in peoples experiences, and how this may shape and affect their reality. Additionally, critical realism was used over relativism as the aim of the thesis was to understand the ways that SNS influenced adolescent body image, wellbeing, and psychosocial functioning, and therefore was focused on truth (while accepting this truth is socially influenced), as well as highlighting the importance of this truth. Finally, critical realism is also aligned with a design that incorporates both quantitative and qualitative data, as is used in this thesis.

Epistemology refers to the theory of knowledge and how we gain knowledge (Braun & Clarke, 2022a). Positivism is an epistemological position where research aims to capture reality, without influencing this reality. This is done to create true and objective knowledge which is the outcome of rigorous scientific method (Braun & Clarke, 2022b). However, this approach has received criticism as it argues that the researcher and participant are separate entities, such that the researcher can explore reality without influencing it (Guba & Lincoln, 1994). Postpositivism is an evolution from positivism which has responded to this critique and recognises that observation is not free from influence. This position views objective knowledge is ideal, therefore this is still aimed for, even if this is not possible (Guba & Lincoln, 1994). Another epistemological approach is contextualism, which is based on the idea that we act in a way based on the context (Pepper, 1942). This means that although there is a sense of 'truth', this can be based on the context that one is in. It posits that enquiry for truth is important, and what we discover through research will be true and valid, but only in certain contexts. Contrary to positivism and contextualism, constructionism follows that research creates evidence, rather than reveals it (Willig, 1999). There are numerous approaches to contextualism, but all focus around the concept of research creating reality. In particular, within constructionism, language is a key tool which the researcher uses to create the reality (Braun & Clarke, 2022b). The epistemological standpoint for this research is contextualism. Contextualism was chosen over positivism because it disregards the impact that a context could have on the research and the data collected. In particular, the research within this thesis is focused on the context of SNS and COVID-19 in shaping adolescents' experiences and therefore the context is an important aspect of enquiry. Furthermore, contextualism was chosen over constructionism due to the aim to reveal, rather than create, knowledge regarding the relationship between the outcomes being measured.

Research overview

The overall aim of the PhD was to explore the impact of SNS on adolescent body image, wellbeing, and psychosocial functioning. Four studies utilising a multimethod approach, which were analysed and interpreted separately, were conducted in order to explore this topic. Further details of each study method can be found in the relevant study chapter.

Quantitative research

Three of the studies that were conducted employed a wholly quantitative approach, which aimed to explore preadolescents' (Study 1) and slightly older adolescents' (Study 2 and Study 4) use of SNS and how this related to their body image, wellbeing, and psychosocial functioning. Cross-

sectional and longitudinal methods were employed to explore these relationships. Cross-sectional research is a type of quantitative and observational research design where the outcome and exposure are measured simultaneously (Coolican, 2017). This type of research can describe or identify patterns of association between variables (Bethlehem, 1999). Although cross-sectional data cannot be used to make inferences about the direction of association, it can help to determine variables which are related and associated (Coolican, 2017). Therefore, cross-sectional research is a valuable technique in describing relationships. Furthermore, as cross-sectional research only requires one time point, this is often a more achievable task under the time and cost constraints often found in research.

Cross-sectional methodology was chosen in order to explore the relationship between SNS engagement and body image, wellbeing, and psychosocial functioning in an under-researched population. As relationships and associations have been found in older samples (Cookingham & Ryan, 2015; Fioravanti et al., 2019; Hogue & Mills, 2019), it was deemed that quantitative research was more relevant than qualitative research as this allows testing of the previously reported relationships in a younger sample. Cross-sectional research was used initially to explore whether any relationships were present and worthy of further longitudinal research. Cross-sectional research was conducted initially, rather than either longitudinal or ecological momentary assessment (EMA), which can both highlight more in-depth relationships and start to explain directions of associations, as these methodologies require more resources (both in relation to cost and time) and therefore it was thought that exploring this relationship cross-sectionally initially, to ensure there were relationships present, would be best.

The final study (Study 4) employed a longitudinal study design to explore the impact that SNS had on adolescents' body image, wellbeing, and psychosocial functioning. Individuals that took part in Study 2 were invited to take part in an additional timepoint (roughly 15 months later). The study was then analysed as two separate timepoints due to the difference in situation (see further explanation in Chapter 7).

Similarly to cross-sectional research, longitudinal studies can collect quantitative data, but with repeated observations at different timepoints. Longitudinal research is often observational, however it can be conducted as a randomised control trial. Longitudinal research can help to determine the causality between observations (Hill, 1965), and therefore can add additional depth to cross-sectional data. The large numbers of participants required for longitudinal analysis, and the

multiple timepoints, makes this far more difficult with the tight timelines and low budgets often found with research.

Study 4 had originally aimed to longitudinally explore the associations between body image, wellbeing, and psychosocial functioning, along with proposed moderators and mediators. In order to achieve this, it had been planned that the same cohort of adolescents would take part in three distinct data collection timepoints (Oct 2019 – Jan 2020; April – July 2020, October 2020 – Jan 2021). However, schools in England closed from March 2020 due to COVID-19, and remained closed during the proposed second timepoint (April – July 2020), therefore this timepoint was cancelled. Due to the continued impact on society the final data collection was moved from October 2020 – Jan 2021 to February – April 2021 and also moved online. Following this, due to the likely impact that COVID-19 would have on SNS and body image, wellbeing and psychosocial functioning, it was decided that the approach to analysis would be changed in order to present findings that were more reflective of adolescents' experiences. It was thought that testing the longitudinal associations, although interesting would be less generalisable and reveal less about adolescent experiences during these two distinct timepoints. Instead, the proposed model was tested separately at the two timepoints and this was qualitatively compared. Study 1, 2, and 4 had minor impacts due to COVID-19, and study 3 was developed as a response to the pandemic. Further detail about this can be seen in the COVID-19 impact statement from page 539.

Qualitative research

Study 3 utilised a qualitative interview technique, using both fully-structured online surveys and semi-structured one-to-one virtual interviews, to explore adolescents' experience of SNS use during the COVID-19 pandemic, and the impact this time and using SNS during this time had on them (further detail about the differences between the two interview techniques can be found in Chapter 6). Qualitative analysis uses written text or speech produced by the participant, rather than ratings on a scale, in order to achieve the research aims. Qualitative research allows more flexibility and nuance compared to quantitative analysis, and therefore it can often be used as a 'starting point' for exploration, as was the case in Study 3 where little previous research had explored this topic. Furthermore, qualitative analysis puts the participant at the centre of the study and aims to explore their own thoughts and experiences. In doing this, qualitative research aims to gain a better understanding of social realities (Handbuch, 2004), and highlight areas of further exploration which are relevant and important to those individuals. Qualitative analysis can be inductive, deductive, or a mixture of the two (abductive approach). Inductive analysis is not guided by research questions or

previous findings, but rather the data determines the themes. Alternatively, qualitative analysis can be deductive, this is when it is guided by theoretical underpinnings, findings or research questions. Inductive qualitative analysis is particularly relevant for exploring avenues with little to no prior relevant research. This is the avenue that was taken for Study 3, as at the time there was little relevant research. This methodology allows deep exploration, without preconceived ideas of the experiences of adolescents during COVID-19. A thematic analysis framework was used for this study, which involves 6 stages; familiarisation with the data, coding, theme development, theme refinement, theme naming, and writing up (Braun & Clarke, 2006). Thematic analysis was chosen because it allows the researcher to identify themes as recurring patterns of talk and meaning within and across interview data. Additionally, thematic analysis allows the opportunity to identify and understand different perspectives on SNS use during a very complex period of time.

Multi-Method Approach

The thesis is made up of multiple studies exploring a common thread. In some theses, these studies will be wholly qualitative or wholly quantitative, and tend to build on each other. Alternatively, when both methods are used (i.e., a mixture of qualitative and quantitative methods), there is the opportunity to utilise a mixed-methods approach. A mixed methods approach is often utilised as this allows the findings from the different methodologies to be integrated and add strength to the findings. However, in this case it was felt that integrating the findings was not applicable, and a multi-methods approach was used. The research studies in this thesis were conducted sequentially, however due to study timelines overlapping (see diagram 1) earlier studies were not used to inform following studies.

The aim had been for study 1 to inform study 2 by highlighting the outcomes that would be best to take forward to the following study, however the sample had not reached the target number therefore recruitment remained open for study 1, and therefore analysis had not been completed when study 2 commenced. Due to this, all items were included in study 2 in order to avoid missing importing findings. Study 4 was developed as a longitudinal study and therefore no changes to the questionnaire were planned from study 2 to study 4. However, changes were made to study 4 to account for COVID-19 and the environmental context the study was completed in, however due to this changing with little warning, the analysis from study 2 was not completed at this point and therefore was unable to inform the changes made to study 4.

Finally, there was no chapter integrating the findings from study 3 with quantitative studies. Due to the thesis being made up of a mixture of qualitative and quantitative studies, a mixed methods approach was considered. This approach is often taken in order to add further depth to the quantitative findings and add strength and generalisation to the qualitative findings. However, this approach was not taken due to the distinct contexts that the studies were conducted under. Some of the studies conducted as part of this thesis occurred pre-COVID-19, one occurred during the COVID-19 pandemic, and one spanned the time from pre- to during COVID-19. It was felt that integrating the qualitative and quantitative studies would not deepen the knowledge or enable the qualitative findings to be generalised due to these very different contexts which are not comparable due to the increased restriction put in place by the government, the increased level of uncertainty and associated changes in psychological wellbeing associated with experiencing a pandemic. Instead of furthering and deepening the knowledge, it was felt that integrating these findings would lead to findings that were not reflective of adolescents' experiences as the studies were conducted under such different conditions.

Diagram 1. *Sequential elements of PhD.*

Study 1 data collection (May 2019 – July 2019)

Study 2 data collection (Oct 2019 – Feb 2020)

Study 3 recruitment (June 2020 – Oct 2020)

Study 3 data collection (June 2020 – Oct 2020)

Study 2 analysis (Jan 2021 – May 2021)

Study 4 analysis (April 2021 – July 2021)

October 2018 – September 2019 (Year 1)	October 2019 – September 2020 (Year 2)	October 2020 – December 2021 (Year 3)

Study 1 recruitment (Jan 2019 – June 2019)

Study 2 & 4 recruitment (Jan 2019 – Jan 2020)

COVID-19 restrictions in place in UK

Study 1 analysis (Oct 2020 – Jan 2021)

Study 3 analysis (Nov 2020 – Feb 2021)

Study 4 data collection (Feb 2021– April 2021)

Reflexivity

The idea of contextualism (that we act in a way based on the context), may also extend to individuals' interest in research. Indeed, research has highlighted that individuals are more willing to take part in research when they have personal experience of the research topic (Glass et al., 2015). However, it is also likely that a researcher's own context and past experiences may also influence their actions as a researcher, such that a researcher's area of interest may be led by their own personal experiences of that topic. Additionally, one's own experiences may influence other aspects of research. The term 'positionality' refers to the researcher's own experiences, world views and position, and how they relate to the study being conducted (Qin, 2016). Reflexivity is the critical view of the researcher's positionality, and the understanding that their positionality may influence the research (Koch et al., 1998).

Considering my own positionality, I was an 'outsider' in many ways during the research projects – as an adult, I conducted research with preadolescents and adolescents. However, my gender (female) made me an insider to those who also identified as female, and my ethnicity (white) made me an insider to those who identified as white. Furthermore, my 'insider' status also related to the fact I was a SNS user, and specifically an image-focused SNS user. My views of social media, and SNS, were not wholly negative. I believe and understand the importance of these platforms, indeed with the majority of my family living abroad I use SNS a great deal to keep connected to them, however, I do also look at SNS with a critical eye and I am aware of the ways that it can make me feel bad about myself, and the ways it may impact others too. Although these are aspects of myself which I cannot change, or completely detach from, I am able to have an awareness of them and the ways that they may impact the research I conduct. My positionality and reflexivity in relation to Study 3 in particular is explored in Chapter 5.

Ethical considerations

Conducting research with adolescents and preadolescents required additional ethical considerations to research with adults, due to the vulnerable nature of the participants. Navigating this was a task which I did not take lightly. While developing Study 1 and 2 a great deal of time was spent deliberating over concepts to explore and scales to be used to do this. The most important element was that individuals would not be exposed to any more harm by taking part in the research project, compared to not taking part. The first consideration in light of this was the age at which to

recruit participants. Adolescents and preadolescents aged 10 – 16 years old took part in the various studies during the PhD, and a great deal of time was spent considering the lower age of the sample. It was decided that the lowest age would be year 6 students due to the evidence at that time that SNS usage is quite common at this age (Ofcom, 2020a). However very little research has evaluated how social media is used at this age, and how it could impact individuals. With SNS usage being associated with a number of negative outcomes in older samples, it was decided that it was important to evaluate this in preadolescents in order to fully explore the impact of SNS use. However, due to the young age, particular care was taken with question selection in order to ensure there was no harm to participants.

One of the topics which received a great deal of deliberation was whether to include a question about body mass index (BMI), or measurement of BMI. BMI is known to impact body dissatisfaction due to the stigma associated with a higher weight (Rojo-Moreno et al., 2013; Romano et al., 2021). However, research has highlighted that there can be negative effects with being weighed (Froreich et al., 2021). In light of this, the distress that could be caused to participants by weighing them is too great to justify collecting this data. Next, asking individuals for their self-reported BMI was considered. This was also disregarded for a number of reasons. First, it was thought there could be large amount of missing (Sherry et al., 2007) or invalid (de Vriendt et al., 2009) data due to children not knowing their weight and/ or height. This, alongside the potential harm to participants due to a question asking them to think about their height and weight, something that can be a distressing experience, meant that it felt it would not be in the best interest of the children to ask this question. Furthermore, asking individuals about their height and weight, alongside the topics and questions being asked in the questionnaire (for example questions about loneliness), it was thought this could reinforce the negative stigmas associated with higher weight (Ikeda et al., 2006). For these reasons it was decided that BMI would not be collected. Finally, using a figure rating scale was considered. Lombardo et al. (2013) suggested that figure drawings correlate with BMI, especially after age 8 years. Therefore, there was sound evidence to use this method. However, the previously considered arguments were still seen as too strong to expose participants to this. For these reasons, it was decided that there would be no measure of BMI or body shape in any of the research studies.

Of the measures which were included, it was felt that these did not cover topics that would elicit any undue stress from the participants, however, in order to ensure that participants did not experience any harm from the study, schools were given the option to remove any questions they

felt it was appropriate to remove. As teachers and schools are aware of the specific topics which may elicit potential harm to their students, it was felt that this would help to keep participants safe. This decision was made, rather than excluding schools which would not accept certain questions, as this would allow a greater number of participants to be included in the study. However, this could lead to large amounts of missing data on questions which schools asked to be removed. Indeed, one school did request for the question on pubertal timing to be removed (this is further detailed in Chapter 4).

Each study within the PhD was reviewed by UWE's Faculty Research Ethics Committee. Prior to sending the protocol to the ethics committee each study was reviewed by a number of parents (supervisors and peers) to gain insight into how a parent may feel about their child being asked these questions. This allowed for the researcher to discuss any concerns in an open dialogue with a parent in order to overcome the particular concern in the most appropriate manner. These conversations led to some changes, for example giving examples for unique codes and adding images within the questionnaire where appropriate.

The topic of consent is of particular importance, even more so when conducting research with individuals under the age of 18. Individuals under the age of 18 required parental consent in order to take part in the studies, as well providing their own assent. For each study completed during the PhD, parental opt-out consent was required (except one school who specified parental opt-in consent), and child assent was confirmed on the day of data collection, if not earlier. For Study 1 and Study 2 schools were asked to discuss the research project with students prior to the day of data collection and to ask children to consider whether they were happy to take part, and discuss any questions they may have with their teacher. Schools were asked to discuss the study with participants prior to data collection so that individuals did not feel uncomfortable requesting not to take part in the study on the day, as they would be able to do this at an earlier point in confidence.

Finally, a topic of much contention in research is that of incentives and donations for participant time. For Study 1 and 2, participants did not directly receive incentives for taking part in the research project, this decision was made after consideration of the ongoing ethical debates around direct incentives to children being coercive (BERA, 2018). Research has suggested that school supplies may be an appropriate incentive for children (Rice & Broome, 2004), therefore, the school was given a small donation for their time. It was hoped, and in many cases it was confirmed by

teachers, that donations would benefit the participants taking part in the research project, often this was in the form of decorations or similar for end of year celebrations. As participants themselves are unaware of the donations, this avoided them feeling coerced to take part due to the monetary gain, furthermore schools were offered a rate of donation which was independent of the number of children taking part in the research project, ensuring that teachers did not feel a duty to sway parents or children to take part. Schools are known to have particularly tight budgets, and therefore being able to give a monetary donation as a thank you, which would benefit the children taking part in the research project, enables the researcher to show their gratitude to the school and teachers for taking the time to allow us to run the research with the students. Individuals taking part in Study 3 were directly compensated for their time with an Amazon voucher, and in Study 4 all participants were made aware of a raffle being run alongside the study, and given the option to take part in the raffle if they completed the questionnaire. It is more common for qualitative research to involve donations due to the larger emotional and time investment from participants, and also to help reduce the power discrepancy between the participant and the researcher (Goodman et al., 2004). All participants that took part in the questionnaire were offered the same donation irrespective of the length or details in the interview.

Summary

In this chapter, the methodologies for the four studies have been reviewed and critically discussed, the ontological and epistemological standpoint of the thesis has been laid out, reflexivity has been detailed, and ethical considerations outlined. Further details of each study will be outlined within their study chapter. The next chapter will detail the first study which explored the use of SNS in preadolescents, and how this was associated with their body image, wellbeing, and psychosocial functioning.

Chapter 4: Study 1- A cross-sectional study evaluating SNS use and body image, wellbeing, and psychosocial functioning in 10-11 year olds.

This chapter details the first research study conducted as part of the thesis. As detailed in previous chapters (chapter 1 and 2) little existing research has explored the relationship between SNS use body image, wellbeing, and psychosocial functioning with preadolescents, therefore this chapter sought to contribute to this knowledge gap in the literature. Study 1 aimed to explore SNS use in preadolescents, and how this is associated with body image, wellbeing, and psychosocial functioning. The chapter provides a brief introduction to the existing research on this topic, as well as the study methods, results, and discussion. This study resulted in two conference presentations: BPS Developmental Section Conference (17/09/2021), BPS Cyberpsychology conference (07/07/2021).

Introduction

The first social networking site (SNS) to reach a million monthly active users was MySpace in 2004. Since then, SNS have gained tremendous popularity (Ortiz-Ospina, 2019). Research conducted with adolescents aged 12 – 15 years old suggests that 70% of individuals have a social media profile (Ofcom, 2020a), and only 4% of girls and 10% of boys aged 14 years reported not using social media (Kelly et al., 2018). Research evaluating individuals younger than this is sparse, but a recent report has suggested that 21% of 8 – 11 year olds have a social media account (Ofcom, 2020a).

Given the established link between traditional media and both increased body image concerns (Grabe et al., 2008) and decreased wellbeing (Durkin & Paxton, 2002), research has started to evaluate the effects of SNS on individuals' body image, wellbeing, and psychosocial functioning. However, this has mostly been evaluated with university students and adults (Saiphoo & Vahedi, 2019), with little research conducted with younger individuals.

SNS and body image research

Within the broader field of SNS and mental health, research has mostly focused on how SNS can affect an individual's body image. For example, a self-report questionnaire found girls aged 13 – 15 years with a Facebook profile scored significantly higher on all measures of body image concern compared to those who did not use Facebook (Tiggemann & Slater, 2013). More recently, research conducted with adolescents, with a mean age of 12.76 years, found that SNS use had a direct effect

on internalisation of sociocultural ideals and muscular ideals in both boys and girls (Rodgers et al., 2020). Furthermore, indirect effects were found for both boys and girls for SNS use and upward appearance comparison, body dissatisfaction, dietary restraint, and muscle building behaviours. Furthermore, one cross-sectional study conducted with Australian girls and boys aged 10 – 12 years old evaluated the impact of social media on body image concerns and wellbeing in early adolescents (Fardouly et al., 2020). For the body image aspect participants were asked questions relating to their social media use, online activities (e.g., appearance comparisons and selfie-posting), body satisfaction and eating pathologies. The results suggested that YouTube, Instagram, and Snapchat users reported higher levels of body image concerns and eating pathology than non-users (Fardouly et al., 2020). Additionally, path analysis suggested that the frequency and direction of appearance comparisons were predictors of body satisfaction and eating pathology for boys and girls, with increased frequency and upward comparisons predicting poorer body satisfaction, and increased eating pathology. The mediating role of appearance comparison on the relationship between SNS use and body image concerns has also been replicated through longitudinal research with slightly older adolescents aged 11 – 16 years (Jarman et al., 2021). These studies highlight the relationship between body image concerns and SNS use in adolescents. Little other research has evaluated a younger population, despite research suggesting that body esteem levels are stable from age 11 years (Lacroix et al., 2020). This demonstrates the importance of evaluating SNS use and body image in a pre-teen population.

A great deal of the research evaluating the effect of SNS on body image has studied SNS use in general, counting all time spent using a SNS, rather than looking at specific aspects of SNS use. However, recently, research has started to look at specific aspects of SNS use and how this affects adolescents. One specific aspect of SNS that has received attention is photo-related behaviour. This is behaviour related to taking self-images ('selfies') and posting these on social media. Research has suggested that girls aged 12 – 13 years who regularly shared selfies on social media reported significantly higher body dissatisfaction compared to those who did not share selfies (Mclean et al., 2015). Additionally, of the girls who had shared photos of themselves on social media, higher engagement in manipulation of the photos, but not higher media exposure, were associated with greater body-related and eating concerns, even after accounting for media use and internalization of the thin ideal. However, this relationship has not been evaluated in boys (Mclean et al., 2015). Contrary to these findings, research conducted with girls aged 10 – 15 years old has suggested that browsing appearance related accounts was associated with increased levels of objectification and body shame, whereas using social media to communicate or post pictures (i.e. use it actively), was

not associated with objectification or body image concerns (Markey & Daniels, 2022). This research supported previous research with older samples, for example research with female college students has suggested that passive Facebook use is associated with decreased body satisfaction (Strubel et al., 2018), and cross-sectional research with adults has suggested passive use is detrimental to both male and female body image (Bodroža et al., 2022). Considering selfie-taking and selfie-posting are considered forms of active SNS use, it is important to explore these opposing findings together, to examine the unique ways these types of SNS use are associated with adolescent body image and wellbeing.

Research has repeatedly suggested that there are gender differences in levels and causes of body image concern (Muth & Cash, 1997). Similarly, research in older adolescents has suggested that there are gender differences in SNS use, and the relationship that this has with body image concerns (Thompson & Lougheed, 2012). However, little research has evaluated these gender differences in preadolescents.

SNS and wellbeing research

Less research has evaluated how SNS can affect adolescents' broader wellbeing. However, that which has been conducted with adults might also inform our understanding of these relationships in young people. Engeln et al., (2020) suggested that Instagram use is linked to decreased positive affect and increased negative affect in undergraduate women. Research which has started to look at more nuanced types of SNS use has examined the relationship between Instagram usage and loneliness in young adults (mean age 19.4 years), suggesting that the impact on loneliness may be dependent on the way in which one engages with the social media platform (Yang, 2016). Specifically, they found that social media interactions which include communicating directly to other people was related to lower levels of loneliness, while Instagram broadcasting (which includes sharing information not directed at a specific person, for example posting or uploading a photo) was related to increased levels of loneliness (Yang, 2016). Research has also started looking at other aspects of wellbeing and found that SNS engagement (a measure which encompassed frequency of SNS consumption, participation, production, and communication) was positively related to self-esteem in individuals aged between nine and 13 years in the Netherlands (van Eldik et al., 2019). Although research has started to evaluate how different types of SNS use can affect an individual's wellbeing, little of this research has looked at adolescents, therefore more research is needed to fully evaluate how SNS effect wellbeing in younger adolescents.

Furthermore, research looking at individuals aged 14 – 19 years found that problematic Instagram use (i.e., addictive Instagram use) was directly associated with loneliness in boys, but not in girls (Yurdagül et al., 2019). This demonstrates that more research is needed in order to evaluate how SNS may be affecting boys and girls differently.

The cross-sectional study conducted by Fardouly et al. (2020) and discussed above also explored the impact of social media on wellbeing in adolescents. For the wellbeing aspect, participants were asked questions relating to their social media use, online activities (e.g., appearance comparisons and selfie-posting), depressive symptoms, and social anxiety. No difference was found on depressive symptoms or social anxiety for SNS users versus non-users (Fardouly et al., 2020). However, path analysis suggested that the frequency and direction of appearance comparisons were predictors of social anxiety for boys and girls, with increased frequency and upward comparisons predicting increased social anxiety. Additionally, it was found that depressive symptoms were predicted by frequency of appearance comparison (Fardouly et al., 2020). In line with this, research has suggested that passive SNS use is associated with decreased wellbeing, in particularly decreased life satisfaction (Wenninger et al., 2014) and increased anxiety and depressed mood (Thorisdottir et al., 2019). However, as well as not exploring these association in preadolescents, little research has looked at other important aspects of wellbeing, for example self-esteem.

SNS and psychosocial functioning research

Very little research has evaluated how SNS may influence psychosocial functioning. Huang et al. (2014) used a longitudinal design to suggest that exposure to risky pictures (i.e., pictures of partying or drinking alcohol) posted online by personal network friends was predictive of adolescents' likelihood of increasing or maintaining their smoking levels in individuals aged 15 – 16 years. SNS allow individuals to connect with people that they may otherwise not have had the opportunity to meet and allow individuals to glimpse into more of other peoples' lives than before. Therefore, it is unsurprising that there is an association between SNS use and risky behaviours seen online, which individuals may then mimic offline. Furthermore, Branley & Covey (2017) also used an online survey to evaluate the relationship between exposure to online risky behaviour content and offline risky behaviour for individuals aged 18 – 25 years. The results demonstrated that risky behaviours seen online relating to drug use, excessive alcohol use, disordered eating, self-harm, violence to others, dangerous pranks, and unsafe sex were associated with such offline behaviours.

Furthermore, research has demonstrated the important role of peer belonging (the extent to which individuals feel that they belong to a peer group) on likelihood of individuals to mimic behaviours seen on Instagram. Bergman et al. (2018) demonstrated through cross-sectional research that alcohol and marijuana use was positively related to Instagram use for young adults (aged 18 – 29 years) with high levels of peer belonging. If one has a greater sense of peer belonging, they may, in line with social identity theory, change their behaviour to fit their peer group, which could lead to more alcohol and marijuana use if this is reflected by their peer group on their Instagram feed. However, the effect of being exposed to these behaviours at a younger age has not been evaluated in relation to SNS. Indeed, little research has even evaluated whether preadolescents are presented with risky behaviour pictures online or not, and if so, how this affects them. The extant studies suggest that online behaviours that we see from others can influence our offline behaviours. However, more research is needed to look at how it may affect younger individuals.

Research has suggested that risky behaviour tendencies in older adolescents vary by gender (Abimbola & Ugbede, 2018; MacArthur et al., 2012). Indeed, research has shown that although there is a relationship between exposure to online risky behaviour content and an individual's own offline risky behaviour or psychosocial functioning for both genders, there are still gender differences. For example, the link between viewing disordered eating content and offline behaviour is moderated by gender (Branley & Covey, 2017). However, far less research has evaluated how these gender differences may play out in preadolescents.

Research question and aims

With half of all lifetime mental health disorders, which are associated with body image concerns (Rodgers et al., 2020), and negative wellbeing (Mushtaq et al., 2014), starting by mid-teens (Kessler et al., 2007), it is particularly important to evaluate how SNS can affect and contribute to this in preadolescents. Little research has evaluated SNS use in this age, and that which has been done was conducted 6 years ago (Tiggemann & Slater, 2013, 2014), a time when SNS were not so ingrained in society. Therefore, this study was guided by the following research question:

Research Question: What are the cross-sectional associations between SNS use and body image, wellbeing, and psychosocial functioning in preadolescent boys and girls aged 10 – 11 years old?

Therefore the study aims to evaluate the frequency of different types of SNS use (social media engagement, selfie-behaviour, and perceived importance of other people's views) in individuals aged 10 – 11 years and to evaluate how these types of SNS use relate to body image, wellbeing, and psychosocial functioning.

Hypotheses:

- H1: Preadolescents will use SNS.

- H2: Those who report greater SNS engagement (measured by more time spent on SNS and more SNS activity) will report more body image concerns as well as lower reported wellbeing and psychosocial functioning. Additionally, those reporting greater active, rather than passive, SNS usage will report lower levels of body image concerns, negative wellbeing, and psychosocial functioning.

- H3: Those who report greater selfie-behaviour will report more body image concerns and negative wellbeing.

- H4: Those who report greater importance of others' views will report more body image concerns and negative wellbeing.

- H5: Regardless of gender, participants who use more image-focused SNS will report higher levels of body image concerns and negative wellbeing, as well as decreased psychosocial functioning, compared with their counterparts who do not use image-focused SNS.

- H6: Girls will report lower levels of wellbeing and higher levels of all body image concerns (other than internalisation of muscular ideals) compared to boys; boys will report lower psychosocial functioning and increased internalisation of masculine ideals compared to girls.

Method

Design

The study utilised a cross-sectional quantitative design, comprised mainly of closed questions. The questionnaire was conducted both online and on paper, depending on the school facilities and preference; this was in order to accommodate each school as best as possible and ultimately maximise response rates. The quantitative methods used in this study allowed empirical

exploration of the associations between SNS usage and body image concerns, wellbeing, and psychosocial functioning in boys and girls.

Participants

Power calculations were conducted before recruitment commenced. The following statistical analyses were planned and later run: correlations, regressions, T-tests, ANOVAs, and Mann-Whitney U tests, therefore power calculations were based on the regression analysis as this requires the largest sample size to reach the desired level of power. The calculation for sample size for regression analysis was based a power of 0.80 with moderate or medium effect size, two independent variables, and a significance level of 95%. The significant level was set at 95% which leaves a 5% chance of a type 1 error (falsely accepting the alternative hypothesis), this error can lead to the results suggesting there is a relationship between variables when there is not. Power was set at 0.80 as this gives a 20% chance of encountering a type 2 error (failing to reject the null hypothesis when it is false). The power analysis set with these levels suggested a sample size of 67 participants per group was needed (Faul et al., 2007). This sample was achieved for girls, but not for boys and is discussed further on page 71.

Ninety primary schools in the South West of England were contacted for recruitment for the study. Eleven primary schools showed an interest in the study (12%), however four schools dropped out due to time constraints or other complications (thus final response rate from schools was 8%). Year 6 children (aged 10 – 11 years) in seven primary schools were invited to take part in the study; 211 participants took part out of a possible 268 participants (79%). Ten participants were removed due to large amounts of missing data or due to giving unrealistic answers. Two children identified their gender as 'other' – these participants were included in the whole group analysis, although they were excluded from analyses that utilised a gender split. This left a total of 201 participants in the initial analysis and 199 participants included in the gender split analysis. Furthermore, some schools requested for certain questions to be removed (for example the single item Pubertal Development Scale (Siegel et al., 1999), therefore there will be substantially lower numbers for some questions.

Measures

Demographics. The following demographic information was collected from participants: gender, age, ethnicity, and family socio-economic status (SES). Participant gender and ethnicity were asked as closed questions, with an additional option to specify, and age and SES were asked as closed questions (see appendix A for full questionnaire). In order to get a measure of the child's

socio-economic status, the children were asked how many cars there are in their house (Torney-Purta et al., 2001) where lower number of cars indicates lower SES. Percentage of pupil premium students for each school was also reported to evaluate SES at a school level.

Social Networking Site usage. A total of eight measures were used to evaluate different aspects of SNS use. These were split into the following groups: social media engagement, selfie-behaviour, and perceived importance of other people's views.

Social media engagement. This subgroup looked at different ways to measure general engagement with SNS.

Number of SNS used. Participants were asked whether they used any SNS (this was defined as having a profile on any social networking site which could include Facebook, Facebook Messenger, Instagram, WhatsApp, Snapchat, YouTube, or any similar platform/app), and to asked to identify which ones they used. This question was created by the researcher and comprised of tick box options of specific SNS, and an open-ended option to add any additional platforms not listed. The number of SNS used was then summed to create a total.

Time spent online. A maximum of nine items created by the researcher identified how long individuals spent on each SNS they used per day. The options were; I don't use this daily, 0 – 1hr, 1 – 3 hrs, 3 – 5 hrs, I'm constantly on this. In order to turn this into a usable scale, the upper limit for each option was used (I don't use this daily = 0, 0 – 1 hr = 1, 1 – 3 hrs = 3, 3 – 5 hrs = 5, I'm constantly on this = 7). Anecdotal evidence suggested that individuals will simultaneously use multiple SNS at one time. Therefore, for this measure, the time for each SNS that they use was summed and divided by the number of SNS that the participant used to create a daily average for time on SNS in hours. The limitation of this approach is discussed later in this chapter.

SNS activity. Seven of the original nine items were taken from the General Social Media subscale of The Media and Technology Usage and Attitudes Scale created by Rosen et al., (2013), however, questions were altered to make them more appropriate to current SNS use, and to cover a number of different activities on a number of different SNS. For example, 'how often do you post photos' was changed to 'how often do you post photos to a profile or story?'. The original 10-point Likert scale was replaced with a 5-point Likert scale (1= once a month or less, 5= every couple of hours or more) as past research has suggested that this is more appropriate (Revilla et al., 2014). Items were averaged to produce a score ranging from 1 to 5, with higher scores indicating higher

engagement in SNS activities. The Cronbach's alpha coefficient for the original study demonstrated high internal consistency ($\alpha = 0.97$; (Rosen et al., 2013). In the current study, the Cronbach's alpha coefficient was 0.90 for boys and 0.84 for girls.

Active v passive usage. One item, created by the researcher, aimed to evaluate whether individuals tend to use SNS mostly 'actively' or mostly 'passively'. Active SNS use was described as 'time spent communicating with others – this can include sharing posts with others, posting, or commenting on others' posts, or private messaging others.' Passive SNS use was described as 'time spent looking – which would include looking at other people's posts or comments, but not adding any comments or posts yourself.' Participants were asked to tick which option best described their time spent on social media: communicating with others ('active') or looking ('passive').

Selfie-behaviour. Two measures looked primarily at behaviours related to selfies.

Selfie-taking. The two item Selfie Taking Scale (Mclean et al., 2015) included the items 'how often do you take selfies with only you in the photo?' and 'how often do you take selfies with you and others in the photo?' The items were rated on an 8-point Likert scale (1 = more than twice a day, 8 = less than once a month). Items were reverse coded, summed, and averaged to produce a score ranging from 1 to 8, with higher scores indicating higher selfie-taking. The Spearman-Brown coefficient for the original study was 0.86 which suggests high internal consistency, and there was also excellent four-week test-retest reliability (ICC = 0.91; Mclean et al., 2015). In the current study, the Spearman-Brown coefficient was 0.81 for boys and 0.69 for girls. Although the Spearman-Brown coefficient for girls is low, this is an acceptable level of reliability considering the low number of items in the measure (Hair et al., 2006).

Selfie-sharing. The two item Selfie Sharing Scale (Mclean et al., 2015), included the items 'do you avoid putting photos of yourself on social media?' and 'do you post photos of yourself online or share them through services like "Snapchat" or "Instagram"?'. These items were rated on a 5-point Likert scale (1 = never, 5 = always). The first item was reverse coded and all items were averaged to produce a score ranging from 1 to 5 with higher score indicating high levels of selfie-sharing. The Spearman-Brown coefficient for the original study was 0.82 demonstrating high internal consistency, and there was also excellent four-week test-retest reliability (ICC = 0.96; Mclean et al., 2015). In this sample, the Spearman-Brown coefficient suggested high internal consistency; 0.91 for boys and 0.89 for girls.

Perceived importance of other people's views. This subgroup looked primarily at creating a specific social 'environment' based on what other people 'like' and engage with.

Photo manipulation. The 10 item Photo Manipulation Scale (Mclean et al., 2015) was used to measure selfie-manipulation. An example item is 'how often do you make specific parts of your body look larger or smaller?'. The items were rated on a 5-point Likert scale (1 = never, 5 = always). Items were s averaged to produce a score ranging from 1 to 5, with higher scores indicating higher rates of photo manipulation. The Cronbach's alpha coefficient (α= 0.85) demonstrated high internal consistency for the original study, and there was also good four-week test-retest reliability (Mclean et al., 2015). In this sample the Cronbach's alpha coefficient was 0.82 for boys and 0.78 for girls.

Likes investment. Investment in 'likes' was assessed with two items (created by the researcher) that asked how much attention is paid to 'likes'. The first item ('how important is the number of likes you receive on a post?') was rated on a 5-point Likert scale (1= not at all important, 5 = extremely important). The second question ('how much do you pay attention to how many likes other peoples' posts/photos have?') was rated on a 5-point Likert scale (1= not at all, 5 = a great deal). In this sample, the Spearman-Brown coefficient was 0.64 for boys and 0.67 for girls. Although these Spearman-Brown coefficients are low, this is an acceptable level of reliability considering the low number of items in the measure (Hair et al., 2006).

Body Image

Self-surveillance. The four item Body Surveillance subscale of the Youth Objectified Body Consciousness Scale (Lindberg, Hyde & Mckinley, 2006) was used to measure self-surveillance. Self-surveillance is considered a manifestation of self-objectification (Fredrickson et al., 1997). This instrument indicates a preoccupation with how the body looks. An example item is, 'I often compare how I look with how other people look'. The items were rated on a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree), and averaged to produce a score ranging from 1 to 7, with higher scores indicating higher levels of self-objectification. Lindberg et al. (2006) reported good construct validity with body esteem, public self-consciousness and attitudes towards appearance, high internal consistency of the subscale (α = 0.88), and good two-week test-retest reliability (r = 0.81). In the current sample, the Cronbach's alpha coefficient was 0.81 for boys and 0.83 for girls.

Muscular Internalisation. The five item Internalisation: Muscular subscale of the Sociocultural Attitudes Towards Appearance Questionnaire-4-Revised (Schaefer et al., 2017) was

59

used to measure internalisation of the muscular ideal. An example item is 'I think a lot about looking muscular'. The items were rated on a 5-point Likert scale (1 = 'definitely disagree', 5 = 'definitely agree'). Items were averaged to create a score ranging from 1 to 5, with higher scores indicating higher levels of internalisation of muscular ideals. Schaefer et al. (2017) reported high internal consistency (α= 0.82 for girls, α= 0.87 for college aged men), and excellent test-retest reliability over two weeks (r = .90). In the current sample, the Cronbach's alpha coefficient was 0.85 for boys and 0.71 for girls.

Body Appreciation. The 10 item Body Appreciation Scale-2 for Children (Halliwell et al., 2017) was used to measure positive body image. An example item is 'I feel good about my body'. The items were rated on a 5-point Likert scale (1 = never, 5 = always). Items were averaged to create a score ranging from 1 to 5, with higher scores indicating higher levels of body appreciation. Halliwell et al. (2017) reported good construct validity, high internal consistency (α= 0.89), and good test-retest reliability over a two-week period (ICC = 0.81 for boys and girls). In the current sample, the Cronbach's alpha coefficient was 0.89 for boys and 0.92 for girls.

Drive for Thinness. The seven item Drive for Thinness subscale of the Eating Disorder Inventory (Garner et al., 1983) was used to measure the attitudinal and behavioural characteristics of disordered eating. An example item is 'I think about dieting'. The items were rated on a 5-point Likert scale (1 = never, 5 = always). One item was reverse coded, and items were averaged, with higher scores indicating higher levels of drive for thinness – this was in line with the non-clinical sample guidelines. Garner et al. (1983) reported good internal consistency (α= 0.89). In the current sample, the Cronbach's alpha coefficient was 0.80 for boys and 0.85 for girls.

Body satisfaction. The nine item Body Areas Satisfaction Scale (Cash, 2000) was used to measure body satisfaction. An example item is 'how satisfied are you with your face'. The items were rated on a 5-point Likert scale (1= very dissatisfied, 5= very satisfied). Items were averaged to create a score ranging from 1 to 5, with higher scores indicating higher levels of body satisfaction. Cash (2000) reported good internal consistency (α= 0.73), and good one-month test-retest reliability (r = 0.74). In the current sample, the Cronbach's alpha coefficient was 0.97 for boys and 0.98 for girls.

Wellbeing

Loneliness. The Isolation subscale of the Perth A-Loneliness Scale (Houghton et al., 2014) was used to measure loneliness. The subscale was reduced from six items (Cronbach's α =.80; Houghton et al., 2014) to three items, as to reduce overall participant burden and the items were very similar in nature to each other. The top three loading items from the original paper ('I am not close to anyone', 'I have nobody to talk to', 'I feel like I do not have a friend in the world') were retained, and the subsequent three items were removed. The items were rated on a 5-point Likert scale (1 = never, 5 = always). Items were averaged to create a score ranging from 1 to 5, with higher scores indicating higher levels of loneliness. Houghton et al. (2014) reported good internal consistency (α= 0.80). In the current sample, the Cronbach's alpha coefficient was 0.83 for boys and 0.84 for girls.

Self-Esteem. The four item Lifespan Self-Esteem Scale (Harris et al., 2018) was used to measure self-esteem. An example item is 'how do you feel about yourself?'. The items were rated on a 5-point Likert scale (1 = really sad, 5 = really happy). Items were averaged to create a score ranging from 1 to 5, with higher scores indicating higher levels of self-esteem. Harris et al. (2018) reported good convergent validity against four established measures of self-esteem, good internal consistency (α = 0.86), and adequate one-year test-retest reliability of r = 0.62 for individuals aged 8 – 13 years old. In the current sample, the Cronbach's alpha coefficient was 0.92 for boys and 0.90 for girls.

Positive and Negative Affect. The 10 item Positive and Negative Affect Schedule for Children-Short Form (Ebesutani et al., 2012) was used to measure positive affect and negative affect. An example item is 'to what extent do you generally feel joyful?'. Five items were positive (joyful, cheerful, happy, lively, and proud) and five items were negative (miserable, mad, afraid, scared, and sad). The items were rated on a 5-point Likert scale (1 = never, 5 = always). The five positive, and five negative, items were averaged separately to find a positive and negative score ranging from 1 to 5, with higher scores indicating higher levels of positive affect, or negative affect, depending on the subscale. Ebesutani et al. (2012) reported good internal consistency (α = 0.86 and α = 0.82 for positive affect and negative affect respectively). In the current sample, the Cronbach's alpha coefficient for positive affect was 0.85 for boys and 0.89 for girls. The Cronbach's alpha coefficient for negative affect was 0.88 for boys and 0.73 for girls.

Psychosocial functioning

Youth Problem Behaviour. The Ohio Youth Problem subscale (Ogles et al., 2001) was used to evaluate psychosocial functioning in adolescents. Eight of the original 20 items were removed, as they were deemed items that may elicit undue stress (e.g., 'talking or thinking about death'), leaving 12 items. An example item is 'please rate the degree to which you have argued with others (in the past 30 days)'. The items were rated on a 6-point Likert scale (1 = not at all, 6 = all of the time). The 12 items from The Ohio Youth Problem subscale were summed to create a score ranging from 6 to 48, with higher scores indicating higher levels of problem behaviour. Ogles et al. (2001) reported excellent internal consistency (α= 0.95) and good one-week test-retest reliability (r = 0.72). In the current sample, the Cronbach's alpha coefficient was 0.84 for boys and 0.85 for girls.

Youth Functioning. The Ohio Youth Functioning subscale (Ogles et al., 2001) was used to evaluate how the adolescent is coping in day-to-day life, another aspect of psychosocial functioning. Fourteen of the original 20 items were removed, as they were deemed irrelevant for the age group (e.g., learning skills that will be useful for future jobs), or deemed items that may elicit undue pressures (e.g., 'dating or developing relationships with boyfriends or girlfriends'), leaving six items in the Ohio Youth Functioning subscale. An example item is 'please rate the degree to which you have got along with friends (in the past 30 days)'. The items were rated on a 6-point Likert scale (1 = not at all, 6 = all of the time). The six items from the Ohio Youth Functioning subscale were summed and averaged to create a score from 6 to 36, with higher scores indicating higher levels of functioning. Ogles et al. (2001) reported excellent internal consistency (α = 0.92) and adequate one-week test-retest reliability (r = 0.43). In the current sample, the Cronbach's alpha coefficient was 0.89 for boys and 0.80 for girls.

Puberty.

The single item Pubertal Development Scale (Siegel et al., 1999) was used to evaluate perceived pubertal development relative to one's peers. The item 'compared to most [boys/girls] your age, would you say that your body has developed' had response options which ranged from 'much later' (1) to 'much earlier' (5).

Procedure

Ethical approval was gained from the University of the West of England in May 2019 (see Appendix A). Some of the specific ethical issues that were considered were around the fact that

vulnerable individuals (children) would be taking part, and question sensitivity. Thus, age-appropriate questions were selected. Following this, recruitment emails were sent out. Of the schools that were interested in taking part in the study, two schools dropped out after the initial meeting, as they decided this was not something that they were interested in taking part in, and one school dropped out following parental concerns over the topics covered in the questionnaire. The researcher had extensive discussions with the parent and put additional precautions in place as the study went forward. Some examples of these are following up after children have completed each questionnaire by sending emails to students' emails with information of where to get support. Originally the protocol was to give paper copies to students after they have finished the questionnaire, however it was thought that few students would accept them, possibly due to fear of how others would perceive them. Therefore, these were directly emailed to students so that there would be no concerns over this, and this also means that students were able to keep it and refer back to if they wanted.

After schools agreed to take part, consent forms were sent home to parents to give them the option to opt their children out of the study. The deadline for completing opt-out consent forms was set for the day before data collection commenced. Teachers gave a brief description of the study to the children during class time and told them that participation in the study was voluntary and confidential. The researcher was present on the day of data collection. Before children completed the study, the researcher gave a brief description of the study and reiterated, in age appropriate language, that participation was voluntary, confidential, and that there were no right or wrong answers. Children were provided with the opportunity to remove themselves from the research. Before starting the questionnaire, children were able to ask any questions that they had. Following this, all children completed the questionnaire either online or offline depending on the school facilities available. The whole class completed the questionnaire at the same time during a lesson, and consideration was taken to find the most convenient time for the school for data collection. Children were able to ask the researcher questions while they completed the questionnaire in case there were any questions that they did not understand. Questionnaires were completed within approximately 30 – 40 minutes. Participants who were opted out of the study did work set by the teacher, and this was often silent reading.

Analysis

The analysis of this study aims to evaluate the frequency of different types of SNS use by individuals aged 10 – 11 years, and to evaluate how SNS use relates to body image, mental wellbeing, and psychosocial functioning.

Participants were split into dichotomous gender categories (boys versus girls) in order to evaluate how the different types of SNS use (social media engagement, selfie-behaviour, and perceived importance of other people's views) related to body image, wellbeing, and psychosocial functioning in each gender. The following statistical analyses were run: correlations, regressions, T-tests, ANOVAs, and Mann-Whitney U tests. Correlations and regressions (which controlled for ethnicity) were used to explore how rate of SNS use related to body image concerns, wellbeing, and psychosocial functioning. When regressions were run, adjusted R^2 was reported rather than R^2 as this accounts for the increased predictive power when additional variables are added into a regression (Wall, 2020). T-tests, ANOVAs, and Mann-Whitney U tests were used to compare groups on level of selfie sharing and SNS users and non-users on body image concerns, wellbeing, and psychosocial functioning.

Due to the number of variables being examined within this study, it is important to consider the issue of multiple testing which can lead to increased rates of type 1 errors. In order to correct for this increased rate of type 1 error, it is possible to increase the significance level in order to reduce the rate of type 1 error back to 5%. This approach was considered for the research conducted within this study (and future studies within the thesis), however there were a number of contributing factors which led to this approach not being taken. First, the comparisons and tests being run were complimentary, they were all exploring the relationship between SNS use and various aspects of adolescent mental health. Past research has suggested that if analyses are complimentary, correcting for multiple testing is not necessary unless the findings are inconsistent (Ridker et al., 2005). The findings were consistent within the study, but also largely consistent with past research. Additionally, all p values were discussed using strength of the evidence, rather than a binary 'significant' or 'not significant' which already reduces the rate of misleading findings adding further reason to not correct for multiple testing. Furthermore, this is an exploratory study, and the sample size and thus power is already low, running the analysis with corrections for multiple testing would be more likely to lead to the possibility of missing important findings. Therefore, instead of reducing the p-value, it is more valuable for further research to be conducted and thus to build a body of

literature with consistent findings (Rotham, 1990). Evidence is built from a body of consistent findings, therefore future research should seek to replicate these studies with larger sample sizes and add to the body of evidence.

Active vs Passive Validity check

The measures evaluating different aspects of 'active' SNS usage (social media engagement, selfie-behaviour, and perceived importance of other people's views) were able to serve as a validity check for the active vs passive measure. As these are different aspects of active SNS usage, it would be expected that the rate of these behaviours would be higher in those who stated that they used SNS mostly in an active way. ANOVAs and Mann-Whitney U Tests were run in order to evaluate this.

Image-focused SNS users or not

Participants were also split into one of two categories; those who used 'image-focused SNS' and those who did not. It was decided that a subgroup would be used, rather than focusing on one specific platform, due to the vast literature highlighting the relationship between media images and increased body image concerns and decreased wellbeing (Harper & Tiggemann, 2008; Pittman & Reich, 2016; Tiggemann & Anderberg, 2020; Tiggemann & Polivy, 2010). 'Image-focused SNS users' will encompass those who use Instagram, TikTok, Snapchat and Facebook. These platforms were included in the subgroup as they are known to be platforms that are image based in nature. Additionally, a lot of past research has focused only on a specific SNS, for example Instagram or Facebook, making it difficult to generalise the findings to other SNS, as they have many different aspects. By grouping image-focused SNS together, the research would be more generalisable now, and in future. For this study, it was decided that the analysis would focus on SNS which allow individuals to follow friends and celebrities, allow people to follow them, communicate with individual people or groups of people, and also which had a focus on images. As research has shown that online images can elicit more negative, as well as positive, effects, YouTube is sometimes referred to as a SNS in the same way as Instagram, TikTok, Snapchat and Facebook and sometimes it is not. Including YouTube in this list was considered, but from looking at how the majority of participants used YouTube, it was decided that they are most commonly passive users of videos on YouTube, rather than using it as a SNS to follow accounts and communicate with people.

Results

Demographics

A total of 201 participants contributed to the initial analysis: 88 participants (43.8%) identified as male, 111 (55.2) identified as female, one identified as trans male (0.5%), and one identified as non-binary (0.5%).

The overall sample mean for the socio-economic status question was 1.56, which equates to between 1 and 2 cars (see Table 1). In 2019, the National Travel Survey estimated there are, on average, 1.39 cars/vans per household in the South West (Transport, 2020), putting the sample for this study slightly above the average (Transport, 2020).

Table 1

Socio-economic status measure: Number of cars

SES	Frequency	Percent
No cars	11	5.5
1 car	86	42.8
2 cars	84	41.8
3 or more cars	20	10.0
Total	201	100.0

The percentage of pupil premium students at each school can be found in Table 2. The national average of students who are eligible for free school meals as of January 2020 is 17.7% for state-funded primary schools (Statistics, 2020). Pupil premium is worked out by the number of students who are eligible for free school meals. As can be seen in Table 2, most of the schools are below the average, i.e., their rate of pupil premium students is less than the national average, whereas two schools were above the national average, suggesting that overall, in line with the previous SES measure, the sample was above average SES.

Table 2

Rates of pupil premium by school

School	% of Pupil Premium students
School 1	1.0%
School 2	7.2%
School 3	8.7%
School 4	9.4%
School 5	11.4%
School 6	28.2%
School 7	35.5%

The ethnic spread of the sample, which can be found in Table 3, demonstrated that the sample was predominantly White British or Irish (61.8%). The rates for the national average can also be seen below (Gov, 2018), demonstrating that the sample in the study is representative of the diversity in the UK. In many ways, the current sample is more representative of minority groups in the UK than the national average.

Table 3

Ethnicity of sample and UK national average

Ethnicity	Sample frequency	Sample percent	National average percent
Asian	23	11.4	7.5
Black African	13	6.5	1.8
Black Caribbean	4	2.0	1.1
Mixed White and Asian	8	4.0	0.6
Mixed White and Black African	3	1.5	0.3
Mixed White and Black Caribbean	8	4.0	0.8
White British or Irish	123	61.2	81.4
White European or American	5	2.5	4.4
White Gypsy/ traveller	1	0.5	0.1
Other (Please specify)	11	5.5	2
Missing	2	1.0	
Total	201	100.0	

The frequency of responses to the pubertal timing question can be found in Table 4. Just under 40% of students described their pubertal timing as 'about the same' as their peers, around 20% reported developing much or somewhat earlier than their peers, and just under 15% of students reported developing much or somewhat later than their peers. One school requested the puberty question be removed, which resulted in 46 children not completing this. Another 8 students chose not to answer this question.

Table 4

Self-reported pubertal timing

	Frequency	Valid Percent
Much earlier	10	6.8
Somewhat earlier	30	20.4
About the same	78	53.1
Somewhat later	18	12.2
Much later	11	7.5
Total	147	100.0
Missing	54	
Total	201	

Social media engagement

The following section will aim to assess the first hypothesis that preadolescents will use SNS. A number of measures were used in order to evaluate different aspect of SNS use. First, participants recorded the SNS that they used. Of the 199 participants who identified as male or female, 171 participants (85.9%) identified as using any SNS, only 28 (14.1%) did not. Of the 88 boys, 73 (81.8%) used SNS, and of the 111 girls, 98 (88.0%) used SNS.

Number of SNS and Time online. Table 5 displays the frequency and percentages of SNS usage by site for the whole sample, and by gender. The most commonly used SNS in this age group were WhatsApp and YouTube, and the least commonly used SNS were Facebook and Facebook Messenger.

Table 5

Frequency of each SNS and time online

	Whole sample frequency (%)	Whole sample average time	Boys frequency (%)	Boys average time	Girls frequency (%)	Girls average time
WhatsApp	128 (63.70)	1.73 (2.01)	51 (58.00)	1.76 (1.88)	76 (68.50)	1.71 (2.10)
YouTube	115 (57.20)	3.00 (2.23)	59 (67.00)	3.05 (2.39)	54 (48.60)	2.94 (2.06)
Instagram	70 (34.80)	1.57 (1.82)	27 (30.70)	1.56 (1.95)	42 (37.80)	1.57 (1.76)
Snapchat	67 (33.30)	1.27 (1.91)	16 (18.20)	0.69 (0.79)*	50 (45.00)	1.46 (2.12)*
TikTok	45 (22.40)	-	12 (13.60)	-	33 (29.70)	-
FB Messenger	23 (11.40)	0.74 (1.29)	7 (8.00)	0.86 (1.07)	16 (14.40)	0.69 (1.40)
Facebook	10 (5.00)	0.70 (0.95)	6 (6.80)	1.00 (1.10)	4 (3.60)	0.25 (0.50)
Other	12 (6.00)	-	8 (9.10)	-	4 (3.60)	-

Note. Average time on SNS is measured in hours per day. * denotes $p \leq .05$, ** denotes $p \leq .001$ for overall model 2.

Tiktok is listed in the table above as a frequently used SNS, however there is no time data for this platform as it was not included in the original six SNS provided to participants. As it was frequently listed as a used platform under the 'other' option, a frequency was created for it. Examples of 'other' SNS include Twitter, PicsArt, Vigo Video etc. A number of participants added platforms/games like Roblox, Discord, and Xbox. These were not included, as they were not deemed to be a SNS as the primary focus of these is often a game, rather than communication.

When evaluating SNS popularity by gender, YouTube was the most commonly reported platform by boys, followed by WhatsApp, Instagram, and then Snapchat. Whereas for girls, WhatsApp was most frequently reported, followed by YouTube, Snapchat, and then Instagram.

The maximum number of SNS that any individual used was 7, with the minimum being 1. The mean number of SNS used by boys was 2.61 (SD = 1.50) and the mean for girls was 3.02 (SD = 1.41). There was no evidence for a difference in number of SNS used between the two genders $t(168)$ = -1.82, p = .07.

Time online. The average number of hours per day spent on SNS was 1.86 hrs for girls (SD= 1.46) and 2.05 hrs for boys (SD= 1.65). There was no evidence for a difference between boys and girls $t(169)$, = 0.81, p = .419, d = 0.12. There was some evidence of a difference in time spent on Snapchat between boys and girls $t(62.31)$ = -2.15, p = .036, d = 0.41. There was also no evidence of a difference between the two genders for time on Instagram $t(67)$ = -0.04, p = .972, d = 0.01, Facebook $t(8)$ = 1.27, p = .242, d = 0.82, Facebook Messenger $t(21)$ = 0.29, p = .779, d = 0.13, YouTube $t(111)$ = 0.27, p = .784, d = 0.05 or WhatsApp $t(125)$ = 0.15, p = .882, d = 0.03. This data was not available for TikTok.

Image-focused SNS user or not. For the remainder of the analysis, participants will be split into two groups; those who use 'image-focused SNS' and those who do not. 'Image-focused SNS users' will encompass those who use Instagram, TikTok, Snapchat, or Facebook. The other group will encompass individuals who use any SNS other than Instagram, TikTok, Snapchat, and Facebook, and those who do not use SNS at all.

Using this criteria, 120 participants (60.3%) used image-focused SNS and 79 (39.7%) did not; 44.3% of boys (N = 39) used image-focused SNS and 72.9% of girls (N = 81) used image-focused SNS. For girls, the sample size was sufficient to detect moderate and medium effect sized, however for boys it was not. The lower sample size would lead to a reduction in the 0.80 power. This may

increase the chance of a type 2 error (failing to reject the null hypothesis when it is false); i.e. the results for boys are likely to be conservative, but not likely to be misleading.

The maximum number of image-focused SNS that any individual used was 4, with the minimum being 1. The mean number of image-focused SNS used by boys was 1.56 (SD = 0.91) and the mean for girls was 1.59 (SD = 0.75). There was no evidence for a gender difference t(118) = -0.18, p = .857, d = -.04.

The following section will aim to assess the second hypothesis that those who report greater SNS engagement (measured by more time spent on SNS and more SNS activity) will report greater body image concerns and negative wellbeing, and lower psychosocial functioning. Additionally, those reporting greater active, rather than passive, SNS usage will report lower levels of body image concerns and wellbeing, as well as lower psychosocial functioning.

The descriptive statistics (found in Table 6) show that both boys and girls had a relatively low level of engagement with image-focused SNS, with all means being towards the lower end of the scale range. Additionally, t-tests were run, with assumptions tested for. Outliers were removed and assumptions were retested. The results with and without the outliers were compared and as there was no difference; the results with the outliers kept in are reported. The t-tests suggested that there is no evidence of a difference for SNS activity t(118) = 1.00, p = .320, time online t(118) = 0.16, p = .875, or number of SNS t(118) = 0.01, p = .994 between boys and girls.

Table 6

T-tests for SNS engagement measure for male and female image-focused SNS users.

	Male mean (SD)	Female mean (SD)	p	t	Cohen's D	Scale range
SNS activity	2.34 (1.04)	2.18 (.75)	.320	1.00	.19	1-5
Time online	1.92 (1.60)	1.87 (1.37)	.875	0.16	.03	0-7
Number of SNS	3.38 (1.57)	3.38 (1.25)	.994	0.01	<.01	0-7

Active vs passive usage. Of the 120 participants who used image-focused SNS, 76 (63.3%) used SNS in a passive way most commonly, 43 (35.8%) used SNS in an active way most commonly,

and one individual did not answer this question (0.8%). Of the 76 passive users, 23 of them were boys and 53 were girls. Of the 43 active users, 16 were boys and 27 were girls.

   Active vs passive usage validity check. T-tests (and Mann-Whitney U tests when the data failed assumptions) were run for image-focused SNS users to look at differences between active and passive use for all measures of social media engagement. It was expected that all SNS engagement measures would be higher for active users than passive users. Mann-Whitney U Tests suggested that there was some evidence for this for girls on the SNS time measure, with girls using SNS actively demonstrating a higher median (2.00) compared to passive users (1.33), U = 907.50, z = 1.96, *p* = .050. There was also some evidence of a higher median on the SNS activity scale for active users (2.29) compared to passive users (2.00), U = 912.50, z = 2.01, *p* = .044. Furthermore, there was strong evidence of higher median scores on the photo manipulation scale for active users (mean rank = 50.57) compared to passive users (mean rank = 34.51), U = 987.50, z = 2.96, *p* = .003. In these cases, girls who stated that they most commonly used SNS in an active way reported higher median levels of SNS time, SNS activity, and photo manipulation compared to those who stated that they used SNS passively (see Table 7 for t-tests and Table 8 for Mann-Whitney U tests). This suggested that the measure was able to differentiate between those who used SNS in an active way more often, and those who used it in a passive way more often.

Table 7

ANOVAs for SNS measures for male and female image-focused SNS users

SNS engagement measure	Passive Users Mean (SD)	Active Users Mean (SD)	*p* value	T Value	Cohen's d	Scale range
Boys						
SNS activities	2.23 (1.05)	2.50 (1.04)	.438	0.78	.26	1-6
Post photos	2.26 (1.18)	3.00 (1.46)	.089	1.75	.57	1-5
Girls						
Selfie-taking	3.68 (1.95)	4.62 (1.99)	.053	1.96	.48	1-8
Post photos	2.37 (1.10)	2.52 (1.19)	.570	0.57	.60	1-5

Table 8

Non-parametric Mann – Whitney U Test for SNS measures for male and female image-focused SNS users.

SNS engagement measure	Passive Users Median (Mean rank)	Active Users Median (Mean rank)	*p* value	U statistic	Z-score	Partial Eta Squared	Scale range
Boys							
SNS time	1.50	1.67	.525	206.50	0.64	.01	0-7
Selfie-taking	2.50	2.50	.703	178.00	0.50	.01	1-8
Likes investment	1.40	2.00	.239	225.50	1.23	.04	1-5
Photo manipulation	12.00	14.00	.662	199.50	0.45	.03	10-50
Girls							
SNS time	1.33	2.00	.050*	907.50	1.96	.01	0-7
SNS activity	2.00	2.29	.044*	912.50	2.01	.02	1-6
Likes investment	1.50	2.00	.302	814.50	1.03	.04	1-5
Photo manipulation	14.00 (34.51)	18.00 (50.57)	.003*	987.50	2.96	.03	10-50

* denotes p ≤ .05, ** denotes p ≤ .001 for overall model 2.

T-tests and Mann-Whitney U tests were then run to evaluate if there was a difference between levels of body image concern, wellbeing, and psychosocial functioning for active and passive users (see Table 9 – Table 12). These demonstrate the differing effects of passive SNS use compared to active SNS use. There was no evidence of a difference for active versus passive use for boys who use image-focused SNS. However, for girls who used image-focused SNS, there was some evidence for differences in: median body satisfaction scores between active (mean rank = 40.83) and passive users (mean rank = 29.24), U = 564.00, z = 2.24, p = .025, and median self-esteem scores between active (4.25) and passive users (3.50), U = 893.00, z = 1.98, p = .047. Those who reported using SNS actively reported higher levels of body satisfaction, and higher self-esteem, compared to passive users.

Table 9

T-tests for outcome measures for image-focused SNS users (boys only)

Boys	Passive (N= 23)	Active (N=16)			
Construct	Mean (SD)		*p* value	T Value	Cohen's d
Body Image					
Objectification	2.90 (6.46)	2.80 (1.36)	.852	0.04	<.01
Muscular ideals	2.46 (0.79)	2.71 (0.99)	.412	0.83	.28
Body appreciation	4.02 (0.89)	3.87 (0.73)	.577	0.56	.18
Drive for thinness	2.89 (1.26)	3.19 (1.23)	.590	0.55	.24
Wellbeing					
Positive affect	3.59 (0.72)	3.66 (0.92)	.772	0.29	.10
Psychosocial Functioning					
Functioning	25.58 (7.57)	27.33 (6.83)	.520	0.65	.24

Table 10

Mann-Whitney U Test for outcome measures for image-focused SNS users (boys only)

Boys	Passive Users Median (Mean rank)	Active Users Median (Mean rank)	*p* value	U statistic	Z-score	Partial Eta Squared
Body Image						
Body Satisfaction	3.94	3.89	.906	139.00	-0.137	<.01
Wellbeing						
Loneliness	1.67	1.00	.437	156.00	-0.843	<.01
Self-esteem	4.50	4.13	.621	166.50	-0.504	<.01
Negative affect	2.00	2.00	.408	201.00	0.863	.03
Psychosocial functioning						
Problem Behaviour	20.00	20.00	.535	98.50	-0.631	<.01

Table 11

T-tests for outcome measures for image-focused SNS users (girls only)

Girls Construct	Passive (N= 53) Mean (SD)	Active (N= 27)	*p* value	T Value	Cohen's d
Body Image					
Objectification	4.03 (1.59)	3.66 (1.89)	.357	0.86	.01
Wellbeing					
Positive affect	3.45 (0.92)	3.82 (0.97)	.096	1.69	.40
Psychosocial Functioning					
Functioning	26.62 (6.20)	27.06 (6.03)	.799	0.26	.07

Table 12

Mann-Whitney U Test for outcome measures for image-focused SNS users (girls only)

Girls	Passive Users Median (Mean rank)	Active Users Median (Mean rank)	p value	U statistic	Z-score	Partial Eta Squared
Body Image						
Muscular ideals	2.00	1.80	.724	390.50	-0.35	<.01
Body appreciation	3.90	4.30	.117	794.00	1.57	.02
Drive for thinness	2.29	1.71	.266	169.00	-1.11	.01
Body satisfaction	3.56	4.50				
	(29.24)	(40.83)	.025*	564.00	2.24	.07
Wellbeing						
Loneliness	1.67	1.00	.063	528.50	-1.86	.02
Self-esteem	3.50	4.25	.047*	893.00	1.98	.04
Negative affect	2.10	2.00	.097	546.50	-1.66	.03
Risky behaviour						
Problem Behaviour	18.00	21.00	.403	375.50	0.84	.02

* denotes *p* value ≤.05

Relationship between SNS time/SNS activity and body image, wellbeing, and psychosocial functioning. Correlations were run to evaluate how measures of SNS engagement (time online and SNS activity) correlated to the measures of body image, wellbeing, and psychosocial functioning. These were conducted for boys and girls who used image-focused SNS separately (see Table 13 and 14). Assumptions for Pearson correlations were checked before the correlations were run and Spearman's rho correlation was run when the assumptions were violated.

Boys. There was strong evidence found for the relationship between time online and objectification r(36) = 0.39, p = .015, and strong evidence for the relationship between SNS activity and negative affect r(36) = 0.43, p = .008 for boys.

Girls. There was also strong evidence found for the relationship between time online and objectification r(79) = 0.33, p = .003, and some evidence for the relationship between time online and problem behaviour *r*(51) = 0.44, *p* = .001. Additionally, there was some evidence found for the

relationship between SNS activity and internalisation of muscular ideals $r(63) = 0.29$, $p = .021$. There was strong evidence for the relationship between SNS activity and problem behaviour $r(51) = 0.44$, $p = .001$ for girls.

Table 13

Correlations between measures of time on SNS and body image, wellbeing, and psychosocial functioning measures for image-focused SNS users (boys and girls).

	Boys					Girls				
	Pearson r	p	Spearman's r_s	p	N	Pearson r	p	Spearman's r_s	p	N
Body Image										
Objectification	.39*	.015	-	-	38	.33**	.003	-	-	81
Muscular ideals	.25	.139	-	-	36	.14	.251	-	-	65
Body appreciation	-.23	.155	-	-	39	-.20	.076	-	-	78
Drive for thinness	.30	.171	-	-	22	.11	.460	-	-	47
Body satisfaction	-.27	.113	-	-	35	-.09	.485	-	-	64
Wellbeing										
Loneliness	-	-	.19	.250	39	.09	.437	-	-	80
Self esteem	-.16	.347	-	-	39	-.21	.058	-	-	80
Positive affect	-.11	.490	-	-	39	-.18	.101	-	-	80
Negative affect	.22	.182	-	-	38	.21	.061	-	-	80
Psychosocial Functioning										
Problem behaviour	-.08	.683	-	-	31	.44	.001**	-	-	53
Functioning	-.17	.373	-	-	31	-.13	.338	-	-	54

* denotes p ≤ .05, ** denotes p ≤ .001.

Table 14

Correlations between measures of SNS activity and body image, wellbeing, and psychosocial functioning measures for image-focused SNS users (boys and girls).

SNS activity	Boys					Girls				
	Pearson r	p	Spearman's r_s	p	N	Pearson r	p	Spearman's r_s	p	N
Body Image										
Objectification	.18	.279	-	-	38	.32**	.003	-	-	81
Muscular ideals	-.09	.598	-	-	36	.29	.021*	-	-	65
Body appreciation	-.05	.770	-	-	39	-	-	-.10	.370	78
Drive for thinness	.12	.583	-	-	22	.30	.053	-	-	47
Body satisfaction	-.11	.521	-	-	35	-	-	-.10	.412	64
Wellbeing										
Loneliness	.04	.795	-	-	39	-.03	.771	-	-	80
Self esteem	.06	.703	-	-	39	-.14	.218	-	-	80
Positive affect	.01	.944	-	-	39	-.08	.458	-	-	80
Negative affect	.43	.008*	-	-	38	.041	.718	-	-	80
Psychosocial Functioning										
Problem behaviour	.38	.035*	-	-	31	.37	.006*	-	-	53
Functioning	-.22	.237	-	-	31	-.08	.589	-	-	54

* denotes p ≤ .05, ** denotes p ≤ .001.

Following this, linear regressions were run on the relevant variables in order to determine the prediction equation, and to determine how much variation is explained by the predictor variable (SNS activity or Time on SNS) and the covariate (ethnicity) jointly (see Table 15 and Table 15b). The seven assumptions for regressions were run with scatterplots to test linearity, homoscedasticity and normality of the residuals, as well as testing for outliers. When outliers were found, they were removed and the data retested for the other assumptions, and the regression re-run. In all cases, the reported regressions are that with any outliers left in. All items passed these assumptions. During this chapter, when regressions are reported, model 1 refers to the model tested with the covariate (ethnicity), and model 2 includes the dependent variable (for example Time on SNS).

There was strong evidence for a linear relationship between time on SNS and problem behaviour for girls suggesting that average time on SNS could predict problem behaviour, $F(2, 49) = 6.79$, $p = .002$, accounting for 19% of the variance in problem behaviour, using adjusted R^2. There was also some evidence for a linear regression found for time on SNS and objectification for girls, such that time on SNS could predict objectification; $F(2, 75) = 4.36$, $p = .016$, accounting for 8% of the variation, using adjusted R^2.

There was some evidence for a linear relationship found for SNS activity and problem behaviour for girls. The regression suggested that SNS activity could predict problem behaviour in girls; $F(2, 49) = 3.73$, $p = .031$, accounting for 10% of the variation using adjusted R^2. There was also some evidence for a linear regression found for SNS activity and objectification for girls such that SNS activity could predict objectification; $F(2, 75) = 3.97$, $p = .023$, accounting for 7% of the variation, using adjusted R^2

There was some evidence for a linear relationship between time spent on SNS and level of objectification for boys suggesting average time on SNS could predict objectification level; $F(2, 34) = 3.53$, $p = .037$, accounting for 13 % of the variation in objectification level, using adjusted R^2.

There was some evidence for a linear regression found for SNS activity and negative affect for boys suggesting that average time on SNS could predict negative affect in boys, $F(2, 34) = 4.13$, $p = .025$, accounting for 15% of the variation in negative affect, using adjusted R^2.

Table 15b shows the coefficients for the independent variable and covariate on each dependent variable. There was no evidence that controlling for ethnicity altered the results.

Table 15

Linear regression for time on SNS and SNS activities for all relevant body image, wellbeing, and psychosocial functioning measures for image-focused SNS users (boys and girls), while controlling for ethnicity.

	Outcome measure	Model 1 Adjusted R^2	DF	F	p	Model 2 Adjusted R^2	DF	F	p	*P* change
Time on SNS										
Body Image										
Boys	Objectification	.01	35	1.39	.247	.13	34	3.53	.037	.023*
Girls	Objectification	-.01	76	0.51	.479	.08	75	4.36	.016	.006*
Psychosocial Functioning										
Girls	Problem behaviour	-.02	50	<.01	.964	.19	49	6.79	.002	.001**
SNS activity										
Body Image										
Girls	Objectification	-.01	76	0.51	.479	.07	75	3.97	.023	.008*
Girls	Muscular ideals	-.02	61	-0.02	.879	.03	59	2.07	.135	.047
Wellbeing										
Boys	Negative Affect	-.01	35	0.49	.488	.15	34	4.13	.025	.009*
Psychosocial Functioning										
Boys	Problem behaviour	.02	28	1.54	.225	.14	27	3.30	.052	.037
Girls	Problem behaviour	-.02	50	<0.01	.964	.10	49	3.73	.031	.009*

Note. Model 1 includes only covariate (ethnicity), Model 2 includes covariate (ethnicity) and independent variable. * denotes p ≤ .05, ** denotes p ≤ .001 for overall model 2

Table 15b

Coefficients for time on SNS and SNS activity, with ethnicity as a covariate for each dependent variable

	B	β	t	p
Time on SNS				
Body Image				
Girls Objectification	.43	.35	2.86	.006
Ethnicity white	.24	.07	.56	.580
Boys Objectification	.38	.37	2.38	.023
Ethnicity white	.49	.15	.94	.354
Psychosocial Functioning				
Girls problem behaviour	2.35	.51	3.68	.001
Ethnicity white	2.70	.19	1.39	.170
SNS activity				
Body Image				
Girls Objectification	.86	.30	2.72	.008
Ethnicity white	-.12	-.03	-.29	.774
Girls Muscularity	.28	.26	2.03	.047
Ethnicity white	.03	.02	.12	.904
Wellbeing				
Boys Negative affect	.30	.43	2.77	.009
Ethnicity white	-.16	-.11	-.71	.484
Psychosocial Functioning				
Boys problem behaviour	3.56	.38	2.20	.037
Ethnicity white	-4.17	-.21	-1.20	.241
Girls problem behaviour	3.71	.37	2.73	.009
Ethnicity white	.38	.03	.20	.844

Selfie-Behaviour. The next section assessed hypothesis three, which was that those who report greater selfie-behaviour will report more negative body image and wellbeing. Correlations were run to evaluate how selfie-behaviour (selfie-taking and selfie-sharing) correlated with measures of body image and wellbeing (see Table 16 and 17).

Boys. For boys who used image-focused SNS, there was some evidence of the relationship between selfie-taking and self-esteem r(35) = 0.35, *p* = .033.

Girls. For girls who used image-focused SNS, there was some evidence of the relationship between selfie-taking and: objectification r(76) = 0.26, p= .021), and internalisation of muscular ideals *r*(61) = 0.30, *p* = .016, and loneliness *r*(75) = -0.36, *p* = .021.

Table 16

Correlations between selfie-taking and body image and wellbeing measures for image-focused SNS users (boys and girls)

	Boys					Girls				
	Pearson r	p	Spearman's r_s	p	N	Pearson r	p	Spearman's r_s	p	N
Body Image										
Objectification	-	-	.24	.155	36	.26	.021*	-	-	78
Muscular ideals	-.16	.368	-	-	34	.30	.016*	-	-	63
Body appreciation	.16	.337	-	-	37	-	-	-.02	.835	76
Drive for thinness	.06	.780	-	-	22	.19	.210	-	-	47
Body satisfaction	.28	.120	-	-	33	-.07	.581	-	-	62
Wellbeing										
Loneliness	-.12	.496	-	-	37	-.26	.021*	-	-	77
Self esteem	.35	.033*	-	-	37	<.01	.980	-	-	77
Positive affect	.19	.260	-	-	37	.15	.195	-	-	77
Negative affect	.11	.550	-	-	36	-.15	.195	-	-	77

* denotes p ≤ .05, ** denotes p ≤ .001.

Table 17

Correlations between selfie-sharing and body image and wellbeing measures for image-focused SNS

users (boys and girls)

	Boys			Girls		
	Spearman's r_s	p	N	Spearman's r_s	p	N
Body Image						
Objectification	.15	.374	38	.13	.253	80
Muscular ideals	.10	.554	36	.22	.082	64
Body appreciation	.03	.858	39	-.09	.414	77
Drive for thinness	.05	.814	22	.06	.702	46
Body satisfaction	.07	.681	35	-.16	.208	63
Wellbeing						
Loneliness	-.06	.710	39	-.04	.726	79
Self esteem	.16	.343	39	-.12	.277	79
Positive affect	.16	.322	39	-.07	.530	79
Negative affect	.21	.199	38	.21	.061	79

Linear regressions were then run on the relevant variables (see Table 18). There was some evidence for a linear relationship for selfie-taking and self-esteem for boys, such that selfie-taking could jointly predict self-esteem level, $F(2, 33) = 4.65$, $p = .017$, accounting for 17% of the variation in self-esteem level, using adjusted R^2, however there was no evidence that the second model predicted self-esteem better than the first model which only included ethnicity (p change = .306).

For girls, there was some evidence for a linear regression found for selfie taking and objectification. The regression suggested that time on SNSs, along with ethnicity, could jointly predict objectification in girls; $F(2, 75) = 3.24$, $p = .020$, accounting for 6% of the variation, using adjusted R^2. There was no evidence for a linear relationship found for selfie taking and any other outcome variables.

Table 18b shows the coefficients for the independent variable and covariate on each dependent variable. There was no evidence of a difference between individuals who identified their ethnicity as white compared to non-white.

Table 18

Linear regression for selfie-taking and all relevant body image, wellbeing, and psychosocial functioning measures for image-focused SNS users (boys and girls), controlling for ethnicity.

Outcome measure	Model 1 Adjusted R^2	DF	F	p	Model 2 Adjusted R^2	DF	F	p	*P* change
Body Image									
Girls									
Objectification	<-.01	73	0.79	.376	.06	72	3.24	.045	.020*
Muscular ideals	-.02	58	0.09	.765	.07	57	3.04	.056	.018
Wellbeing									
Boys									
Self-Esteem	.17	34	8.20	.007	.17	33	4.65	.017	.306
Girls									
Loneliness	<-.01	72	0.74	.393	.05	71	.28	.065	.030

Note. Model 1 includes only covariate (ethnicity), Model 2 includes covariate (ethnicity) and independent variable. * denotes p ≤ .05, ** denotes p ≤ .001 for overall model 2.

Table 18b

Coefficients for selfie-taking, and ethnicity as a covariate for each dependent variable

	B	β	t	Sig
Body Image				
Girls Objectification	.23	.27	2.37	.020
Ethnicity white	-.24	-.07	-.58	.563
Girls Muscular ideals	.13	.31	2.45	.018
Ethnicity white	.01	.01	.04	.971
Wellbeing				
Boys self-esteem	.09	.19	1.04	.306
Ethnicity white	-.72	-.35	-1.95	.060
Girls loneliness	-.15	-.26	-2.22	.030
Ethnicity white	.17	.07	.57	.573

Selfie-Sharing. In order to evaluate whether there was a significant difference for body image and wellbeing measures between male and female selfie-sharers and non-sharers, a series of T-tests and Mann-Whitney U tests were conducted (see Table 19 – 22). There were no significant differences between selfie-sharers and non-sharers in relation to any body image or wellbeing measures.

Table 19

T-test for photo-sharer versus non-sharer for boys

	Sharer	Non-sharer			
Boys	Mean (SD)	Mean SD	p	T	Cohen's d
Body Image					
Muscular ideals	2.68 (0.94)	2.41 (0.78)	.363	0.92	.31
Body appreciation	3.99 (0.84)	3.92 (0.82)	.777	0.29	.09
Drive for thinness	3.10 (1.30)	2.88 (1.13)	.708	0.38	.17
Body satisfaction	3.88 (0.96)	3.72 (0.91)	.614	0.51	.17
Wellbeing					
Self esteem	4.20 (0.87)	3.74 (1.10)	.146	1.49	.48

Table 20

Mann-Whitney U Test for photo-sharer versus non-sharer for boys

	Non-sharer Median (Mean rank)	Sharer Median (Mean rank)	p value	U statistic	Z-score	Partial Eta Squared
Body Image						
Objectification	2.00	3.25	.152	228.00	1.46	.06
Wellbeing						
Loneliness	1.67	1.00	.377	155.00	-0.96	<.01
Positive affect	3.80	3.80	.243	228.50	1.18	.06
Negative affect	1.80	2.00	.432	205.50	0.804	.01

Table 21

T-tests for photo-sharer versus non-sharer for girls

	Sharer	Non-sharer			
	Mean (SD)	Mean SD	p	T	Cohen's d
Body Image					
Objectification	4.03 (1.77)	3.70 (1.62)	.378	0.79	.01
Muscular ideals	2.17 (1.84)	1.84 (0.78)	.097	1.69	.42
Body appreciation	3.72 (1.04)	3.84 (0.84)	.574	0.57	.32
Wellbeing					
Self esteem	3.71 (0.99)	3.89 (0.80)	.363	0.91	.21
Positive affect	3.51 (0.96)	3.63 (0.95)	.553	0.60	.31

Table 22

Mann-Whitney U test for photo-sharer versus non-sharer for girls

	Non-sharer Median (Mean rank)	Sharer Median (Mean rank)	p value	U statistic	Z-score	Partial Eta Squared
Body Image						
Drive for Thinness	2.21	2.00	.991	260.50	0.01	<.01
Body Satisfaction	3.83	3.63	.516	446.00	-0.649	.01
Wellbeing						
Loneliness	1.67	1.33	.481	710.00	-0.704	<.01
Negative affect	2.00	2.00	.445	854.50	0.763	.01

Perceived importance of others' views. The next section assessed the fourth hypothesis that those who report greater importance of others' views will report more negative body image and wellbeing. Correlations were run for boys and girls to evaluate the relationship between perceived importance of others' views (likes investment and photo manipulation) against body image and wellbeing measures, specifically for those that use image-focused SNS (see Table 23 – 24).

Boys. There was some evidence for a negative relationship for boys who used image-focused SNS between photo manipulation and self-esteem $r(37) = -0.32$, $p = .049$. There was also strong evidence for the relationship between photo manipulation and: loneliness $r(37) = 0.45$, $p = .004$ and lower positive affect $r(37) = -.37$, $p = .019$. There was also some evidence for a relationship between likes investment and objectification $r(36) = 0.35$, p = .033 for boys.

Girls. For girls, there was strong evidence for the relationship between likes investment and: objectification $r(79) = 0.39$, p = <.001, internalisation of muscular ideals $r(63) = 0.43$, p = <.001, and lower body satisfaction $r(62) = -0.34$, $p = .006$. There was also some evidence for the relationship between photo manipulation and: internalisation of muscular ideals $r(63) = 0.25$, $p = .046$ and lower body appreciation $r(75) = -0.29$, $p = .012$.

Table 23

Correlations between likes investment and body image and wellbeing measures for image-focused SNS users (boys and girls)

	Boys					Girls				
	Pearson r	p	Spearman's r_s	p	N	Pearson r	p	Spearman's r_s	p	N
Body image										
Objectification	.35*	.033	-	-	38	.39**	<.001	-	-	81
Muscular ideals	.13	.465	-	-	36	.43	<.001**	-	-	65
Body appreciation	-	-	-.01	.971	39	-.14	.212	-	-	78
Drive for thinness	.20	.370	-	-	22	.08	.602	-	-	47
Body satisfaction	-	-	.05	.799	35	-.34	.006*	-	-	64
Wellbeing										
Loneliness	-.12	.472	-	-	39	.14	.223	-	-	80
Self esteem	.10	.560	-	-	39	-.22	.053	-	-	80
Positive affect	.06	.705	-	-	39	-.11	.336	-	-	80
Negative affect	-	-	.15	.360	38	-	-	.12	.296	80

* denotes p ≤ .05, ** denotes p ≤ .001.

Table 24

Correlations between photo manipulation and body image and wellbeing measures for image-focused SNS users (boys and girls)

| | Boys | | | | | Girls | | Spearman's | | |
	Pearson r	p	Spearman's r_s	p	N	Pearson r	p	r_s	p	N
Body image										
Objectification	.27	.107	-	-	38	.40**	<.001	-	-	80
Muscular ideals	.31	.069	-	-	36	.25	.046*	-	-	65
Body appreciation	-.24	.150	-	-	39	-.29	.012*	-	-	77
Drive for thinness	.19	.394	-	-	22	.17	47	-	-	-.05
Body satisfaction	-	-	-.18	.308	35	-.08	.530	-	-	63
Wellbeing										
Loneliness	.45	.004*	-	-	39	.10	.367	-	-	80
Self esteem	-.32	.049*	-	-	39	-.26	.021*	-	-	
Positive affect	-.37	.019*	-	-	39	-.23	.047*	-	-	79
Negative affect	.20	.238	-	-	38	-	-	.02	.866	79

* denotes p ≤ .05, ** denotes p ≤ .001.

Following this, the regression analysis was run on the relevant outcome variables (see Table 25). There was some evidence of an associated between likes investment and objectification for boys, such that likes investment could predict objectification for boys, $F(2, 34) = 4.49$, p = .019, accounting for 16% of the variation of objectification, using adjusted R^2. There was some evidence that photo manipulation could predict loneliness for boys, $F(2, 35) = 5.29$, $p = .010$, accounting for 19% of the variation of loneliness, using adjusted R^2. There was some evidence that photo manipulation could predict positive affect, $F(2, 35) = 3.44$, $p = .043$, accounting for 12% of the variation of positive affect, using adjusted R^2. There was strong evidence that photo manipulation and ethnicity could jointly predict self-esteem, $F(2, 35) = 9.69$, $p = <.001$, accounting for 32% of the variation of self-esteem, using adjusted R^2.

For girls, there was some evidence photo manipulation could predict body appreciation for girls; $F(2, 71) = 3.17$, $p = .048$, accounting for 6% of the variation using R^2. There was also some evidence photo manipulation could predict objectification in girls; $F(2, 74) = 7.04$, p = .002, accounting for 14% of the variation, using R^2. Furthermore, for girls, there was strong evidence of an association between likes investment and internalisation of muscular ideals, and strong evidence for an association between likes investment and body satisfaction. There was strong evidence that likes investment could predict internalisation of muscular ideals for girls; $F(2, 59) = 5.88$, $p = .005$, accounting for 14% of the variation of internalisation of muscular ideals, using adjusted R^2. There was also strong evidence that likes investment could predict objectification for girls, F(2, 75) = 5.98, p = .004, accounting for 11% of the variation of objectification, using adjusted R^2. There was some evidence that likes investment could predict body satisfaction for girls; $F(2, 59) = 4.89$, $p = .011$, accounting for 11% of the variation of body satisfaction, using adjusted R^2.

Table 25b shows the coefficients for the independent variable and covariate on each dependent variable. Only one of the regressions highlighted a difference between individuals who identified their ethnicity as white compared to non-white, this was the regression between photo manipulation and boys' self-esteem.

Table 25

Linear regression for likes investment and photo manipulation and all relevant body image, wellbeing, and psychosocial functioning measures for image-focused SNS users (boys and girls), controlling for ethnicity and pubertal timing (girls) and ethnicity (boys).

Gender	Outcome measure	Model 1 Adjusted R^2	DF	F	p	Model 2 Adjusted R^2	DF	F	p	*P* change
Likes Investment										
Boys	Objectification	.01	35	1.38	.247	.16	34	4.49	.019	.010*
Girls	Objectification	-.01	76	0.51	.479	.11	75	5.98	.004	.001*
Girls	Muscular ideals	-.02	60	.024	.879	.14	59	5.88	.005	.001*
Girls	Body satisfaction	-.02	60	0.01	.941	.11	59	4.89	.011	.003*
Photo manipulation										
Girls	Objectification	-.01	75	0.45	.507	.14	74	7.04	.002	<.001*
Girls	Muscular ideals	-.02	60	0.02	.879	.02	59	1.73	.186	.069
Girls	Body appreciation	-.01	72	0.09	.772	.06	71	3.17	.048	.015*
Boys	Loneliness	-.01	36	.48	.494	.19	35	5.29	.010	.003*
Boys	Self-esteem	.19	36	9.63	.004	.32	35	9.69	<.001	.008*
Boys	Positive affect	-.02	36	.41	.528	.12	35	3.44	.043	.016*
Girls	Self-esteem	-.01	75	0.54	.466	.05	74	3.05	.054	.021
Girls	Positive affect	-.01	75	<0.01	.952	.04	74	2.56	.084	.027

Note. Model 1 includes only covariate (ethnicity), Model 2 includes covariate (ethnicity) and independent variable. * denotes p ≤ .05, ** denotes p ≤ .001.

Table 25b

Coefficients for photo manipulation and likes investment, with ethnicity as a covariate

	B	β	t	Sig
Likes Investment				
Body Image				
Boys Objectification	.83	.43	2.71	.010
Ethnicity white	1.02	.31	1.96	.059
Girls Objectification	.79	.37	3.37	.001
Ethnicity white	-.11	-.03	-.29	.775
Girls Muscular ideals	.48	.41	3.43	.001
Ethnicity white	.08	.04	.35	.731
Girls body satisfaction	-.52	-.39	-3.13	.003
Ethnicity white	-.11	-.05	-.43	.667
Photo manipulation				
Body image				
Girls Objectification	1.5	.39	3.68	<.001
Ethnicity white	-.22	-.06	-.57	.573
Girls Muscular ideals	.05	.24	1.86	.069
Ethnicity white	-.10	-.05	-.41	.686
Girls Body appreciation	-.06	-.29	-2.50	.015
Ethnicity white	.05	.022	.20	.846
Wellbeing				
Boys loneliness	.08	.47	3.16	.003
Ethnicity white	.41	.18	1.19	.242
Boys self-esteem	-.06	-.39	-2.81	.008
Ethnicity white	-1.04	-.51	-3.74	.001
Boys Positive affect	-.05	-.40	-2.53	.016
Ethnicity white	-.26	-.16	-1.02	.316
Girls self-esteem	-.05	-.27	-2.35	.021
Ethnicity white	.14	.07	.66	.513
Girls positive affect	-.05	-.26	-2.26	.027
Ethnicity white	-.01	<-.01	-.03	.975

Image-focused SNS use

The next section will assess the fifth hypothesis that regardless of gender, participants who use more image-focused SNS will report higher levels of body image concerns and negative wellbeing, as well as decreased psychosocial functioning, compared with their counterparts who do not use image-focused SNS. Independent sample T-tests and Mann-Whitney U tests were run to evaluate any differences between image-focused and non-image-focused SNS users on the body image, wellbeing, and psychosocial functioning measures (see Table 26 – 39). This demonstrated some evidence that for problem behaviour there was a difference between boys who used image-focused SNS and those that did not, U = 419.50, z = -2.46, p = .014. For girls, there was no evidence of a difference between those that used image-focused SNS and those that did not.

Table 26

ANOVAs for image-focused versus non image-focused SNS use for boys on all outcome measures

Boys	Image-focused (N=39)	Non-image-focused (N=49)	p	T	Cohen's d	Score range
Body image						
Objectification	2.86 (1.61)	2.77 (1.47)	.792	0.27	.06	1-7
Muscular ideals	2.56 (0.87)	2.61 (1.04)	.823	0.23	.05	1-5
Thinness	3.03 (1.23)	2.43 (1.08)	.064	1.89	.52	1-6
Body satisfaction	3.80 (0.93)	3.71 (0.81)	.633	0.48	.11	1-5
Psychosocial Functioning						
Functioning	26.26 (7.23)	26.75 (7.32)	.779	0.28	.07	6-36

Table 27

Mann-Whitney U Test for image-focused versus non image-focused SNS use for boys on all outcome measures

Boys	Image focused Median	Non-Image Focused Median	p value	U statistic	Z-score	Partial Eta Squared
Body Image						
Body appreciation	4.10	4.10	.525	880.00	-0.64	.01
Wellbeing						
Loneliness	1.33	1.33	.740	918.00	-0.33	<.01
Self esteem	4.25	4.25	.489	1037.00	0.69	.01
Positive affect	3.80	4.00	.424	1050.00	0.80	<.01
Negative affect	2.00	1.80	.552	862.00	-0.60	<.01
Psychosocial Functioning						
Problem Behaviour	20.00	18.00	.014*	419.50	-2.46	.07

* denotes p ≤ .05, ** denotes p ≤ .001.

Table 28

ANOVAs for image-focused versus non image-focused SNS use for girls on all outcome measures

Girls	Image-focused (N=81)	Non-image-focused (N=30)	p	T	Cohen's d	Score range
Body image						
Objectification	3.88 (1.69)	3.58 (1.51)	.402	0.71	.01	1-7
Muscular ideals	2.01 (0.80)	1.99 (0.63)	.914	0.11	.02	1-5
Body satisfaction	3.63 (0.93)	3.77 (0.67)	.439	0.78	.16	1-5
Wellbeing						
Positive affect	3.59 (0.95)	3.44 (0.67)	.375	0.89	.17	1-5
Psychosocial Functioning						
Functioning	26.78 (6.09)	27.93 (5.28)	.415	0.82	.20	6-36

Table 29

Mann-Whitney U Test for image-focused versus non image-focused SNS use for girls on all outcome measures

Girls	Image focused Median	Non-Image Focused Median	p value	U statistic	Z-score	Partial Eta Squared
Body Image						
Body appreciation	4.05	3.80	.974	1048.50	-0.03	<.01
Drive for Thinness	2.14	2.29	.279	627.00	1.08	.01
Wellbeing						
Loneliness	1.67	1.33	.471	1097.00	-0.72	.01
Self esteem	4.00	4.00	.432	1316.50	0.79	.01
Negative affect	2.00	2.00	.167	964.50	-1.38	.01
Psychosocial functioning						
Problem Behaviour	19.00	18.00	.217	571.00	-1.24	.01

Gender Differences

The next section will assess the sixth hypothesis that girls will report lower levels of wellbeing and higher levels of body image concerns compared to boys and that boys will report lower psychosocial functioning compared to girls. Independent samples T-tests and Mann-Whitney U tests (when assumptions were not met) were run on the whole sample to evaluate gender differences between levels of body image concern, wellbeing, and psychosocial functioning (see Tables 30 and 31). There was strong evidence that girls reported higher self-objectification levels than boys F$(1, 195)$ = 18.56, p= <.001, and that boys reported higher internalisation of muscular ideals $t(1, 145.27)$ = 4.30, p = <.001 than girls. There was also some evidence that boys reported a higher median score for self-esteem than girls, U = 3852.00, z = -2.48, p = .013, and that boys reported lower mean rank on the negative affect scale than girls, U = 5644.40, z = 2.32, p = .020.

Table 30

T-test for boys and girls for all outcome measures

	No SNS split (i.e., whole sample)					
	Boys (N=88)	Girls (N=111)	P	T	Cohen's d	Score range
Body image						
Objectification	2.81 (1.53)	3.80 (1.65)	<.001**	18.56	.09	1-7
Muscular ideals	2.59 (0.96)	2.01 (0.75)	<.001**	4.30	.68	1-5
Psychosocial Functioning						
Problem behaviour	21.71 (8.56)	21.00 (7.20)	.583	0.55	.09	12-72
Functioning	26.54 (7.23)	27.15 (5.83)	.562	0.58	.09	6-36

* denotes p ≤ .05, ** denotes p ≤ .001.

Table 31

Mann-Whitney U Test for boys and girls for all outcome measures

	Boys Median (mean rank)	Girls Median (mean rank)	p value	U statistic	Z-score	Partial Eta Squared
Body Image						
Body appreciation	4.10	4.00	.460	4334.50	-0.74	<.01
Thinness	2.57	2.21	.221	1647.50	-1.22	.01
Body satisfaction	3.89	3.78	.589	3265.00	-0.541	<.01
Wellbeing						
Loneliness	1.33	1.50	.505	5095.00	0.67	<.01
Self esteem	4.25	4.00	.013*	3852.00	-2.48	<.02
Positive affect	3.80	3.75	.451	4497.50	-0.754	.01
Negative affect	2.00 (88.12)	2.00 (106.78)	.020*	5644.50	2.32	.01
Psychosocial Functioning						
Problem Behaviour	18.50	18.00	.719	2747.50	-0.36	<.01

* denotes p ≤ .05, ** denotes p ≤ .001.

Discussion

This study aimed to evaluate how preadolescents aged 10 – 11 years are engaging with SNS and how SNS use relates to body image, mental wellbeing, and psychosocial functioning. Overall, the results from this study suggest that there is a relationship between SNS use and body image concerns, negative wellbeing, and decreased psychosocial functioning for preadolescents as young as 10 – 11 years.

Hypothesis 1: Preadolescents will use SNS.

Evidence was found to support the first hypothesis that preadolescents would use SNS. Past research has suggested that 21% of 8 – 11 year olds have a social media account (Ofcom, 2020a). Therefore, the current findings, suggesting that 85.4% of participants use some form of SNS and 42.4% of participants use image-focused SNS, were far higher than anticipated. Interestingly, 10 – 11 years olds are using, on average, more than two SNS each, despite the required age for most SNS being at least 13 years old. This highlights the importance of evaluating how preadolescents are using SNS, and how it may be affecting individuals of this young age. As research has suggested body image concerns are present by 11 years of age, and then remain fairly stable (Lacroix et al., 2020), it is important that when investigating potential contributors to body image concerns, research focuses on preadolescents.

Hypothesis 2: Those who report greater SNS engagement (measured by more time spent on SNS and more SNS activity) will report more body image concerns as well as lower reported wellbeing and psychosocial functioning. Additionally, those reporting greater active, rather than passive, SNS usage will report lower levels of body image concerns, negative wellbeing, and psychosocial functioning.

As past research has shown that boys and girls use SNS in different ways, and are affected differently (Frison & Eggermont, 2016a), it is important to evaluate how preadolescents aged 10 – 11 years are using SNS. The findings below show support for the second hypothesis. Looking specifically at SNS engagement and body image concerns, the current research suggested that boys and girls who reported spending more time on image-focused SNS, and girls who reported higher levels of SNS activity, reported higher levels of objectification. This is in line with past cross-sectional research, which has suggested that time on SNS is associated with higher levels of objectification (Hanna et al., 2017; Salomon & Brown, 2019). Although longitudinal research is needed in order to discover the direction of these associations, the present findings highlight the range of ways in which SNS are associated with body image concerns in individuals as young as 10 years old. Contrary to

past research in a slightly older sample (Rodgers, Slater, et al., 2020), no relationship was found between SNS activities and internalisation of muscular ideals for boys. This could perhaps be due to the high internalisation of muscular ideals that they already have from other sources (for example gaming), thus social media is not adding to this, or perhaps due to the later puberty rate for boys, perhaps this pressure becomes more apparent later. No relationship was found between SNS engagement and body appreciation, drive for thinness, or body satisfaction for girls or boys. Past research has shown evidence for these relationships with other samples, for example body satisfaction in boys and girls was previously found to be negatively associated with Instagram use (Fardouly et al., 2020). The lack of findings in the current study could be due to the SNS platforms which were included in the analysis. As most research has focused on one specific SNS (mainly Facebook and Instagram), it could be that media being viewed on TikTok is different in nature and could be moderating this effect. This highlights the need for further evaluation in a variety of SNS and different ways in which they can be used.

The findings related to SNS engagement and wellbeing, and psychosocial functioning found that boys who reported more SNS activity also reported increased negative affect. This is in line with past research with undergraduate women, which has suggested that overall Instagram use is linked to increased negative affect (Engeln et al., 2020). Interestingly, despite past research finding this affect with undergraduate women (Engeln et al., 2020), this study did not reveal this relationship in preadolescent girls, this could be due to the smaller cumulative effect that SNS have on this population at this age. Recent research has also suggested that there is a positive association between 'fear of missing out' and negative affect in adults (Li et al., 2020). Those engaging with SNS more may become more aware of what others are doing due to seeing photos and posts, or discussing this online, leading to increased negative affect mediated by what others are doing (social norm beliefs). Despite past research suggesting a link between SNS engagement and positive affect, loneliness, and self-esteem in older samples, no relationship was found between SNS engagement and these variables in the current study. This could possibly be due to the younger sample in this age (and thus less cumulative effect), or the lower rate of SNS engagement. Additionally, girls who reported more time on SNS and girls and boys who reported higher levels of SNS activity, also reported higher levels of problematic behaviour (for example arguing with others). This could be due to increased communication with others on SNS. For example, seeing photos of problematic behaviour, or talking to individuals on SNS about their behaviour, may lead them to copy these problematic behaviours, or possibly those taking part in more problematic behaviour are spending more time engaging with social media in order to discuss this. No relationship was found between

SNS engagement and functioning. Past research, with a slightly older sample, looking at specific aspects of adolescent functioning, has found that heavy SNS use predicts a decrease in school functioning (van den Eijnden et al., 2018). This suggests that there is a need for further research into SNS usage and adolescent functioning.

When looking at differences in active and passive SNS use, the majority of participants (58.7%) stated that they most often used SNS in a passive way, which was the case for both girls and boys. For girls, there was evidence that there were higher rates of body satisfaction for those who reported using SNS in an active way, compared to passive SNS use. This could be because those using SNS actively will spend less time 'scrolling' through a SNS newsfeed and thus may see fewer images which could affect the way in which they see their own body, in line with social comparison theory (Festinger, 1954). Alternatively, perhaps those with lower levels of body satisfaction are spending more time looking at photos of others in order to compare to themselves, thus spending more time using SNS passively. This relationship was not found for boys. The discrepancy in findings between boys and girls could be due to the increased pressure that girls feel from a younger age. Alternatively, it could be that this relationship has not been found with boys because gaming, which is more frequent amongst boys than girls, may be used more by boys of this age and thus is more influential in this relationship. Further research could evaluate this interaction. It is unsurprising that differences have been found between boys and girls, as past research evaluating the relationship between active and passive SNS use and adolescent wellbeing has found different effects between the two genders (Frison & Eggermont, 2016a). Further research into the motivations for different types of SNS use between the genders would lead to a clearer understanding of this complex relationship. It is important to understand how preadolescents are using SNS, as past research has suggested that passive SNS use is related to reduced subjective wellbeing (Krasnova et al., 2013), greater anxiety, and depressed mood (Thorisdottir et al., 2019). However, less research has evaluated the ways in which preadolescents use SNS, and whether the way in which they engage with SNS has the same effect as it does on older adolescents and adults. Indeed, these findings suggest that there are fewer negative effects associated with passive SNS use for preadolescents compared to findings with older ages (Rousseau et al., 2017; Verduyn et al., 2015; Wenninger et al., 2014). This could be due to the content that preadolescents are seeing when they are using SNS in a passive way; perhaps they are viewing fewer images which are influencing how they feel about their body; perhaps there is a smaller cumulative effect of SNS on preadolescents as they have been using them for less time; or perhaps at this age, their type of SNS usage is based on factors different to older adolescents (for example, it could be that at this age they are more likely to copy how their

peers use SNS, rather than being autonomous in what they are searching for on social media). No differences were found between active and passive use for objectification, internalisation of muscular ideals, body appreciation, drive for thinness, negative affect, positive affect, loneliness, or functioning for either boys or girls. This differs from past research with older samples, which has found differences between these groups. The opposing findings in this study could possibly be due to the low rate of active SNS use; it could be due to lower cumulative effects of SNS use at this age; or the motivations for active and passive use may be different in preadolescents. Further research with preadolescents may be able to highlight these differences compared to the current research in older samples. Further longitudinal research is needed in order to evaluate the cause of this relationship. This has implications for future interventions because if the way in which preadolescents use SNS, and how these affect them, is different to older individuals, then interventions will need to target the specific aspects that affect preadolescents.

Hypothesis 3: Those who report greater selfie-behaviour will report more body image concerns and negative wellbeing.

The third hypothesis stated that greater selfie-behaviour would be related to more body image concerns and negative wellbeing. Looking specifically at self-objectification, girls who reported taking more selfies also reported higher levels of self-objectification, adding support for hypothesis three. This is in line with past research, which has found that higher levels of self-objectification in adults preceded greater engagement in selfie-behaviour (Veldhuis et al., 2018), it could be that girls aware of their own self-objectifying tendencies may be taking selfies to take control of how they are viewed and empower themselves. This relationship was not found for boys. Past research has focused mainly on the association between selfie-taking and body image in girls, with little research focusing on boys. Therefore, it could be that selfie-taking does not affect boys in the same way, possibly due to the lower societal pressure they experience to look a certain way, especially when young. There was no evidence of a relationship between selfie-taking and internalisation of muscular ideals for boys or girls. This could perhaps be due to filters which can be found on many social media platforms focusing on female beauty standards, rather than male beauty standards. For example, the majority of filters will focus on enlarging eyes, reducing nose size, or highlighting lip colour; very few will focus on increasing muscle appearance. Overall, these findings were only able to partially support the third hypothesis. There was no relationship found for selfie behaviours and body appreciation, drive for thinness, body satisfaction, negative affect or positive affect for boys or girls, despite past experimental research reporting similar findings (Mills et al., 2018). Past research on selfie-taking and selfie taking is incongruent; qualitative research with

adults has suggested that women may take selfies in order to empower themselves, thus leading to increased levels of self-esteem (Pounders et al., 2016), although extensive literature on selfie-posting (rather than selfie-taking) has highlighted its negative affect on wellbeing (Mclean et al., 2015; Wang et al., 2020). To the researcher's knowledge, there is scant past literature on the relationship between selfie-related behaviour and levels of loneliness in early/middle adolescents, further exploration is needed in these areas. There were no relationships found between any of the variables and selfie-sharing. The means for selfie-sharing and selfie-taking in this sample were lower than in previous samples (Mclean et al., 2015), suggesting as a sample, the current participants may not share selfies very often. This in itself is interesting, and further research should evaluate if and why younger generations who are growing up with social media more ingrained in society may post less selfies than their older counterparts do. It could be that preadolescents are posting other images, for example images of scenery or memes, or posting videos rather than photos. If this is this case, it would be important to explore whether these differences are due to selfie posting declining overtime, or selfie posting increasing with age.

Hypothesis 4: Those who report greater importance of others' views will report more body image concerns and negative wellbeing.

The next hypothesis stated that those who report greater importance of others' views will report more body image concerns and negative wellbeing. The current research suggested that girls reporting higher levels of likes investment also reported higher levels of internalisation of muscular ideals. As past research has predominantly focused on muscular internalisation in relation to boys, this is particularly interesting. It could be that those who are paying more attention to the likes that they, and other people, receive are noticing the images which are receiving a high number of likes and thus internalising this with how they should look. Alternatively, perhaps those who have internalised a certain body ideal (in this case muscular), are paying more attention to what posts receive likes in order to support their own ideal. Interestingly, this relationship was not found for boys. It could be that boys' internalisation of muscular ideals are associated with other mediums (for example, gaming), more so than from SNS. Alternatively, it could be that the muscular ideal is not aimed towards females through many other mediums (for example TV personalities still focus on a thin ideal for females, rather than a muscular ideal), therefore the association between SNS use and muscular ideals is particularly strong for females but not males. Additionally, boys and girls who reported higher levels of likes investment, and girls reporting higher levels of photo manipulation, also reported higher objectification. Likes investment could be seen as an extension of the body checking that is found in self-objectification; individuals who are displaying this behaviour may be

more likely to also be checking the likes that they, and others receive in order to monitor oneself. Furthermore, girls reporting higher levels of likes investment also reported lower levels of body satisfaction. Additionally, girls who reported higher levels of photo manipulation also reported lower levels of body appreciation. This finding is in line with past research, which has demonstrated higher engagement in photo manipulation is associated with greater body-related concerns (Mclean et al., 2015). It could be that individuals who are manipulating their images become unsatisfied with the original, unedited image. Alternatively, perhaps individuals who are already unsatisfied with their appearance are editing their images in order to make them appear in a way that they find more pleasing. Further longitudinal research will be needed to evaluate the direction of this relationship. These relationships were not found for boys. The manipulation measure covers a variety of types of manipulation and does not focus solely on editing appearance features (for example it also covers editing images into black and white), and it could be that the type of photo manipulation used by boys and girls is different in nature. Further research, with more nuanced measures, would be needed to evaluate this. Additionally, the research was also able to suggest that boys who reported higher levels of photo manipulation also reported lower levels of self-esteem. Past research evaluating selfie-manipulation and self-esteem have not found significant findings (Veldhuis et al., 2018). However, the current study may have uncovered a relationship between these two factors due to the more detailed photo-manipulation measure. It is not unexpected that photo manipulation is related to lower levels of self-esteem, as research has shown that photo manipulation is related to body dissatisfaction, and past research has also shown a relationship between body dissatisfaction and self-esteem (Tiggemann, 2005). Furthermore, the act of manipulating a selfie suggests a level of discontent with the original image, with manipulation occurring in order to 'improve' it. An additionally interesting aspect of this findings is the role of ethnicity in this finding. Although ethnicity was added as a dichotomous (white vs. other) covariate in all regressions, the relationship between boys' photo manipulation and self-esteem was the only regression which highlighted a difference between the two covariate levels (with those who identified as white reporting a stronger negative relationship between photo manipulation and self-esteem), which is particularly interesting for future exploration. Level of reported loneliness was another measure evaluated in the current study. Boys reporting higher levels of photo manipulation also reported higher levels of loneliness. As past research has suggested that perceived online support is a buffer for the negative effects of SNS use (Frison & Eggermont, 2016a), and that levels of loneliness predicts later levels of SNS use (i.e., those more lonely at Time 1, will report higher rates of SNS use at Time 2; Kross et al., 2013), perhaps increased levels of loneliness are leading to photo-manipulation in order to gain some engagement from online peers. If this is the case, it is likely that

this relationship is being mediated by some other factor, for example low levels of belonging. Therefore, further exploration of this is needed to fully unpick this relationship. Additionally, this relationship was not found for girls, as past research evaluating photo manipulation has rarely evaluated its associations to wellbeing. Further research would be beneficial in order to evaluate any differences in motivations for photo manipulation between boys and girls. Furthermore, the research suggested that boys who reported higher levels of photo manipulation also reported decreased positive affect. As low levels of positive affect are associated with feelings of sadness and lethargy, it could be possible that individuals are editing their photos in order to gain more online connections which may be used as a form of support at a time when they are not feeling at their best. Alternatively, those who have frequently edited their photos may be feeling sad and helpless that they feel they cannot match their own internalised beauty standards, to which their edited their photos are more closely aligned.

Hypothesis 5: Regardless of gender, participants who use more image-focused SNS will report higher levels of body image concerns and negative wellbeing, as well as decreased psychosocial functioning, compared with their counterparts who do not use image-focused SNS.

The penultimate hypothesis that regardless of gender, participants who use more image-focused SNS will report higher levels of body image concerns and negative wellbeing, as well as decreased psychosocial functioning, compared with their counterparts who do not use image-focused SNS, was also only partially supported. Boys who reported using image-focused SNS also reported higher levels of problem behaviour compared to those who did not use image-focused SNS. This is unsurprising considering that SNS themselves are not allowed at this age, this in itself could be a form of problematic behaviour, i.e., rule breaking if parents are unaware of children's SNS accounts. However, no other findings were able to add support to this hypothesis. Although many past studies have demonstrated stronger effects for the differences in body image and wellbeing outcomes between those who use SNS and those who do not, as past research has demonstrated that risky/problematic behaviours peak between ages 14 – 15 (van Lier et al., 2009), it is unsurprising that these rates are low in preadolescents. It is likely that preadolescents have had SNS for less time than their older counterparts, therefore any cumulative effect of using SNS on their body image and wellbeing would be expected to be lower. Conversely, individuals of this age may be using SNS differently to their older peers, which could be because their body image and wellbeing is less problematic, or it could be because they have grown up surrounded by social media and are therefore more aware of positive ways to use these platforms.

Hypothesis 6: Girls will report lower levels of wellbeing and higher levels of all body image concerns (other than internalisation of muscular ideals) compared to boys; boys will report lower psychosocial functioning and increased internalisation of masculine ideals compared to girls.

The final hypothesis that girls will report lower levels of wellbeing and higher levels of body image concerns compared to boys, and boys will report increased internalisation of muscular ideals and lower levels of psychosocial functioning compared to girls, was only partially supported. Research evaluating gender differences in self-esteem are not congruent. Still, research looking specifically at early/middle adolescents has suggested that boys report higher global self-esteem than girls (Maiano et al., 2004). Indeed, this study was able to support this finding. Furthermore, it was found that boys reported higher levels of internalisation of muscular ideals than girls, and girls reported higher objectification compared to boys, and had a higher mean rank of negative affect than boys, in line with past research (Choma et al., 2010; Grabe et al., 2007; Hamama & Hamama-Raz, 2019; Mccreary & Sasse, 2000), showing that the findings reported in older samples are also found in preadolescents. No other support for this hypothesis was found. As this research is conducted with a young sample, it is not surprising that there is little difference between boys and girls. Research has suggested that body image concerns increase for girls, and decrease for boys, after puberty (Ricciardelli & Yager, 2015), therefore it would be expected that there are fewer gender differences in preadolescents.

Chapter 4 field contribution:

This chapter explored a number of associations which had received little to no attention in this age group and in boys. The current study contributes the important knowledge that at age 10 – 11 years old SNS is associated with negative body image, wellbeing, and psychosocial functioning for boys and girls. In particular, there were some novel findings around the association between boys' SNS use and wellbeing, as boys who reported more SNS activity also reported increased negative affect, and boys who reported higher levels of photo manipulation also reported higher levels of loneliness and lower levels of self-esteem, highlighting the importance of examining this field.

There were also some novel findings relating to girls' body image concerns, with little past research exploring the association between muscular ideals for girls as young as 10-11 years old. This study suggested that girls reporting higher levels of likes investment also reported higher levels of internalisation of muscular ideals, suggesting an important future avenue to explore is the motivations for SNS use. Finally, psychosocial functioning has received little prior research attention,

and that which it has is focused predominantly on university students. The novel finding that girls who reported higher levels of SNS activity, and more time on SNS, also reported higher levels of problematic behaviour highlights the breadth of ways that SNS is associated with preadolescents' experiences and behaviours.

There were a number of differences between the findings for girls and boys within this study, this could be due to the different societal pressures at this age, but also possibly due to differences in motivations for usage. These aspects would be an interesting avenue for further research.

Limitations

As with all research, despite the important addition this research adds to the field, there are a number of limitations. The first limitation which will be evaluated is based on the methodology used in the study. As this research was cross-sectional, the direction of causation is not known. In this case, for example, whether social media use causes increased internalisation of muscular ideals, or whether internalisation of muscular ideals leads to increased use of social media, cannot be confirmed without further longitudinal research. However, the cross-sectional research does suggest that this relationship, which has been seen in older adults, is also apparent in preadolescents. Although further research is needed to understand the direction of this relationship, this research highlights the importance to start targeting interventions at earlier ages than we currently do. Longitudinal research is costly, both in funding and in time. Cross-sectional research, however, is less costly in both ways, and is still able to suggest possible relationships which can be further evaluated through longitudinal research. Cross-sectional research offers less in-depth evaluation of possible relationships, but is still able to evaluate where relationships occur. However, without the addition of longitudinal research, we are unable to understand the cause of these relationships and thus work to create successful interventions; we are only able to predict these directions. The aim in research is to eventually understand what causes positive and negative outcomes and what can influence these relationships, and although cross-sectional research is not able to answer all of these questions, it is able to start teasing relationships apart.

Additionally, there may be a number of confounding variables which were not measured or evaluated which could have an impact on the found relationships. For example, pubertal timing had been planned to be included as a covariate, but considering some schools requested for this question to be removed, it was not included due to the large amounts of missing data. Some other

confounding variables which could have an affect which were not evaluated could be parents' dieting behaviour and what sort of social media accounts people follow. It is important to note that a number of other factors may also affect the results so that these can then be evaluated in future. It is important to note the implication of confounding variables as not only may they be having an effect which is currently unaccounted for, but they may also be the underlying cause of some of the relationships which have been found.

There were a number of measures which were created by the researcher (e.g., peer behaviour), altered by the researcher for this study (e.g., Isolation subscale of the Perth-A Loneliness scale), or not validated on this age (e.g., photo manipulation). It is important to note that the interpretations for these results are made cautiously due to this. These measures were chosen, despite the lack of validation with this sample, as other validated measures were not able to capture the correct essence, or they were deemed to have a higher risk of eliciting undue stress in the participants. Whenever possible, it is preferable to use fully validated measures, however when exploring new avenues, there is not always a relevant measure. Ideally, the measures which were not fully validated would have been tested against their original measure, or similar measures in order to evaluate their validity prior to this study, however, this was not possible due to time constraints.

The lack of pilot testing is another limitation. Pilot testing is able to demonstrate the level of understanding that participants have with the questionnaire (something that can be particularly important when working with a younger sample), and can highlight any oversights. For example, the lack of detailed data on TikTok (for example time spent on TikTok), despite this SNS being used by a large proportion of participants, could have been overcome by pilot testing, as this would have been likely to demonstrate the prevalence of this SNS. As time was tight, the decision was made to forgo pilot testing in order to allow maximum time for data collection. With research going forward, TikTok was added and therefore this study was able to help inform the later longitudinal study.

Another limitation of this study is the small sample size. This sample was obtained during the final school term 2019, with the plan to obtain more the following year. However, this was not possible due to school closures in summer 2020 due to COVID-19. Although the overall sample is 201 participants, the number of boys and girls who use image focused SNS was far lower. Furthermore, most participating schools were based in Bristol (with one school located in Devon), a large and

reasonably diverse city. Therefore, the overall sample is not representative of more rural areas which may have different rates of SNS use (Philip & Williams, 2019).

Two separate measures were used to evaluate SES. Both of these measures of SES are not without flaws. The self-reported measure was chosen above other options, as it was thought that other options could lead to a large amount of missing data (e.g., parental occupation), or could be time consuming for the adolescent (e.g., how many books are in your house). However, there are still concerns with the self-reported measure, especially during a time of increased environmental awareness. It could be argued that those with a lower number of cars may in fact depict a higher SES. These individuals are able to make a conscious choice to be more environmentally friendly and thus use other forms of transport which could be more expensive in terms of money and/or time. Additionally, rurality may play a part in how many cars a household needs, with more rural locations being more likely to require one, or more cars, compared to more central locations (Statista Research Department, 2015). Although this is not a perfect measure, other options, for example direct questions relating to parental job are unreliable in young children (Torney-Purta et al., 2001). For this reason, percentage of pupil premium students was also evaluated. The percentage of pupil premium at each school is looking at SES at a school level, rather than an individual level. Despite this, the findings from the two measures both suggested the sample was above average SES.

As each research questionnaire is approved by the school before parents are informed, in order to collect as much data as possible, the researcher chose to accept schools which requested for certain questions to be removed from the questionnaire. This did, however, mean that there was a large amount of missing data which could not be corrected for via multiple imputation because the data was unlikely to be missing at random (which is a requirement for multiple imputation; Allison, 2000; Jakobsen et al., 2017), e.g., head teachers who are aware that students at their school have high levels of body dissatisfaction may have requested for these items to be removed. Furthermore, multiple imputation pattern analysis showed that some of the most frequent patterns for missing data had multiple variables missing, further suggesting that missing data could not be assumed to be missing completely at random. Although analysis was still conducted on the data, this resulted in very lower numbers for some measures, and therefore type I and type II errors may occur (Oakes, 2017). Therefore, further analysis with a larger sample is needed in the future.

The measure 'time spent online' was an average of reported time on each SNS. This decision was driven by anecdotal evidence which suggested that individuals will simultaneously use multiple

SNS at one time. However, when looking at preadolescents' reported time on each platform, many of these added to over 24 hours, which gave further evidence to create an average. It is likely that some participants may have answered this question by splitting their overall time online between the different platforms and therefore this measure would underreport their time on SNS. This highlights the need to create universal measures to explore individuals SNS use.

Finally, the questionnaire was designed to be completed either online or on paper, in order to accommodate all schools which were interested in taking part in the study. This does, however, mean that the layout of the questions vary slightly and the excitement of the students may also be affected by this; for many schools only a certain amount of time is allocated to computer-related lessons, perhaps making the questionnaire more exciting for them purely on the basis that they were allowed to use computers for this task, which could have led to lower concentration levels due to the excitement.

Conclusion

The current study suggests that individuals as young as $10-11$ years old are using SNS. Although this research has started to evaluate the ways in which preadolescents use SNS, further analysis, with a larger sample is needed. The data suggests that at this age, SNS usage is correlated with a number of negative body image, wellbeing, and psychosocial functioning tendencies, and that passive SNS usage is related to increased body image concerns in girls as young as $10-11$ years. Further research is needed in this area, in particular to evaluate the directionality of this relationship, and which particular aspects of active SNS could be protective or relevant to this relationship. Furthermore, a deeper understanding of how adolescents use SNS, and how this impacts their body image concerns, wellbeing, and psychosocial functioning, can lead to a deeper understanding of what aspects of SNS are positive for preadolescents, and what aspects lead to more negative thoughts and behaviours. With this knowledge, we can hope to educate young people about the harmful effects of SNS, and guide them to use them in a more positive way. This will also aid the development of research-informed interventions which target the specific nuances of preadolescent SNS usage.

Chapter 5: Study 2 – Cross-sectional study evaluating SNS use and body image, wellbeing, and psychosocial functioning in adolescents aged 11 – 15 years old.

This chapter, which details Study 2, built on the previous study by examining the same measures in a larger and slightly older sample. This study also expanded on the previous study by including proposed moderators and mediators into the relationships being tested. It aimed to explore adolescents' SNS use, and the associations with body image concerns, wellbeing, and psychosocial functioning, and to test three proposed models for these associations. The chapter provides a brief introduction to the existing research on this topic, as well as the study methods, results, and discussion. This research led to a conference presentation at the UWE HAS postgraduate conference (18/06/2019).

Introduction

As highlighted in Chapter 2 and Chapter 4, SNS play a significant role in adolescents' lives and have received significant research attention due to the unique user experience where individuals can view peers and celebrities alongside each other, connect with individuals, and also create and share their own mediums. Although much research regarding SNS use has focused on the detrimental associations (Schonning et al., 2020), mixed findings have led researchers to also explore the beneficial associations (McCrory et al., 2020; Mcdool et al., 2016; Pittman & Reich, 2016; Roberts & David, 2020; Weinstein, 2018).

A breadth of research has highlighted the associations between SNS use and body image concerns (Fardouly & Vartanian, 2016; Rodgers et al., 2021), with less research exploring the underlying pathways for these associations. Research exploring traditional media and the impact of body image has previously highlighted the relevance of self-objectification on this relationship. Objectification theory (Fredrickson et al., 1997) posits that western culture sexualises the female body, focusing on female physical appearance, rather than other qualities (Aubrey & Frisby, 2011; Baker, 2005). This may lead women to internalise this societal sexual objectification and look at their own body from an observer's perspective; this action has been termed 'self-objectification' (Fredrickson et al., 1997). Self-objectification often manifests as body surveillance, which is the persistent monitoring of oneself against idealised bodies (Fredrickson et al., 1997), and this has been associated with body dissatisfaction (Slater & Tiggemann, 2002; Tiggemann & Kuring, 2004), body

shame (Greenleaf, 2005), and disordered eating (Schaefer & Thompson, 2018). Furthermore, the relationship between SNS use, self-objectification, and body image concerns has been supported by research which has suggested that self-objectification mediated the relationship between Facebook use and body shame in undergraduate students (Hanna et al., 2017).

Research has explored how specific online behaviours may relate to body image concerns. Past research has suggested that there is a positive association between selfie-manipulation behaviour and body image dissatisfaction in adolescent girls (further research supporting these findings can be found in Chapter 4; Meier & Gray, 2014; Rodgers & Melioli, 2016). Cross-sectional research has started to explore the underlying mechanisms of this relationship, with one possibility being objectification. Research conducted with female university students in Italy suggested that self-objectification was positively associated with SNS use and frequency of selfie-editing (Caso et al., 2020). Furthermore, these findings have been replicated with adolescents aged 14 – 18 years, which found that internalisation of beauty ideals was positively related to selfie manipulation (Rousseau, 2021). Additionally, experimental research with university students has suggested that photos taken with a snapchat filter, compared to photos taken without, predicted body surveillance and self-objectification (Burnell et al., 2021).

Research has also explored the associations between SNS use and wellbeing (Verduyn et al., 2017), with less research exploring possible models for these associations. One theory which could explain the link between SNS use and wellbeing is social comparison theory (Festinger, 1954; Vogel et al., 2014; Yang, 2016). This theory posits that individuals compare themselves and their lived experiences to others, and that partaking in upward comparison can lead to feeling insufficient, which can be manifested in a number of ways, including, decreased positive affect (de Vries et al., 2018) and low self-esteem (Vogel et al., 2014). With popular SNS (e.g., Instagram and Snapchat) allowing individuals a glimpse into the highly edited self-images of friends, strangers, and celebrities (Vogel et al., 2014), (and thus more chances of upward comparison) it is important to further evaluate the effect of social comparison as a mediator for negative wellbeing in adolescent SNS use. In support of this, longitudinal research has demonstrated that technology-based social comparison and feedback-seeking are associated with depressive symptoms in individuals aged 12-16 years (Nesi & Prinstein, 2015). Additionally, longitudinal research exploring Facebook use with individuals aged 12-19 years found that negative comparisons on Facebook predicted a decrease in life satisfaction over a period of eight months (Frison & Eggermont, 2016b). However, this study also demonstrated that life satisfaction negatively predicted individuals' negative Facebook comparisons, highlighting

how longitudinal research is needed in order to demonstrate the dynamic of this relationship, which these findings suggest could be bidirectional or cyclical. A recent cross-sectional study has also explored the relationship between SNS use and adolescent wellbeing, suggesting that adolescent SNS use is negatively associated with life satisfaction, mediated by peer comparison (Jarman et al., 2021). Furthermore, research exploring the type of SNS usage more specifically has found that passive SNS use, more so than active SNS use, is associated with decreased wellbeing, and this has been supported by longitudinal research with German adolescents (Wenninger et al., 2014) and Chinese college students (Wang et al., 2018). This highlights the potential importance of the type of SNS usage, and suggests this should be included in a model hoping to explain the relationship between SNS use and wellbeing.

Little research has explored the links between SNS use and psychosocial functioning, however one aspect of psychosocial functioning which has received attention is risky behaviours. Research has found positive associations between social media use and risky behaviours (Vannucci et al., 2020). However, little research has explored the underlying pathways for these associations. One theory which could explain the link between SNS use and risky behaviours, and has received some empirical support is social norms theory (Berkowitz, 2004). Social norms theory argues that behaviour is influenced by misperception of how peers think and act. Individuals may believe that certain behaviours and thoughts are more common than they are, thus align themselves to these behaviours in an attempt to fit in (Perkins & Berkowitz, 1986). With adolescence being a time of finding one's identity (Erikson, 1968), it is particularly important to explore this during this developmental stage.

In support of this, longitudinal research has demonstrated positive correlations between exposure to friends' online drinking photos and increased alcohol consumption in individuals aged 15 – 16 years (Huang et al., 2014). More research exploring the impact of exposure to online risky behaviour content has found that risky behaviours seen online relating to drug use, excessive alcohol use, disordered eating, self-harm, violence to others, dangerous pranks, and unsafe sex are associated with such offline behaviours in adults (Branley & Covey, 2017). Furthermore, longitudinal studies have suggested that exposure to pictures of partying or drinking posted online by personal social network friends is predictive of adolescents' likelihood of increasing or maintaining their smoking levels and alcohol use (Huang et al., 2014). Furthermore, cross-sectional research has demonstrated that individuals aged 16 – 25 years significantly over-report risk and under-report protective behaviours related to sexual practices of Facebook friends (Black et al., 2013), which

suggests online photos may promote certain behaviours, thus creating false social norms as the behaviours appear 'normal'. With SNS allowing individuals to increase their online social network, and thus increase the opportunity for a variety of risky photos seen online, it is important to further evaluate the effect of social norms as a mediator for more age-appropriate measures related to risky behaviour in adolescents. Research exploring this with an older sample has suggested that Instagram use and perceived peer norms have been positively related to marijuana use in young adults (Bergman et al., 2018b). This highlights the important role that perceived social norm beliefs and online portrayal of risky behaviour may have in the relationship between SNS and risky behaviour in older samples. Furthermore, although these studies suggest that online behaviours we see from others can influence our offline behaviours, more research is needed to explore this relationship in a younger sample, explore any mediating effects, and explore this relationship in relation to current SNS platforms.

Together, these studies suggest that further research is needed to confirm whether associations found with adults are replicated with a younger sample, and to also explore how factors which have been shown to be important in these relationships may moderate or mediate the relationships between SNS use and body image concerns, wellbeing, and psychosocial functioning.

Research question and aims

This study is guided by the following research question:

Research Question: What are the cross-sectional associations between SNS use and body image, wellbeing, and psychosocial functioning in adolescent boys and girls aged 11 – 14 years old?

This led to the development of the study aim, which was:

Aim: To examine the relationships between SNS use and body image, wellbeing, and psychosocial functioning in adolescents aged 11 – 15 years.

Hypotheses

- H1: SNS engagement will increase with age, there will be no gender difference in SNS engagement.

- H2: Those who report greater SNS engagement will report more negative wellbeing and body image concerns, as well as lower psychosocial functioning. Additionally, those reporting greater active, rather than passive, usage will report lower levels of body image concerns and negative wellbeing, as well as lower psychosocial functioning.

- H3: Regardless of gender, participants who use image-focused SNS will report higher levels of body image concerns, lower wellbeing, and lower psychosocial functioning, compared with their counterparts who do not use image-focused SNS.

- H4: Higher levels of SNS engagement will predict higher body image concerns, mediated by body surveillance, and moderated by selfie manipulation. This relationship will be found for boys and girls.

- H5: Higher levels of SNS engagement will predict lower wellbeing, mediated by peer comparisons, and moderated by SNS activities. This relationship will be found for boys and girls.

- H6: Higher levels of SNS engagement will predict lower psychosocial functioning, mediated by perceived social norms, and moderated by peer belonging and risky behaviours seen online. This relationship will be found for boys and girls.

Method

Design

This study utilised a cross-sectional questionnaire design to evaluate the frequency and usage of SNS and how it is associated with individual wellbeing, body image concerns, and psychosocial functioning in individuals aged 11 – 15 years. Little research has evaluated SNS use in this age group, and that which has been done was conducted in a time when SNS were not so ingrained in society (Tiggemann & Slater, 2013, 2014). Furthermore, as body image concerns (Markey, 2010; Ricciardelli, 2012; Wertheim & Paxton, 2011), negative wellbeing (Orben et al., 2020), and risky behaviours (Bell, 2016) are particularly salient at this age, these are important aspects to explore in relation to SNS use.

Research ethics

Study 2 was an extension of Study 1, therefore the ethics application for the two studies were submitted together. Details of ethical approval can be found in Chapter 4.

Participants

Power calculations are particularly challenging in mediation analysis, therefore published guidelines are often followed (Schoemann et al., 2017), as was the case during this study. As the study was exploratory in nature and used regression-based analysis, a minimum sample size of 179 males and 179 females was needed within this study. Fritz and MacKinnon (2007) reported that a sample size of n=179 will achieve at least 80% power if indirect mediated effects, direct associations between dependent variable and mediator (α), and direct effects between mediator and outcome (β) are all in the range of moderate, medium or large effects. As this was timepoint 1 of a longitudinal study, provisions were made to include enough participants to account for attrition. An attrition rate of around 15% is common in body image longitudinal research (Diedrichs et al., 2021; Stice et al., 2000), therefore efforts were made to increase the sample size as a minimum sample size of n= 225 of each gender was needed to provide sufficient power for the longitudinal aspect of the study. Students from Year 7 (ages 11-12), Year 8 (ages 12-13) and Year 10 (ages 14-15) were included in the study at Time 1. Incentives were offered to schools taking part in the study, such that each school received a £200 donation for taking part in the cross-sectional study. Additionally, a session was given to each interested school to outline to the teachers the importance of the research, how the research would be conducted and how the findings would be used. Each school taking part was also provided with a summary of the findings once the study had finished.

Thirty secondary schools in the South-West of England were invited to take part in the study, five schools initially agreed to take part (17%), however two dropped out due to limited time or COVID-19 related complications, leaving three schools included in the study (10%). All students with an ability to understand English, who did not opt-out were included in the study. No special arrangements were made for SEN children, however, any assistance they receive in normal class time was permitted during the data collection.

Measures

In addition to the measures described in Study 1, there were a few additions to Study 2, which are detailed below.

Youth Problem subscale. One item was added to the Youth Problem subscale which related to online behaviours. This was 'Posting or sending revealing or inappropriate pictures'. The item was added due to the previously reported rates of 'sexting' in adolescents making this an appropriate item to measure (Gámez-Guadix et al., 2017; Houck et al., 2014), and the increasing pressure for

adolescents to engaging in 'sexting' behaviour (Hartikainen et al., 2021; Lippman & Campbell, 2014). In the current sample, the measure showed high internal consistency ($\alpha = 0.88$ for girls, $\alpha = 0.85$ for boys).

Behaviours Seen Online. The five item 'Behaviours Seen Online' scale was created by the researcher. The question format was based on the 'Exposure to Friends' Social Networking Sites Alcohol Content' scale by Nesi et al. (2017), and the items were based on the Ohio Youth Problem subscale (Ogles et al., 2001). Participants are asked to tick the behaviours that they have seen a friend post about online, there was also a response option for 'none of the above'. This could include posting a photo, status, or talking about it online. The items were 'rule breaking behaviour' 'inappropriate or revealing images', 'taking drugs', 'smoking', and 'drinking alcohol'. The five behavioural items were summed to create a measure score from zero to five. The measure showed high internal consistency in the sample ($\alpha = 0.86$ for girls, $\alpha = 0.88$ for boys).

Social Norms scale. The two item Social Norms Scale was created by the researcher. The question layout was based on the Perceived Norms scale from (Cullen et al., 2001), and the items in the scale were based on the Ohio Youth Problem subscale (Ogles et al., 2001). For this question, participants were asked to tick the behaviours that they thought most children their age take part in, there was also a response option for 'none of the above'. The five items matched the items in the Behaviours Seen Online measure. The five behavioural items were summed to create a measure score from zero to five. The measure showed high internal consistency in the sample ($\alpha = 0.84$ for girls, $\alpha = 0.82$ for boys).

Peer comparison scale. The seven item Social Comparison to Same-Sex Peers measure (Jones, 2001) was utilised to measure peer comparison. Participants were asked how frequently they compare themselves to same gender peers on seven qualities (e.g., 'intelligence', 'popularity' and 'personality'). Items were rated on a 5-point scale (1 = never, 5 = a lot), and averaged to produce a score ranging from 1 to 5, with higher scores indicating higher levels of peer comparison. The measure showed high internal consistency in the sample ($\alpha = 0.92$ for girls, $\alpha = 0.93$ for boys).

Peer Belonging scale. The seven item Peer Belonging scale (Hayden- Thomson, 1989) was utilised to measure peer group feelings of belonging. Participants were asked how they felt seven statements were true for them (e.g. 'I feel part of a group of friends that does things together'). Items were rated on a 5-point scale (1 = not at all true, 5 = always true), and averaged to produce a

score ranging from 1 to 5, with higher scores indicating high feeling of peer group belonging. The measure showed high internal consistency in the sample ($\alpha = 0.91$ for girls, $\alpha = 0.89$ for boys).

Procedure

Online and paper questionnaires were offered to each school so they had flexibility to make taking part in the study as convenient as possible. Participants completed the questionnaires individually. The study aimed to capture adolescents during two transition periods during adolescence. The lower age group (ages 11 – 13 years old, which corresponds with UK Year 7 – 8) were chosen as it is quite a pivotal time for children with a lot of change as they enter secondary school (van Rens et al., 2018; West et al., 2010). The upper age group of 14 – 15 years old (which corresponds with Year 10) was chosen as risky health behaviours have been shown to peak between 14 and 15 years (Van Lier et al., 2009), therefore looking at individuals over these ages could capture a number of changes in behaviours. Both male and female participants were included, but analysis was run separately as it has been shown that the media can affect males and females in different ways.

The data collection for the cross-sectional study took take place during class time, either on computers through Qualtrics, or on paper copies, all schools utilised a mixture of methodologies depending on their facilities during the lesson time. Each individual created a unique ID made up of characters from their last name, first name, and date of birth. This helped to keep data confidential, but allowed the data from each individual to be linked across time points for the later longitudinal aspect (Study 4).

All children taking part in the study were under 18 years, and opt-out parental informed consent was obtained. Parents were sent an informed consent sheet though the preferred means by the school, whether this be in the post, with the child, through email, or school-parent communication apps. Whenever possible, multiple avenues were used for sending information sheets and consent forms to parents. In the information sheet parents were made aware of their right to withdraw their child from the study at any point. Data collection occurred during class time with the researcher and a teacher present. Prior to data collection, participants were told they are taking part in a study and anything they feel uncomfortable disclosing can be left blank. Participants were also made aware they did not have to partake in the research project at all if they did not want to, and child assent was collected on the first page of the questionnaire. Participants were also made aware of their time-limited right to remove their data. These measures were put in place to reduce

the chance of risk to participants, as well as ensuring participants were aware of their own rights with their data, however, the researcher was available to answer any questions that arose, and gave each participant an information sheet with websites or services to access if they felt affected by the study, and also asked schools to email this information to students after the sessions. Participants took, on average, 45 minutes to complete the questionnaire. After data collection, all hard copies were stored in a locked cupboard at the University, and virtual data was stored on the PhD student's UWE OneDrive account. Only the PhD student had the password for the computer and OneDrive login.

Data collection

Data collection took place from October 2019-February 2020. In this time, Year 7, Year 8, and Year 10 pupils from three schools completed the questionnaire. A total of 1377 participants, from three schools, took part. Nine participants were removed due to unrealistic gender specifications, e.g., 'plastic bottle' or 'toaster' and an additional 44 participants left their gender blank and were therefore removed. A further 29 participants were removed due to more than 50% missing data (nine participants), due to the researcher noting their distracted behaviour during questionnaire completion (e.g., answering questions without reading the questions; four participants), or due to inconsistent answers, e.g., responding to 'none' and a behaviour for seen/ norms question (16 participants), leaving a total of 1295 participants.

Analysis

The analysis of this study aimed to evaluate the relationships between SNS use, body image concerns, wellbeing, and psychosocial functioning. All analysis was run with a dichotomous gender split in order to evaluate the relationship between SNS use and body image concerns, wellbeing, and psychosocial functioning for each gender. The statistical analysis used to test these relationships were; ANOVAs, T-tests, correlations, regressions, mediations, and moderations. A dichotomous gender split was used as past research has highlighted the differences between male and female body image concerns (Shaheen et al., 2016; Tiggemann & Pennington, 2007), reported wellbeing (Bergman & Scott, 2001), and psychosocial functioning (Abimbola & Ugbede, 2018; Fitzsimons et al., 2018). However, as there were such low numbers of individuals who identified outside of the gender binary (N = 9), and four different identifications within this subsample, it was thought a sample of this size would not represent this group and therefore these participants were left out of any gender

split analysis. A discussion around multiple testing is discussed in Chapter 4 (page 64-65) and is also relevant to this study.

Data screening

All data was screened before analysis occurred. First data was checked to ensure data fell within realistic values, there were no problems with this, other than when participants rated how long they spend on SNS. A number of responses that were unlikely to be realistic (e.g., 11 hours) were given, and the data screening also highlighted a number of outliers (+/-1.5*interquartile range; Walfish, 2007). Discussions were held with the supervisory team and it was decided that unrealistic self-reported time online was unlikely to be due to students purposefully giving misleading answers, and more likely due to a lack of concept of time. Therefore, outliers were replaced to 7 hours, as this was the maximum value not considered an outlier. This was done for all outliers, unless more than 24 hours was given, in which case the participant was removed from analysis. Three outliers were reduced to 7 hours. Missing data analysis was then run on the data. This produced a missing data rate of 4.14%. It is considered unnecessary to correct for missing data (e.g., run multiple imputation) if this is below 5% (Bennett, 2001; Schafer, 1999), therefore missing data was not corrected for. Screening of the data also showed there were no major violations to the underlying assumptions of the analyses. The assumptions for regression assumptions were: Linear relationship between dependent variable and independent variable, independent variables not highly correlated, consistent variance of residuals, independence of observation, and multivariate normality. The assumptions for the comparison tests were: one continuous dependent variable, categorical independent variable, independence of observations, no significant outliers, approximately normally distributed dependent variable for each group of the independent variable, homogeneity of variances. Although some of the data was positively skewed, the proposed analyses are particularly robust to this violation (Zuur et al., 2010), therefore raw data was kept, in favour of transformation.

Throughout the results section, only statistically significant results are reported in the text. Although this is not always considered best practice, all results can be found in the corresponding tables, either within the main body of the text, or within appendix B.iv. When results are only reported in the appendix this will be noted. This decision was made to reduce the length of the results section. All results will be discussed in the discussion.

Moderated mediation

For hypothesis 3, 4, and 5, moderated mediation (Hayes, 2018) was tested. The stages of this analysis were as follows: regressions were run, followed by the moderation, then the mediation and finally the moderated mediation. Only variables which showed evidence of a regression were carried forward to the mediation. Furthermore, only the first and final stage of this analysis is reported in the main text of the thesis. The moderations and mediations are reported in appendix B.iv. As is common with the software PROCESS (Hayes, 2018), for moderation and mediation analysis p values were used, for moderated mediation the confidence intervals were used. For this, when the confidence interval did not pass 0 (i.e., both lower and upper confidence interval were positive, or both were negative) this was taken as evidence of moderated mediation. If the values passed through 0, this suggested there was no moderated mediation. Furthermore, for mediation, if there was no evidence of a total effect of the IV on the DV, mediation was not considered to occur. Within the literature, there is evidence to support this approach (Baron & Kenny, 1986; Fairchild & MacKinnon, 2009; Mallinckrodt et al., 2006), however, some scholars argue that mediation may still occur (Frazier et al., 2004; Kenny et al., 1998). Due to this, the most precautious approach was used. Finally, full mediation was reported when the direct effect became non-significant after the mediator was added. Partial mediation was reported when the direct effect remained significant, but reduced, after the mediator was added. Within the tables, pathway a, b, c, and c' will be referred to. The figures below demonstrate these pathways on a mediation model. Within diagrams * denotes p ≤ .05, ** denotes p ≤ .001.

Figure 3. *Pathways on mediation model.*

Results

Sample Characteristics

Of the 1295 participants, 51% reported identifying as female and 48% reported identifying as male. The table below shows the gender spread for each year, and overall.

Table 32

Number and percentage of each gender identification.

	Male (%)	Female %	Other	Total
Year 7	221	223	1	455 (35%)
Year 8	221	243	2	466 (36%)
Year 10	178	190	6	374 (29%)
Total	620 (48%)	666 (51%)	9 (1%)	1295

The overall sample mean for the socio-economic status question was 2.84, which equates to between 2 and 3 cars (see Table 33). In 2019, the National Travel Survey estimated there are, on average, 1.39 cars/vans per household in the South West (Transport, 2020), putting the sample for this study above the national average (Transport, 2020).

Table 33

Socio-economic Status: Number of Cars

SES	Frequency	Valid percent
None	37	3.0
1	341	27.7
2	634	51.5
3 or more	219	17.8
Missing	64	
Total	1295	

The percentage of pupil premium students at each school can be found in Table 34. The national average of students who were eligible for free school meals for the academic year 2019/ 2020 was 15.9% (Association, n.d.) as of January 2020 for state-funded secondary schools. Pupil premium is based on the number of students who are eligible for free school meals. As can be seen in Table 34, two of the schools are above the average, i.e., their rate of pupil premium students is higher than the national average, suggesting that overall, population in the school is below average SES.

Table 34

Pupil Premium by school

School	% of Pupil Premium students
School 1	16.8%
School 2	11.0 %
School 3	19.0%

The sample ethnicity can be found in Table 35, which demonstrated that the sample was predominantly White British or Irish (69%). The rates for the national average can also be seen below (Gov, 2018), demonstrating that the sample in the study is fairly representative of the ethnic diversity in the UK.

Table 35

Ethnicity of sample and UK national average.

Ethnicity	Sample frequency	Sample valid percent	National average percent
Asian	34	2.8	7.5
Black African	18	1.5	1.8
Black Caribbean	3	0.2	1.1
Mixed White and Asian	41	3.4	0.6
Mixed White and Black African	19	1.6	0.3
Mixed White and Black Caribbean	22	1.8	0.8
White British or Irish	894	73.3	81.4
White European or American	156	12.8	4.4
White Gypsy/ traveller	3	0.2	0.1
Other (Please specify)	30	2.5	2.0
Missing	75		
Total	1295		

The frequency of responses to the pubertal timing question can be found in Table 36. Just over 40% of students described their pubertal timing as 'about the same' as their peers, 20% reported developing much or somewhat earlier than their peers, and just under 30% of students reported developing much or somewhat later than their peers. A total of 115 students (8.9%) chose not to answer this question.

Table 36

Self-reported pubertal timing

	Frequency	Valid Percent
Much earlier	76	6.4
Somewhat earlier	182	15.4
About the same	579	49.1
Somewhat later	235	19.9
Much later	108	9.15
Total	1180	100.0
Missing	115	
Total	1295	

SNS use

SNS use was assessed using a number of different measures, in order to evaluate different aspects of SNS use. Participants recorded the SNS that they used. Of the 1295 participants, 1235 (95.4%) reported using at least one SNS, only 60 participants (4.6%) did not use any. Of the 620 participants who identified as male, 581 (93.7%) used SNS, of the 666 girls who identified as female, 645 (96.8%) used SNS, and of the nine participants identified outside of the gender binary, nine (100%) used SNS. Due to the small number of participants who identified outside of the gender binary, the rest of the analysis will only include those who identified as male or female

Frequency of SNS use and Time online. Tables 37-39 displays the frequency and percentages of SNS activity by site for the whole sample, and by gender. The most commonly used SNS in this sample were WhatsApp and YouTube, and the least commonly used SNS were Facebook and Facebook messenger. For boys the most popular SNS were also WhatsApp and YouTube, but for girls WhatsApp was followed by Snapchat. Examples of 'other' SNS include Twitter, Wattpad, and Kooth. A number of participants added platforms/games like Roblox, Discord, and Xbox. Similarly to Study 1, these were not counted, as they were not deemed to be a SNS as the primary focus of these is often a game, rather than communication.

Table 37

Frequency of each SNS for the whole sample, and split by gender

	Whole sample frequency				Boys' frequency				Girls' frequency			
	All years (%)	Y7	Y8	Y10	All years (%)	Y7	Y8	Y10	All years (%)	Y7	Y8	Y10
WhatsApp	1081 (83.5)	378 (85.1)	392 (84.5)	311 (85.5)	499 (80.5)	178 (80.5)	180 (81.4)	141 (79.2)	573 (86.0)	199 (89.2)	210 (86.4)	164 (86.3)
YouTube	971 (75.0)	296 (66.7)	347 (74.8)	328 (89.1)	484 (78.1)	147 (66.5)	176 (79.6)	161 (90.4)	480 (72.1)	148 (66.4)	169 (69.5)	163 (85.8)
Instagram	943 (73.3)	235 (52.9)	351 (75.6)	357 (97.0)	442 (71.3)	114 (51.6)	160 (72.4)	168 (94.4)	494 (74.2)	121 (54.3)	189 (77.8)	184 (96.8)
Snapchat	852 (66.3)	249 (56.1)	286 (61.6)	317 (86.1)	346 (55.8)	101 (45.7)	109 (49.3)	136 (76.4)	503 (75.5)	148 (66.4)	177 (72.8)	178 (93.7)
TikTok	760 (59.1)	277 (62.4)	260 (56.0)	223 (60.6)	240 (38.7)	108 (48.9)	76 (34.4)	56 (31.5)	513 (77.0)	168 (75.3)	182 (74.9)	163 (85.8)
Facebook	303 (23.6)	43 (9.7)	57 (12.3)	203 (55.2)	146 (23.5)	24 (10.6)	28 (12.7)	94 (52.8)	154 (23.1)	19 (8.5)	29 (11.9)	106 (55.8)
FB Messenger	282 (21.9)	56 (12.6)	61 (13.1)	165 (44.8)	121 (19.5)	25 (11.3)	25 (11.3)	71 (39.9)	159 (23.9)	31 (13.9)	36 (14.8)	92 (48.4)
Other	269 (20.9)	64 (14.4)	89 (19.2)	116 (31.5)	127 (20.5)	34 (15.4)	37 (16.7)	56 (31.5)	140 (21.0)	30 (13.5)	52 (21.4)	58 (30.5)

On average, YouTube was the SNS which had the most time spent on it. For boys specifically YouTube was also the SNS with the longest average amount of time, whereas for girls this was TikTok. Table 38 below also highlights the year group split.

Table 38

Mean time spent on SNS (measured in hours per day)

	Whole sample means (SD)				Boys (SD)				Girls (SD)			
	All years	Y7	Y8	Y10	All years	Y7	Y8	Y10	All years	Y7	Y8	Y10
WhatsApp	0.87	1.01	0.89	0.58	0.78	0.78	0.92	0.54	0.94	1.19	0.84	0.61
	(1.22)	(1.34)	(1.30)	(0.70)	(0.92)	(0.76)	(1.20)	(0.59)	(1.42)	(1.66)	(1.36)	(0.78)
YouTube	2.00	1.94	2.04	2.01	2.36	2.28	2.44	2.35	1.63	1.61	1.62	1.68
	(1.67)	(1.75)	(1.73)	(1.50)	(1.76)	(1.83)	(1.87)	(1.57)	(1.49)	(1.61)	(1.48)	(1.36)
Instagram	1.16	0.99	1.32	1.11	1.00	0.90	1.18	0.91	1.29	1.07	1.43	1.29
	(1.15)	(1.35)	(1.22)	(0.91)	(0.92)	(0.87)	(1.16)	(0.65)	(1.31)	(1.66)	(1.26)	(1.06)
Snapchat	1.19	0.75	0.92	1.78	0.90	0.60	0.77	1.21	1.37	0.84	1.00	2.18
	(1.40)	(1.09)	(1.08)	(1.64)	(1.04)	(0.67)	(1.02)	(1.18)	(1.56)	(1.26)	(1.11)	(1.81)
TikTok	1.60	1.65	1.55	1.61	1.16	1.27	1.14	0.92	1.81	1.90	1.68	1.85
	(1.59)	(1.70)	(1.45)	(1.60)	(1.21)	(1.29)	(1.26)	(0.92)	(1.69)	(1.89)	(1.46)	(1.70)
Facebook	0.60	0.87	0.43	0.57	0.57	1.00	0.45	0.45	0.61	0.71	0.42	0.64
	(0.89)	(1.56)	(0.45)	(0.69)	(1.05)	(2.00)	(0.48)	(0.54)	(0.72)	(0.80)	(0.43)	(0.77)
FB Messenger	0.50	0.60	0.34	0.55	0.38	0.37	0.41	0.36	0.59	0.79	0.29	0.68
	(0.86)	(1.04)	(0.35)	(0.98)	(0.44)	(0.40)	(0.38)	(0.52)	(1.07)	(1.34)	(0.31)	(1.19)
Other	1.26	1.86	0.95	1.16	1.62	2.61	1.21	1.33	0.84	0.96	0.72	0.90
	(1.79)	(2.75)	(1.06)	(1.45)	(2.21)	(3.35)	(1.38)	(1.65)	(0.99)	(1.40)	(0.59)	(1.07)

The average number of SNS that individuals had an account on was four. Table 39 shows the average number of SNS overall, and split by gender and year group.

Table 39

Average number of SNS

	Whole sample (SD)				Boys (SD)				Girls (SD)			
	All years	Y7	Y8	Y10	All years	Y7	Y8	Y10	All years	Y7	Y8	Y10
Average number of SNS	4.22 (1.71)	3.74 (1.66)	3.92 (1.57)	5.11 (1.58)	3.95 (1.71)	3.65 (1.73)	3.61 (1.60)	4.70 (1.60)	4.46 (1.76)	3.83 (1.60)	4.19 (1.51)	5.53 (1.44)

H1: SNS engagement will increase with age, there will be no gender difference.

The first hypothesis, that for both boys and girls SNS engagement will increase with age, was explored through ANOVAs. First, two ANOVAs were run to explore whether there was any evidence for a difference between any year groups for each gender (see table 40). For boys there was strong evidence for a difference in both SNS activity and time online between the year groups, with the post hoc analysis giving evidence of a difference between all year groups for SNS activity, but only a difference between year 7 and year 10 for time online. For girls there was strong evidence for a difference between SNS activity, with the post hoc analysis showing strong evidence that girls in year 10 took part in more SNS activities than girls in year 7, and girls in year 8 (see table 41). Furthermore, there was strong evidence for a difference in time online for girls in different years. The post hoc analysis gave strong evidence that girls in year 10 spent more time on SNS than girls in year 7, and girls in year 8 (see table 41).

Next, t-tests were run to explore gender differences in each year. There was strong evidence that girls reported higher SNS activity than boys in each year. There was also strong evidence that girls reported higher time online than boys in each year (see table 42).

Table 40

ANOVA to explore year group differences for boys and girls

| | Boys | | | | | | | Girls | | | | | | | |
	Y7 mean (SD)	Y8 mean (SD)	Y10 mean (SD)	df	p	F	Partial Eta Squared	Y7 mean (SD)	Y8 mean (SD)	Y10 mean (SD)	df	p	F	Partial Eta Squared	Scale range
SNS activity	2.41 (1.89)	2.80 (1.74)	3.37 (1.01)	2, 615	<.001**	17.14	.05	3.15 (1.77)	3.46 (1.61)	4.08 (0.95)	2, 663	<.001**	20.19	.03	1 – 6
Time online	0.61 (0.83)	0.72 (0.87)	0.86 (0.64)	2, 591	.009*	4.77	.02	0.96 (1.11)	1.13 (1.04)	1.55 (1.17)	2, 659	<.001**	15.58	.02	0 – 7

* denotes p ≤ .05, ** denotes p ≤ .001.

Table 41

Tukey posthoc for ANOVA to explore year group differences for boys and girls

| | Boys | | | Girls | | |
	Y7 x Y8 p-value	Y7 x Y10 p-value	Y8 x Y10 p-value	Y7 x Y8 p-value	Y7 x Y10 p-value	Y8 x Y10 p-value
SNS activity	.030*	<.001**	.002*	.070	<.001**	<.001**
Time online	.316	.006	.214	.183	<.001**	<.001**

* denotes p ≤ .05, ** denotes p ≤ .001.

Table 42

T-tests to explore gender differences for each year group

| | SNS activity | | | | | | Time online | | | | | |
	Boys mean (SD)	Girls mean (SD)	df	p	t	Cohen's d	Boys mean (SD)	Girls mean (SD)	df	p	t	Cohen's d
Y7	2.41 (1.89)	3.15 (1.77)	442.41	<.001**	-4.31	-.41	0.61 (0.83)	0.96 (1.11)	423.56	<.001**	-3.78	-.35
Y8	2.80 (1.74)	3.46 (1.61)	446.91	<.001**	-4.22	-.39	0.72 (0.87)	1.13 (1.04)	442	<.001**	-4.52	-.43
Y10	3.37 (1.00)	4.08 (0.95)	365	<.001**	-7.06	-.74	0.86 (0.64)	1.55 (1.17)	296.40	<.001**	-7.08	-.73

* denotes p ≤ .05, ** denotes p ≤ .001.

Image-focused SNS users. For the remainder of the analyses, participants were split into two groups; those who use 'image-focused SNS' and those who do not. 'Image-focused SNS users' encompassed those who used Instagram, TikTok, Snapchat, or Facebook. The other group encompassed individuals who used any SNS other than Instagram, TikTok, Snapchat, and Facebook, and those who do not use SNS at all.

Using this criteria, 1078 participants (83.2%) used image-focused SNS and 208 (16.1%) did not; 79.7% of boys (N = 494) used image-focused SNS, 87.7% of girls (N = 584) used image-focused SNS. The mean number of image focused SNS that the whole samples used was 2.63 (SD = .99; maximum value was 4), for girls the average was 2.85 (SD = .92), for boys the average was 2.38 (SD = 1.02).

H2: Those who report greater SNS engagement will report more negative wellbeing and body image concerns, as well as lower psychosocial functioning. Additionally, those reporting greater active, rather than passive, usage will report lower levels of body image concerns, negative wellbeing, and psychosocial functioning.

The second hypothesis was that those who report greater SNS engagement will report more negative wellbeing and body image concerns, as well as lower psychosocial functioning. Additionally, that those reporting greater active, rather than passive, usage will report lower levels of body image concerns and negative wellbeing, as well as lower psychosocial functioning was explored through correlations, regressions and t-tests. First of all, Pearson correlation coefficients were run to evaluate the strength of relationships between the measures of SNS use and all other measures. For the remaining analysis, only those engaging in image focused SNS were included in the analysis.

Associations between boys' SNS activity and body image, wellbeing, and psychosocial functioning. For boys, there was strong evidence of a positive correlation between SNS activity and internalisation of muscular ideals, drive for thinness, negative affect, and problem behaviour. Additionally, there was strong evidence of a negative correlation between SNS activity and self-esteem, and functioning. There was also some evidence of a negative correlation between SNS activity and body appreciation, and body satisfaction. The values for these relationships can be found in table 43.

Associations between girls' SNS activity and body image, wellbeing, and psychosocial functioning, For girls, there was strong evidence that SNS activity was positively correlated with internalisation of muscular ideals, drive for thinness, negative affect, and problem behaviour. There

was strong evidence for a negative correlation between SNS activity and body appreciation, body satisfaction, self-esteem, and functioning. There was also some evidence of the positive correlation between SNS activity and loneliness, and a negative correlation between SNS activity and positive affect. The values for these correlations can be found in table 43.

Table 43

Correlations between SNS activity and all outcome measures for boys and girls

	Boys (N= 494)			Girls (N= 584)		
	Pearson r	p	N	Person r	p	N
Body Image						
Body appreciation	-.11	.017*	486	-.22	<.001**	569
Muscular ideals	.29	<.001**	487	.14	.001**	573
Drive for thinness	.19	<.001**	486	.12	.004*	568
Body satisfaction	-.11	.014*	481	-.17	<.001**	568
Wellbeing						
Loneliness	.04	.356	476	.10	.018*	566
PANAS-N	.21	<.001**	481	.22	<.001**	569
PANAS-P	-.07	.122	481	-.10	.020*	569
Self-Esteem	-.13	.006*	481	-.21	<.001**	566
Psychosocial functioning						
Problem	.33	<.001**	466	.39	<.001**	568
Functioning	-.01	.008*	460	-.17	<.001**	565

* denotes p ≤ .05, ** denotes p ≤ .001.

Associations between boys' time on SNS and body image, wellbeing, and psychosocial functioning, For boys, there was strong evidence of a positive correlation between time on SNS and internalisation of muscular ideals, drive for thinness, negative affect, and problem behaviour. There was strong evidence of a negative correlation between time on SNS and body satisfaction, and functioning. There was no evidence of a relationship between time online and body appreciation, loneliness, positive affect, or self-esteem. The values for these can be found in table 44.

Associations between girls' time on SNS and body image, wellbeing, and psychosocial functioning, For girls, there was strong evidence of a positive correlation between time on SNS and negative affect, and problem behaviour. There was strong evidence of a negative correlation between body appreciation, body satisfaction, self-esteem, and functioning. There was some evidence for a positive relationship between time on SNS and drive for thinness. There was no evidence for a relationship between time on SNS and internalisation of muscular ideals, loneliness, or positive affect, The values for these correlations can be found in table 44.

Table 44

Correlations between time on SNS and all outcome measures for boys and girls

	Boys (N= 494)			Girls (N= 584)		
	Pearson r	p	N	Person r	p	N
Body Image						
Body appreciation	-.03	.494	461	-.15	<.001**	566
Muscular ideals	.24	<.001**	462	.03	.491	570
Drive for thinness	.15	.001**	461	.11	.010*	565
Body satisfaction	-.14	.003*	456	-.17	<.001**	564
Wellbeing						
Loneliness	.03	.582	450	.07	.098	562
PANAS-N	.18	<.001**	457	.18	<.001**	565
PANAS-P	.01	.842	457	-.04	.351	565
Self-Esteem	-.09	.062	457	-.15	<.001**	563
Psychosocial functioning						
Problem	.25	<.001**	445	.29	<.001**	564
Functioning	-.16	.001**	438	-.14	.001**	560

* denotes p ≤ .05, ** denotes p ≤ .001.

Next, regressions were run to explore whether those who reported greater SNS engagement also reported more negative wellbeing and body image concerns, and lower psychosocial functioning. A number of variables were considered as control variables: pubertal timing, self-reported SES, year group, and ethnicity. After evaluating the demographics of each variable ethnicity and SES were excluded due to low numbers of at least one group after the gender split. Pubertal timing and year group remained as covariates, therefore each multiple regression below included year group and pubertal timing in model one, and time online and SNS activity were added for model two. Regression models are only reported in the text where there was evidence of associations, all results are presented in the tables below (table 45-50).

Relationship between boys' SNS engagement and body image measures. The multiple regression model exploring internalisation of muscular ideals as a dependent variable, had an adjusted R^2 value of 10.3%. There was strong evidence that both time online and SNS activity added to the prediction. The results indicated that boys who reported more time online and reported higher engagement in SNS activity had higher levels of muscular internalisation of ideals (see table 45).

The next multiple regression model explored drive for thinness as a dependent variable, reported an adjusted R^2 value of 8.7%. There was some evidence that time online and SNS activity added significantly to the prediction. Additionally, the covariates highlighted evidence of an effect of year group and puberty on drive for thinness. The results indicated that boys who reported more time online and reported higher engagement in SNS activity also reported higher levels of drive for thinness.

The multiple regression model exploring body satisfaction suggested time online was the only predictor which added to the model (adjusted R^2 value of 2.1%). The results indicated that boys who reported more time online also reported lower levels of body satisfaction.

Relationship between boys' SNS engagement and wellbeing measures. The next multiple regression model aimed to predict negative affect in boys and found an adjusted R^2 value of 5.7%. There was strong evidence that time online and SNS activity added to the predication (see table 46). The results indicated that boys who reported more time online and reported higher engagement in SNS activity also reported higher levels of negative affect.

Relationship between boys' SNS engagement and psychosocial functioning measures. The penultimate multiple regression model for boys explored problem behaviour and gave an adjusted R^2 value of 13.1%. Time online and SNS activity added to the prediction (see table 47). The results indicated evidence that boys who reported more time online and reported higher engagement in SNS activity also reported higher levels of problem behaviour.

The final multiple regression model for boys explored functioning and had an adjusted R^2 value of 5.5%. Time online was the only predictor with evidence of adding to the predication, there was also evidence that age was a covariate (see table 47). The results indicated that boys who reported more time online also reported lower levels of functioning.

Relationship between girls' SNS engagement and body image measures. The multiple regression exploring body appreciation in girls gave an adjusted R^2 value of 8.6%. SNS activity was the only predictor which added to the regression, age was a significant covariate (see table 48). The results indicated that girls who reported higher engagement in SNS activity also reported lower levels of body appreciation.

There was strong evidence that the multiple regression model did predict internalisation of muscular ideals in girls. The adjusted R^2 value was 2.5%. SNS activity was the only predictor which added to the regression, age was a covariate (see table 48). The results indicated that girls who reported higher engagement in SNS activity also reported higher internalisation of muscular ideals.

Relationship between girls' SNS engagement and wellbeing measures. The multiple regression models for wellbeing suggested that both time online and SNS activity predicted negative affect in girls (adjusted R^2 value was 10.2%). Furthermore, SNS activity predicted self-esteem (adjusted R^2 value was 7.1%). There was evidence that age and puberty were covariates for both models (see table 49). The results indicated that girls who reported more time on SNS and higher engagement in SNS activity also reported higher levels of negative affect, and girls who reported higher engagement in SNS activity also reported lower levels of self-esteem.

Relationship between girls' SNS engagement and psychosocial functioning measures. The regression analysis exploring girls' problem behaviour found evidence that both time online and SNS activity added to the model, with an adjusted R^2 value of 21.5%. There was also evidence that age and pubertal timing were significant covariates (see table 50). The results indicated that girls who

reported more time online, and higher engagement in SNS activity, also reported increased levels of problem behaviour.

There was evidence that the final multiple regression model predicted functioning in girls. The adjusted R^2 value was 6.0%. SNS activity was the only predictor which added to the regression, age was a covariate (see table 50). The results indicated that girls who reported higher engagement in SNS activity also reported lower levels of functioning.

Table 45

Summary of multiple regression for body image measures for boys

	B	β	t	Sig	F	df	p	adj, R^2	Sig. F change
Body appreciation									
Overall model (model 1)					1.13	4, 406	.076	.01	.076
Overall model (model 2)					2.11	6, 406	.052	.02	.132
Covariate									
Y7	0.30	.15	2.74	.006					
Y8	0.11	.05	0.97	.335					
Puberty earlier	<0.01	<.01	0.01	.995					
Puberty same	0.11	.06	0.95	.342					
Independent variables									
Time online	-0.02	-.02	-0.39	.698					
SNS activity	-0.09	-.09	-1.79	.074					
Internalisation of muscular ideals									
Overall model (model 1)					1.17	4, 407	.325	<.00	.325
Overall model (model 2)					8.83	6, 407	<.001	.10	<.001**
Covariate									
Y7	-0.21	-.10	-1.82	.069					

	B	β	T	Sig	F	df	p	adj, R^2	Sig. F change
Y8	-0.10	-.05	-0.86	.391					
Puberty earlier	-0.14	-.06	-1.04	.297					
Puberty same	-0.20	-.10	-1.72	.087					
Independent variables									
Time online	0.21	.16	3.37	.001					
SNS activity	0.26	.24	4.87	.000					
Drive for thinness									
Overall model (model 1)					7.82	4, 406	<.001	.06	<.001
Overall model (model 2)					7.43	6, 406	<.001	.08	.002*
Covariate (dummy variable)									
Y7	0.66	.25	4.79	.000					
Y8	0.39	.15	2.85	.005					
Puberty earlier	-0.25	-.09	-1.51	.132					
Puberty same	-0.35	-.15	-2.48	.013					
Independent variables									
Time online	0.15	.10	2.08	.038					
SNS activity	0.14	.11	2.12	.035					

	B	β	T	Sig	F	df	p	adj, R^2	Sig. F change
Body satisfaction									
Overall model (model 1)					1.52	4, 403	.196	.01	.196
Overall model (model 2)					2.46	6, 403	.024	.02	.014*
Covariate (dummy variable)									
Y7	0.04	.02	0.38	.701					
Y8	0.07	.04	0.74	.458					
Puberty earlier	0.30	.16	2.55	.011					
Puberty same	0.17	.11	1.71	.089					
Independent variables									
Time online	-0.13	-.13	-2.57	.011					
SNS activity	-0.03	-.03	-0.59	.555					

Note. Model 1 includes covariates (Y7, Y8, Y10, Puberty early Puberty same, and Puberty later). Model 2 includes covariates (Y7, Y8, Y10, Puberty early, Puberty same, and Puberty later) and independent variables (time online and SNS activity). Baseline comparison for covariates is Y10, and Puberty later. * denotes $p \leq .05$, ** denotes $p \leq .001$ for overall model 2.

Table 46

Summary of multiple regression for wellbeing measures for boys

	t	B	β	Sig	F	df	p	adj, R^2	Sig. F change
PANAS-N									
Overall model (model 1)					1.26	4, 405	.287	.003	.287
Overall model (model 2)					5.07	6, 399	<.001	.057	<.001**
Covariate									
Y7	0.94	.08	.05	.350					
Y10	0.29	.02	.02	.789					
Puberty earlier	1.19	.10	.06	.235					
Puberty later	1.93	.17	.10	.054					
Independent variables									
Time online	3.01	.14	.15	.003					
SNS activity	2.97	.12	.15	.003					
Self-esteem									
Overall model (model 1)					4.39	4, 406	.002	.032	.002
Overall model (model 2)					3.79	6, 406	.001	.040	.083
Covariate (dummy variable)									
Y7	0.61	.07	.04	.540					

	t	B	β	Sig	F	df	p	adj, R^2	Sig. F change
Y10	-2.88	-.29	-.17	.004					
Puberty earlier	-1.75	-.18	-.09	.081					
Puberty later	-1.36	-.14	-.07	.174					
Independent variables									
Time online	-1.12	-.06	-.06	.266					
SNS activity	-1.54	-.07	-.08	.125					

Note. Model 1 includes covariates (Y7, Y8, Y10, Puberty early Puberty same, and Puberty later). Model 2 includes covariates (Y7, Y8, Y10, Puberty early, Puberty same, and Puberty later) and independent variables (time online and SNS activity). Baseline comparison for covariates is Y10, and Puberty later.

* denotes p ≤ .05, ** denotes p ≤ .001 for overall model 2.

Table 47

Summary of multiple regression for psychosocial functioning measures for boys

	t	B	β	Sig	F	df	p	adj, R^2	Sig. F change
Problem behaviour									
Overall model (model 1)					1.71	4, 405	.147	.007	.147
Overall model (model 2)					11.14	6, 405	<.001	.131	<.001**
Covariate									
Y7	-0.22	-.02	-.01	.828					
Y10	-0.79	-.06	-.04	.430					
Puberty earlier	1.50	.13	.07	.133					
Puberty later	1.75	.15	.09	.081					
Independent variables									
Time online	3.20	.14	.16	.001					
SNS activity	5.76	.22	.28	<.001					
Functioning									
Overall model (model 1)					3.91	4, 402	.004	.028	.004
Overall model (model 2)					4.87	6, 402	<.001	.055	.002*
Covariate									

Y7	2.60	.34	.15	.010
Y10	-0.39	-.05	-.02	.698
Puberty earlier	-0.32	-.04	-.02	.746
Puberty later	-1.96	-.25	-.10	.051
Independent variables				
Time online	-3.62	-.24	-.19	<.001
SNS activity	1.18	.07	.06	.238

Note. Model 1 includes covariates (Y7, Y8, Y10, Puberty early Puberty same, and Puberty later). Model 2 includes covariates (Y7, Y8, Y10, Puberty early,

Puberty same, and Puberty later) and independent variables (time online and SNS activity). Baseline comparison for covariates is Y10, and Puberty later.

* denotes p ≤ .05, ** denotes p ≤ .001 for overall model 2.

Table 48

Summary of multiple regression for body image measures for girls

	t	B	β	Sig	F	df	p	adj, R^2	Sig. F change
Body appreciation									
Overall model (model 1)					8.79	4, 531	<.001	.055	<.001
Overall model (model 2)					9.36	6, 531	<.001	.086	<.001**
Covariate									
Y7	3.32	.36	.16	.001					
Y10	-1.85	-.20	-.09	.065					
Puberty earlier	-1.13	-.13	-.05	.260					
Puberty later	-1.16	-.12	-.05	.248					
Independent variables									
Time online	-1.29	-.06	-.06	.198					
SNS activity	-3.46	-.19	-.16	.001					
Internalisation of muscular ideals									
Overall model (model 1)					2.53	4, 533	.040	.011	.040
Overall model (model 2)					3.32	6, 533	.003	.025	.008*
Covariate									
Y7	-2.70	-.23	-.13	.007					
Y10	0.04	.00	<.01	.969					

	t	B	B	Sig	F	df	p	adj, R^2	Sig. F change
Puberty earlier	-0.77	-.07	-.04	.441					
Puberty later	-0.50	-.04	-.02	.615					
Independent variables									
Time online	-1.41	-.05	-.07	.160					
SNS activity	3.10	.14	.15	.002					
Drive for thinness									
Overall model (model 1)					4.46	4, 529	.001	.026	.001
Overall model (model 2)					3.88	6, 529	<.001	.032	.071
Covariate (dummy variable)									
Y7	-0.80	-.11	-.04	.427					
Y10	0.65	.09	.03	.518					
Puberty earlier	3.50	.53	.16	.001					
Puberty later	1.40	.18	.07	.163					
Independent variables									
Time online	1.51	.09	.07	.131					
SNS activity	1.06	.08	.05	.290					
Body satisfaction									
Overall model (model 1)					8.11	4, 531	<.001	.051	<.001
Overall model (model 2)					7.97	6, 531	<.001	.073	<.001**

	t	B	B	Sig	F	df	p	adj, R^2	Sig. F change
Covariate (dummy variable)									
Y7	2.47	.23	.12	.014					
Y10	-2.33	-.21	-.11	.020					
Puberty earlier	-1.10	-.11	-.05	.274					
Puberty later	-2.01	-.17	-.09	.045					
Independent variables									
Time online	-2.42	-.10	-.11	.016					
SNS activity	-1.83	-.09	-.08	.067					

Note. Model 1 includes covariates (Y7, Y8, Y10, Puberty early Puberty same, and Puberty later). Model 2 includes covariates (Y7, Y8, Y10, Puberty early, Puberty same, and Puberty later) and independent variables (time online and SNS activity). Baseline comparison for covariates is Y10, and Puberty later.

* denotes $p \leq .05$, ** denotes $p \leq .001$ for overall model 2.

Table 49

Summary of multiple regression for wellbeing measures for girls

	t	B	β	Sig	F	df	p	adj, R^2	Sig. F change
Loneliness									
Overall model (model 1)					2.92	4, 527	.021	.014	.021
Overall model (model 2)					2.44	6, 527	.025	.016	.230
Covariate									
Y7	-1.22	-.17	-.06	.223					
Y10	-0.47	-.06	-.02	.641					
Puberty earlier	2.52	.37	.12	.012					
Puberty later	2.34	.29	.11	.020					
Independent variables									
Time online	0.75	.04	.04	.455					
SNS activity	1.15	.08	.06	.251					
PANAS-N									
Overall model (model 1)					8.44	4, 532	<.001	.053	<.001
Overall model (model 2)					11.12	6, 532	<.001	.102	<.001**
Covariate									
Y7	-3.03	-.25	-.14	.003					

	t	B	β	Sig	F	df	p	adj, R^2	Sig. F change
Y10	-1.53	-.12	-.07	.126					
Puberty earlier	3.94	.34	.18	<.001					
Puberty later	1.85	.14	.08	.065					
Independent variables									
Time online	3.54	.12	.16	<.001					
SNS activity	2.67	.11	.12	.008					
PANAS-P									
Overall model (model 1)					6.14	4, 532	<.001	.037	<.001
Overall model (model 2)					4.62	6, 532	<.001	.039	.215
Covariate (dummy variable)									
Y7	1.92	.18	.09	.056					
Y10	-2.52	-.23	-.12	.012					
Puberty earlier	-2.04	-.20	-.10	.042					
Puberty later	-1.67	-.14	-.08	.096					
Independent variables									
Time online	0.75	.03	.04	.453					
SNS activity	-1.75	-.08	-.08	.080					

	t	B	β	Sig	F	df	p	adj, R^2	Sig. F change
Self-esteem									
Overall model (model 1)					7.72	4, 529	<.001	.048	<.001
Overall model (model 2)					7.72	6, 523	<.001	.071	<.001**
Covariate (dummy variable)									
Y7	2.32	.24	.11	.020					
Y10	-2.02	-.21	-.10	.044					
Puberty earlier	-2.32	-.26	-.11	.021					
Puberty later	-1.82	-.17	-.08	.070					
Independent variables									
Time online	-1.30	-.06	-.06	.195					
SNS activity	-2.86	-.15	-.13	.004					

Note. Model 1 includes covariates (Y7, Y8, Y10, Puberty early Puberty same, and Puberty later). Model 2 includes covariates (Y7, Y8, Y10, Puberty early, Puberty same, and Puberty later) and independent variables (time online and SNS activity). Baseline comparison for covariates is Y10, and Puberty later.

* denotes p ≤ .05, ** denotes p ≤ .001 for overall model 2.

Table 50

Summary of multiple regression for psychosocial functioning measures for girls

	t	B	β	Sig	F	df	p	adj, R^2	Sig. F change
Problem behaviour									
Overall model (model 1)					13.94	4, 533	<.001	.088	<.001
Overall model (model 2)					25.38	6, 533	<.001	.215	<.001**
Covariate									
Y7	-3.15	-.24	-.14	.002					
Y10	1.86	.14	.08	.064					
Puberty earlier	3.52	.28	.15	<.001					
Puberty later	1.85	.13	.08	.065					
Independent variables									
Time online	3.55	.12	.15	<.001					
SNS activity	6.69	.26	.28	<.001					
Functioning									
Overall model (model 1)					7.09	4, 532	<.001	.044	<.001
Overall model (model 2)					6.71	6, 532	<.001	.060	.004*

	t	B	β	Sig	F	df	p	adj, R^2
Covariate								
Y7	3.40	.40	.16	.001				
Y10	-0.63	-.07	-.03	.530				
Puberty earlier	-1.92	-.24	-.09	.055				
Puberty later	-1.69	-.18	-.08	.093				
Independent variables								
Time online	-1.37	-.07	-.06	.171				
SNS activity	-2.34	-.14	-.11	.020				

Note. Model 1 includes covariates (Y7, Y8, Y10, Puberty early Puberty same, and Puberty later). Model 2 includes covariates (Y7, Y8, Y10, Puberty early, Puberty same, and Puberty later) and independent variables (time online and SNS activity). Baseline comparison for covariates is Y10, and Puberty later.

* denotes p ≤ .05, ** denotes p ≤ .001 for overall model 2.

Differences between active and passive SNS use

T-tests were run to explore the differences between active vs passive SNS use on body image, wellbeing, and psychosocial functioning. In the following sections only the t-tests which suggested evidence of a relationship are reported in the text. There was no evidence of a difference on any wellbeing measures between active or passive users for boys or girls (see table 51), furthermore, there was no evidence of a difference on any body image measures between female active or passive users. However, for boys there was some evidence of a difference in internalisation of muscular ideals between active and passive users, with active users reporting higher internalisation of muscular ideals than passive users (see table 51). No other body image measure showed evidence of a difference. Finally, there was evidence for a difference in problematic behaviour between active and passive users, for both boys and girls. For girls there was strong evidence that active users reported higher levels of problematic behaviour than passive users, and for boys there was some evidence for the same relationships (see table 51). No other psychosocial functioning measure showed evidence of a difference.

Table 51

T-tests to explore differences between active and passive SNS use for each gender

| | Boys | | | | | | Girls | | | | | Cohen's d |
| | Passive | Active | | | | | Passive | Active | | | | |
	mean (SD)	mean (SD)	Df	p	t	Cohen's d	mean (SD)	mean (SD)	Df	p	t	
Body appreciation	3.66 (0.88)	3.63 (0.94)	465	.760	0.31	.03	3.16 (1.11)	3.16 (1.01)	530.60	.961	0.05	<.01
Muscular ideals	2.71 (1.02)	2.89 (.96)	466	.048*	-1.99	-.18	1.94 (0.83)	1.97 (0.79)	546	.665	-0.43	-.04
Drive for thinness	2.51 (1.18)	2.46 (1.16)	465	.625	0.49	.05	2.93 (1.32)	2.96 (1.33)	543	.823	-0.22	-.02
Body satisfaction	3.52 (0.79)	3.45 (0.82)	460	.343	0.95	.09	3.14 (0.92)	3.08 (0.88)	542	.437	0.78	.07
Loneliness	1.68 (1.06)	1.56 (0.83)	445	.150	1.44	.13	2.12 (1.23)	2.07 (1.26)	539	.582	0.55	.05
Self-esteem	3.73 (0.79)	3.72 (0.90)	461	.891	0.14	.01	3.18 (1.05)	3.24 (0.98)	541	.452	-0.75	-.07
Positive affect	3.48 (0.88)	3.49 (0.90)	461	.968	-0.04	<-.01	3.11 (0.90)	3.23 (0.86)	543	.098	-1.66	-.14
Negative affect	2.14 (0.71)	2.17 (0.71)	462	.664	-0.44	-.04	2.49 (0.78)	2.52 (0.82)	543	.692	-0.40	-.03
Problem behaviour	1.81 (0.67)	1.95 (0.75)	448	.037*	-2.09	-.20	1.78 (0.72)	1.98 (0.83)	539.91	.004*	-2.91	-.25
Functioning	4.18 (1.09)	4.13 (0.96)	441	.631	0.48	.05	4.14 (1.12)	4.07 (1.13)	537	.463	0.73	.06

* denotes p ≤ .05, ** denotes p ≤ .001.

H3: Image focused SNS users will report higher levels of body image concerns, lower wellbeing, and lower psychosocial functioning, compared to non-users

In order to explore the third hypothesis t-tests were run to explore the differences between image-focused and non-image focused users on body image, wellbeing, and psychosocial functioning measures. There was evidence of a difference in some body image, wellbeing, and psychosocial functioning measures between image-focused users and non-image-focused users for both boys and girls (see tables 52 – 53). For boys, there was strong evidence of a difference in internalisation of muscular ideals and problem behaviour between image-focused users and non-image-focused users, with imaged-focused users reporting higher internalisation of muscular ideals and higher problem behaviour than non-users (see table 52). There was also some evidence for a reported difference for loneliness, with boys using image-focused SNS reporting lower levels of loneliness compared to those not using image-focused SNS. There was also some evidence to suggest there was a difference in reported functioning level between the two groups, with those using imaged-focused SNS reporting lower levels of functioning compared to those who do not use image-focused SNS.

For girls, there was also evidence of differences in reported body image, wellbeing, and psychosocial functioning measures between image-focused users and non-users (see table 53). There was strong evidence that girls who reported using image-focused SNS reported lower levels of body appreciation than non-users, lower levels of functioning, lower levels of self-esteem, as well as higher levels of drive for thinness and higher levels of problem behaviour (see table 53). Furthermore, there was some evidence that girls who used image-focused SNS reported lower levels of body satisfaction compared to those who did not use image-focused SNS.

Table 52

T-tests for difference between image focused SNS users and non-users for boys

Construct	Non-user Mean (SD)	Image focused SNS user	t value	Df	*p* value	Cohen's d
Body Image						
Body appreciation	3.64 (0.89)	3.64 (0.91)	0.06	607	.954	.01
Muscular ideals	2.44 (0.90)	2.80 (0.99)	-3.67	612	<.001**	-.37
Thinness	2.35 (1.16)	2.48 (1.16)	-1.04	609	.297	-.11
Body satisfaction	3.49 (0.78)	3.48 (0.81)	.140	603	.887	.01
Wellbeing						
Loneliness	1.91 (1.20)	1.64 (0.98)	2.30	166.62	.023*	.26
Negative affect	2.19 (0.72)	2.17 (0.73)	.23	608	.820	.02
Positive affect	3.36 (0.90)	3.48 (0.90)	-1.32	608	.187	-.13
Self-esteem	3.71 (0.85)	3.72 (0.85)	-.08	607	.935	-.01
Psychosocial functioning						
Problem behaviour	1.68 (0.68)	1.88 (0.71)	-2.86	590	.004*	-.29
Functioning	4.36 (1.19)	4.14 (1.05)	1.99	580	.047*	.21

Note. equal variance not assumed for loneliness. * denotes p ≤ .05, ** denotes p ≤ .001.

Table 53

T-tests for difference between image focused SNS users and non-users for girls

Construct	Non-user Mean (SD)	Image focused SNS user	t value	Df	*p* value	Cohen's d
Body Image						
Body appreciation	3.60 (0.99)	3.15 (1.06)	3.60	649	<.001**	.43
Muscular ideals	1.89 (0.64)	1.95 (0.81)	-0.72	119.04	.476	-.07
Drive for thinness	2.55 (1.23)	2.96 (1.31)	-2.60	649	.009*	-.31
Body satisfaction	3.35 (0.88)	3.10 (0.90)	2.28	647	.023*	.27
Wellbeing						
Loneliness	1.89 (1.11)	2.12 (1.26)	-1.64	107.96	.103	-.18
Negative affect	2.32 (0.75)	2.50 (0.80)	-1.98	107.38	.051	-.22
Positive affect	3.33 (0.95)	3.17 (0.89)	1.57	650	.117	.19
Self-esteem	3.63 (1.07)	3.21 (1.00)	3.51	647	<.001**	.42
Psychosocial functioning						
Problem behaviour	1.61 (0.65)	1.88 (0.78)	-3.47	114.39	.001**	-.36
Functioning	4.49 (1.13)	4.09 (1.12)	2.97	643	.003*	.36

Note. equal variances not assumed for Muscular ideals, loneliness, negative affect, and problem behaviour. * denotes p ≤ .05, ** denotes p ≤ .001.

H4: Higher levels of SNS engagement will predict higher body image concerns, mediated by body surveillance, and moderated by photo manipulation. This relationship will be found for boys and girls.

Relationship between each SNS engagement measure and body image concerns for boys. In order to explore possible mediation relationships, hierarchical multiple regressions were run in SPSS to first evaluate the relationship between the dependent variables and each of the measures of SNS engagement separately (tables 54-55). Only regressions which suggested evidence of a relationship were then carried forward to the mediation. The first model tested included SNS activity as a predictor variable and the second model tested included SNS time as a predictor variable, both with scholastic year group and self-reported puberty as covariates. Both models were fitted for the following outcome variables; body appreciation, internalisation of muscular ideals, drive for thinness and body satisfaction.

There was some evidence that for boys both SNS activity and the covariates jointly predicted body appreciation and drive for thinness, with an adjusted R^2 value of 2% and 8% respectively. These models suggested that boys who reported more SNS activity reported lower levels of body appreciation and higher levels of drive for thinness, respectively. Furthermore, there was strong evidence that the predictor variable predicted internalisation of muscular ideals in boys with an adjusted R^2 value of 8%, and with the results indicating that boys who reported more SNS activity also reported higher levels of muscular internalisation of ideals (see tables 54-55).

Next, the models which included SNS time as a predictor variable were tested. There was strong evidence that internalisation of muscular ideals was predicted by SNS time, with an adjusted R^2 value of 6% and the regression suggesting that boys who reported more SNS time also reported higher levels of internalisation of muscular ideals. There was some evidence SNS time and puberty jointly predicted body satisfaction, with an adjusted R^2 value of 2% and the results indicating that boys who reported more time on SNS also reported lower levels of body satisfaction. Finally, there was strong evidence that SNS time and the covariates jointly predicted drive for thinness, with an adjusted R^2 value of 8%. The results indicated that boys who reported more SNS activity also reported higher levels of drive for thinness (see tables 54-55).

Table 54

Summary of hierarchical multiple regression for body image measures for boys

	Model 1				Model 2				Sig. F change	B	β	t	Sig
	F	df	p	adj R^2	F	df	p	adj R^2					
SNS activity													
Body appreciation	2.09	4, 428	.081	.01	2.62	5, 428	.014	.02	.031*	-.10	-.10	-2.15	.032
Muscular ideals	0.98	4, 429	.417	<.01	8.53	4, 429	<.001	.08	<.001**	.30	.29	6.20	<.001
Drive for thinness	7.51	4, 428	<.001	.06	8.33	5, 428	.001	.08	.001**	.19	.16	3.31	.001
Body satisfaction	1.45	4, 425	.218	.004	1.69	5, 425	.136	.008	.104	-.07	-.08	-1.63	.104
Time on SNS													
Body appreciation	2.12	4, 409	.077	.01	1.86	5, 409	.101	.01	.375	-.05	-.04	-0.89	.375
Muscular ideals	1.22	4, 410	.301	<.01	5.82	5, 410	<.001	.06	<.001**	.30	.24	4.89	<.001
Drive for thinness	7.48	4, 409	<.001	.06	7.71	5, 409	<.001	.08	.005*	.20	.14	2.84	.005
Body satisfaction	1.39	4, 406	.238	<.01	2.89	5, 406	.014	.023	.003*	-.14	-.14	-2.97	.003

Note. Model 1 includes covariates (Y7, Y8, Y10, Puberty early Puberty same, and Puberty later). Model 2 includes covariates (Y7, Y8, Y10, Puberty early, Puberty same, and Puberty later) and independent variables (time online and SNS activity). Baseline comparison for covariates is Y10, and Puberty later.

* denotes p ≤ .05, ** denotes p ≤ .001 for overall model 2.

Table 55

Summary of coefficients for IV and covariates for hierarchical multiple regressions for body image measures for boys

	SNS activity model 2					Time on SNS model 2			
	B	β	t	Sig		B	β	t	Sig
Body appreciation	-.10	0.10	-2.15	.032		-.05	-.04	-.89	.375
Y7	.28	.14	2.61	.009		.284	.141	2.59	.010
Y8	.13	.07	1.24	.214		.09	.05	0.83	.408
Puberty earlier	.01	<.01	0.05	.959		-.02	-.01	-.16	.871
Puberty same	.13	.07	1.20	.230		.10	.06	.92	.359
Muscular ideals	.30	.29	6.20	<.001		.30	.24	4.89	<.001
Y7	-.22	-.10	-1.91	.057		-.19	-.09	-1.62	.107
Y8	-.12	-.06	-1.09	.275		-.05	-.02	-.42	.673
Puberty earlier	-.14	-.06	-1.06	.292		-.04	-.02	-.31	.760
Puberty same	-.19	-.10	-1.67	.095		-.14	-.07	-1.15	.251
Drive for thinness	.19	.16	3.31	.001		.20	.14	2.84	.005
Y7	.64	.24	4.68	<.001		.66	.25	4.79	<.001
Y8	.36	.14	2.74	.007		.41	.16	3.05	.002
Puberty earlier	-.21	-.08	-1.31	.189		-.18	-.07	-1.10	.270
Puberty same	-.36	-.15	-2.60	.010		-.31	-.13	-2.19	.029
Body satisfaction	-.07	-.08	-1.63	.104		-.15	-.15	-2.97	.003
Y7	.04	.02	0.45	.653		.05	.03	.48	.633
Y8	.09	.05	1.00	.319		.07	.04	.76	.446
Puberty earlier	.28	.11	1.87	.015		.28	.15	2.37	.018
Puberty same	.18	.11	1.87	.062		.16	.10	1.58	.115

Note. Baseline comparison for covariates is Y10, and Puberty later.

Relationship between SNS engagement, body surveillance, photo manipulation, and body image concerns for boys. The moderation and mediation analysis steps that occurred before the moderated mediation can be found in appendix B.iv.

Finally, a moderated mediation was run using PROCESS macro (Hayes, 2018) to evaluate the relationship that objectification and photo manipulation had on the relationship between the SNS engagement measures and the body image measures. Standardised values were used in the moderated mediation. Hypothesised moderated mediation models were tested using the PROCESS macro model number 7, which tests a model where photo manipulation moderates the direct effect of SNS measure on objectification (Figure 3).

Figure 3. *Boys' body image moderated mediation model*
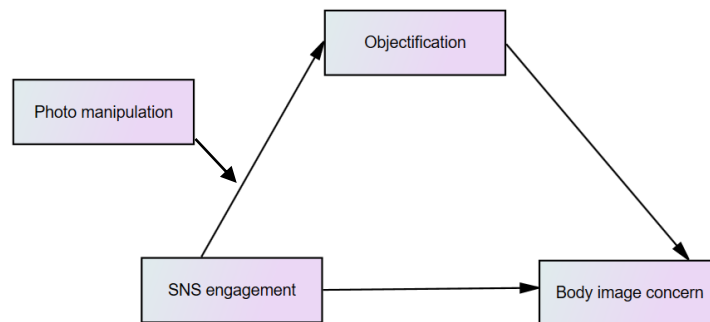
Time on SNS. None of the moderated mediation models using time on SNS as the predictor showed evidence of a relationship (see table 56)

SNS activity. The moderated mediation analysis for the relationship of SNS activity on body appreciation (see table 57), mediated by objectification and moderated by photo manipulation, gave evidence of moderated mediation, as zero is not within the confidence interval, this indicates a moderating effect of photo manipulation on time on SNS on the indirect effect via objectification. Photo manipulation was found to moderate the effect of SNS activity and objectification. More SNS activity was associated with increased levels of objectification. The conditional indirect effect was strongest in those reporting low photo manipulation (1 SD below the mean of photo manipulation). The indirect effect was non-significant in those reporting high photo manipulation (1 SD above the mean of photo manipulation).

Figure 4. *Boys' body appreciation moderated mediation*
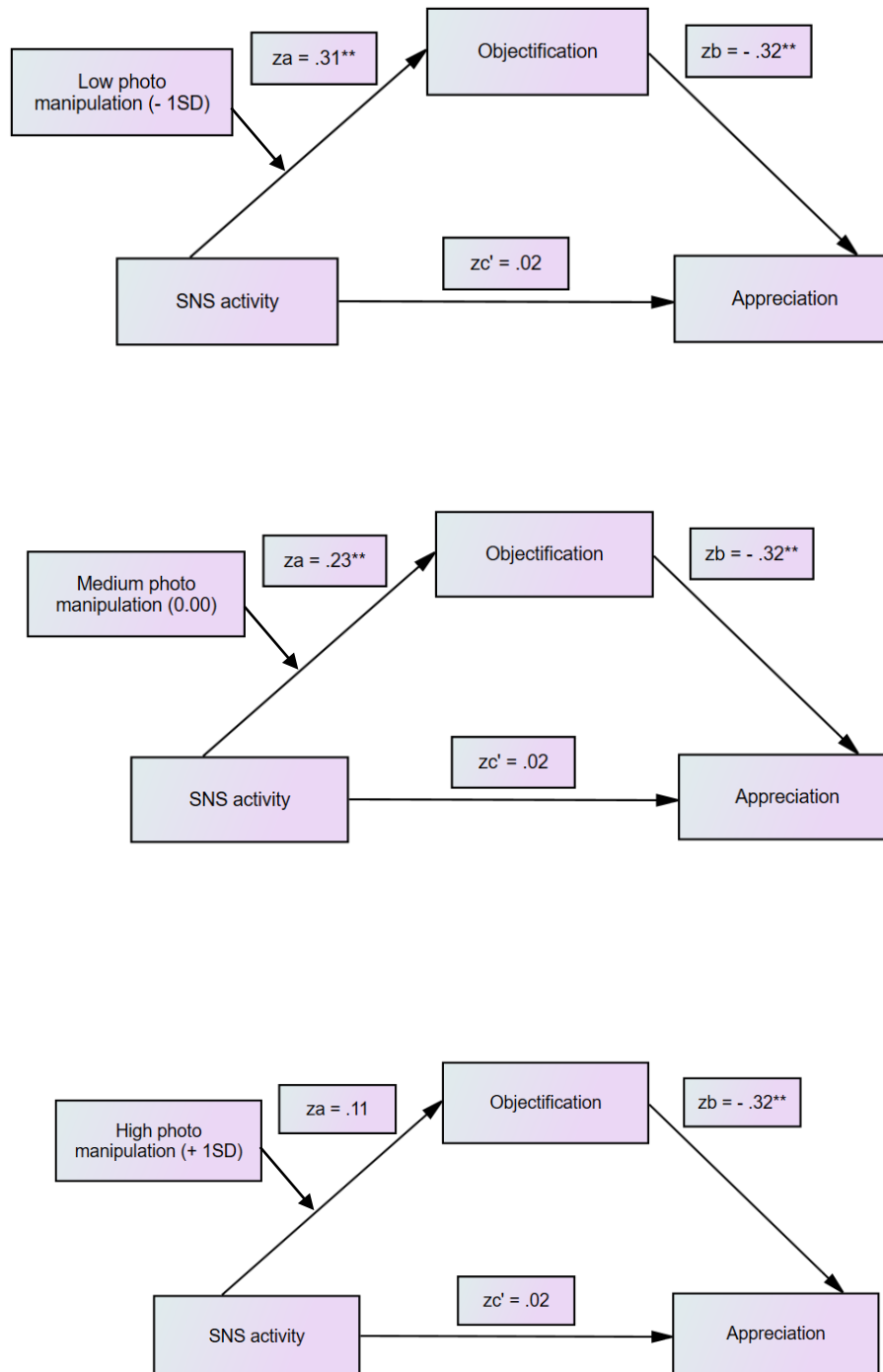
The next moderated mediation analysis gave evidence for the relationship of SNS activity on internalisation of muscular ideals (see table 57), mediated by objectification and moderated by photo manipulation. Photo manipulation moderated the effect of SNS activity and objectification, such that increased levels of SNS activity was associated with increased levels of objectification. The conditional indirect effect was strongest in those reporting low photo manipulation and the indirect effect was non-significant in those reporting high photo manipulation.

Figure 5. *Boys' muscular ideals moderated mediation*
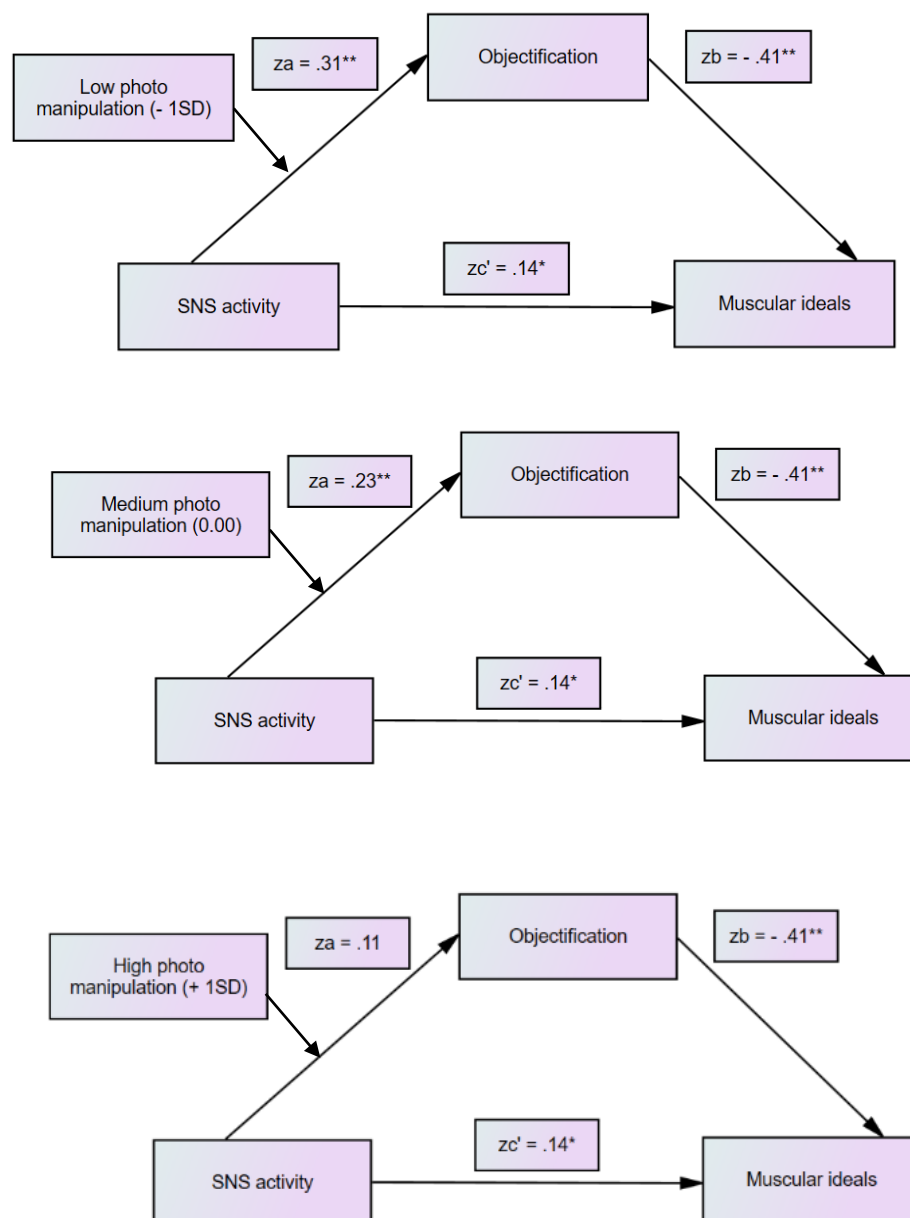
The final moderated mediation analysis gave evidence that SNS activity predicted drive for thinness (see table 57), mediated by objectification and moderated by photo manipulation. Photo manipulation was found to moderate the effect of SNS activity and objectification, such that more SNS activity was associated with increased levels of objectification. The conditional indirect effect was strongest in those reporting low photo manipulation, and the indirect effect was non-significant in those reporting high photo manipulation.

Figure 6. *Boys' drive for thinness moderated mediation*

Low photo manipulation (- 1SD) → Objectification: $z_a = .31^{**}$
Objectification → Drive for thinness: $z_b = -.29^{**}$
SNS activity → Drive for thinness: $z_{c'} = .05$

Medium photo manipulation (0.00) → Objectification: $z_a = .23^{**}$
Objectification → Drive for thinness: $z_b = -.29^{**}$
SNS activity → Drive for thinness: $z_{c'} = .05$

High photo manipulation (+ 1SD) → Objectification: $z_a = .11$
Objectification → Drive for thinness: $z_b = -.29^{**}$
SNS activity → Drive for thinness: $z_{c'} = .05$

Table 56

Moderated mediation for boys' body image measures, with time on SNS as IV

	Mediation Direct effect				Moderation				Moderated mediation			
	β	SE	t	p	β	T	DF	p	β	SE	LLCI	ULCI
Muscular ideals												
a path (Time on SNS → Objectification)	.12	.05	2.48	.014	.12	2.48	393	.014				
Photo manipulation → Objectification					.47	9.66	393	<.001				
Interaction					-.07	-2.37	393	.019				
b path	.42	.05	9.19	<.001								
c' path	.14	.05	3.12	.002								
Covariates												
Year 7	-.09	.11	-.80	.422	-.43	-3.92	393	<.001				
Year 8	.01	.11	.05	.960	-.23	-2.13	393	.034				
Puberty early	-.11	.13	-.83	.407	.05	0.37	393	.714				
Puberty same	-.12	.11	-1.08	.281	-.10	-0.93	393	.351				
Index of moderated mediation									-.03	.019	-.070	.004
Drive for thinness												
a path (Time on SNS →	.11	.05	2.30	.022	.11	2.30	393	.022				

	b	SE	t	p	est	t	df	p				
Objectification)												
Photo manipulation → Objectification					.47	9.66	393	<.001				
Interaction					-.07	-2.40	393	.017				
b path	.26	.05	5.49	<.001								
c' path	.09	.05	1.77	.077								
Covariates												
Year 7	.63	.12	5.46	<.001	-.43	-3.91	393	<.001				
Year 8	.39	.11	3.43	.001	-.24	-2.24	393	.025				
Puberty early	-.21	.14	-1.48	.139	.05	.36	393	.718				
Puberty same	-.27	.12	-2.29	.023	-.11	-1.01	393	.313				
Index of moderated mediation									-.02	.01	-.05	<.001
Body satisfaction												
a path (Time on SNS → Objectification)	.11	.05	2.29	.001	.11	2.29	390	.022				
Photo manipulation → Objectification					.48	9.67	390	<.001				
Interaction					-.07	-2.42	390	.016				
b path	-.22	.05	-4.53	<.001								
c' path	-.11	.05	-2.34	.020								
Covariates												

Year 7	-.02	.12	-.14	.891	-.43	-3.85	390	<.001				
Year 8	.03	.11	.29	.776	-.25	-2.32	390	.021				
Puberty early	.42	.14	2.93	.004	.04	.30	390	.768				
Puberty same	.22	.12	1.83	.068	-.11	-1.00	390	.317				
Index of moderated mediation									.02	.01	-<.001	.041

Table 57

Moderated mediation for boys' body image measures with SNS activity as IV

	Mediation Direct effect				Moderation				Moderated mediation			
	β	SE	t	p	β	T	DF	p	β	SE	LLCI	ULCI
Body appreciation												
a path (SNS activity → Objectification)	.24	.04	5.41	<.001	.24	5.41	411	<.001				
Photo manipulation → Objectification					.45	8.91	411	<.001				
Interaction					-.12	-2.72	411	.007				
b path	-.32	.05	-6.50	<.001								
c' path	.01	.05	.25	.802								
Covariates												
Year 7	.19	.12	1.68	.094	-.42	-3.98	411	.001				
Year 8	.07	.11	.66	.509	-.21	.10	411	.040				
Puberty early	.05	.14	.33	.740	-.06	.12	411	.611				
Puberty same	.11	.12	.95	.341	-.15	.10	411	.151				
Index of moderated									.04	.02	.008	.076

175

mediation

Muscular ideals

a path (SNS activity→ Objectification)	.23	.04	5.27	<.001	.23	5.27	412	<.001				
Photo manipulation → Objectification					.23	5.27	412	<.001				
Interaction					-.11	-2.67	412	.008				
b path	.40	.05	8.57	<.001								
c' path	.15	.05	3.21	.001								
Covariates												
Year 7	-.11	.11	-1.00	.317	-.41	-3.89	412	<.001				
Year 8	-.06	.10	-.54	.591	-.20	-.196	412	.050				
Puberty early	-.15	.13	-1.19	.233	-.06	-.49	412	.625				
Puberty same	-.13	.11	-1.20	.230	-.16	-1.49	412	.136				
Index of moderated mediation									-.04	.02	-.086	-.010

Drive for thinness

a path (SNS activity	.23	.04	5.19	<.001	.23	5.19	412	<.001

→ Objectification)												
Photo manipulation → Objectification					.47	8.90	412	<.001				
Interaction					-.11	-2.69	412	.008				
b path	.28	.05	5.73	<.001								
c' path	.06	.05	1.14	.256								
Covariates												
Year 7	.63	.11	5.45	<.001	-.41	.11	412	<.001				
Year 8	.35	.11	3.19	.002	-.21	.10	412	.041				
Puberty early	-.20	.14	-1.44	.151	-.06	.13	412	.625				
Puberty same	-.28	.11	-2.42	.016	-.16	.10	412	.122				
Index of moderated mediation									-.03	.01	-.065	-.008

Relationship between each SNS engagement measure and body image concerns for girls.
Hierarchical multiple regressions were run for girls to evaluate the relationship between the dependent variables and each of the measures of SNS engagement separately (see tables 58-59). Only regressions which suggested evidence of a relationship were reported in the text and carried forward for further analysis. The first model tested included SNS activity and the second model tested included SNS time as a predictor variable. Both models included scholastic year group and self-reported puberty as covariates and were fitted for the following outcome variables; body appreciation, internalisation of muscular ideals, drive for thinness and body satisfaction.

There was strong evidence that for girls, SNS activity and year group jointly predicted body appreciation and internalisation of muscular ideals, with an adjusted R^2 value of 9% and 2% respectively. The results indicated that girls who reported more time on SNS reported lower body appreciation, and higher internalisation of muscular ideals respectively. Furthermore, there was strong evidence that SNS activity, year group, and puberty jointly predicted body satisfaction, with an adjusted R^2 value of 7%. The results indicated that girls who reported more SNS activity reported lower levels of body satisfaction (see tables 58-59).

Next, regression models were run which included SNS time as a predictor variable. There was strong evidence that SNS time and scholastic year jointly predicted body appreciation, and body satisfaction, in girls. The adjusted R^2 values were 7% for both models, the results indicated that girls who reported more time on SNS reported lower levels of body appreciation, and body satisfaction respectively. Furthermore, there was little evidence that SNS time, scholastic year and puberty jointly predicted drive for thinness in girls. The adjusted R^2 value was 3%, and the results indicated that girls who reported more time on SNS reported higher drive for thinness (see tables 58-59).

Table 58

Summary of hierarchical multiple regressions for body image measures for girls

	Model 1				Model 2				Sig. F change	B	β	t	Sig
	F	df	p	adj R^2	F	df	p	adj R^2					
SNS activity													
Body appreciation	8.94	4, 535	<.001	.06	11.01	5, 535	<.001	.09	<.001**	-.22	-.18	-4.26	<.001
Muscular ideals	2.24	4, 537	.063	.01	3.24	5, 532	.007	.02	.008*	.11	.12	2.67	.008
Drive for thinness	4.61	4, 533	.001	.03	4.32	5, 533	.001	.03	.081	.12	.08	1.75	.081
Body satisfaction	8.11	4, 536	<.001	.05	8.40	5, 536	<.001	.07	.003*	-.13	.04	-3.01	.003
Time on SNS													
Body appreciation	8.79	5, 532	<.001	.06	8.68	5, 532	<.001	.07	.005*	-.12	-.12	-2.79	.005
Muscular ideals	2.52	4, 534	.04	.01	2.03	5, 534	.073	.01	.805	-.01	-.01	-.25	.805
Drive for thinness	4.47	4, 530	.001	.03	4.46	5, 530	.001	.03	.039*	.12	.09	2.07	.039
Body satisfaction	8.09	4, 532	<.001	.05	8.87	5, 532	<.001	.07	.001**	-.13	-.14	-3.37	.001

Note. Model 1 includes covariates (Y7, Y8, Y10, Puberty early Puberty same, and Puberty later). Model 2 includes covariates (Y7, Y8, Y10, Puberty early, Puberty same, and Puberty later) and independent variables (time online and SNS activity). Baseline comparison for covariates is Y10, and Puberty later.

* denotes p ≤ .05, ** denotes p ≤ .001 for overall model 2.

Table 59

Summary of coefficients for IV and covariates for hierarchical multiple regressions for body image

measures for girls

| | SNS activity model 2 | | | | | Time online model 2 | | | |
	B	β	t	Sig		B	β	t	Sig
Body appreciation									
Y7	.58	.25	5.29	<.001		.57	.25	5.05	<.001
Y8	.21	.10	2.01	.045		.20	.09	1.90	.058
Puberty earlier	-.01	<-.01	-.06	.949		-.07	-.03	-.57	.569
Puberty same	.13	.06	1.33	.184		.11	.05	1.10	.273
Muscular ideals									
Y7	-.20	-.11	-2.29	.023		-.24	-.14	-2.75	.006
Y8	.01	.01	.16	.876		-.01	-.01	-.10	.924
Puberty earlier	-.01	-.01	-.10	.920		.01	<.01	.08	.936
Puberty same	.05	.03	.58	.562		.04	.03	.53	.596
Drive for thinness									
Y7	-.23	-.08	-1.60	.111		-.21	-.07	-1.42	.156
Y8	-.11	-.04	-.83	.407		-.10	-.04	-.71	.481
Puberty earlier	.37	.11	2.35	.019		.38	.12	2.40	.017
Puberty same	-.18	-.07	-1.41	.159		-.18	-.07	-1.35	.177
Body satisfaction									
Y7	.48	.24	5.01	<.001		.45	.23	4.65	<.001
Y8	.24	.13	2.60	.009		.22	.12	2.38	.018
Puberty earlier	.06	.03	.62	.537		.04	.02	.36	.720
Puberty same	.18	.10	2.11	.035		.17	.09	1.96	.051

Note. Baseline comparison for covariates is Y10, and Puberty later.

Relationship between SNS engagement, body surveillance, photo manipulation, and body image concerns for girls. Moderation analysis showed no evidence that photo manipulation moderated the relationship between either time on SNS or SNS activities with objectification. Details for the moderation analysis can be found in appendix B.iv.

Following this, mediations were run for relationships which suggested evidence for a regression relationship between the IV (SNS measures) and DV (Body image measure)

Figure 7. *Girls' body image mediation model*
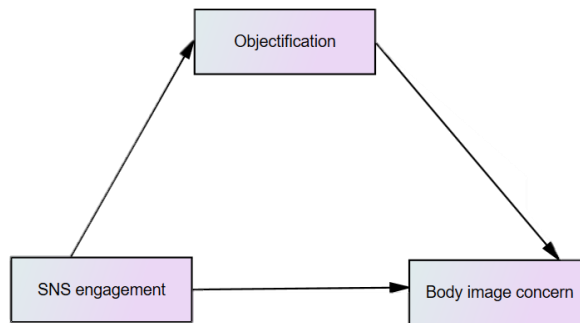
Time online. For the first mediation tested, the outcome variable for analysis was body appreciation, the predictor variable for the analysis was time on SNS. The mediator variable for the analysis was objectification, and school year and puberty timing were added as covariates. There was evidence of an indirect effect of time on SNS on body appreciation, and objectification was shown to fully mediate the relationship between time on SNS and body appreciation due to the direct effect (path c') not remaining significant after objectification was added into the model (see table 58).

Figure 8. *Girls' body appreciation mediation*
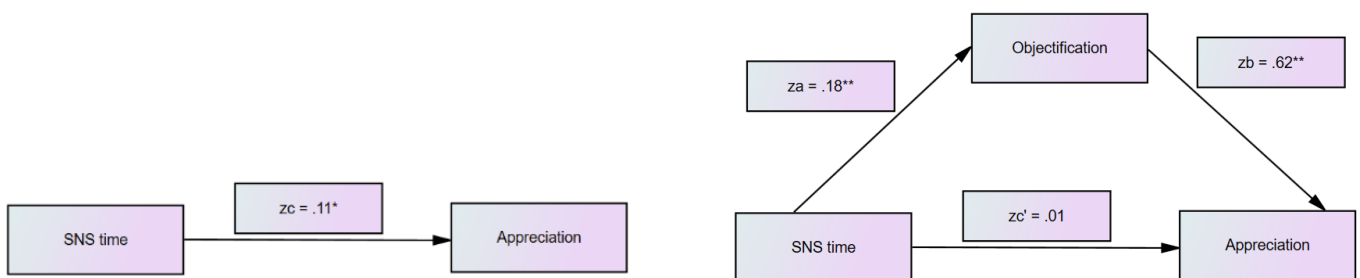
The next mediation gave evidence for the indirect effect of time on SNS on body satisfaction, and objectification fully mediated the relationship between time on SNS body satisfaction (see table 58).
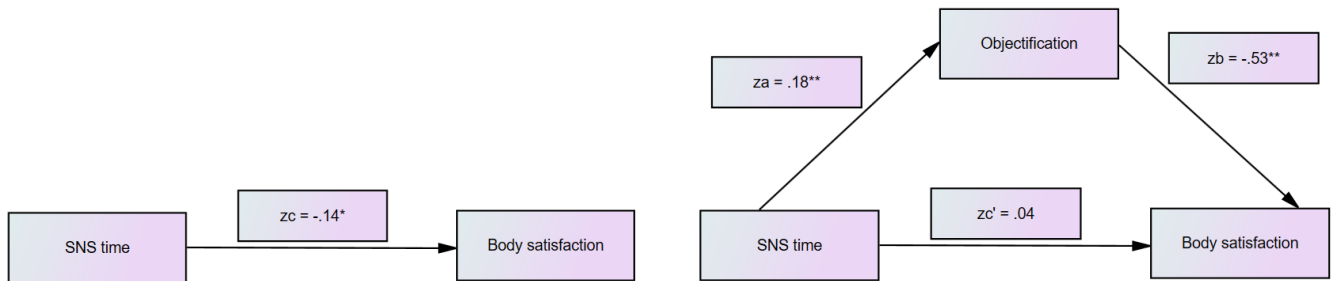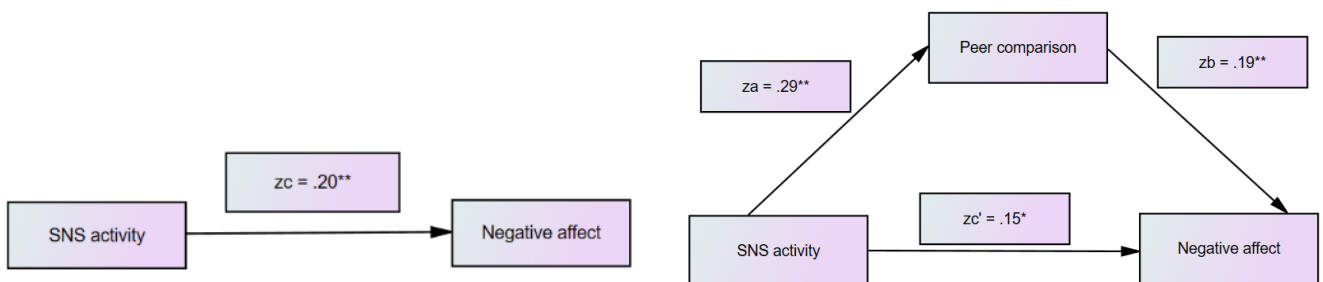
Table 60

Mediation analysis for girls' body image pathway with time online as IV, objectification as mediator, and year group and pubertal timing as covariates

	Direct effect (X, M → Y)				Direct model		Total effect (X → Y)				Total model	
	β	SE	t	p	R^2	p	β	SE	t	p	R^2	p
Body appreciation					.42	<.001					.07	<.001
a	0.18	.05	3.74	<.001	.08	<.001						
b	0.01	.04	-17.82	<.001								
c'	-.062	.04	0.17	.863								
c							-0.11	.05	-2.16	.031*		
Year 7	0.26	.09	3.06	.002			0.55	.11	5.24	<.001		
Year 8	0.13	.08	1.59	.113			0.20	.10	1.94	.053		
Puberty early	0.05	.09	0.60	.551			-0.06	.11	-0.53	.595		
Puberty same	0.11	.08	1.50	.133			0.10	.10	1.04	.300		
Muscular ideals					.06	<.001					.020	.059
a	0.18	.05	3.76	<.001	.08	<.001						
b	0.22	.04	4.83	<.001								
c'	-0.06	.05	-1.26	.209								
c							-0.02	.05	-0.47	.637		
Year 7	-0.21	.11	-1.91	.057			-0.31	.11	-2.84	.005		
Year 8	0.01	.10	0.12	.902			-0.01	.10	-0.10	.918		
Puberty early	-0.02	.12	-0.17	.868			0.02	.12	0.17	.862		
Puberty same	0.05	.10	0.54	.590			0.06	.10	0.58	.559		

	Direct effect (X, M → Y)				Direct model		Total effect (X → Y)				Total model	
	β	SE	t	p	R^2	p	β	SE	t	p	R^2	p
Drive for thinness					.25	<.001					.037	.001
a	0.17	.05	3.50	<.001	.08	<.001						
b	0.50	.04	12.18	<.001								
c'	-0.01	.05	-0.12	.905								
C							0.08	.05	1.54	.124		
Year 7	0.08	.10	0.76	.448			-0.17	.11	-1.57	.117		
Year 8	-0.02	.09	-0.18	.857			-0.08	.11	-0.77	.439		
Puberty early	0.19	.11	1.72	.087			0.29	.12	2.39	.017		
Puberty same	-0.15	.09	-1.66	.098			-0.13	.10	-1.34	.182		
Body satisfaction					.32	<.001					.07	<.001
a	0.18	.05	3.68	<.001	.08	<.001						
b	-0.53	.04	-13.86	<.001								
c'	-0.04	.04	-0.99	.322								
c							-0.14	.05	-2.77	.006*		
Year 7	.027	.09	2.85	.005			0.52	.11	4.85	<.001		
Year 8	0.18	.09	2.10	.036			0.24	.10	2.37	.018		
Puberty early	0.13	.10	1.35	.178			0.04	.12	0.31	.759		
Puberty same	0.20	.08	2.44	.015			0.18	.10	1.88	.060		

Note. Baseline comparison for covariates is Y10, and Puberty later. * denotes p ≤ .05, ** denotes p ≤ .001.

SNS activity. Next, the mediation model tested included SNS activity as the predictor, with objectification as the mediator, and scholastic year and puberty as covariates. There was evidence of an indirect effect of SNS activity on body appreciation, and objectification fully mediated the relationship between SNS activity and body appreciation as the total effect (path c') did not remain significant after the mediator was added (see table 59).

Figure 9. *Girls' body appreciation mediation model*
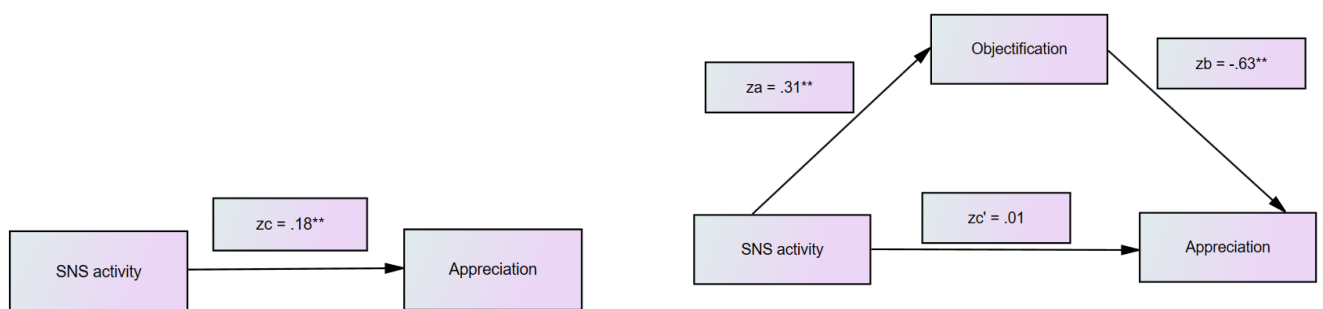
The next mediation gave evidence that there was an indirect effect of SNS activity on internalisation of muscular ideals with objectification fully mediating the relationship between SNS activity and internalisation of muscular ideals as the total effect (path c') did not remain significant after the mediator was added (see table 59).

Figure 10. *Girls' muscular ideals mediation model*
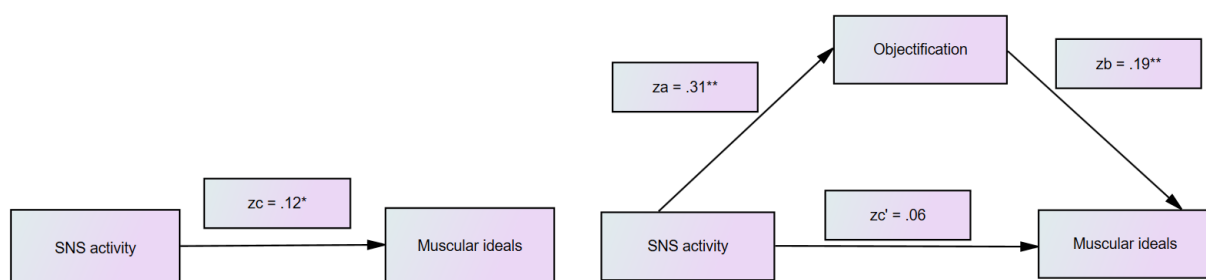
The next mediation gave evidence that there was an indirect effect of SNS activity on body satisfaction with objectification fully mediating the relationship between SNS activity and body satisfaction as the total effect (path c') did not remain significant after the mediator was added (see table 59).

Figure 11. *Girls' body satisfaction mediation model*
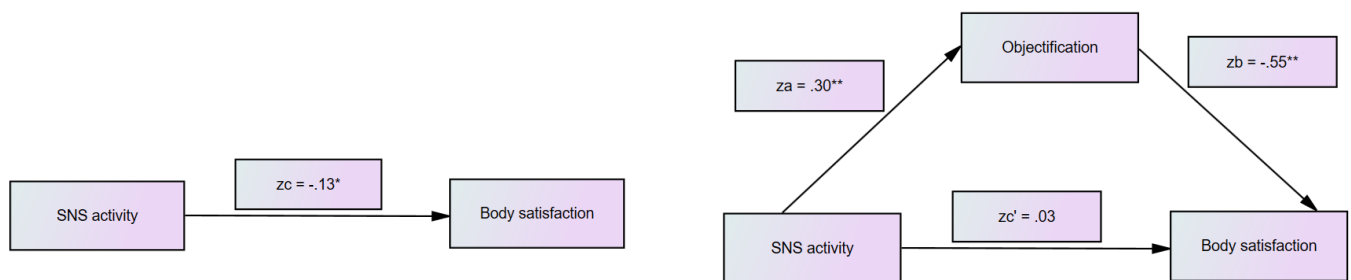
Table 61

Mediation analysis for girls' body image pathway with SNS activity as IV, objectification as mediator, and year group and pubertal timing as covariates

	Direct effect (X, M → Y)				Direct model		Total effect (X → Y)				Total model	
	β	SE	t	p	R^2	p	β	SE	t	p	R^2	p
Body appreciation					.42	<.001					.09	<.001
a	0.31	.04	7.53	<.001	.15	<.001						
b	-0.63	.04	-17.32	<.001								
c′	.013	.04	0.35	.722								
c							-0.18	.04	-4.23	<.001**		
Year 7	0.26	.08	3.13	.002			0.55	.10	5.29	<.001		
Year 8	0.13	.08	1.60	.109			0.19	.10	1.96	.051		
Puberty early	0.06	.09	0.68	.496			-0.00	.11	-0.02	.986		
Puberty same	0.12	.08	1.62	.106			0.12	.09	1.26	.208		
Muscular Ideals					0.06	<.001					.03	.006
a	0.31	.04	7.53	<.001	.15	<.001						
b	0.19	.05	4.12	<.001								
c′	0.06	.05	1.29	.197								
c							0.12	.04	2.67	.008*		
Year 7	-0.17	.11	-1.53	.128			-0.25	.11	-2.34	.020		
Year 8	0.04	.10	0.36	.716			0.02	.10	0.17	.867		
Puberty early	-0.02	.12	-0.18	.853			-0.00	.12	-0.02	.986		

	B	SE	t	p	R^2	p	B	SE	t	p	R^2	p
Puberty same	0.06	.10	0.63	.531			0.06	.10	0.63	.526		
Drive for thinness					.25	<.001					.04	<.001
a	0.30	.04	7.23	<.001	.15	<.001						
b	0.52	.04	12.33	<.001								
c′	-0.08	.04	-1.83	.068								
C							0.08	.04	1.74	.083		
Year 7	0.07	.10	0.75	.453			-0.17	.11	-1.59			
Year 8	-0.02	.09	-0.25	.801			-0.09	.10	-0.08			
Puberty early	0.21	.11	2.02	.044			0.28	.12	2.32			
Puberty same	-0.14	.09	-1.62	.105			-0.14	.10	-1.39			
Body satisfaction					.32	<.001					.07	<.001
a	0.30	.04	7.39	<.001	.15	<.001						
b	-0.55	.04	-13.79	<.001								
c′	0.03	.04	0.89	.373								
c							-0.13	.04	-3.00	.003*		
Year 7	.028	.09	3.00	.003			0.53	.11	5.01	<.001		
Year 8	0.20	.09	2.25	.025			0.25	.10	2.49	.013		
Puberty early	0.13	.10	1.26	.210			0.07	.12	0.58	.565		
Puberty same	0.20	.08	2.47	.014			0.19	.10	2.04	.042		

Note. Baseline comparison for covariates is Y10, and Puberty later. * denotes $p \leq .05$, ** denotes $p \leq .001$.

H5: Higher levels of SNS engagement will predict lower wellbeing, mediated by comparisons, and moderated by SNS activities. This relationship will be found for boys and girls

Relationship between each SNS engagement measure and wellbeing measures for boys. In order to explore possible mediation relationships, hierarchical multiple regressions were run in SPSS to first evaluate the relationship between the dependent variables and each of the measures of SNS engagement separately (see tables 60-61). Only regressions which suggested evidence of a relationship were reported in the text and then carried forward. First SNS activity was tested as a predictor variable, following this, SNS time was tested as a predictor variable. Both models included scholastic year group and self-reported puberty as covariates. Both models were fitted for the following outcome variables; loneliness, positive affect, negative affect, self-esteem.

There was some evidence that for boys both SNS activity and reported pubertal timing jointly predicted negative affect, with an adjusted R^2 value of 4%. Additionally, SNS activity and scholastic year jointly predicted self-esteem, with an adjusted R^2 value of 4%. These models suggested that boys who reported more SNS activity reported increased negative effect and reduced self-esteem (see tables 60-61).

Next, the models which included SNS time as a predictor variable were tested. There was strong evidence that negative affect was predicted by SNS time, with an adjusted R^2 value of 4% and the regression suggesting that boys who reported more SNS time also reported higher levels of negative affect (see tables 60-61).

Table 62

Summary of hierarchical multiple regression for wellbeing measures for boys

	Model 1				Model 2								
	F	df	p	adj, R^2	F	df	p	adj, R^2	Sig. F change	B	β	t	Sig
SNS activity													
Loneliness	7.14	4, 424	<.001	.06	5.81	5, 424	<.001	.05	.462	.04	.04	0.74	.462
PANAS-N	1.58	4, 427	.180	.01	4.74	5, 427	<.001	.04	<.001**	.15	.20	4.14	<.001
PANAS-P	4.26	4, 427	.002	.03	3.64	5, 427	.003	.03	.283	-.05	-.05	-1.08	.283
Self-esteem	4.91	4, 428	.001	.04	4.88	5, 428	<.001	.04	.033*	-.09	-.10	-2.14	.033
Time on SNS													
Loneliness	7.00	4, 404	<.001	.06	5.64	5, 404	<.001	.05	.606	.03	.03	0.52	.606
PANAS-N	1.29	4, 408	.275	<.01	4.29	5, 408	.001	.04	<.001**	.17	.20	4.02	<.001
PANAS-P	3.87	4, 408	.004	.03	3.09	5, 408	.010	.03	.929	.01	<.00	0.09	.929
Self-esteem	4.58	4, 409	.001	.03	4.22	5, 409	.001	.04	.101	-.09	-.08	-1.64	.101

Note. Model 1 includes covariates (Y7, Y8, Y10, Puberty early Puberty same, and Puberty later). Model 2 includes covariates (Y7, Y8, Y10, Puberty early, Puberty same, and Puberty later) and independent variables (time online and SNS activity). Baseline comparison for covariates is Y10, and Puberty later. * denotes p ≤ .05, ** denotes p ≤ .001..

Table 63

Summary of coefficients for IV and covariates for hierarchical multiple regressions for wellbeing measures for boys

	SNS activity model 2					Time online model 2			
	B	β	t	Sig		B	β	t	Sig
Loneliness									
Y7	.12	.06	1.05	.293		.14	.12	1.19	.235
Y8	-.02	-.01	-0.20	.841		<.00	.12	<0.01	.997
Puberty earlier	-.11	-.05	-0.81	.420		-.18	.14	-1.25	.212
Puberty same	-.54	-.27	-4.59	<.001		-.57	.12	-4.70	<.001
PANAS-N									
Y7	.03	.02	0.36	.720		.07	.05	0.87	.384
Y8	.01	.01	0.09	.928		<.01	<.01	0.01	.994
Puberty earlier	-.04	-.03	-0.42	.669		-.02	-.01	-0.22	.826
Puberty same	-.20	-.13	-2.27	.024		-.14	-.10	-1.67	.096
PANAS-P									
Y7	.32	.11	3.07	.002		.32	.11	3.00	.003
Y8	.24	.10	2.30	.022		.21	.11	1.96	.050
Puberty earlier	-.16	.13	-1.24	.217		-.13	.13	-1.01	.314
Puberty same	.10	.11	0.95	.343		.13	.11	1.16	.245
Self-esteem									
Y7	.35	.19	3.49	<.001		.35	.19	3.45	<.001
Y8	.29	.16	3.00	.003		.28	.15	2.77	.006
Puberty earlier	-.07	-.03	-0.55	.580		-.07	-.03	-0.57	.568
Puberty same	.15	.08	1.44	.152		.13	.07	1.23	.219

Note. Baseline comparison for covariates is Y10, and Puberty later.

Relationship between SNS engagement, peer comparison, activity type, and wellbeing measures for boys. Moderation analyses showed no evidence that activity type moderated the relationship between either SNS activity and any wellbeing outcomes, or time on SNS and any wellbeing measures. Details of the moderation can be found in appendix B.iv.

Following this, mediation analyses were run for relationships which suggested evidence for a regression relationship between the IV (SNS measure) and DV (wellbeing image measure).

Time on SNS. The first mediation model tested included time on SNS as the predictor, peer comparison as the mediator, scholastic year and puberty as covariates, and negative affect as the outcome variable. There was evidence of an indirect effect of time on SNS on negative affect, and peer comparison was shown to partially mediate the relationship between time on SNS and negative affect due to the direct effect reducing, but remaining significant, after peer comparison was added into the model.

Figure 12. *Boys' negative affect mediation model*

SNS time — $zc = .19^{**}$ → Negative affect

Peer comparison
$za = .19^{**}$
$zb = .20^{**}$
SNS activity — $zc' = .15^{*}$ → Negative affect
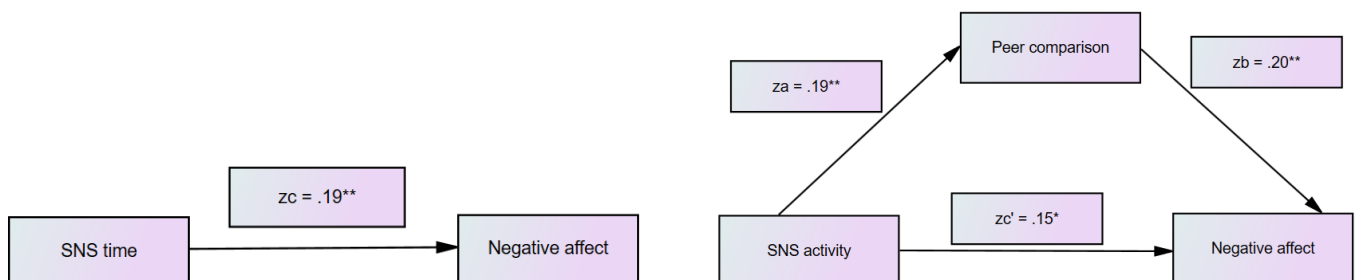
Table 64

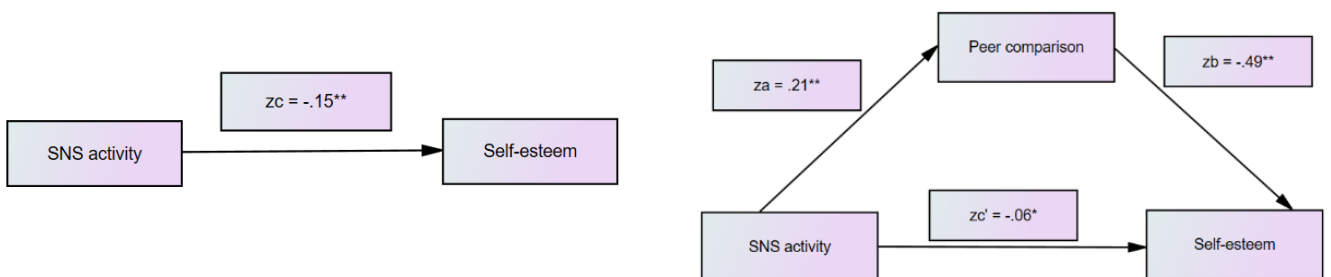*Mediation analysis for boys' wellbeing image pathway with time on SNS as IV, peer comparison as mediator, and year group and pubertal timing as covariates*

	Direct effect (X, M → Y)				Direct model		Total effect (X → Y)				Total model	
	β	SE	t	p	R^2	p	β	SE	t	p	R^2	p
PANAS-N					.09	<.001					.05	<.001
A	.18	.05	3.66	<.001	.05	<.001						
B	.20	.05	3.99	<.001								
c'	.15	.05	3.20	.002								
c							.19	.05	3.91	<.001**		
Year 7	.16	.12	1.34	.182			.12	.12	1.01	.311		
Year 8	<.01	.11	0.01	.996			<.01	.12	0.02	.985		
Puberty early	-.06	.14	-0.42	.672			-.03	.14	-0.23	.819		
Puberty same	-.18	.12	-1.54	.124			-.21	.12	-1.74	.083		

Note. Baseline comparison for covariates is Y10, and Puberty later. * denotes p ≤ .05, ** denotes p ≤ .001.

SNS activity. The first mediation model tested included SNS activity as the predictor, peer comparison as the mediator, scholastic year and puberty as covariates, and negative affect as the outcome variables. There was evidence of an indirect effect of SNS activity on negative affect, and peer comparison was shown to partially mediate the relationship between SNS activity and negative affect.

Figure 13. *Boys' negative affect mediation model*

The next mediation model tested included SNS activity as the predictor, peer comparison as the mediator, scholastic year and puberty as covariates, and self-esteem as the outcome variables. There was evidence of an indirect effect of SNS activity on self-esteem, and peer comparison was shown to fully mediate the relationship between SNS activity and self-esteem.

Figure 14. *Boys' self-esteem mediation model*
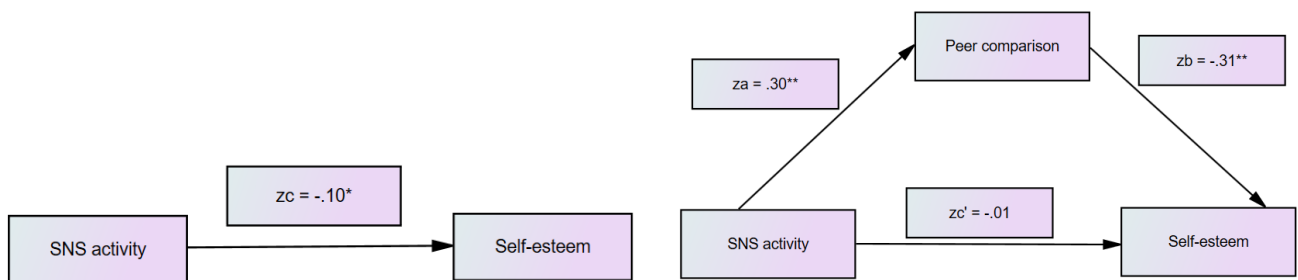
Table 65

Mediation analysis for boys' wellbeing pathway with SNS activity as IV, peer comparison as mediator, and year group and pubertal timing as covariates

	Direct effect (X, M → Y)				Direct model		Total effect (X → Y)				Total model	
	β	SE	t	p	R^2	p	β	SE	t	p	R^2	p
Negative affect					.09	<.001					.05	<.001
A	.29	.05	6.25	<.001	.10	<.001						
B	.19	.05	3.76	<.001								
c'	.14	.05	2.87	.004								
c							.20	.05	4.09	<.001**		
Year 7	.10	.12	0.82	.415			.06	.12	0.48	.630		
Year 8	.02	.11	0.19	.852			.02	.12	0.15	.884		
Puberty early	-.07	.14	-0.48	.629			-.06	.14	-0.42	.676		
Puberty same	-.24	.12	-2.04	.043			-.28	.12	-2.30	.022		
Self-esteem					.13	<.001					.05	<.001
A	.30	.05	6.33	<.001	.11	<.001						
B	-.31	.05	-6.20	<.001								
c'	-.01	.05	-.21	.833								
c							-.10	.05	-2.06	.040*		
Year 7	.34	.12	2.95	.003			.41	.12	3.38	<.001		
Year 8	.32	.11	2.90	.004			.33	.12	2.84	.005		
Puberty early	-.03	.14	-0.25	.802			-.05	.14	-0.33	.741		
Puberty same	.12	.12	1.05	.294			.18	.12	1.46	.145		

Note. Baseline comparison for covariates is Y10, and Puberty later. * denotes p ≤ .05, ** denotes p ≤ .001.

Relationship between each SNS engagement measure and wellbeing measures for girls. In order to explore possible mediation relationships, hierarchical multiple regressions were run in SPSS to first evaluate the relationship between the dependent variables and each of the measures of SNS engagement separately (see tables 64-65). Only regressions which suggested evidence of a relationship were reported in the text and carried forward to the mediation. The first models tested included SNS activity as a predictor variable, following this, time on SNS was used as a predictor. Both models included scholastic year group and self-reported puberty as covariates and both models were fitted for the following outcome variables; loneliness, positive affect, negative affect, self-esteem.

There was strong evidence that for girls SNS activity and reported puberty and scholastic year jointly predicted negative affect, with an adjusted R^2 value of 8%. Additionally, SNS activity, reported puberty and scholastic year jointly predicted self-esteem, with an adjusted R^2 value of 7%. These models suggested that girls who reported more SNS activity reported increased negative effect and reduced self-esteem (see tables 64-65).

Next, the models which included SNS time as a predictor variable were tested. There was strong evidence that negative affect was jointly predicted by SNS time and reported puberty, with an adjusted R^2 value of 9%, with the regression suggesting that girls who reported more SNS time also reported higher levels of negative affect. Finally, there was also some evidence that SNS time and scholastic year jointly predicted self-esteem, with an adjusted R^2 value of 6%, with the regression suggesting that girls who reported more SNS time also reported lower levels of self-esteem (see tables 64-65).

Table 66

Summary of hierarchical multiple regressions for wellbeing measures for girls

	Model 1				Model 2								
	F	df	p	adj, R^2	F	df	p	adj, R^2	Sig. F change	B	β	t	Sig
SNS activity													
Loneliness	2.95	4, 532	.020	.01	2.85	5, 532	.015	.02	.123	.10	.07	1.55	.123
PANAS-N	8.18	4, 537	<.001	.05	10.72	5, 537	<.001	.08	<.001**	.17	.19	4.45	<.001
PANAS-P	6.44	4, 537	<.001	.04	5.59	5, 537	<.001	.04	.145	-.06	-.06	-1.46	.145
Self-esteem	8.05	4, 533	<.001	.05	9.22	5, 533	<.001	.07	<.001**	-.17	-.15	-3.63	<.001
Time on SNS													
Loneliness	2.98	4, 528	.019	.02	2.70	5, 528	.020	.02	.213	.07	.06	1.25	.213
PANAS-N	8.42	4, 533	<.001	.05	11.81	5, 533	<.001	.09	<.001**	.16	.21	4.89	<.001
PANAS-P	6.15	4, 533	<.001	.04	4.91	5, 533	<.001	.04	.928	<.01	<.01	0.09	.928
Self-esteem	7.73	4, 530	<.001	.05	7.54	5, 530	<.001	.06	.011	-.11	-.11	-2.54	.011

Note. Model 1 includes covariates (Y7, Y8, Y10, Puberty early Puberty same, and Puberty later). Model 2 includes covariates (Y7, Y8, Y10, Puberty early, Puberty same, and Puberty later) and independent variables (time online and SNS activity). Baseline comparison for covariates is Y10, and Puberty later.

* denotes p ≤ .05, ** denotes p ≤ .001 for overall model 2.

Table 67

Summary of coefficients for IV and covariates for hierarchical multiple regressions for wellbeing measures for girls

	SNS activity model 2					Time online model 2			
	B	β	t	Sig		B	β	t	Sig
Loneliness									
Y7	-.13	-.05	-0.92	.689		-.11	-.04	-0.78	.435
Y8	.05	.02	0.39	.016		.06	.02	0.48	.630
Puberty earlier	.06	.02	0.40	.356		.09	.03	0.60	.549
Puberty same	-.30	-.12	-2.42	.698		-.30	-.12	-2.36	.018
PANAS-N									
Y7	-.19	-.10	-2.04	.042		-.13	-.08	-1.58	.115
Y8	.09	.06	1.15	.252		.12	.07	1.47	.143
Puberty earlier	.20	.10	2.20	.028		.23	.12	2.61	.009
Puberty same	-.14	-.09	-1.89	.060		-.14	-.08	-1.79	.073
PANAS-P									
Y7	.41	.21	4.35	<.001		.41	.22	-0.81	<.001
Y8	.21	.12	2.35	.019		.23	.13	1.64	.011
Puberty earlier	-.05	-.02	-0.46	.645		-.08	-.04	4.32	.416
Puberty same	.15	.08	1.76	.080		.14	.08	2.56	.103
Self-esteem									
Y7	.23	.22	4.51	<.001		.46	.21	4.25	<.001
Y8	-.18	.11	2.23	.026		.21	.10	2.05	.041
Puberty earlier	-.08	-.03	-0.72	.471		-.13	-.05	-1.08	.281
Puberty same	.19	.09	1.98	.049		.17	.09	1.78	.075

*Baseline comparison for covariates is Y10, and Puberty later.

Relationship between SNS engagement, peer comparison, activity type, and wellbeing measures for girls. Girls' moderations were run however there was no evidence that activity type moderated the relationship between either SNS activity and any wellbeing outcomes, or time on SNS and any wellbeing measures. Details of the moderation can be found in appendix B.iv. Following this,

mediations were run for relationships which evaluated evidence for a regression relationship between the IV (SNS measure) and DV (wellbeing measure).

Time on SNS. The first mediation model tested included time on SNS as the predictor, peer comparison as the mediator, scholastic year and puberty as covariates, and negative affect as the outcome variable. There was evidence of an indirect effect of time on SNS on negative affect, and peer comparison was shown to partially mediate the relationship between time on SNS and negative affect due to the strength of the direct relationship reducing, but remaining significant after peer comparison was added into the model.

Figure 15. *Girls negative affect mediation model*
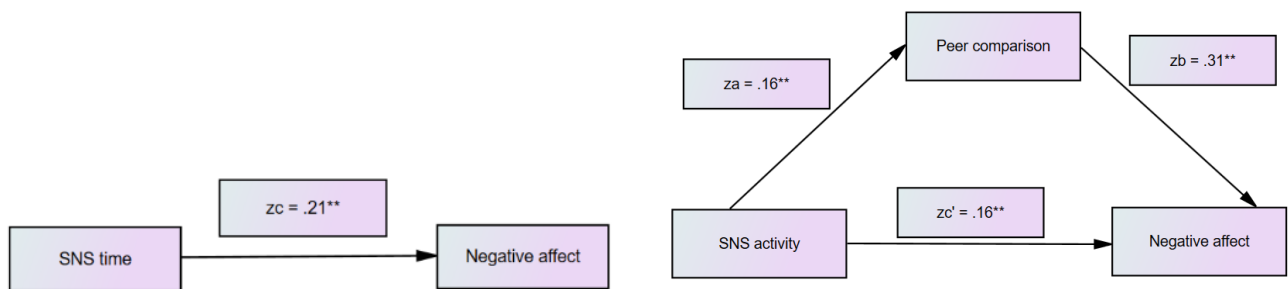
The next mediation tested time on SNS as the predictor, peer comparison as the mediator, scholastic year and puberty as covariates, and self-esteem as the outcome variable. There was no evidence to support the mediation as the total effect did not give evidence of a relationship.

Figure 16. *Girls' self-esteem model*
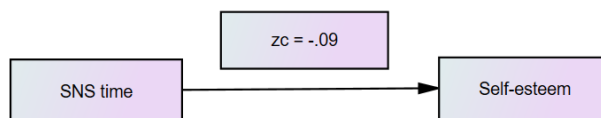
Table 68

Mediation analysis for girls' wellbeing pathway with time on SNS as IV, peer comparison as mediator, and year group and pubertal timing as covariates

	Direct effect (X, M → Y)				Direct model		Total effect (X → Y)				Total model	
	β	SE	t	p	R^2	p	β	SE	t	p	R^2	p
Negative affect					.17	<.001					.09	<.001
A	.16	.05	3.30	.001	.15	<.001						
B	.31	.04	7.05	<.001								
c'	.16	.05	3.46	<.001								
c							.21	.05	4.32	<.001**		
Year 7	.08	.11	0.71	.481			-.18	.11	-1.72	.085		
Year 8	.24	.10	2.47	.014			.12	.10	1.21	.226		
Puberty early	.25	.11	2.23	.026			.28	.11	2.45	.015		
Puberty same	-.17	.09	-1.84	.066			-.16	.09	-1.64	.101		
Self-esteem					.27	<.001					.06	<.001
A	.16	.05	3.42	<.001	.16	<.001						
B	-.50	.04	-12.08	<.001								
c'	-.01	.04	-0.28	.782								
c							-.09	.05	-1.85	.064		
Year 7	.05	.10	0.53	.597			.48	.11	4.43	<.001		
Year 8	.02	.09	0.26	.794			.22	.10	2.17	.031		
Puberty early	-.08	.10	-0.74	.462			-.14	.12	-1.23	.220		
Puberty same	.17	.09	1.98	.049			.15	.10	1.56	.119		

Note. Baseline comparison for covariates is Y10, and Puberty later. * denotes p ≤ .05, ** denotes p ≤ .001 for overall model 2.

SNS activity. The next mediation model tested included SNS activity as the predictor, peer comparison as the mediator, scholastic year and puberty as covariates, and negative affect as the outcome variable. There was evidence of an indirect effect of SNS activity on negative affect, and peer comparison was shown to partially mediate the relationship between time on SNS and negative affect.

Figure 17. *Girls' negative affect mediation model*
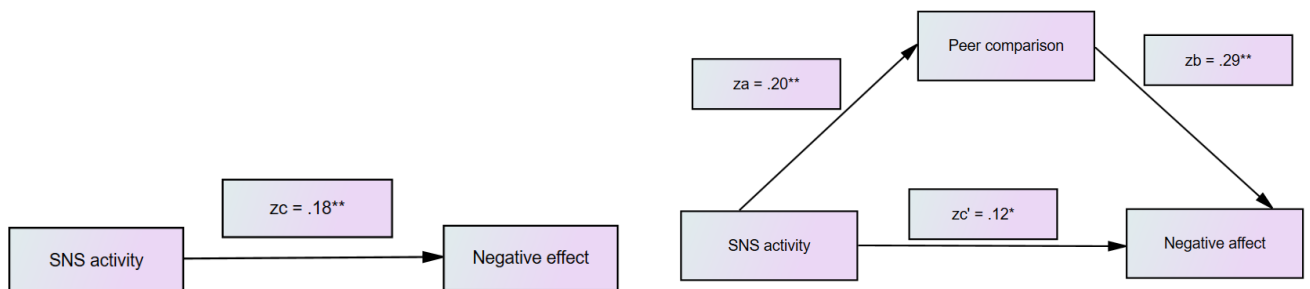
The final mediation model tested included SNS activity as the predictor, peer comparison as the mediator, scholastic year and puberty as covariates, and self-esteem as the outcome variable. There was evidence of an indirect effect of time on SNS on self-esteem, and peer comparison was shown to fully mediate the relationship between SNS activity and self-esteem.

Figure 18. *Girls' self-esteem mediation model*

Table 69

Mediation analysis for girls' wellbeing pathway with SNS activity as IV, peer comparison as mediator, and year group and pubertal timing as covariates

	Direct effect (X, M → Y)				Direct model		Total effect (X → Y)				Total model	
	β	SE	t	p	R^2	p	β	SE	t	p	R^2	p
Negative affect					.16	<.001					.09	<.001
A	.20	.04	4.99	<.001	.17	<.001						
B	.29	.04	6.70	<.001								
c'	.12	.04	2.97	.003								
c							.18	.04	4.33	<.001**		
Year 7	.03	.11	0.27	.791			-.22	.10	-2.08	.039		
Year 8	.21	.10	2.21	.028			.10	.10	1.01	.314		
Puberty early	.22	.11	2.00	.046			.25	.12	2.14	.032		
Puberty same	-.18	.09	-1.93	.054			-.17	.09	-1.78	.075		
Self-esteem					.27	<.001					.08	<.001
A	.21	.04	5.19	<.001	.18	<.001						
B	-.49	.04	-11.71	<.001								
c'	-.06	.04	-1.41	.160								
c							-.16	.04	-3.66	<.001**		
Year 7	.06	.10	.55	.584			.47	.11	4.46	<.001		
Year 8	.03	.09	.350	.727			.23	.10	.24	.025		
Puberty early	-.06	.10	-.59	.553			-.10	.12	-0.87	.382		
Puberty same	.17	.09	2.04	.04			.16	.10	1.70	.089		

Note. Baseline comparison for covariates is Y10, and Puberty later. * denotes p ≤ .05, ** denotes p ≤ .001 for overall model 2.

H6: Higher levels of SNS engagement will predict lower psychosocial functioning, mediated by social norms, and moderated by perceived risky behaviours seen online and peer belonging. This relationship will be found for boys and girls.

Figure 19. *Psychosocial functioning moderated mediation model*
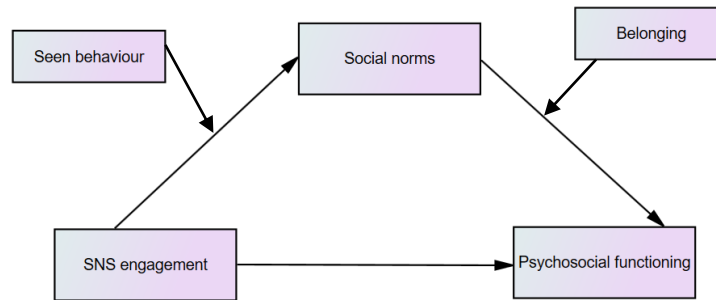
Relationship between each SNS engagement measure and psychosocial functioning measures for boys. Hierarchical multiple regressions were run to evaluate the relationship between the dependent variables and each of the measures of SNS engagement separately. All regressions can be found in the tables below (see tables 68-69). The first model tested included SNS activity as a predictor variable with scholastic year group and self-reported puberty as covariates and the second model tested included SNS time as a predictor variable with scholastic year group and self-reported puberty as covariates. Both models were fitted for the following outcome variables: problem behaviour and functioning. In the following sections only the regressions which suggested evidence of a relationship are reported in the text.

There was some evidence that for boys SNS activity predicted problem behaviour, with an adjusted R^2 value of 11%. This model suggested that boys who reported more SNS activity reported higher levels of problem behaviour (see tables 68-69).

Next, the models which included SNS time as a predictor variable were tested. There was strong evidence that problem behaviour was predicted by SNS time, with an adjusted R^2 value of 6% and the regression suggesting that boys who reported more SNS time also reported higher levels of problem behaviour. Finally, there was strong evidence that SNS time and the covariates jointly predicted functioning, with an adjusted R^2 value of 5%. The results indicated that boys who reported more SNS activity also reported lower levels of functioning (see tables 68-69).

Table 70

Summary of hierarchical multiple regression for psychosocial functioning measures for boys

	Model 1				Model 2				Sig. F change	B	β	t	Sig
	F	df	p	adj R^2	F	df	p	adj R^2					
SNS activity													
Problem behaviour	1.61	4, 427	.170	.01	11.07	5, 427	<.001	.11	<.001**	.24	.32	6.94	<.001
Functioning	3.50	4, 424	.008	.02	2.83	5, 424	.016	.02	.672	-.02	-.02	-0.42	.672
Time on SNS													
Problem behaviour	1.72	4, 408	.144	.01	6.43	5, 408	<.001	.06	<.001**	.22	.24	4.99	<.001
Functioning	3.94	4, 405	.004	.03	5.55	5, 405	<.001	.05	<.001**	-.22	-.17	-3.40	<.001

Note. Model 1 includes covariates (Y7, Y8, Y10, Puberty early Puberty same, and Puberty later). Model 2 includes covariates (Y7, Y8, Y10, Puberty early, Puberty same, and Puberty later) and independent variables (time online and SNS activity). Baseline comparison for covariates is Y10, and Puberty later.

* denotes p ≤ .05, ** denotes p ≤ .001 for overall model 2.

Table 71

Summary of coefficients for IV and covariates for hierarchical multiple regressions for psychosocial functioning measures for boys

	SNS activity model 2					Time on SNS model 2			
	B	β	t	Sig		B	β	t	Sig
Problem behaviour									
Y7	.03	.02	0.35	.725		.06	.04	0.76	.449
Y8	.06	.04	0.79	.428		.10	.07	1.21	.227
Puberty earlier	.10	.06	0.99	.322		.07	.04	0.64	.525
Puberty same	-.09	-.06	-1.07	.284		-.10	-.07	-1.19	.236
Functioning									
Y7	.38	.17	3.18	.002		.39	.17	3.18	.002
Y8	.09	.04	0.72	.471		.07	.03	0.62	.537
Puberty earlier	.20	.12	1.95	.052		.23	.09	1.52	.128
Puberty same	-.02	-.02	-0.42	.672		.28	.13	2.20	.028

*Baseline comparison for covariates is Y10, and Puberty later.

Relationship between SNS engagement, seen behaviours, social norms, belonging, and psychosocial measures for boys. Boys' moderations showed no evidence that seen behaviour moderated the relationship between SNS engagement and social norms, or that belonging moderated the relationship between social norms and psychosocial functioning. Details of the moderation can be found in appendix B.iv.

Following this, mediations were run for relationships which evaluated evidence for a regression relationship between the IV (SNS measure) and DV (psychosocial functioning measure).

SNS time. Next, mediation models were tested which included time on SNS as the predictor, social norms as the mediator and scholastic year and puberty as covariates. First problem behaviour was included as the outcome variable. There was evidence of an indirect effect of time on SNS on problem behaviour, social norms was shown to partially mediate the relationship between time on SNS and problem behaviour.

Figure 20. *Boys' problem behaviour mediation model*
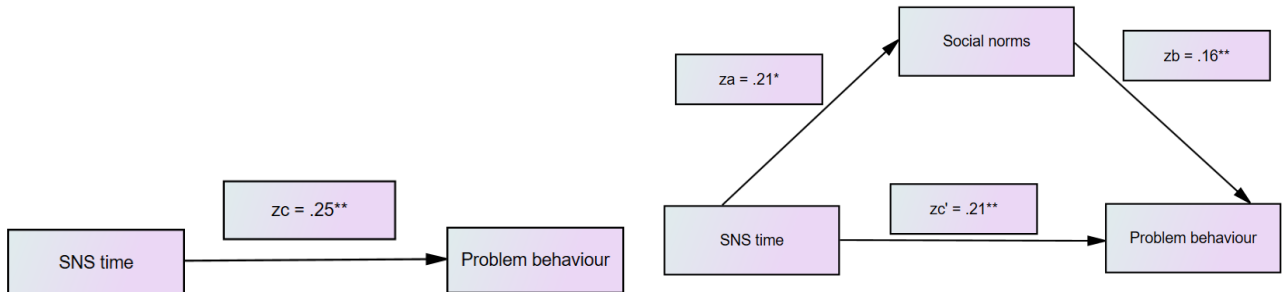
Next, time on SNS was included as the predictor, social norms as the mediator, scholastic year and puberty as covariates and functioning as the outcome variable. There was no mediation since there was no evidence of the relationship between social norms and functioning (b path).

Figure 21. *Boys' functioning mediation model*
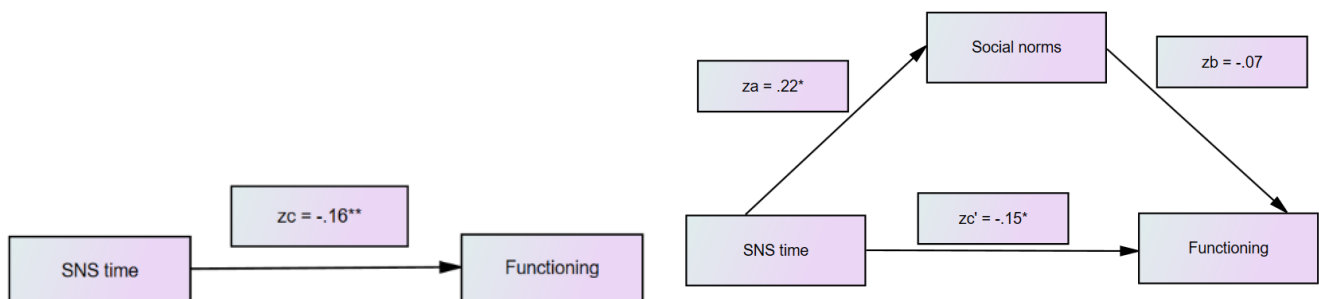
Table 72

Mediation analysis for boys' psychosocial functioning pathway with time on SNS as IV, social norms as mediator, and year group and pubertal timing as covariates

	Direct effect (X, M → Y)				Direct model		Total effect (X → Y)				Total model	
	β	SE	t	p	R^2	p	β	SE	t	p	R^2	p
Problem behaviour					.13	<.001					.07	<.001
A	.21	.07	2.78	.006	.33	<.001						
B	.16	.03	4.85	<.001								
c'	.21	.05	4.45	<.001								
c							.25	.05	5.03	<.001**		
Year 7	.45	.14	3.22	.001			.07	.12	0.61	.541		
Year 8	.32	.12	2.58	.010			.11	.12	0.95	.541		
Puberty early	.05	.14	0.39	.700			.08	.14	0.57	.569		
Puberty same	-.13	.12	-1.12	.265			-.16	.12	-1.27	.204		
Functioning					.07	<.001					.06	<.001
A	.22	.08	2.92	.004	.33	<.001						
B	-.07	.03	-1.90	.058								
c'	-.15	.05	-3.07	.002								
c							-.16	.05	-3.37	.001**		
Year 7	.22	.14	1.54	.125			.37	.12	3.13	.002		
Year 8	-.02	.12	-0.18	.861			.06	.12	0.50	.616		
Puberty early	.22	.14	1.56	.120			.21	.14	1.49	.138		
Puberty same	.24	.12	.198	.048			.25	.12	2.06	.040		

Note. Baseline comparison for covariates is Y10, and Puberty later. * denotes p ≤ .05, ** denotes p ≤ .001 for overall model 2.

SNS activity. The first mediation model tested included SNS activity as the predictor, social norms as the mediator, scholastic year and puberty as covariates, and problem behaviour as the outcome variables. There was evidence of an indirect effect of SNS activity on problem behaviour, social norms were shown to partially mediate the relationship between SNS activity and problem behaviour.

Figure 22. *Boys' problem behaviour mediation model*
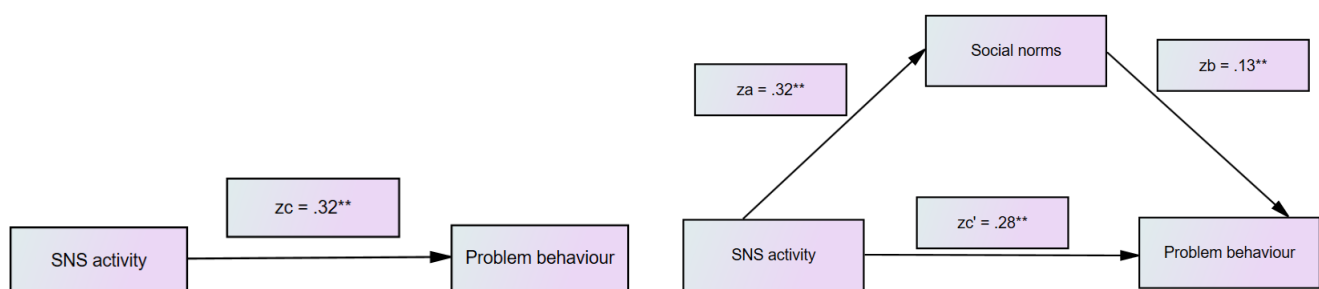
Table 73

Mediation analysis for boys' psychosocial functioning pathway with time SNS activity as IV, social norms as mediator, and year group and pubertal timing as covariates

	Direct effect (X, M → Y)				Direct model		Total effect (X → Y)				Total model	
	β	SE	t	p	R^2	p	β	SE	t	p	R^2	p
Problem behaviour					.14	<.001					.11	<.001
A	.32	.07	4.44	<.001	.34	<.001						
B	.13	.03	4.00	<.001								
c'	.28	.05	5.80	<.001								
c							.32	.05	6.69	<.001**		
Year 7	.34	.14	2.46	.014			.03	.12	0.26	.795		
Year 8	.25	.12	2.07	.040			.07	.11	0.65	.517		
Puberty early	.02	.14	.15	.885			.02	.13	0.18	.861		
Puberty same	-.16	.12	-1.38	.168			-.19	.12	-1.60	.110		

Note. Baseline comparison for covariates is Y10, and Puberty later. * denotes p ≤ .05, ** denotes p ≤ .001 for overall model 2.

Relationship between each SNS engagement measure and psychosocial functioning measures for girls. Hierarchical multiple regressions were run to evaluate the relationship between the dependent variables and each of the measures of SNS engagement separately. All regressions can be found in the tables below (see tables 72-73). The first models tested included SNS activity as a predictor variable with scholastic year group and self-reported puberty as covariates and the second models tested included SNS time as a predictor variable with scholastic year group and self-reported puberty as covariates. Both models were fitted for the following outcome variables: problem behaviour and functioning. In the following sections only the regressions which suggested evidence of a relationship are reported in the text.

There was strong evidence for girls that SNS activity and scholastic year jointly predicted problem behaviour and functioning with an adjusted R^2 value of 20% and 6% respectively. These models suggested that girls who reported more SNS activity reported higher levels of problem behaviour, but lower levels of functioning (see tables 72-73).

Next, the models which included SNS time as a predictor variable were tested. There was strong evidence that problem behaviour was jointly predicted by SNS time, scholastic year and puberty, with an adjusted R^2 value of 15% and the regression suggesting that girls who reported more SNS time also reported higher levels of problem behaviour. Finally, there was some evidence that SNS time and scholastic year jointly predicted functioning, with an adjusted R^2 value of 5% and the results indicating that girls who reported more time on SNS also reported lower levels of functioning (see tables 72-73).

Table 74

Summary of hierarchical multiple regression for psychosocial functioning measures for girls

	Model 1				Model 2								
	F	df	p	adj R^2	F	df	p	adj R^2	Sig. F change	B	β	t	Sig
SNS activity													
Problem behaviour	13.63	4, 538	<.002	.086	27.49	5, 538	<.001	.20	<.001**	.31	.34	8.68	<.001
Functioning	7.55	4, 537	<.001	.05	7.95	5, 537	<.001	.06	.003*	-.17	-.13	-3.01	.003
Time on SNS													
Problem behaviour	13.94	4, 534	<.001	.09	19.93	5, 534	<.001	.15	<.001**	.20	.26	6.31	<.001
Functioning	7.07	4, 533	<.001	.04	6.89	5, 533	<.001	.05	.015*	-.12	-.11	-2.44	.015

Note. Model 1 includes covariates (Y7, Y8, Y10, Puberty early Puberty same, and Puberty later). Model 2 includes covariates (Y7, Y8, Y10, Puberty early, Puberty same, and Puberty later) and independent variables (time online and SNS activity). Baseline comparison for covariates is Y10, and Puberty later.

* denotes p ≤ .05, ** denotes p ≤ .001 for overall model 2.

.

Table 75

Summary of coefficients for IV and covariates for hierarchical multiple regressions for psychosocial functioning measures for girls

	SNS activity model 2					Time on SNS model 2			
	B	β	t	Sig		B	β	t	Sig
Problem behaviour									
Y7	-.41	-.24	-5.36	<.001		-.39	-.23	-4.88	<.001
Y8	-.16	-.10	-2.21	.028		-.15	-.09	-1.92	.055
Puberty earlier	.16	.08	1.87	.062		.23	.12	2.63	.009
Puberty same	-.13	-.08	-1.84	.066		-.12	-.08	-1.70	.089
Functioning									
Y7	.51	.21	4.30	<.001		.48	.20	3.96	<.001
Y8	.09	.04	0.78	.438		.08	.03	0.69	.493
Puberty earlier	-.05	-.02	-0.41	.681		-.10	-.04	-0.76	.446
Puberty same	.20	.09	1.87	.062		.18	.08	1.64	.101

Note. Baseline comparison for covariates is Y10, and Puberty later.

Relationship between SNS engagement, seen behaviours, social norms, belonging, and psychosocial measures for boys. Girls' moderations showed no evidence that reported seen behaviours moderated the relationship between SNS engagement and social norms, or that belonging moderated the relationship between social norms and psychosocial functioning. Details of the moderation can be found in appendix B.iv.

Following this, mediations were run for relationships which suggested evidence for a regression relationship between the IV (SNS engagement measure) and DV (psychosocial functioning measure).

SNS activity. The first mediation model tested included SNS activity as the predictor, social norms as the mediator, scholastic year and puberty as covariates, and problem behaviour as the outcome variable. There was evidence of an indirect effect of SNS activity on problem behaviour, and social norms was shown to partially mediate the relationship between SNS activity and problem behaviour.

Figure 23. *Girls' problem behaviour mediation model*
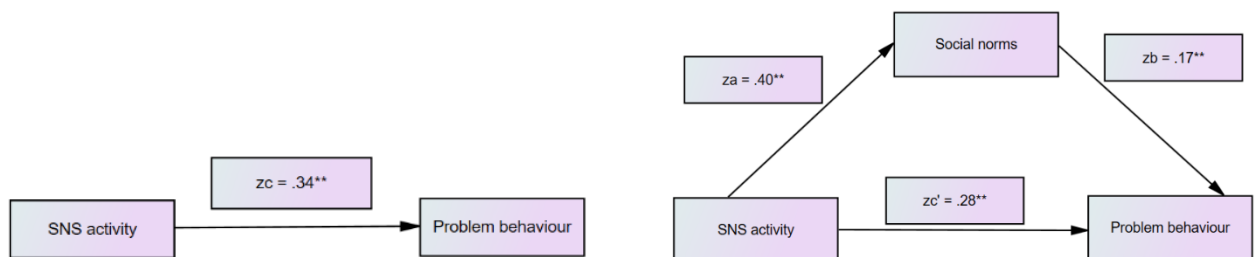
The next mediation model tested included SNS activity as the predictor, social norms as the mediator, scholastic year and puberty as covariates, and functioning as the outcome variable. There was evidence of an indirect effect of SNS activity on functioning, and social norms was shown to fully mediate the relationship between SNS activity and functioning.

Figure 24. *Girls' functioning mediation model*
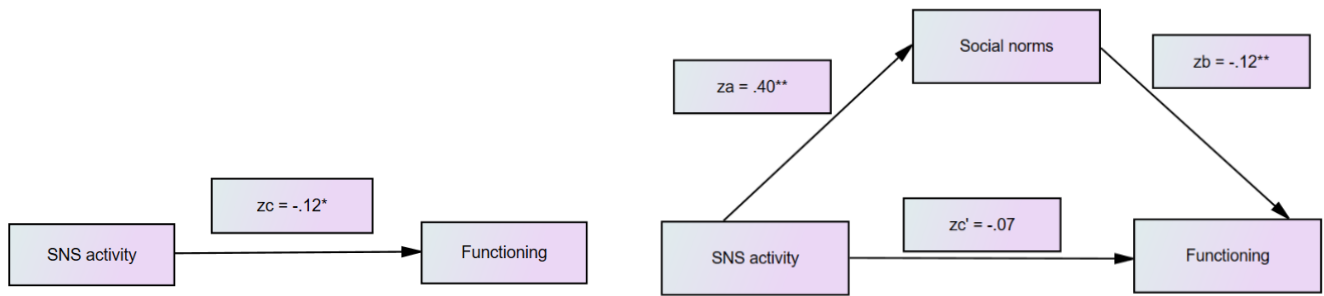
Table 76

Mediation analysis for girls' psychosocial functioning pathway with SNS activity as IV, social norms as mediator, and year group and pubertal timing as covariates

	Direct effect (X, M → Y)				Direct model		Total effect (X → Y)				Total model	
	β	SE	t	p	R^2	p	β	SE	t	p	R^2	p
Problem behaviour					.25	<.001					.21	<.001
A	0.40	.06	6.84	<.001	.54	<.001						
B	0.17	.03	5.59	<.001								
c′	0.28	.04	6.74	<.001								
c							.34	.04	8.47	<.001**		
Year 7	-0.01	.14	-0.08	.938			-.54	.10	-5.41	<.001		
Year 8	0.10	.11	0.94	.351			-.22	.09	-2.31	.021		
Puberty early	0.20	.11	1.88	.061			.21	.11	1.94	.053		
Puberty same	-0.15	.09	-1.76	.079			-.16	.09	-1.77	.078		
Functioning					.10	<.001					.07	<.001
A	.40	.06	6.83	<.001	.54	<.001						
B	-.12	.03	-3.62	<.001								
c′	-.07	.05	-1.58	.114								
c							-.12	.04	-2.70	.007*		
Year 7	.13	.15	0.90	.368			.51	.11	4.73	<.001		
Year 8	-.12	.19	-1.04	.300			.10	.10	1.02	.310		
Puberty early	-.06	.12	-0.49	.628			-.06	.12	-0.55	.581		
Puberty same	.17	.10	1.75	.081			.17	.10	1.77	.078		

Note. Baseline comparison for covariates is Y10, and Puberty later. * denotes p ≤ .05, ** denotes p ≤ .001 for overall model 2.

Time on SNS. The next mediation model tested included time on SNS as the predictor, social norms as the mediator, scholastic year and puberty as covariates, and problem behaviour as the outcome variable. There was evidence of an indirect effect of time on SNS on problem behaviour, and social norms was shown to partially mediate the relationship between time on SNS and problem behaviour.

Figure 25. *Girls' problem behaviour mediation model*
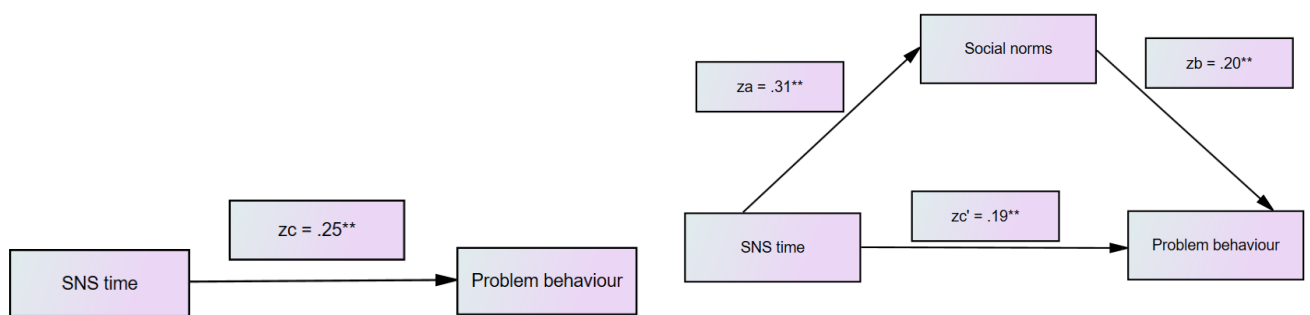
The final mediation model tested included time on SNS as the predictor, social norms as the mediator, scholastic year and puberty as covariates, and functioning as the outcome variable. There was no evidence of an indirect effect of SNS time on functioning.

Figure 26. *Girls' functioning model*
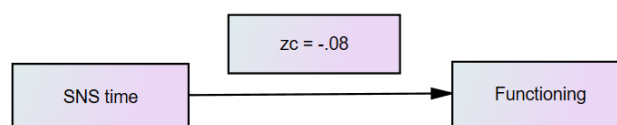
Table 77

Mediation analysis for girls' psychosocial functioning pathway with time on SNS as IV, and social norms as mediator, and year group and pubertal timing as covariates

	Direct effect (X, M → Y)				Direct model		Total effect (X → Y)				Total model	
	β	SE	t	p	R^2	p	β	SE	t	p	R^2	p
Problem behaviour					.21	<.001					.15	<.001
A	.31	.07	4.49	<.001	.51	<.001						
B	.20	.03	6.65	<.001								
c'	.19	.05	4.04	<.001								
c							.25	.05	5.22	<.001**		
Year 7	.08	.14	0.57	.566			-.55	.11	-5.26	<.001		
Year 8	.16	.11	1.45	.147			-.22	.10	-2.20	.029		
Puberty early	.27	.11	2.48	.013			.30	.11	2.69	.007		
Puberty same	-.15	.09	-1.66	.098			-.15	.09	-1.64	.103		
Functioning					.09	<.001					.06	<.001
A	.31	.07	4.48	<.001	.51	<.001						
B	-.13	.03	-4.03	<.001								
c'	-.04	.05	-0.77	.442								
c							-.08	.05	-1.55	.121		
Year 7	.09	.15	0.63	.529			.50	.11	4.59	<.001		
Year 8	-.14	.12	-1.17	.244			.11	.10	1.04	.301		
Puberty early	-.08	.12	-0.74	<.001			-.11	.12	0.91	.361		
Puberty same	.15	.10	1.55	.123			.15	.10	1.55	.121		

Note. Baseline comparison for covariates is Y10, and Puberty later. * denotes p ≤ .05, ** denotes p ≤ .001 for overall model 2.

Discussion

This study aimed to evaluate the impact of SNS use on the body image, wellbeing, and psychosocial functioning of adolescents aged 11 – 15 years. A number of models were tested which aimed to explain the relationship between SNS engagement and body image, wellbeing, and psychosocial functioning, and also aimed to explore levels of body image concern, wellbeing, and psychosocial functioning in SNS users compared to non-users. Overall, the results from this study suggest that there is an association between SNS use and body image concerns, negative wellbeing, and decreased psychosocial functioning for adolescents aged 11 – 15 years. All proposed models were at least partially supported, and differences between SNS users and non-users were also found.

Hypothesis 1: SNS engagement will increase with age, there will be no gender difference in SNS engagement.

Of those who took part in this study, 95.4% reported using any form of SNS, and 83% reported using at least one image-focused SNS. There was mixed support found for the first hypothesis, that SNS engagement will increase with age, with no gender difference. For both boys and girls there was evidence of higher SNS activity in year 10 compared to year 7 and year 8; for boys there was also more activity in year 8 compared to year 7. For time online, both boys and girls in year 10 spent more time online than their counterparts in year 7, and for girls, students in year 10 also spent more time online than students in year 8. This therefore supported the first part of the hypothesis, that SNS engagement will increase with age. Research exploring SNS usage in different ages has found higher levels of usage in individuals aged 15 – 24 years compared to older samples (Office for national communication, 2021), but little research has explored usage below this age. Following the t-tests, there was also evidence to suggest higher SNS engagement for girls compared to boys for every year, on both SNS use measures. This finding was counter to the hypothesis which proposed there would be no gender difference. Very little research has explored SNS engagement between age groups or gender, however this is vitally important in order to understand the different ways that usage may affect individuals. As SNS usage increases with age, this suggests that initial interventions and education about SNS should be targeted prior to year 7.

Hypothesis 2: Those who report greater SNS engagement will report more negative wellbeing and body image concerns, as well as lower psychosocial functioning. Additionally, those reporting greater active, rather than passive, usage will report lower

levels of body image concerns and negative wellbeing, as well as lower psychosocial functioning.

The second hypothesis had two parts: those who report greater SNS engagement will report more negative wellbeing and body image concerns, as well as lower psychosocial functioning; and those reporting greater active, rather than passive, usage will report lower levels of body image concerns and negative wellbeing, as well as lower psychosocial functioning. This hypothesis was partially supported. For the first part of the hypothesis, there was evidence found for higher levels of SNS engagement being associated with higher levels of internalisation of muscular ideals and lower levels of body satisfaction for both boys and girls. There was also evidence for the hypothesised relationship between SNS engagement and body appreciation (for girls only), and for drive for thinness (for boys only). Due to cultural appearance ideals, most research exploring boys' body image has evaluated this in relation to internalisation of muscular ideals. Therefore, although this finding is unsurprising, little research has explored this in relation to SNS in such a young sample. However, little research has explored how internalisation of muscular ideals related to girls. Research has reported the emergence of 'fitspiration' content online (Carrotte et al., 2017; Talbot et al., 2017), therefore it could be that this content may be having an impact on young girls and how they view their own bodies. The relationship between SNS engagement and body satisfaction for boys and girls, and body appreciation for girls, is in line with past research (Jarman et al., 2021; Saiphoo & Vahedi, 2019) that has suggested that similarly to traditional forms of media, it could be that viewing idealised images through social media may increase body image concerns (Fardouly et al., 2017). However, without longitudinal research, this argument cannot be favoured over an alternative; for example, those with reduced body appreciation and satisfaction may be turning to SNS more in order to gain validation from others. Finally, research relating to drive for thinness in boys is sparce, however these findings do support the current consensus (Kim & Chock, 2015). Furthermore, past research has explored the relationship between SNS use and drive for thinness in women and found evidence for such a relationship (Kim & Chock, 2015), but this was not supported in the current study. Although this could be due to the age of the participants and the cumulative effect of media ideals not having had as much of an effect yet, research has suggested that body image concerns increase after the onset of puberty (Stice, 2003) for girls. With the average age of pubertal onset currently at 11 years (NHS, 2019), it could be that for a slightly older sample, this difference may be apparent. Alternatively, perhaps a larger shift has occurred with young girls more preoccupied with looking like the 'fit ideal' as opposed to the 'thin ideal'. In line with this, it is interesting that for boys, both internalisation of muscular ideals and thin ideals were associated with

SNS engagement as these two seemingly opposing aspirations, both unrealistic in their own right, could be causing an increased internal conflict and burden during an already complicated time in adolescent development.

The next part of this hypothesis explored the wellbeing measures. This found that more SNS engagement was associated with higher levels of negative affect for both boys and girls. Less research has explored the relationship between negative affect and SNS use compared to other wellbeing measures, however as high levels of negative affect are associated with 'fear of missing out' (FOMO; a prevalent concern that one is absent from experiences that others may be having; Przbylski et al., 2013), and major depression (Cohen et al., 2017; Elhai et al., 2020), it seems an important aspect to evaluate in adolescents. Higher levels of negative affect were associated with higher levels of SNS engagement, possibly due to adolescents seeing what people they are following are doing and feeling they are missing out. Alternatively, individuals with higher levels of negative affect may be engaging with SNS more, due to the ease of communicating and connecting with others online, compared to in person. Further longitudinal research can help to explore the direction. Furthermore, decreased self-esteem was also associated with increased SNS engagement, for girls only. This supports past research which has suggested that social media use is associated with decreased levels of self-esteem in adolescents due to increased upward comparisons (Woods & Scott, 2016). It is also in line with evidence that a higher proportion of influencers are female (Statista Research Department, 2021), perhaps increasing the opportunity for social comparison for girls more so than boys. Alternatively, perhaps individuals turn to use social media when feeling particularly low in self-esteem in order to gain validation from peers through likes and engagement with posts. There was no support found for an association between SNS engagement and loneliness or positive affect for either boys or girls, similarly to study one. Although past research has highlighted a link between SNS use and reduced loneliness (Pittman, 2015), some recent research has similarly been unable to replicate this (Yavich et al., 2019), suggesting either a problem with the measurement method, or a recent shift in this association, perhaps due to the way social media is being used. Indeed, research has suggested that the way social media is used can impact the association with loneliness (Thomas et al., 2020). For example, using social media in a liminal way, i.e., to present who one is now (e.g., hiding/ restricting past posts) is associated with greater levels of loneliness, compared to those who feel comfortable with their historic social media posts (Thomas et al., 2020). Therefore, perhaps a more detailed exploration of SNS use is needed to properly explore this relationship in a younger sample. The association between SNS use and measures of wellbeing (other than self-esteem, life satisfaction, loneliness, and depression) has

received very little attention (Huang, 2017), therefore it felt important to explore positive affect due to its association with cognitive flexibility (Figueira et al., 2018), something particularly important during the changing environmental demands of adolescence (Hauser et al., 2015). There was no evidence found for this association. This opposes research with adults, which has found an association between SNS use and positive affect (Wirtz et al., 2020), suggesting that future research should seek to explore this relationship further, particularly in a younger sample.

The next part of this hypothesis explored psychosocial functioning. This found evidence that increased SNS engagement was associated with increased problem behaviour and lower functioning for both boys and girls. Past research has found an association between risky behaviour and SNS use in young adults (Bergman et al., 2018b), however little research has explored the relationship between problem behaviour and functioning in a sample younger than university students. Therefore, it's particularly interesting to find this association for both boys and girls at this age. The direction of the relationship is still unknown, and it could be that seeing content online entices adolescents to mimic this behaviour offline, as has been suggested in past cross-sectional research (Branley & Covey, 2017). Alternatively, it could be that engaging in more social media may be an act of defiant behaviour in itself, chosen by adolescents in order to push boundaries. Longitudinal analysis would need to be conducted in order to fully explore this. However, this highlights an interesting avenue for further research which is currently scantly considered.

There was little evidence to support the final part of the hypothesis that those reporting greater active, rather than passive, usage will report lower levels of body image concerns, negative wellbeing, as well as lower levels of psychosocial functioning. For girls, active SNS use, compared to passive use, was associated with increased problem behaviour; there was no evidence for any other differences for girls. Although little research has explored the impact of SNS use on problematic behaviour, it could be that engaging with risky behaviour content makes it more appealing to mimic, or alternatively individuals may feel like engaging in this behaviour will increase their online popularity (Ward et al., 2021). For boys, increased active use was associated with increased internalisation of muscular ideal, and increased problem behaviour; there was no evidence for any other differences for boys. The finding regarding internalisation of muscular ideals gave evidence contrary to the hypothesis. It could be that individuals are actively searching or are engaging with media which supports their own body ideals and passive users may have less appearance related ideals initially, or perhaps actively engaging with media showcasing muscular ideals may be having an additional impact compared to just scrolling past it. Similarly, for girls, increased active SNS use

was associated with increased problem behaviour, further highlighting the importance of this area for further investigation. There were no other differences between active and passive users. This is surprising, considering that a great deal of research has focused on how the type of SNS use (i.e., active or passive) relates to a number of outcomes in older samples (Escobar-Viera et al., 2018; Wang et al., 2019; Wang et al., 2018). As the current research was mostly unable to support these past findings, this could suggest that younger age groups are using SNS in a different way to older generations, or that they are more aware of how they are using social media and what effect that may have.

Hypothesis 3: Regardless of gender, participants who use image-focused SNS will report higher levels of body image concerns, lower wellbeing, and lower psychosocial functioning, compared with their counterparts who do not use image-focused SNS.

The third hypothesis, that image focused SNS users will report higher levels of body image concerns, lower wellbeing, as well as lower levels of psychosocial functioning, compared to non-users, was partially supported. Like the rest of the analysis, this hypothesis was run with a gender split and found that for girls, image-focused users reported higher levels of drive for thinness and problem behaviour compared to non-users, and lower levels of body appreciation, body satisfaction, self-esteem, and functioning compared to non-users. Furthermore, for boys, image-focused users reported higher internalisation of muscular ideals, and higher problem behaviour compared to non-users, and also reported lower levels of loneliness and lower levels of functioning compared to non-users. This supports past research which has frequently found evidence that SNS use is associated with body image concerns for girls (Holland & Tiggemann, 2016), adding more updated evidence which is still in line with previous findings, despite changes of social media platforms and beauty ideals seen online. For boys, there was evidence for a difference in internalisation of muscular ideals between users and non-users, although this is unsurprising as most body ideals targeted at boys relate to muscular ideals (Mahon & Hevey, 2021); less research has evaluated the link between SNS use and body image concerns in boys compared to girls. Considering past research has highlighted that girls internalise media body ideals more so than boys (Knauss et al., 2007), it highlights that this under-researched area is important to explore. Although the finding that boys engaging in image-focused SNS use reported lower levels of loneliness compared to non-users is contrary to the hypothesis, less research has explored SNS use in boys. In general, research has found inconsistent results regarding SNS use and levels of loneliness (Wang et al., 2018; Yang, 2016), therefore this adds further evidence to this discussion. Furthermore, past research has shown that girls' self-esteem and body image are highly correlated during adolescence, therefore it is unsurprising that evidence was

found for these two variables for girls. Finally, the findings add support to the relationship between SNS use and psychosocial functioning which has so far mostly been limited to young adults (Bergman et al., 2018b). Little research has explored problem behaviour and functioning in relation to SNS use, with research focusing predominantly on photos seen online, although the cause and effect is still unclear. It could be that users that are more inclined to behave in a problematic way may use SNS more, due to the ease they find to communicate with others over SNS compared to in person. Alternatively, individuals using SNS may be viewing problematic behaviour which they are then mimicking offline.

Hypothesis 4: Higher levels of SNS engagement will predict higher body image concerns, mediated by body surveillance, and moderated by selfie manipulation. This relationship will be found for boys and girls.

The fourth hypothesis proposed that for both boys and girls, higher levels of SNS engagement will predict higher body image concerns, mediated by body surveillance, and moderated by photo manipulation. For boys, when SNS activity was the independent variable, there was evidence of moderated mediation for the outcome variables body appreciation, internalisation of muscular ideals, and drive for thinness, but not body satisfaction. Conversely, no moderated mediations met the threshold when time on SNS was included as the independent variable. A great deal of past research has focused on measuring time on SNS as the main measure, and this can be problematic due to adolescents' poor time estimation skills. Although it could be possible to ask participants to check their time online through a device, this was deemed inappropriate during school-based data collection due to most schools having rules against phone use during lesson time, and also due to the opportunity for students to get distracted on their phones while checking their time online. Despite this, as knowledge within the field has progressed, it has been suggested that the way individuals use SNS may be more important than the time they spend online (Yang, 2016). Despite this, for this study there was no difference found for the type of usage (active versus passive). Perhaps this suggests that it is more nuanced than a dichotomous split of active or passive use, perhaps younger individuals are using social media differently to older samples, or perhaps the motivations of using social media differ compared to older samples. Despite this, it is interesting that there was evidence for the moderated mediation including SNS activity and body appreciation, internalisation of muscular ideals, and drive for thinness for boys. Little research has explored SNS usage in boys, and therefore evidence that a wide range of different aspects of boys' body image is associated with SNS use makes an important contribution to the existing knowledge. Whether boys with higher levels of body image concerns are finding themselves engaging with SNS more, or if

higher engagement with SNS leads to higher body image concerns cannot be determined from this study, and longitudinal research is needed to explore this relationship more fully. For girls, the moderation analysis revealed that photo manipulation was not a moderator. Following this, the mediation analyses found that with time online as independent variable; body appreciation and body satisfaction were mediated by body surveillance. There was no evidence for a relationship between time on SNS and drive for thinness or internalisation of muscular ideals. For SNS activity, body appreciation, internalisation of muscular ideals, and body satisfaction were mediated by body surveillance, however, drive for thinness showed no relationship. This is particularly interesting, as there was no evidence to support either model which included drive for thinness for girls, despite this being a heavily researched aspect of body image concerns. This again may relate to the shift in body ideals that are being presented through social media, especially considering that evidence was found for internalisation of muscular ideals for girls. Alternatively, it may be that other aspects of society have a larger association with drive for thinness for girls, rather than SNS. The findings showing support for the models for body appreciation and satisfaction are in line with past research, which has found this relationship in older individuals (Hanna et al., 2017), and highlights that this model is also relevant for a younger sample.

Hypothesis 5: Higher levels of SNS engagement will predict lower wellbeing, mediated by peer comparisons, and moderated by SNS activities. This relationship will be found for boys and girls.

The fifth hypothesis, that for both boys and girls, higher levels of SNS engagement will predict lower wellbeing, mediated by comparisons, and moderated by SNS activity type, was partially supported. No moderation of SNS activity type was found, therefore only mediations were explored. Furthermore, there was no evidence of any mediation models which included positive affect or loneliness as outcome variables. However, for both boys and girls, when SNS activity was the independent variable and peer comparison was the mediator, there was evidence of full mediation for self-esteem for both boys and girls, and partial mediation for negative affect for both boys and girls. When time online was included as the independent variable, there was partial mediation found for negative affect for boys only. These findings add further evidence that perhaps evaluating individuals' usage in a more detailed way (i.e., looking at activity rather that time) may allow us to better capture these associations. The full mediation found for peer comparison between self-esteem and SNS activity gives further evidence to support social comparison theory (Festinger, 1954), and suggests that even at this age, individuals are using social media for unrealistic comparisons. Whether individuals with low self-esteem are turning to social media more, or if

increased usage of social media is leading to low levels of self-esteem, the underlying mechanism of peer comparison is still playing an important role and is something worth exploring further and including in education for individuals as young as 11 years. There was also evidence for the models including negative affect. This is a lesser researched area in relation to SNS use, but highlights an area for further exploration as negative affect is a factor underlying both major depression and anxiety (Wolniewicz et al., 2018), and therefore being able to explore the direction of this association is important. Although longitudinal research is needed to confirm the direction of the model, the current findings suggest that peer comparisons mediate the relationship between SNS use and negative affect. As most treatments for major depression focus on reducing negative affect (Oren-Yagoda et al., 2017), understanding the relationship between negative affect and social media use may be helpful for early intervention for at risk individuals. It is interesting that there was no evidence for any of the models including loneliness or positive affect. SNS use and loneliness have been studied in older samples, however less research has explored these associations with adolescents. Considering this developmental stage can feel very lonely if one does not fit in with their peers, and SNS can give access to groups that would not be accessible in person, it seemed an important aspect for evaluation. Furthermore, with past research highlighting the impact of FOMO on individual wellbeing, and the associations of SNS use with FOMO (Roberts & David, 2020), loneliness could play a vital part in explaining this relationship. It is possible that this relationship could be evidenced at a slightly older age, or through longitudinal research, however this particular study has been unable to find any evidence of any relationship. There was no evidence for the mediation model for including positive affect for either girls or boys and, as discussed above, this finding should be further explored in order to evaluate why there were differences between this sample and older samples. Finally, there was no moderation for activity type (active versus passive) found for this model. Previous research has explored the difference between active and passive SNS use and found different associations between the two usage types (Frison & Eggermont, 2016a; Wang et al., 2018). From this, there appeared to be a fundamental difference in how usage type affected an individual, or why individuals utilise the different activity styles. However, a great deal of this research has been conducted on an older sample (who did not grow up surrounded by social media), and therefore there may be differences in their usages, but also their underlying motives for usage. Alternatively, adolescents may be using SNS in both a passive and active way, and therefore measuring this at this age may not be as reliable due to them still navigating how they want to use SNS and what works best for them – a number of participants did tick both boxes or write 'both', suggesting this. Finally, it could also be that the self-reported measure was not able to differentiate

between usage type, and the one item measure may have been too simplistic for adolescents who may have had difficulty deciding which to choose. The measure was created by the researcher due to no favourable measures being found. As previous research has highlighted the differences between active and passive SNS use, it would be important for a reliable measure to be able to explore these types of usage.

Hypothesis 6: Higher levels of SNS engagement will predict lower psychosocial functioning, mediated by perceived social norms, and moderated by peer belonging and risky behaviours seen online. This relationship will be found for boys and girls.

The final hypothesis, that for both boys and girls, higher levels of SNS engagement will predict lower levels of psychosocial functioning, mediated by perceived social norm beliefs, and moderated by peer belonging and seen behaviours, was partially supported. Seen behaviour was not found to moderate the hypothesised path (between SNS engagement and social norms), and peer belonging was not found to moderate the relationship between social norms and psychosocial functioning. However, the mediation analysis revealed evidence for boys that the relationship between time online and functioning was partially mediated by social norm beliefs, and for girls the relationship between SNS activity and functioning was fully mediated by social norm beliefs. Furthermore, there was evidence that the relationship between time online and problem behaviour, and SNS activity and problem behaviour, was partially mediated by social norm beliefs for both boys and girls. Little research has explored how SNS use is associated with psychosocial functioning of any sort in adolescents, with most research focusing specifically on alcohol use, marijuana use, and sexting in older samples (Yonker et al., 2015). Research exploring alcohol and marijuana use in young adults found that peer norms were positively related to alcohol and marijuana use (Bergman et al., 2018b). It is interesting to see this association replicated in a younger sample and to extend this to explore peer norms as a mediator. Further longitudinal research could help to explore the direction of this relationship, and also explore this relationship in more detail, however, the findings may suggest that those reporting poorer psychosocial functioning (i.e., low levels of functioning or higher levels of problem behaviour) are using SNS to explore whether their behaviour is the norm, or perhaps those using SNS more are seeing skewed views of norms and therefore mimicking this. Neither belonging nor seen behaviours were found to moderate the hypothesised pathways. This was surprising because past research has suggested that these may be important factors in the relationship between SNS use and risky behaviour (Bergman et al., 2018b; Huang et al., 2014). However, between ages 11 – 15 years adolescents are gaining more autonomy over their decisions, therefore these relationships may be more apparent as adolescents get older.

The findings from this study have important implications. Adolescents as young as year 7 are using, on average, 4 SNS. This highlights a high level of engagement with these platforms at this age. Therefore, education around safely using these platforms needs to occur prior to secondary school. Furthermore, these findings highlight the detrimental associations between SNS use and body image, wellbeing, and psychosocial functioning from as young as 11 years. This highlights the need to create tailored interventions and educational materials to help individuals tackle appearance-based ideals, negative wellbeing, and psychosocial functioning, in a time of prolific SNS use. In order for these interventions and education programs to target the most appropriate facets, further longitudinal research with young adolescents needs to be conducted. An additional implication the findings from this study also suggests that more nuance than a dichotomous active versus passive usage split is needed when exploring how exactly the type of SNS usage is associated with body image, wellbeing, and psychosocial functioning.

Chapter 5 field contribution:

There were a number of important and novel findings in this study which have contributed to the literature within this field. Overall, there were more associations found within this study compared to the previous study. Although this could be due to the increased power from the larger sample, it could also be due to the cumulative effect of using SNS for longer, and thus stronger associations being found for older groups. This would be an important avenue to continue to explore. Little research has explored the association between SNS use and psychosocial functioning, especially with younger samples, therefore the finding that SNS engagement was associated with increased problem behaviour and lower functioning for both boys and girls is a particularly important addition to the field. This study also tested three models which brought together associations which have been found in older samples, and highlighted the relevance of these models in a younger sample. Finally, this chapter continued to explore measures aiming to capture different aspects of SNS use. There is little consensus on how to appropriately measure SNS use, and different facets of this. For this study, participants usage of a variety of SNS were measured in order to explore SNS use as a whole, rather than explore specific platforms. A great deal of research has explored individual platforms, however the findings from this study highlight the relevance of measuring a variety of platforms.

Limitations

There were a number of limitations with the research study. First, as mentioned in the discussion of the results, although this cross-sectional study has highlighted associations found in data, it is unable to explore the causal direction of the findings. This area of research is gravely lacking in longitudinal research which can aim to evaluate the direction of the reported associations. Without longitudinal research, interventions cannot aim to successfully target the specific causes of body image concerns, poor wellbeing or of risky behaviour.

Due to the large number of measures included in this study, the questionnaire was long, taking on average around 40 minutes for adolescents to complete. Although this was done in class-time, a number of adolescents still appeared rather fatigued towards the end of the study. Testing each model pathway on a different sample could have reduced participant burden, however this would have required a great deal more participants to take part in the study. There are a number of problems associated with participant fatigue, for example participants may view research studies as daunting in future. Alternatively, if participants are fatigued, they may not read questions fully and may put down inaccurate answers. In order to help avoid this, all instructions were kept as brief as possible, and data was screened extensively to ensure any likely false answers were removed before the analysis commenced.

The research conducted included year group as a covariate in the analysis, which provides parameter estimates and p-values to suggest whether this was important at predicting the outcome measures. However, these have not been further interpreted (as this was not the main focus of the hypotheses). Future research could seek to explore this relationship further by running these models for each age group. Considering risky behaviours are known to peak between 14 – 15 years old (van Lier et al., 2009), and the impact of body changes from puberty on body image (Williams & Currie, 2000), these relationships would be particularly interesting to explore by year group.

Risky behaviours are notoriously difficult to measure through self-reporting due to social desirability bias, especially when completed in schools. Past research has highlighted that it is likely that risky behaviours are underreported in research (Branley & Covey, 2017; Davis et al., 2010). All possible measures were taken to ensure this was not the case; for example, participants were reassured there was no right or wrong answer and neither parents nor teachers would see any answers, although it is still likely that these rates were underreported. However, if this is the case, any associations are likely to be stronger than reported, and therefore the current findings are likely to be conservative.

Another limitation of this study relates to the gender split used throughout the analysis. Most existing research is conducted with a dichotomous gender split due to the different experiences of males and females, similarly, the current study looked at gender with a binary split. Due to the small number of participants who identified outside of the gender binary these participants were removed from the analysis as there was not enough power to evaluate any experiences in these groups. However, more work needs to be put in to either conduct qualitative research with these individuals, or recruit a large enough sample to conduct quantitative analysis to allow the experiences of those identifying outside of the gender binary to be heard, and to understand any unique experiences of these groups.

During and after the data collection, the researcher overheard participants discussing the study and their worries of what this could lead to in relation to future SNS use. Although it was stated a number of times that no parents or teachers will see the students' answers, and that the aim of the study is not to stop people using SNS (in fact the researcher specified during the instructions that they themselves used SNS to highlight that this was not an attempt to gain data to shut SNS down), adolescents still seemed concerned over this. This therefore could have led to the underreporting of a number of behavioural measures by adolescents. Although this could be problematic, it means it is likely that any associations are stronger than reported and therefore unlikely to impact the validity of the findings.

Due to the large number of variables being tested in this study, there was a lot of analyses run. In order to cover each stage of the analysis process, some sections (e.g., moderations) were moved to an appendix and numbers were not reported in the text. The researcher, along with the supervisory team, discussed numerous ways to try and present the results in a concise way and this seemed the most appropriate. However, this did mean that any analysis that did not reach the predefined cut-off for significance was not reported in the text. In order to try and overcome this, all analysis was reported in the tables and these were referenced within the text.

Conclusion

The present data adds to current literature on adolescent SNS use and the associations with body image, wellbeing, and psychosocial functioning. Past research is either dated, or focuses on older samples, therefore new research looking at how adolescents use SNS, and how this is associated to their self-reported body image, wellbeing, and psychosocial functioning, was needed. This study also highlights possible mediators and moderators for these associations. The current

findings can be useful in order to help direct longitudinal research and highlight areas which need further exploration. These findings suggested that SNS use is associated to body image concerns, wellbeing measures, and increased psychosocial functioning in both boys and girls aged 11 – 15 years, and highlights the underlying mediators for these relationships. Future longitudinal research will help to explore the direction of these associations so that interventions may be able to target the most impactful underlying cause.

Chapter 6: Study 3 – A qualitative exploration of the impact of the COVID-19 pandemic on adolescent wellbeing and social media use

This study was developed to explore how a significant environmental change may influence adolescent experiences of SNS and wellbeing. This study expanded on the previous two studies by more deeply exploring adolescents' own perceptions and experiences of SNS and how this may influence aspects of their life. In addition to this, the study also expanded on the previous studies by exploring these experiences within a changing context (during the COVID-19 pandemic). The chapter provides a brief introduction to the existing research on this topic, as well as the study methods, results, and discussion. This study resulted in three conference presentations: Appearance Matters conference (15/07/2021), BPS Developmental Section Conference (17/09/2021), PsyPag conference (30/07/2021), as well as one podcast episode (Appearance Matters: the podcast! Episode 89) and is currently under review for publication (Meechem et al., under review).

Introduction

The COVID-19 pandemic, impacted nearly every nation (Feehan & Apostolopoulos, 2021), led to most countries implementing some form of lockdown measures (i.e., restrictions on opening of establishments and socialising) and many international borders closing. The effect this could have on the population was large, however, of particular importance was how adolescents were feeling, and coping during COVID-19. At a time where they would normally be testing the boundaries and becoming more independent, they were finding themselves being kept indoors and relying on online communications to stay in contact with friends and family. The full effect that the lockdown had on adolescents' online use is still unknown, however, with schools closed and most lessons moving online, screen time was likely to have dramatically increased. This was confirmed by research conducted by Cauberghe et al., (2021) which found that 76% of adolescents reported increases in SNS use during the COVID-19 lockdown compared to before. It is important that we investigate this further considering research has shown that SNS use is associated with a number of mental health risk factors, for example body image concerns (Holland & Tiggemann, 2016), and loneliness (Cookingham & Ryan, 2015), and the prevalence of SNS use in adolescents is very high (Barry et al., 2017; Ofcom, 2017).

COVID-19 Research

Research conducted to explore mental health during the COVID-19 pandemic has started to emerge. Research conducted with adults from Wuhan, China during the current COVID-19 pandemic demonstrated that citizens of Wuhan had a higher level of depression and anxiety during lockdown compared to the rest of China (Gao et al., 2020). Building on this, online questionnaires revealed that both close contact with individuals who had contracted COVID-19, and two hours or more looking at COVID-19 related news on social media was associated with increases in probable anxiety and depression for Wuhan residents. However, perceived social support was found to mitigate this relationship (Ni et al., 2020).

Furthermore, longitudinal research conducted with adolescents, as part of the 'Risks to Adolescent Wellbeing Project' in America found that adolescents experienced significant increases in depressive symptoms and anxiety, and a significant decrease in life satisfaction, two months after government restrictions were introduced, compared to the 12 months leading up to the COVID-19 restrictions. These findings were particularly pronounced among girls (Magson et al., 2021). Another longitudinal study, conducted with university students in Canada, evaluated how individuals with and without mental health concerns in May 2019 (pre COVID-19 pandemic) compared when completing a questionnaire again in May 2020 (during COVID-19 pandemic). It was found that, in line with research conducted with adults (Hamza et al., 2020), those without pre-existing mental health conditions showed a decline in mental health (Magson et al., 2021). However, research conducted with adults has also found that those with a pre-existing mental health condition showed improved or similar mental health during the pandemic compared to their counterparts (Hamza et al., 2020), highlighting the complicated relationship and the need to evaluate this further with a younger sample.

COVID-19 and SNS

Research with a sample of Chinese University students found that a higher level of SNS use was associated with poorer mental health during COVID-19 (Zhao & Zhou, 2020). The researchers evaluated levels of COVID-19 impact on Chinese citizens (for example those who experienced Wuhan lockdown, or experienced death of a loved one). The findings suggested that higher levels of SNS use were associated with poorer mental health, additionally, greater exposure to disaster news via SNS were associated with greater depression for participants with high (but not low) levels of COVID-19 impact (Zhao & Zhou, 2020). Building on this, Zhong et al., (2021) conducted research with Wuhan residents and found that although excessive use of SNS was associated with higher levels of depression and secondary trauma (Zhong et al., 2021), SNS use was also associated with increased

informational, emotional and peer support, highlighting the likely complex relationships between SNS use and wellbeing during the pandemic (Zhong et al., 2021). Indeed, past research has highlighted that a key motivation for SNS usage by adolescents is connection (Rodgers, Mclean, et al., 2020). Considering this, and with each country managing the pandemic differently, it is important to explore these experiences in other countries, as well as in a younger sample. Although there has been comparatively less research evaluating adolescents' experiences of the COVID-19 pandemic compared to adults, one longitudinal study conducted with Australian adolescents (aged 13 – 16 years) sought to evaluate their experiences. This study highlighted that adolescents experienced increases in depressive and anxiety symptoms, and a significant decrease in life satisfaction from Time 1 (pre-COVID-19 pandemic) to Time 2 (during COVID-19 pandemic), with this effect being particularly pronounced for girls. Furthermore, COVID-19 related worries, online learning difficulties, and increased conflict with parents were found to moderate this relationship, and adherence to stay-at-home orders and feeling socially connected during the COVID-19 lockdown protected against poor mental health (Magson et al., 2021). This study highlighted the negative impact that the pandemic may have on adolescents, and some of the ways that these effects may be reduced.

More broadly, research with individuals in isolation has shown the negative effects this can have, for example depression (Gao et al., 2020; Loades et al., 2020), low self-esteem (Hall-Lande et al., 2007), and anxiety (Loades et al., 2020). However, little research has evaluated the interaction between lockdown and SNS. It was thought that individuals would have spent more time on SNS, thus the negative effects of SNS, for example poor body image and decreased self-esteem could be heightened. Conversely, some research has demonstrated that SNS can be used in a positive way and can help individuals cope with illness (Primack et al., 2017) and isolation (Coddington & Mountz, 2014) by providing virtual support networks when one is unable to physically access these. Thus, it is unclear how the interaction of isolation due to a pandemic along with possible increased SNS use could influence adolescent wellbeing. With communication over SNS being the main way individuals stay in touch with friends and family outside of their household, it is important to evaluate if and how adolescents changed how they used these platforms, and how isolation and SNS use interact and the effect this has on adolescent mental health. A report from Ofcom highlighted that SNS users spent on average 18 minutes longer on SNS platforms each day in April 2020 compared to January 2020 (Ofcom, 2020b).

Study three was designed to consider how the 2020 UK lockdown restrictions due to the COVID-19 pandemic affected adolescent SNS use, and their wellbeing. As there is very little research

around this topic, it was decided that a qualitative approach would be most appropriate to allow the participants' voices to be heard. Therefore, fully-structured online surveys, as well as one-to-one virtual interviews were utilised.

Research question and aims

The extant limited research on the effects of isolation have shown the widespread effects it can have on adolescents, from loneliness (Vines et al., 2018) to suicide attempts (Hall-Lande et al., 2007). Additionally, research evaluating how adolescents use SNS has demonstrated its relationship to a number of positive and negative outcomes, for example from providing a source of support (Drouin et al., 2018), to increased body image concerns (Fardouly & Vartanian, 2016). A qualitative method was utilised in order to understand how these factors together affect adolescents. Qualitative research is able to offer a richness and complexity that can't be understood through quantitative analysis by allowing a deeper insight into the experiences of the participant (Braun & Clarke, 2013). Given adolescence is a time when individuals are particularly reliant on peers, it is possible that SNS may reduce the perception of being socially isolated during a pandemic, and therefore could be a very important tool during isolation. This study aims to understand how adolescents felt as a result of the pandemic, and the role of SNS in coping with this challenging time.

The study aimed to explore the effect of a national lockdown on adolescent wellbeing, in a time where SNS could be used to help connect with friends and family, but could also be used to increase comparisons from others and show negative messages. The study was conducted through both fully-structured online surveys , and virtual interviews with students aged 12 – 15 years old.

This study was guided by the following research question:

Research Question: How did the COVID-19 pandemic influence adolescent experiences, as well as their SNS use?

This led to the development of two broad aims, to:

1. Explore the impact of lockdown on adolescent wellbeing.
2. Explore the influence of SNS use on adolescent wellbeing during lockdown.

Method

The current study employed a qualitative approach to investigate how SNS use might change during a time of social isolation, and how this may influence feelings and experiences of adolescents aged 12 – 15 years. Fully-structured online surveys were employed between June – July 2020, followed by semi-structured one-to-one virtual interviews (which took place from September – October 2020) to add further depth to the data. The qualitative analysis approach used was thematic analysis (Braun & Clarke, 2006b).

Research ethics

The study received full ethical approval from the ethics committee at the University of the West of England on 19th June 2020 (REC REF No: HAS.20.05.181; Appendix C).

Recruitment

A non-probability sampling approach was employed, using volunteer and convenience sampling. Two schools in the south-west of England were invited to take part in the fully-structured online survey, and one school agreed to take part. Additionally, the researcher employed any contacts they had who were willing to take part in this stage of the study. Following this, an advertisement for the one-to-one virtual interview went out through the university communications to all staff members, asking if they would be happy for their child to take part, as well as the researcher contacting any additional contacts they had. Parents who responded to the advert for the one-to-one virtual interview were sent further information for themselves, and for their child, along with a consent form if both were happy for the child to take part. See timeline below for timing for recruitment and data collection for this study:

Figure 27. *Timeline of recruitment and data collection*
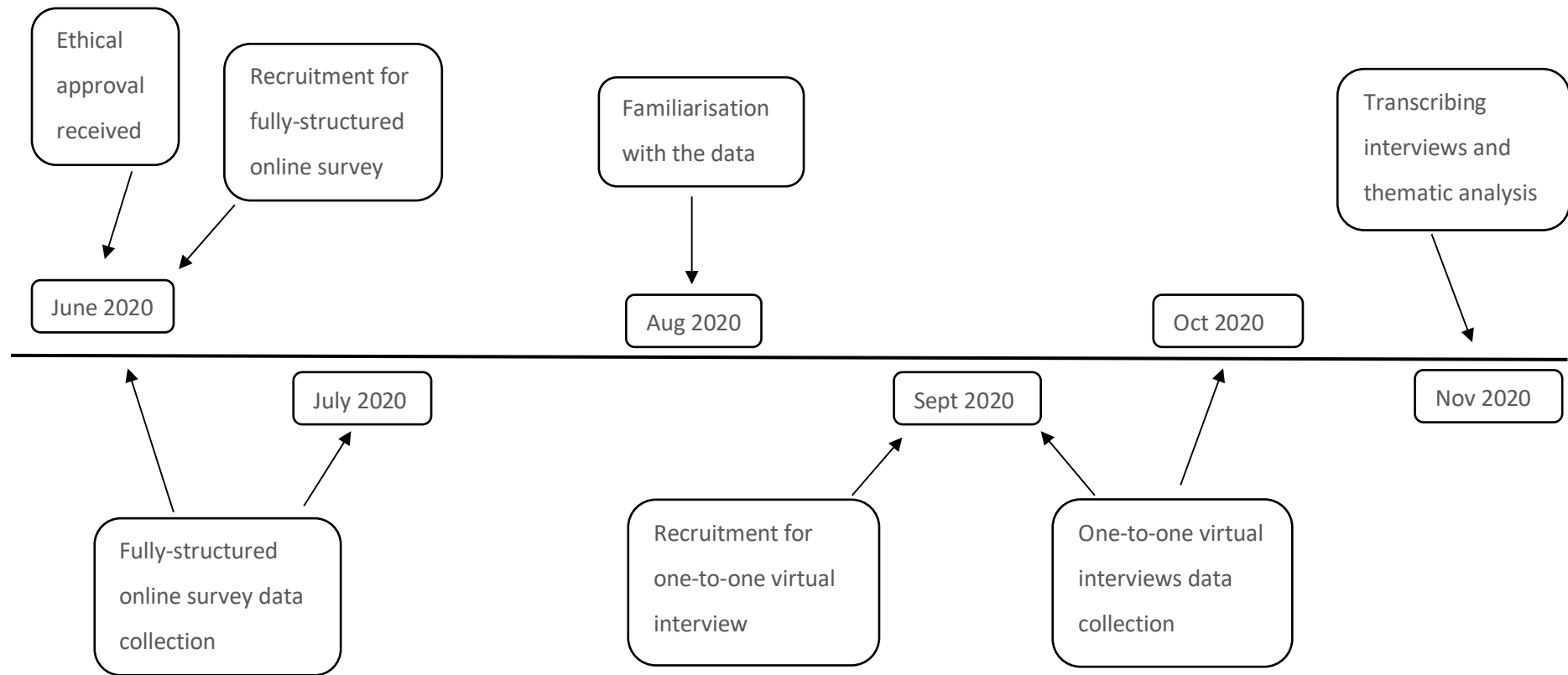
Participants

Adolescents aged between 12 – 15 years with an ability to understand English, and with parental informed consent were included in the study. No special arrangements were made. This age group (which corresponds with Years 8 – 10 in schools in England) was chosen as risky health behaviours have been shown to peak between 14 and 15 years (van Lier et al., 2009), and half of all mental health problems are established by the age of 14 (Taskforce, 2017). Both male and female participants were included, as it has been shown that social networking sites and mental health disorders can affect males and females in different ways, therefore it was important to evaluate the experiences of both genders.

As the study was qualitative, using thematic analysis, a total of 6 – 10 one-to-one virtual interview participants and 10 – 50 online fully-structured online survey participants were required. These sample sizes were in line with Braun and Clarke's recommendations for qualitative analysis sample size for small thematic analysis studies (Braun & Clarke, 2013). Completion of the fully-structured online survey occurred between June – July 2020, with a total of 26 participants taking part (lockdown state: schools were closed, along with a large proportion of the economy, however, the hospitality sector was starting to re-open). The semi-structured one-to-one virtual interview consisted of six participants who took part between September – October 2020 (lockdown state: schools were open, hospitality sector was open, discussions of retightening of restrictions had started).

Fully-structured online surveys and semi-structured one-to-one virtual interviews

The online interview comprised of fully-structured questions created to explore the experiences of adolescents during lockdown, and how they found using SNS during COVID-19. The questions included were guided by past research which has suggested that SNS can facilitate support when individuals feel isolated (Coddington & Mountz, 2014). Given schools only had a couple of weeks left of the summer term by the time ethical approval had been received, and the impact of COVID-19 the following term was unknown, the researcher decided there was not enough time to conduct thorough pilot testing. One adolescent (female, 17 years) known to the researcher, agreed to read through the interview and offered re-wording suggestions which were taken on board before the study commenced.

The semi-structured one-to-one virtual interviews followed the same script as the online fully-structured online survey, but allowed further probing and exploration of areas of interest, for

example specific experiences the participant alluded to. The two techniques were used to complement each other, in order to allow the strength of both techniques to be utilised. The fully-structured online survey was conducted first. This technique for qualitative data collection was chosen as it was understood that adolescents were experiencing a time of extreme turmoil and it was thought that interviews with extensive probing could risk causing distress to participants. Previous research has found that participants perceive a greater sense of anonymity during fully-structured online surveys (Braun et al., 2020), compared to interviews, therefore this method was selected. The researcher wanted to reduce participant distress as much as possible and therefore thought surveys would allow individuals to answer as much, or as little, as they wanted without feeling any pressure. This technique was also able to achieve a larger sample size in a short space of time (Braun et al., 2020), which was important with schools closed and the end of term time fast approaching. However, semi-structured one-to-one virtual interviews were later employed in order to add more in-depth responses, with a smaller sample. This enabled the researcher to gain a richer level of data, allowed additional probing in areas of interest, and also allowed a different perspective, at a time when lockdown restrictions were not so new and shocking. However, as a number of COVID-19 restrictions were still in place both inside and outside of school (e.g., social distancing, mask wearing, and students remaining in the same classrooms throughout the day), adolescents were still experiencing behavioural consequences associated with the pandemic.

Procedure

Each participant only took part in one type of interview. In all cases, parents responded to an advert and were sent an online opt-in consent form (hosted on Qualtrics) via email. Once parental informed opt-in consent was received, either a link to the online survey website Qualtrics (which is GDPR compliant) was sent to parents to pass on to their child, or parents were recontacted to arrange a time and platform to interview the adolescent. Informed assent was gained from the adolescent before the interview started, and participants were also given the chance to ask any questions before the interview commenced. The exclusion criteria for participation in the study was a lack of spoken or written English. Within the fully-structured online surveys, no identifiable information was taken, therefore all answers were completely anonymous. Data collection occurred online without a teacher or researcher present due to lockdown constraints. Similarly, the one-to-one virtual interviews also took part at home, with an interview time and platform arranged with the parents. Participants taking part in the one-to-one virtual interviews were offered a choice of interview method; telephone or video call platform (Microsoft Teams or Zoom were suggested).

Those that opted for video call were told prior to the interview that they were welcome to have their video on or off, whichever was most comfortable to them (see table 78 for breakdown of this). Participants taking part in the one-to-one virtual interview were reimbursed with a £10 Amazon voucher as a thank you for their time. At the start of both forms of interview demographic questions were asked which covered participants age, gender and ethnicity. The participant self-reported each of these.

Fully-structured and semi-structured (see appendix C) interviews were conducted in line with the study aims. Participants were asked if they used any SNS, and if so which ones, and were then asked about their experience of lockdown, how they have felt, and how they used SNS during this time. Adolescents that took part in the one-to-one virtual interview were asked to reflect on the time when schools were closed.

Analysis

The chosen form of analysis for this study was thematic analysis. This form of qualitative analysis was chosen because it allows exploration of the experiences, opinions and thoughts of the individuals taking part in the study. This was chosen over other forms of qualitative analysis, for example, content analysis as it allows a richer interpretation of the interviews. Thematic analysis focuses on constructing themes that depict patterns of experiences across the participants. This is done by creating transcriptions of the interviews, coding the transcriptions and creating themes from the codes (Braun et al., 2016). The table below demonstrates the six stages of thematic analysis that were followed during this study.

Table 78

Six stages of thematic analysis (Braun et al., 2016)

Stage	Process	Description
1	Familiarisation with the data	This is the process of immersing oneself in the data. This can be through reading and re-reading, or listening and re-listening to the interviews, and making notes. The aim of this stage to is feel one 'knows' the data and to engage with the data.
2	Coding	Identifying and labelling interesting aspects of the data which are relevant to your research question.

3	Theme development	This stage involves organising codes and coding the data into possible themes.
4	Theme refinement	The stage is focused on reviewing and revising the possible themes. This involves working with both the codes and the whole dataset. The aim here is to ensure the codes fit well with the data.
5	Theme naming	This related to defining the themes. This is an ongoing process to refine each theme. Here the depth and detail of the analysis is being built. Additionally, creation of theme names occurs here, specifically creating names that capture the essence of the theme.
6	Writing up	This involves gathering and editing the analytic writing which was created in the previous stages, situating this within the scope of the study.

An inductive approach to thematic analysis was taken, this allowed the coding process to occur in a data driven way, i.e., without trying to fit it to preconceived themes (Braun & Clarke, 2006b). The one-to-one virtual interviews were transcribed verbatim, and no transcribing was needed for the fully-structured online surveys as all answers had already been written by the participant. The fully-structured online surveys required a great deal of familiarisation with the data before analysis could occur as transcription did not take place. Following familiarisation with the data, data analysis was carried out inductively. After coding was complete, the themes and subthemes were discussed with supervisors. Thematic maps were created to visualise the themes and show the development of themes. A number of discussions with other members of the Centre for Appearance Research were also had, in order to develop the narrative of the themes and subthemes and ensure the story reflected the data. The three figures below show different stages of theme development and refinement (thematic maps 1,3,7). The full process can be found in appendix C.

Figure 28. *Thematic map stage 1*

Surprise

Difficulty remembering lockdown

Positive appearance

World changes

Negative appearance

Rule breaking

Changing location of posts

Talking to different people

Appearance

Lockdown has been bad

Changes throughout lockdown

I don't compare myself

Tried new things

Plans affected

School problems

Different levels of friendships

Exploring experiences of lockdown during adolescents

SNS importance

Sense of unity

Entertainment

Distance

Social media helped

Contact

SNS increase

Having space

Fear

SNS changes

Own schedule

Positive experience of lockdown

Mood change

Hasn't affected me too much

No change

Lack of routine

Freedom

Lack of motivation

Figure 29. *Thematic map stage 3*
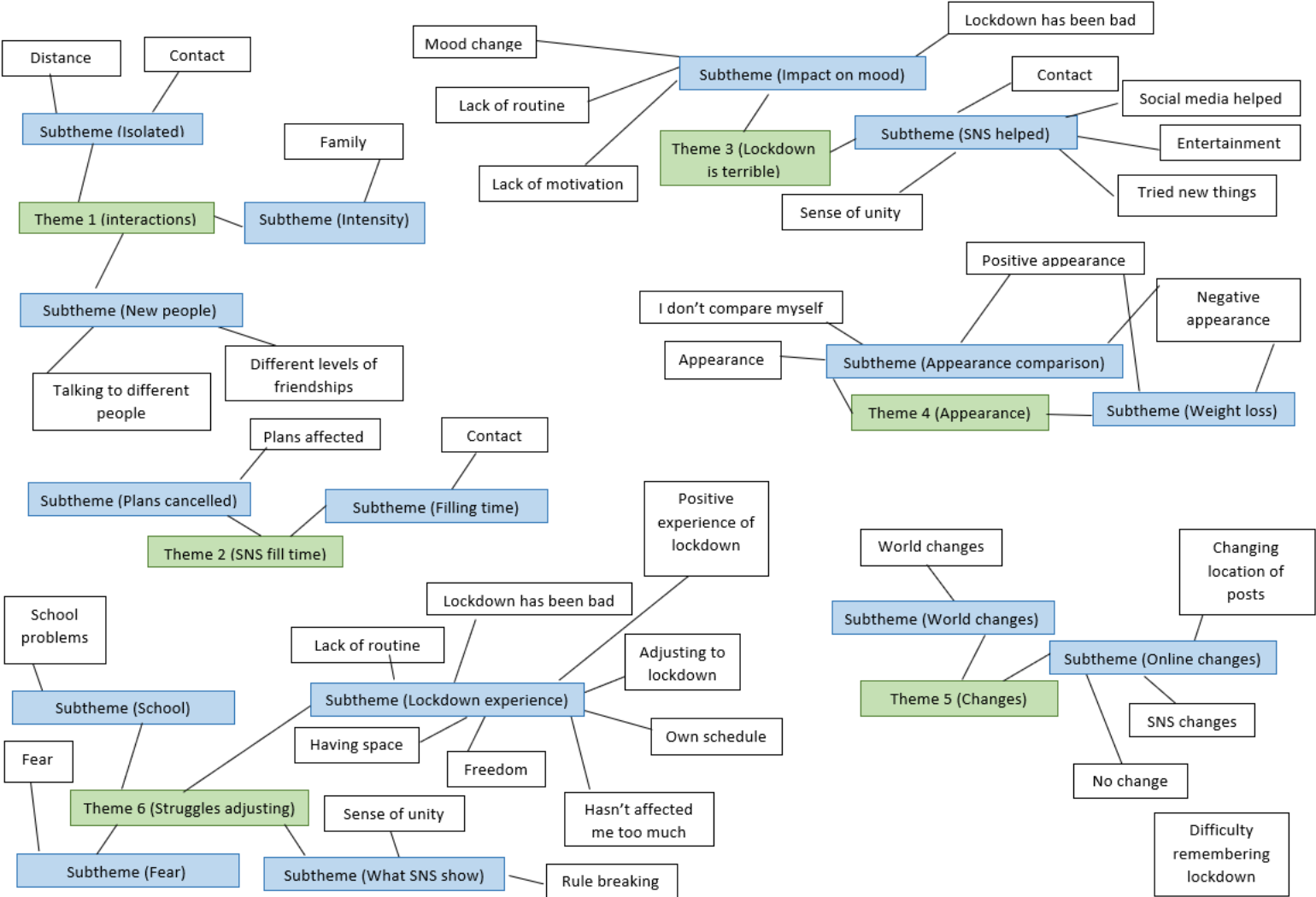
Figure 30. *Thematic map stage 7*
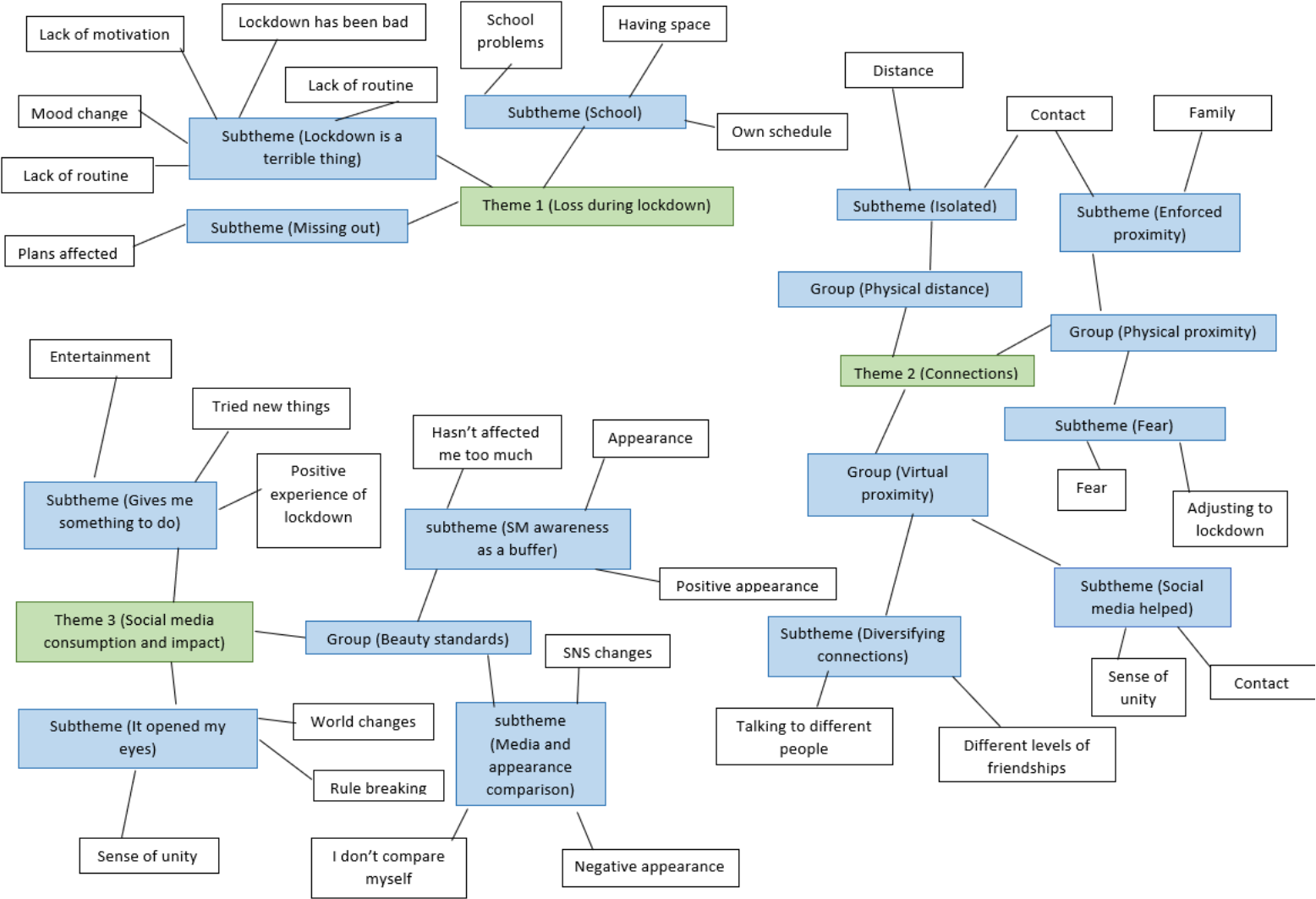
Results

Participant demographics

A total of 32 participants took part in the study: 26 in the fully-structured online surveys, and six in the one-to-one virtual interviews. Details of the demographics of the sample can be seen in table 79 below.

Table 79

Sample self-reported demographics: Gender, Age, and Ethnicity

Individual-level demographic	ALL (N=32)	Fully-structured online survey N=26	One-to-one virtual interview N=6
Gender			
Female	14 (43.7%)	11	3
Male	17 (53.1%)	14	3
Non-binary	1 (3.1%)	1	0
Age			
12	3 (9.4%)	1	2
13	15 (46.9%)	14	1
14	12 (37.5%)	9	3
15	2 (6.3%)	2	0
Ethnicity			
Black African	1 (3.1%)	1	0
White British	30 (93.8%)	25	5
White European	1 (3.1%)	0	1

Thirty participants reported using SNS, with one participant stating they didn't use any SNS (3.1%), and one left this question blank (3.1%). Participants reported that they used on average 2.93 SNS. Table 80 below shows the frequency of use for each SNS, and table 81 shows the mode of interview and the SNS used by each participant.

Table 80

Frequency of SNS use (N = 32)

	Frequency	Percentage[1]
Instagram	25	(88.1)
Snapchat	20	(64.5)
TikTok	19	(61.3)
WhatsApp	9	(29.0)
Facebook	4	(12.9)
Twitter	4	(12.9)
YouTube	3	(9.7)
Band	2	(6.5)
Houseparty	2	(6.5)
None	1	(3.2)
Missing	1	

[1]Participants were able to select more than one SNS, therefore percentages do not equal 100

Table 81

Participant label and information

Participant number	Gender	Age	Mode of interview	SNS used
Participant 1	Male	12	Survey	BLANK
Participant 2	Female	14	Survey	TikTok
Participant 3	Male	13	Survey	Instagram, Snapchat, TikTok
Participant 4	Male	13	Survey	Instagram
Participant 5	Nonbinary	14	Survey	WhatsApp
Participant 6	Male	13	Survey	Instagram, Facebook, WhatsApp
Participant 7	Male	14	Survey	Snapchat, TikTok, WhatsApp
Participant 8	Female	14	Survey	Band, Instagram, WhatApp, YouTube
Participant 9	Male	13	Survey	Instagram, Snapchat, TikTok
Participant 10	Male	14	Survey	Band, Whatsapp
Participant 11	Female	13	Survey	Instagram, Snpachat
Participant 12	Female	13	Survey	Snapchat, TikTok
Participant 13	Female	13	Survey	Facebook, Instagram, Snapchat, TikTok
Participant 14	Male	13	Survey	Instagram, Snapchat, TikTok
Participant 15	Male	14	Survey	Houseparty, Instagram, WhatsApp,
Participant 16	Female	13	Survey	Instagram, Snapchat, TikTok, Twitter
Participant 17	Female	13	Survey	Instagram, Snapchat TikTok,
Participant 18	Male	13	Survey	Instagram

Participant 19	Male	13	Survey	Facebook, Instagram, TikTok, Twitter, Snapchat
Participant 20	Female	15	Survey	Instagram, Snapchat, TikTok
Participant 21	Female	15	Survey	Instagram, Snapchat, TikTok, WhatsApp
Participant 22	Female	14	Survey	Instagram, Snapchat, TikTok
Participant 23	Female	13	Survey	Instagram, Snapchat, TikTok
Participant 24	Male	14	Survey	Instagram Snapchat, Twitter,
Participant 25	Male	14	Survey	Facebook, Instagram
Participant 26	Male	13	Survey	None
Participant 27	Male	12	Interview – phone call	Instagram, Snapchat, TikTok
Participant 28	Female	13	Interview – phone call	Houseparty, Instagram Snapchat, TikTok, Youtube,
Participant 29	Male	12	Interview – Teams video call – interviewer and participant video on	Instagram, TikTok, WhatsApp
Participant 30	Female	14	Interview – phone call	Instagram, Snapchat, TikTok
Participant 31	Female	14	Interview – phone call	Instagram, Snapchat, TikTok, Twitter
Participant 32	Male	14	Interview – Teams video call, interviewer video on, participant video off	Instagram, Snapchat, YouTube, WhatsApp

Three main themes were identified during the thematic analysis. Overall, the thematic analysis explored how adolescents coped during the COVID-19 pandemic lockdown, and what role SNS played in their coping, with the first two themes reflecting experiences of lockdown, and the third theme reflecting the impact of SNS during lockdown. The first theme was 'Loss during lockdown' with subthemes 'Missing out', 'Lockdown is a terrible thing', and 'School support'. Broadly, this theme covered their general experiences of lockdown. The second theme 'Connections' reflected the impact that lockdown had on a variety of connections and how unbalanced this became. The subthemes were 'Physical distance', 'Physical proximity', and 'Virtual proximity'. The final theme was 'Social media: content and consequences' which was comprised of three subthemes 'Beauty standards', 'Gives me something to do', and 'It opened [my] eyes'. This theme covered the online content that adolescents viewed, and how this influenced them. Although throughout this thesis the term 'SNS' has been used, the remainder of this chapter will use the term 'social media' instead. This terminology reflects the chosen phrasing by adolescents, therefore a decision was made to use this language within in the themes to reflect the adolescents' voices.

Table 82

Summary of themes and subthemes

Theme	Grouping	Subtheme
1. Loss during lockdown		1.1 Missing out
		1.2 "Lockdown is a terrible thing"
		1.3 School support
2. Connections	Physical distance	2.1 Isolated
	Physical proximity	2.2 Enforced proximity
		2.3 Fear of future connections
	Virtual proximity	2.4 Diversifying connections
		2.5 "Social media helped"
3. Social media: content and consequence	"Beauty standards"	3.1 Social media and appearance comparison
		3.2 Social media (awareness) as a buffer
		3.3 "Gives me something to do"
		3.4 "It opened [my] eyes

Theme 1: Loss during lockdown

This theme reflects the frequent references to feelings of loss and negative experiences of lockdown. This is explored in the three subthemes 'Missing out', 'Lockdown is a terrible thing', and 'School support'. This theme shows the wide range of ways that lockdown impacted on adolescent mental health. In general, adolescents seemed to experience an element of loss and mourning over how their life used to be.

Missing out. The first subtheme related to participants' reflections of events and hobbies that were cancelled or changed due to lockdown, and how this made adolescents feel. Many participants voiced frustration and anger at these changes, and at what they felt they were missing out on. For many, this was the most tangible impact of the COVID-19 pandemic, especially in the early stages:

> *"I do dance I think four days a week, for quite a few hours after school, so it's kinda a big part of -what- my life I guess, so it was so weird when it- because at first it stopped for like a few weeks, and then they moved it online once they'd figured out, figured it all out. Umm, but um, I think it was just quite restricting when you can't do a lot of things um because of like space and safety and things but err I think it made me kind of realise like how umm important like getting out and um exercising things really are in like changing your mood I guess"* (participant 30, female, 14, interview).

Clearly, the impact of hobbies being cancelled was significant. To this participant, dance used to take up the majority of her evenings and this was gone suddenly, with it slowing moving online later. Even when moved online she reflected that this still wasn't what it used to be, due to the additional restrictions still in place. Participants highlighted how they realised how much their hobbies helped their mood, suggesting that they struggled during the time they were unable to take part in their hobbies. This idea is supported by past research which has suggested that hobby engagement has important social benefits (Steinberg & Simon, 2019) and mental health benefits (Swann et al., 2018) for adolescents. Some participants noted feeling lost due to the disruption of their normal regular activities:

> *"I do karate every Saturday. So that was stopped, but we restarted it like in the late weeks … Well it kind of disjointed my perception of the week, because usually I'm used to that early morning waking up early going to karate. But um, I just didn't have that so I was so confused*

of which day it was, like despite me going on my phone every couple of minutes, having the
literal date in front of me, I still didn't know whether it was Monday or Wednesday"
(participant 32, male, 14, interview).

This quote reiterates how a previously regular hobby being cancelled due to lockdown affected their life. Participants reflected how their hobbies were an important part of their week, like a compass, helping them to gain direction. Without this, they felt disjointed and confused. This highlights how integral to adolescents lives these hobbies are. This is reflected in research which has highlighted the importance of adolescents' engagement in activities for their emotional wellbeing (Eccles et al., 1996), as well as feelings of belonging (Miserandino, 1996) and academic motivation (Ryan, 2000). However, it was not just hobbies that individuals were missing out on, participants disclosed how plans for socialising were also impacted.

"I have felt angry at times and very annoyed as I can't do the things I want with friends"
(participant 13, female, 13, survey).

"...makes me think about what I could be doing if I was allowed to go out and see my friends.
I made all these plans for meeting up with friends, having sleep overs and its rubbish I can't
do anything anymore" (participant 7, male, 14, survey).

These quotes highlight the distress that participants felt in relation to missing out. Participants felt upset and anger over not being able to see their friends, something which is an important aspect of life as an adolescent (Chaplin & John, 2010). Participants seemed to be thinking about how they would be spending their time if lockdown restrictions were not in place, and upset that they are unable to do these. It may be particularly difficult for adolescents, with initial evidence suggesting that there was no perceived risk to adolescents as COVID-19 infections were nearly always asymptomatic or mild for adolescents (Channel 4, 2020; Forbes, 2020; Guardian, 2020), instead the risk was of them carrying the infection to other more vulnerable individuals. Therefore, any restrictions to adolescent life might be perceived as a sacrifice for the health of the older population, something that might be difficult for some adolescents to appreciate given their stage of cognitive development.

FOMO has been shown to have higher rates for adolescents compared to older populations (Rozgonjuk et al., 2021). FOMO has been heavily researched in relation to social media and how this can mediate the relationship between social media use and negative wellbeing (Reer et al., 2019),

however research has not had the opportunity to explore how people feel when the global population is missing out. Quotes from participants highlighted that adolescents may still be experiencing FOMO thoughts even when individuals around the globe are all missing out. In some cases, adolescents were missing out on events which were time limited, so although everyone was missing out on these events at this time, they were aware that these are experiences other people have had, or will have:

> *"I also feel like I am missing out on time with my friends and school activities such as school sports days and house sports … which is sad because I love sports day and it is my last one"* (participant 21, female, 15, survey).

The sadness about missing out on one's last sports day is an example of the numerous rites of passages adolescents experience over this age which were missed out on. These are important memories and experiences that these adolescents will not get back.

"Lockdown is a terrible thing". This subtheme related to the personal burden that individuals felt from lockdown, and the wider impact this had on them. In general, most participants noted feeling "angry or sad" (participant 17, female, 13, survey) and this was a burden that many adolescents highlighted. Adolescents mentioned the difficulty adjusting and how different this experience was:

> *"Umm, I think I was very -umm, I think probably hard at first because it was obviously not very normal and from going from like seeing my friends everyday at school to not really being able to see them at all is kind of very weird as such but yeah like just being like just being at home especially in like the confined space all like not going out very much is very different"* (participant 30, female, 14, interview).

Participants reflected on this difficult time, and how it was strange that they were unable to see friends they used to see regularly, and how they had far less freedom than they were used to. The survey responses were able to highlight the difficult experiences that adolescents were experiencing in a particularly emotive way:

> *"It's horrible. Hate it. Most days I struggle, I feel depressed and lonely"* (participant 7, male, 14, survey).

Although succinct, this quote encompasses the turmoil that individuals were experiencing during COVID-19. This participant highlighted that most days they struggle, showing how lockdown is affecting their daily life. They then go on to explain how they are struggling, which highlights some of the ways lockdown is affecting adolescents' mental health. These sentiments reflect similar findings with adults, which has suggested that adults reported higher levels of depression, stress, and anxiety than population norms during the COVID-19 pandemic (Jia et al., 2020). Furthermore, adolescents experienced feeling that the current moment was all consuming and looking beyond this time and to the future could be difficult:

"no positives, it's ruined my life" (participant 7, male, 14, survey).

Although an adult may be able to see this as a difficult time which will pass, for adolescents the current time is what they know, so seeing past the immediacy of the situation, to when life will return to normal in the future, is often harder to think about. Furthermore, adolescents frequently expressed how this time was making them feel:

"I feel sad" (participant 15, male, 14, survey).

"It's weird" (participant 5, nonbinary, 14, survey).

"Lockdown is a terrible thing" (participant 6, male, 13, survey).

Lockdown was a difficult time for adolescents as they feel sad and had difficulty adjusting to it, but also the short and to the point responses suggest how exasperated they are with this time. This is supported in the following quotes:

"I usually posted drawings but over lockdown I have lost the motivation to draw therefore I don't post much" (participant 17, female, 13, survey).

"The lockdown has made me feel less lively and motivated to do things" (participant 25, male, 14, survey).

These quotes highlighted the impact this time had on adolescent motivation levels, suggesting apathy towards current life. Participants expressed a loss in motivation, even towards hobbies which they would normally enjoy. This builds on previous findings which reported that Italian and Portuguese parents perceived a reduction in their children's motivation levels for

extracurricular activities during COVID-19 (Zaccoletti et al., 2020). Not only does this show what a difficult time it was for adolescents, but also the importance of the stimulation of normal life, which they were lacking during the pandemic.

School support. The next subtheme related to how the school closures and distanced learning affected adolescents and their school experience. Throughout much of lockdown, teaching moved online for all students except those whose parents were key workers, or high-risk students. Participants were not asked specifically whether they went into school during the pandemic, however from their responses it was clear most participants did not. Many adolescents noted the difficulty in getting the same level of support from the school and teacher, while they were at home:

"If there was anything I didn't understand, it would take them a couple of hours to get back to me" (participant 29, male, 12, interview).

This quote shows how the school structure changed during COVID-19. Students were used to having a teacher lead a lesson and be immediately available for questions, whereas during lockdown the physical distance from their teacher made this more difficult, or impossible. For some students, this may not have been a problem, or even this may have been a benefit as they had the opportunity to gain a deeper understanding by not seeking the teacher for answers, as recent research has suggested (Magson et al., 2021). However, for others this would have made school work very difficult. This was echoed in some of the survey responses:

"Biggest negative is with some school work is hard because you don't have the usual teacher support and it is really easy to get distracted from doing the work" (participant 11, female, 13 survey).

This not only highlighted how the lack of teacher support made it more difficult as there was not someone to help support students learning when they need it, but it also highlighted that when the school work was particularly difficult, without the school environment and the teacher around for encouragement and accountability, it could be easy to get distracted from the work. This idea was also echoed in the quotes below:

"I am struggling with learning when not being in a class environment" (participant 4, male, 13, survey).

"I think one of the biggest negatives for me is not going to school. I really liked the social side of school and I find it a lot easier to learn at school rather than at home" (participant 17, female, 13, survey).

These quotes showed how the importance of school is not just about the presence of the teachers, but how other aspects of school, for example the support students get from their friends and fellow students in the class environment, the structure of the school day, and the structure of the classroom environment are also important. However, some adolescents also reflected on having the opposite experience, finding that home-schooling was particularly beneficial to them:

"Umm, I found it a lot less stressful because I had like all day to do it, and it wasn't like as hard and you didn't have like the teacher in your ear all the time telling you, you were doing it wrong, and you could just do it at your own pace and stuff. I found it a lot better" (participant 31, female, 14, interview).

This supports recent suggestions that a benefit of educational institutions closing is that students can learn at their own pace (Armstrong-Mensah et al., 2020), something which will have a more positive effect for students of certain ability levels. For some students, the school environment was needed due to the support from the teacher, and the additional motivation they got from the environment, whereas some students found working from home better as they were able to take their time and go through the work at a pace that suited them better.

Theme 2: Connections

Many participants expressed distress over the impact lockdown had on their connections and relationships with various others. This was explored in the five subthemes which are grouped by 'Physical distance', 'Physical proximity' and 'Virtual proximity'. In particular, this theme demonstrated the delicate balance 'normal' life has in relation to connections, and the range of ways that the change in distance and proximity from certain people during lockdown affected how adolescents felt.

Physical distance. During lockdown many people found themselves physically distanced from others. In particular, this was felt in relation to the friends that adolescents used to see at school, out of school and during the hobbies they partook in, and also in relation to family they could not see. Adolescents recalled how they "have not been able to see [their] grandmother" (participant 19, male, 13, survey) and are "really missing [their] friends" (participant 7, male, 14, survey). Many

adolescents felt isolated due to this new enforced distance. This finding was in line with recent research which has highlighted high rates of loneliness during the COVID-19 lockdown, especially for younger age groups (Groarke et al., 2020). At this age school is an important source of friendships (Kiesner et al., 2003) thus individuals were likely seeing close friends daily while at school. It is therefore unsurprising that school closures would affect adolescents' levels of loneliness.

Isolated. The first subtheme relates to the sense of isolation participants felt due to the physical distance from friends and family. In particular, participants discussed how the distance made them miss their friends, and made friendships feel less close and intimate:

"it made me feel sort of a bit more stretched from my friends, like more far apart. Because like I saw them, but I couldn't actually chat to them and do stuff" (participant 29, male, 12, interview).

This quote highlights how although they were still able to communicate with people, and even see them due to video calls, it still was not the same as physically being with someone, and the conversations with friends were affected by the distance, despite being able to see them. The idea of there being a new gap between relationships, due to the physical distance was echoed in some of the survey responses:

"feel a lot more distanced from everyone in my life than normal" (participant 17, female, 13, survey).

The quote shows how participants felt the physical distance in their relationships, and thus how important physical proximity is for relationships to flourish. Some responses also highlighted how this changed the dynamic of their relationships:

"there are some people I have definitely talked to less than I would have if we weren't in lockdown but then at the same time I have talked to other people more than I did before so those friendships have gotten stronger" (participant 23, female, 13, survey).

This was particularly interesting as it demonstrated how for some friendships the physical distance is a barrier to the friendship, even when virtual proximity is an option, however for other friendships this is not the case. This was also echoed in some of the survey responses, with the idea that being unable to see or "hug those close friends and my family" (participant 23, female, 13, survey) had a large influence on relationships:

"I still feel connected to my best friend, but not others" (participant 16, female, 13, survey).

During this age, friendships are integral and help individuals to discover their own identity, and during this time individuals shift their support seeking from caregivers to friends (Szwedo et al., 2017). Given this shift is an important step in the path to adult functional independence, having enforced distance between friendships may make achieving this more difficult. Furthermore, research has suggested that social isolation in adolescence is associated with decreased health in later life, measured by hospitalisation (Almquist, 2010), highlighting the importance of socialising during adolescence.

Physical proximity. As well as experiencing an increased physical distance from some friends and family, many individuals experienced an increase in physical proximity to those they were presently living with, and also reflected on how they think they will feel when restrictions are eased, and they are able to see more people.

Enforced proximity. This subtheme related to how the increased time with those they live with (in addition to the decreased time spent with others) had affected the adolescents' mood and relationship with their family. During adolescence, individuals are starting to establish their own identity, away from their parents and close family (Crone & Fuligni, 2020), and this is particularly hard to do when restrictions require you to stay at home, which could lead to disagreements. This can be seen in the below quotes:

> *"It is hard not to start a fight every 30 seconds because we are all living in close proximity with each other and aren't really getting breaks from each other's company"* (participant 21, female, 15, survey).

Participants highlighted how boundaries are often tested between family members by disagreements, however with no space to go, or people to see to diffuse this, these encounters become particularly challenging:

> *"I'm getting fed up with my family"* (participant 16, female, 13, survey).

> *"I also argue a lot more with my sibling."* (participant 8, female, 14, survey).

These two quotes highlight how adolescents are aware of the difficulties they are facing with their family, they are aware they are arguing more, however they feel unable to rectify this as they have no other space to go to. This is particularly evident in the quote below:

"I feel it has also been difficult with family because I now have to live with them 24/7." (participant 21, female, 15, survey)

Although it was evident from the previous subthemes that adolescents were longing for more contact with friends, the contact they were having with the family they lived with had become challenging for some. During this developmental period, adolescents are pushing boundaries with family and becoming more independent from them (SAHRC, 2013a). This conflict was occurring while adolescents were unable to leave home, and therefore it had an impact on the relationships they have with their family.

Fear of future connections. This subtheme related to how adolescents felt about the prospect of future meetings with loved ones. The pandemic had shifted adolescents' thoughts of future meetings with friends and family, leaving them feeling anxious and worried about this time. One participant highlighted this when they were discussing how they felt about not being able to see their grandparents:

"I was a bit sad cause- yeah and quite worried about them cause yeah they're really old." (participant 29, male, 12, interview).

Participants highlighted the difficulty of not seeing their grandparents, how upsetting this was for them, but also the worry they felt for them:

"I have really missed my Grandma, I used to see her 3 times a week, and we are very close. I am now afraid if I see her I will pass on the virus to her, and I don't want that." (participant 7, male, 14, survey).

Participants reflected on the disruption this time had caused them, as they used to frequently see family that they were now unable to see. On top of the sadness of not being able to see distanced family, participants experienced fear of making family ill when they did see them, a concept which must be difficult to come to terms with as an adolescent. Most research exploring health anxiety has focused on adults due to symptoms typically presenting during early adulthood (Haig-Ferguson et al., 2020), however these reflections from adolescents suggest that an important

257

avenue for further research is anxiety related to adolescents' asymptomatic infections and resulting transmissions to older relatives, as well as any long-term implications of this. Another survey participant also highlighted the internal turmoil this had led to:

"I have felt more sad and worried at times because of the situation" (participant 8, female, 14, survey).

These quotes highlight the awareness adolescents had of the risks associated with seeing their loved ones, and the distress this was causing them. The following quote also highlights how this shift had become normalised, and the fear they felt when they anticipate adjusting back once the risks of the pandemic have reduced:

"It felt very different at first but now it just feels normal. It will feel very different when all restrictions are down and I am aloud to see my friends without social distancing" (participant 26, male, 13, survey).

One participant, who was interviewed when schools had briefly returned, highlighted the awareness that adolescents felt of the risks of spreading the illness:

"I just want to be back in lockdown to be honest because it stops coronavirus spread, because I just don't – I – to be honest yeah I just don't know why we're not still in lockdown if we haven't found a vaccine yet" (participant 31, female, 14, interview).

It is clear that adolescents felt anxious and worried about seeing other people and how this could bring a risk of infection, and how this had impacted their mental health as it was frequently occupying their thoughts.

Virtual proximity. The previous subthemes have highlighted how difficult adolescents have found this time, due to the increased time with those they live with, and not being able to see other family and their friends. In order to try and rebalance their social connections, many individuals used online communications to try and bridge this gap, and help things feel more normal. Past research with isolated groups has also highlighted the importance of social media to create online networks to alleviate feelings of isolation (Coddington & Mountz, 2014; van der Velden & el Emam, 2013). This grouping includes the subthemes 'Diversifying connections' and 'Social media helped', which highlight the importance of online communications in trying to rebalance their interactions.

Diversifying connections. This leads on from the previous subthemes, and shows how the lack of contact with a variety of others was compensated for with additional interactions online. This was in relation to both the increased opportunities to connect (more time to be online) and the new people they connected with. Participants talked about how they diversified who they spoke to, and how this was mainly due to trying to fill time:

> *"Um yeah I probably spoke to more people from my school than I would normally at school … mainly probably because no one really had anything to do, we were just all looking for like people to talk to … Um, yeah I've made quite a few good friends um like during lockdown and I still chat to quite a lot of them and I've been seeing them at school recently"* (participant 28, female, 13, interview).

Evidently, new friendships and connections were made due to the need to fill time and talk to people. This was echoed in quotes from survey participants. The quote below also reflects on how it was important for adolescents to find people outside of their house to talk to, as they needed more diversity in their communications:

> *"I have spoken to other people that I don't go to school with or know in person as it's the only way to have an outside conversation"* (participant 13, female, 13, survey).

Adolescents showed how important it was for them to find people to talk to from outside their home, such that when people they did know were not online, they would find other people in order to diffuse the intensity of their time at home. Below, participant 15 reflects on how new friendships were formed, and how the dynamics of some older friendships shifted during this time. In some cases, this was simply because different people were now available online, suggesting that during this lockdown period, friendships were influenced by who was online at the same time:

> *"I have started talking to new people I know 'cause they are online a lot and lost contact with old friends who aren't online very much"* (participant 15, male, 14, survey).

In the past, friendships may have been based on physical proximity (Preciado et al., 2012), i.e., those who you live close to, or see at school every day. However, with people unable to leave the house, the friends that were easily accessible changed for some people. The quote above suggests that sometimes this was due to who is online, alternatively this could be due to which online games individuals choose to play, as suggested by participant 3 in the quote below:

"I have started to interact more online with three of my friends and less with one of my friends as he's at a different school. We all play on our Xboxes together as we all like the same games" (participant 3, male, 13, survey).

This quote shows how important social interactions are at this age. If close friends are not available individuals are forced to make new friends in order to remain connected with a variety of people.

"Social media helped". This subtheme highlights the way that social media was used to help individuals feel more connected when they were physically distanced from friends and family. The past themes and subthemes have clearly shown the various ways that adolescents were impacted by the lockdown restrictions. Their use of social media often aimed to help relieve the intensity of being at home and help them connect. The ways that social media was used during the pandemic is particularly interesting as past pandemics did not occur in a time when social media was as ingrained in society as it is now. The previous pandemic, the 2009 H1N1 pandemic (CDC, 2018), which led to far fewer restrictions than the current pandemic, occurred in a time when social media was just starting to gain traction (Ortiz-Ospina, 2019). Participants reflected on the importance of this technology:

"Umm, I think so, I think umm because we were on such a time of like loneliness everyone was just kind of well alone especially when you'd have parents that were both just working you just kinda have nothing to do all day and you can't go and see friends or I think before I would have kind of see social media as kind of a probably like um a just a way of communication" (participant 30, female, 14, interview).

Adolescents highlighted that social media was needed in order to help individuals feel less lonely and alone, and how this helped them to feel like they were with their friends, even if they were not. Specifically, social media helped to reduce the perception of the physical distance and help people feel connected. This was echoed in some of the survey responses:

"It has helped me keep in contact with my friends and family helping me cope with not feeling so isolated" (participant 8, female, 14, survey).

These quotes highlight how online communications were able to make individuals feel more connected with friends and family. Helping to bridge the gap between the normal contact they are

used to and what they currently had due to restrictions. Some participants did still reflect on finding this difficult:

"Um, probably the fact that like I was able to talk to them but not in real life it kind of annoyed me" (participant 27, male, 12, interview).

Participants highlighted how although social media made it easier to stay connected, it was not able to fully replace the in-person interactions people were used to. This void was not completely fulfilled from online communications. The quote below highlights this again, encapsulating how social media was not a good replacement for in-person contact, but it was important during that time to try and bridge the gap:

"It definitely made me miss my friends more, but I'd say it social media helped more than it like didn't help." (participant 28, female, 13, interview).

Here, the participant reflected on the fact that social media was not able to fully replace the interactions adolescents were used to, and that led them to missing their friends, however it was still vitally important and without it adolescents would have felt more alone. Historically, loneliness research has focused predominantly on the elderly population due to this being a major health problem for the elderly (Donaldson & Watson, 1996; Gardiner et al., 2018). However, these findings highlight the relevancy of further exploring this topic in relation to adolescents during the pandemic.

Theme 3: Social media: content and consequence

The final theme created explored the ways that adolescents interacted with the social media content they consumed, and how this influenced them. This theme encompassed the subthemes 'Social media and appearance comparison', 'Social media (awareness) as a buffer', 'Gives me something to do' and 'It opened [my] eyes', which highlights the different roles social media had on adolescents' thoughts and experiences during COVID-19. In general, this theme showed how social media could either be used to empower individuals, or it could feel like a weight during an already difficult time.

"Beauty standards". This grouping comprised of the subthemes 'Social media and appearance comparison' and 'Social media (awareness) as a buffer'. Adolescents frequently expressed how they lost confidence and were unhappy with the way they looked. These subthemes

reflect how online content was focused on body appearance and how social media could either heighten this, or protect from it, depending on how it was used.

Social media and appearance comparison. This subtheme reflects adolescents' frequent discussions of how social media made them think and feel about their own appearance. Social media was frequently mentioned as an influence in relation to how they perceived their own body:

"my content has changed from arts and crafts and meme pages to celebrity Instagram posts. this has affected my mood a lot because I sometimes start subconsciously comparing myself to them but I know that most of it is fake" (participant 21, female, 15, survey).

Participants reflected on how their content had changed over lockdown, and how this influenced their point of comparisons, with one participant explicitly saying the negative of lockdown is "not liking the way I look, lost my confidence" (participant 20, female, 15, survey), highlighting the impact this time had on how they felt about themselves. These experiences are perhaps unsurprising with the restrictions around the activities individuals are able to do, leading to an increase in time online as there is little else they can do. This is further highlighted in the quote below:

"I see a lot of new content on Instagram such as TikToks being uploaded to Instagram and there are a lot more of fitness videos and weight loss journey videos that keep appearing and also makeup transformations and videos as people have more free time so they're doing extravagant looks … it also sometimes makes me feel as if my content is trying to tell me to do more makeup looks and workouts and go on a diet which I know isn't true but because everyone is, it is quite hard for me to just ignore it … I feel loads of people are using this time to get fit and share weight loss journeys which makes me feel as if I should to so when I go back to school I am still skinny and not fat." (participant 11, female, 13 survey).

Participants recognised that people changed their content, and they were therefore seeing more appearance-related content. They also reflected on how this influenced how they felt and how they thought they should be acting. Participants highlighted a perceived importance of their appearance, something which has been fuelled by the comparisons they were making to how everyone else was spending their time. Indeed, early findings exploring social media and COVID-19 explored weight-related content highlighted the frequency of 'quaratine-15' posts on social media (Pearl, 2020). Quarantine15 is a hashtag which was borrowed from the "#freshman-15" trend

262

associated with the fear of gaining weight in the freshman year due to the changes in one's physical activity and eating patterns (Pearl, 2020). The conversations with adolescents highlight the damaging impact of seeing appearance-based content during a time of social isolation. Below, another participant highlighted how the comparisons they made on social media have altered how they see themselves:

> *"I don't think social media necessarily had anything to do with it apart from seeing what other people look like and wanting different parts of what they look like myself"* (participant 23, female, 13, survey).

In this quote the participant is first denying, or unaware of the effect social media has on their appearance satisfaction, however they then go on to explain how images of other people influences their views on their own appearance. However, this goes even further by splitting the appearance into 'parts', as is proposed by objectification theory (Fredrickson et al., 1997). Overall, this theme highlighted the ways that social media and lockdown impacted how adolescents felt, demonstrating this influenced them in far more ways that just how lonely they felt during this time.

Social media (awareness) as a buffer. After showing an awareness of the ways that social media influenced how they thought and felt about their appearance, a number of adolescents mentioned how they used social media in certain ways to buffer these comparison tendencies, or how awareness of certain techniques were able to relieve some of this comparison. This was highlighted in the quote below:

> *"I don't really get phased by that stuff because I – I know it's photoshopped because I like do umm media in school so I've seen it I know how it works and stuff but I know it's fake but still sometimes I'm like well I wish could like look a bit more like that but then I'm just like nah actually don't really care ... Yeah it definitely did because before I did learn photoshop I would obviously be like wow how did they actually get to like look like that and then after I was just like well I know now how they do that"* (participant 31, female, 14, interview).

Participants highlighted the importance of knowing about common photo editing techniques in helping them realise these standards are unrealistic. Interestingly, this participant does mention still having a tendency to view these images as a goal to achieve, which is in line with previous research exploring the influence of magazine images on young girls (Tiggemann et al., 2000). However, overall the awareness of editing techniques allowed her to view the images with a critical

eye which, in line with past research, suggests that media awareness has an important role in reducing unrealistic comparisons (Mclean et al., 2016). Recent findings have highlighted that individuals aged 14 – 24 years are aware of the negative impacts of social media on individual wellbeing (Harness et al., 2022), and the current finding extends this awareness to the impact social media may have on body image concerns. The awareness of social media content not being realistic was echoed in another interview where the participant reflected on watching videos and separating the individual from reality:

> *"I mean usually when I'm watching a video I can completely disjoint them from reality err so I can well they're just a guy on the screen. They – they could just be not real to be honest"* (participant 32, male, 14, interview).

However, awareness of photo editing techniques was not the only protective tool adolescents reported using. Awareness of how media can make one feel was also seen as being really important, as highlighted in the following extract, where this individual recalled how they unfollowed a number of appearance-focused accounts and the effect this had on them:

> *"Um but I think err I think if I'd still been following like accounts I guess like that I think I would be in a very different space right now I think I probably wouldn't be very happy I think I would feel very kinda feel like maybe people were judging me or something I don't really know but umm before I guess I guess people umm I don't really know"* (participant 31, female, 14, interview).

The quotes above by participant 31 and participant 32 may also suggest some gender differences in the ways that boys and girls view what they see online. Girls frequently reported policing their social media accounts in order to protect themselves, whereas boys highlighted that they were able to discount the content as fake, or uninfluential. Nonetheless, this awareness is important, as it demonstrates that adolescents recognised they had the power to control what they are seeing on social media, as can be shown in the quote below:

> *"Um, yes. I think I'm quite an insecure person but I think um I think it was the good thing that I um like unfollowed loads of accounts that are kinda like celebrities I guess because even though um even though you don't really realise it, sometimes they'll just kinda planting ideas um in your head about like things like body image or beauty standards or um things like that"* (participant 30, female, 14, interview).

Adolescents reflected on how beneficial it was to unfollow certain accounts that were negatively influencing their views on appearance. They reflected on how removing this content was beneficial. In a similar vein, one adolescent discussed how difficult it could be growing up as a Black girl surrounded by Eurocentric beauty standards, however over lockdown they had "been posting pictures that fit [their] aesthetic" (participant 20, female, 15, survey), which had helped them to appreciate and accept their appearance more. Further highlighting how control over what they are seeing and posting was able to help adolescents to reinforce positive messages.

"Gives me something to do". The next subtheme related to the ways social media was used by adolescents to fill time. Many adolescents mentioned feeling bored and demotivated during lockdown, and turned to social media as a way to ease this. Social media was seen as a powerful source of entertainment. There were a number of different ways that social media was able to give adolescents something to do, from just spending time on it, to giving them ideas for hobbies and crafts to partake in. This was highlighted in the quote below:

"I think err I think we had so much like time I guess um on our hands I think everyone just kinda uses it to use up time I guess which kinda it seems, it seems a bit silly but um because people are always on about how like don't have enough time to do things and um one I guess I think they just kinda suck you in I guess um from the pattern of just going on it even though they're not really helping you in any way" (participant 30, female, 14, interview).

This quote shows how important social media was to fill time, but also how the virtual space was able to provide some relief from the isolation and loneliness they felt due to the loss of everyday routine. The loss of in-person activities were replaced with activities seen online, with some activities trending, which could also help fill time:

"I can see videos on what people are doing to give me inspiration on new ideas for hobbies" (participant 11, female, 13 survey).

"It's been so helpful and cured lots of my boredom. It has also given me many new things to cook/bake" (participant 12, female, 13, survey).

These finding contradicts quantitative research conducted with Chinese adults, which found that there was no relationship between using social media for entertainment and improvements on wellbeing measures (Yue et al., 2021). This highlights the differences between cultural and

generational experiences of social media use during COVID-19. These ideas were echoed in the survey responses, with one participant sharing "It always gives me something to do" (participant 12, female, 13, survey), again suggesting that social media was used to fill time. On a deeper level, activities were also able to provide a sense of community, even if this was virtual. With individuals doing the same things, for example baking sourdough, this could help to recreate the supportive networks found in friendships. Some participants however, found that it was also able to give them new things to do away from social media too. Participants reflected on how seeing other people's hobbies online had led adolescents to try these and find new things to do. One example of this is how a participants reflected on how watching videos of film critics led to an interest in this for himself, and this then gave him other things to do:

> "I found like a new hobby and that's criticising movies, then just seeing the movies, watching or revisiting old TV shows that I used to watch when I was younger and seeing where they did have their flaws" (participant 32, male, 14, interview).

A number of adolescents also reflected how social media was able to entertain them, and fill time:

> "I think social medias have helped in a way because when I'm bored I can look on YouTube or Instagram for something I've never seen before" (participant 9, male, 13, survey).

> "Umm, I mean it [social media] became quite bigger in my life, in lockdown" (participant 29, male, 12, interview).

These quotes highlighted how important it was for adolescents to have a virtual space that they could connect to, feel like they belong, and have time away from their family. However, the extra time spent on social media was not always seen as a positive:

> "I think I definitely although I'm on it a lot more now I think which is a problem … umm I feel like now I'll be doing something else and like I'll just pick up my phone like I won't have any need to pick up my phone, like I won't have any messages or anything but I'll pick it up anyways. I think that kinda has changed I feel like more I – I might have not really realise if I was doing something else if I was maybe talking to my mum or something I might just pick up my phone and start looking at it. I think I generally use it a lot more now" (participant 30, female, 14, interview).

This quote highlighted how this had become normal, something they rely on more than they used to. The was echoed in some of the survey responses too:

"I have used social media a great deal more as I am home and do not really have a break from it now, it's the only way to see what my friends are doing. But seeing them makes me want to see and chat to them in person more" (participant 13, female, 13, survey).

These quotes show the adolescent's awareness that social media was not a sufficient replacement for socialising with people as they used to, however in a time when government restrictions do not allow it, this technology was heavily relied on.

"It opened [my] eyes". The final subtheme highlighted the ways that social media could increase awareness of the world, and what was happening in it. Some of this was positive, for example the "black lives matter stuff and online protests" (participant 14, male, 13, survey), whereas sometimes social media was able to highlight the lockdown restrictions put in place, for example restrictions on going out to see friends. Participants reflected on how the increased time on social media meant that information was spread more easily:

"Especially with the BLM um movement I think definitely I think people more kind of opened their eyes to see how much um err like they're seeing especially if you're on your phone all the time because you're at home um you're seeing more information because people were like I guess on there for longer so you're seeing like more information about things I think people were also like only got wiser about um issues and things I think that was a good thing I think even though um we haven't got very far I guess but I think the um things about issues and people have become more aware of them I guess" (participant 30, female, 14, interview).

This reflection suggested that even if this was an unintended consequence, the increased time on social media, and the voices that were heard through social media, had led to further understanding of important topics, this was also echoed in the survey responses:

"I have seen how social media trends can help influence/inform people on social issues such as racism" (participant 15, male, 14, survey).

The frequency with which these reflections came up in the interviews and surveys highlighted how interested adolescents were in social justice, and how important social media was

267

for them in relation to learning about world issues. However, adolescents also noted that social media was able to show them more negative aspects of the world as well:

"There were some cases where um my friends did post them hanging out with a bunch of people and I'm like huh- I'd love to do that but it's quarantine that's not supposed to do it and I was just getting kinda jealous of some people" (participant 32, male, 14, interview).

The following quote also shows how this can be difficult, especially for adolescents who are already feeling isolated:

"At times, it has made it harder when I see people breaking isolation rules when I can't" (participant 15, male, 14, survey).

The quotes above showed how seeing their friends break lockdown rules could make them feel sad, and how their perception of missing out can arise due to this. Most research which explored FOMO during COVID-19, has previously explored how this factor led to increases in social media use during the pandemic due to not wanting to miss out on online communications (Gioia et al., 2021; Liu et al., 2021). This finding furthers this, highlighting additional relationships between social media and FOMO during the COVID-19 lockdown. Building on this, the following quote also highlighted how social media can show the lives of those we do not personally know, as participant 31 reflected on seeing a celebrity breaking rules:

"Umm, I saw like some celebrities breaking rules like Jake Hall, but like that's in America but still …. it kinda annoyed me a little bit because there's like actually people dying and they're just like they could have it but they just don't know" (participant 31, female, 14, interview).

In this case, participant 31 felt angry at the selfish actions of the celebrity, rather than jealous of their freedom. Nonetheless, it highlights, along with the previous two quotes, how social media constantly presents the lives of a range on others, increasing opportunity for comparisons and FOMO.

The interviews highlighted the experiences of UK adolescents during the COVID-19 pandemic and how this time influenced their thoughts and perceptions. Overall, adolescents reported feeling disjointed from their previous life, be this due to the distance from friends or loved ones, or the cancellation of events and hobbies. Adolescents reporting finding this time difficult,

with social media being reported in some ways as a saviour, but also an extra weight during an already difficult time.

Chapter 6 field contribution:

The importance of exploring the impact of a new and complicated time should not be overlooked. Adolescence is a complicated and critical time during development, and this study sought to pull together a number of different contextual factors which could impact and influence adolescents' experiences. This study produced novel findings around adolescents' experiences of using SNS during the COVID-19 pandemic, for example participants reflected on how online content changed and how this influenced their body image during the pandemic. This highlights the importance of continuing to examine these relationships as society emerges from the COVID-19 pandemic. The implications of these experiences are important to note, as is the relevance of whether the changes to online content that adolescents reflected on noticing continues as COVID-19 restrictions lift or not. The theme 'loss during lockdown' highlighted the numerous forms of loss that adolescents felt during this time. Although all were associated with a loss of freedom, it highlights the breadth of ways adolescents experienced this and is an important addition to the field.

Reflexivity

Within qualitative research it is important to reflect on the role of the researcher in the process. It is unrealistic to argue that a researcher's perspective and experience will not influence qualitative analysis. Indeed, my own life felt very unstable at this time, with my previously clear direction now needing diversions. It was also the impact of COVID-19 on my research which led to the development of this study, with a large side-step being made in order to allow the PhD to continue smoothly.

While conducting the interviews, my insider-outsider presence was variable. Although I was no longer at secondary school, I was still within the education system. Furthermore, I, along with the rest of the world, experienced the restrictions of the pandemic. Although this was a time in our life that will have affected everyone differently (depending on one's own health, the health of their loved ones, and their priorities), and although I could not assume to know how the adolescents felt, I did share some similarities with their experiences. Finally, I was also a social media user, my reliance on social media to stay connected during COVID-19 mirrored that of the adolescents, and I certainly felt like a lot of my own experiences were mirrored in their words. However, I could not comprehend

the complicated feeling and experiences of trying to navigate through a pandemic during a developmental time so incompatible to the restrictions in place. My age (27 years) compared to the participants was also important to reflect on, and how this may influence both my own interpretation of the research and interviews, and the participants experience too. Although early in my research career and young as a researcher, I may still be deemed 'old' to the participants, it is the case that a teacher at the school I recruited from was a close friend of mine, highlighting how I may be seen more as a 'teacher age' to the participants.

Furthermore, my own experiences in lockdown may have influenced what I found interesting to probe during interviews. My own regular hobby had been cancelled due to the pandemic and I therefore found adolescents' own experiences of their lack of dance or karate particularly interesting and important to explore.

In conclusion, although all research can be influenced by the views of the researcher, from their own experience of an event or relationships for example, in qualitative research the researcher has greater influence of interpretation of the results and therefore has a larger impact on the findings, making reflexivity a more important aspect in qualitative research.

This study had a number of important strengths to note. First, this study added to the existing research by exploring adolescents' own experiences of the COVID-19 pandemic, and how they navigated this time. By exploring the adolescents' experiences, this can study help researchers evaluate the impact of the pandemic on adolescents lives, and highlight important avenues for further research, in particular suggesting the importance of media literacy interventions.

Secondly, the two types of qualitative data collection were used in a way that allowed the strengths of both to be utilised, and the limitations of both to be balanced, leading to an in-depth qualitative study with adolescents. Both the fully-structured online surveys, and the one-to-one virtual interviews brought up the same topics from the students, also highlighting the applicability of both styles of interviews. Some researchers have criticised online techniques as being unable to deliver the depth found in face-to-face interviews (Braun et al., 2020; Mann & Stewart, 2000). Alternatively, online techniques may give individuals more time to think and reflect on the question, which can lead to more thorough and relevant answers (Braun et al., 2020; Opdenakker, 2006). Although a number of the online interview responses were more succinct, this data collection occurred during an arguably more challenging time for adolescents, therefore it was thought that virtual interviews would not be in the best interest of the adolescents. Participants taking part in the

later one-to-one virtual interviews were given a number of different platforms for the interview, this was to try and make the adolescent feel as comfortable as possible taking part. Time was also put aside at the start to have a short chat with the participant before the interview started in order to help them feel at ease. Furthermore, both interview styles allowed for data collection during a pandemic, a time when face-to-face interviews were not possible. They also allowed participants to take part in the research from the comfort of their own home, rather than attending an unknown location which could lead to them feeling uneasy even before the interview started.

Finally, this study explored the experience of adolescents, an understudied group in relation to social media use, and the pandemic. As this is a challenging developmental stage, it is a particularly important age to evaluate in relation to online comparisons and times of restrictions and isolation. With past research highlighting that social isolation is associated with later health problems this age is particularly important to explore, and to continue exploring in order to further provisions for this generation to help avoid any long-term negative impact (Almquist, 2010).

Limitations

There are also a number of limitations within this research which should be noted. The sample of participants that took part in the research project was not ethnically diverse. Although this is a problem in a lot of psychology research, this limitation was exacerbated due to time constraints, the researcher used a contact they already knew at a school in a particularly nondiverse area of the UK. This led to a sample that was predominantly White British. Although qualitative research does not aim to be generalisable, rather to seek the experiences of the sample, interviews with more diverse participants would add to the literature by highlighting different impacts of the pandemic and social media on broader groups. This is a common problem with research as certain demographics dominate research participation, furthering the gap in knowledge (Clancy & Davis, 2019; Henrich et al., 2010).

Secondly, the structured online interview included a number of prompts and suggestions underneath each question in order to try and help adolescents expand their discussion if they felt comfortable to. It was thought that by completing the interview online in this format, adolescents would feel anonymous and would therefore feel able to write as much or as little as they felt comfortable with. However, this did mean that the researcher was unable to follow up any discussions that were particularly interesting or insightful, or further probe for additional detail. Furthermore, another disadvantage of qualitative surveys is that they require an individual to be

confident in their literacy skills, and therefore could exclude some participants (Braun & Clarke, 2013; Terry & Braun, 2017). Reassuring participants that spelling and punctuation does not need to be correct can help to address this, however some individuals who are not confident in their writing ability may have declined to take part.

Finally, the one-to-one virtual interviews were conducted at a later timepoint compared to the fully-structured online surveys. The one-to-one virtual interviews took place when schools had recently reopened. For these interviews, participants were asked to reflect back to when schools were closed. Some of the participants did report finding this challenging, therefore more accurate recollections may have been found if the interviews had occurred earlier in the year. However, the one-to-one interviews did still occur during the COVID-19 pandemic, when a number of restrictions were still in place, and it was evident from the interviews that adolescents were still able to highlight important aspects of this time.

Conclusion

This study sought to explore adolescents' experiences during lockdown, and what part social media played during this time. The themes explored how adolescents felt a sense of loss from their previous freedom and social lives, how connections were unbalanced due to the restrictions, how social media was used to help them connect to others, and to empower them, but how avoiding the negative associations with social media was difficult and required action on the adolescents' part. It is important to note that this study explored an exceptionally turbulent time during an already difficult developmental stage. For adolescents, lockdown and isolation was happening at the same time as adolescent development, the compounding effect of these two stages occurring together alongside each other made this research particularly important.

Much of the current research evaluating the COVID-19 pandemic and social media use has looked at the impact on adults, and used quantitative methods (Cauberghe et al., 2021; Jones et al., 2017; Sun et al., 2022; Yue et al., 2021). This study adds to the current literature by seeking the experiences of adolescents, in their own words. Although past research has highlighted that adolescents suffered from lack of school support during the pandemic (Magson et al., 2021), this study was able to provide further depth to this, highlighting that for some adolescents this was not a negative, however, for those that it was, the lack of support was not solely in relation to teacher time, but also the peer support and the more structured environment they have when at school. This may have important implications for individuals that are not able to attend school, perhaps due

to illness. Furthermore, past research has highlighted the negative impact that social media can have on body image, however this research suggests that media awareness is an important tool which adolescents utilise in order to protect themselves. This not only has important implications in relation to the use of social media literacy in schools, but also highlights the awareness that adolescents have around their own social media use. This study has also shown some of the positive ways that adolescents are using social media, in order to help them find and develop new skills and hobbies, highlighting further areas of important exploration.

Chapter 7: Study 4 – Longitudinal study evaluating SNS use and body image, wellbeing, and psychosocial functioning in adolescents aged 11 – 16 years old

The final study in this thesis built on the findings from study 1 and 2 and explored how the relationships found in these studies may differ at distinct timepoints. The three models that aimed to explore adolescents' SNS use, and the associations with body image concerns, wellbeing, and psychosocial functioning were tested both pre-COVID-19 and during COVID-19. It utilised mostly the same measures (minor changes are detailed later in the chapter) to expand on these studies. The chapter provides a brief introduction to the research on this topic, as well as the study methods, results, and discussion.

Introduction

The relationship between SNS use and body image, wellbeing, and psychosocial functioning has been discussed previously (see chapters 2, 4, and 5), highlighting that in general, past research has suggested a positive association between SNS use and body image concerns (Saiphoo & Vahedi, 2019; Vandenbosch et al., 2021), and negative associations between SNS use and wellbeing (Orben, 2020), and psychosocial functioning (Vannucci et al., 2020). The COVID-19 pandemic was an important time to evaluate due to the unique nature of the way the population was living, and the possible long-term impact this time could have. Research has started to explore the impact of COVID-19 on individual body image, wellbeing, psychosocial functioning, and SNS use.

COVID-19 and SNS use

Considering the conflicting findings relating to the impact of SNS use, it is particularly important to explore the role of SNS during a pandemic, when there is increased time which could be spent online. So far, there is conflicting evidence exploring the frequency of adolescent SNS use during lockdown. Some research found that 73% of Belgian adolescents reported increasing their social media use during the COVID-19 lockdown compared to before (Cauberghe et al., 2021). Supporting these findings, research conducted with German adolescents (aged 10 -17 years) explored rates of gaming and social media use pre-lockdown, and during lockdown (Paschke et al., 2021). This research suggested that social media use increased from Time 1 to Time 2 for the sample included in the research (Paschke et al., 2021). However, more recent research which was conducted in Ireland, as part of an ongoing longitudinal study found that girls (aged 12 – 14 years) did not report any changes in SNS use from before lockdown, to during lockdown (O'Kane et al., 2021).

Considering the conflicting findings, and the previously reported associations between SNS use and body image, wellbeing, and psychosocial functioning, and the possible heavy reliance on SNS during COVID-19, it's important that SNS use is considered while exploring the relationship between COVID-19 and body image, wellbeing, and psychosocial functioning.

COVID-19 and body image

There is limited research exploring body image concerns during the pandemic. Early research conducted with American college students found no change in objective weight, BMI, or BMI category between January and April 2020. Despite this, individuals' subjective weight description changed, such that they reported falling into a higher weight category, suggesting increased body image concerns (Keel et al., 2020). Furthermore, research conducted with Lithuanian university students found that both men and women reported increased levels of internalization of thin beauty ideals during the lockdown, compared to baseline (Baceviciene & Jankauskiene, 2021). These studies highlight how adult body image concerns appear to have increased during COVID-19. The effect of lockdown on body image concerns could be due in part to increased time on social media (Cauberghe et al., 2021), and indeed research has found that women reported increases in weight-related media pressures during lockdown compared to before (Baceviciene & Jankauskiene, 2021). Further research has highlighted the surge of "#quarantine15" posts on SNS during lockdown (Pearl, 2020). Research conducted during lockdown found that "#quarantine15" images depicted objectifying images of predominantly white, low weight women (Lucibello et al., 2021). Furthermore, research has suggested that Spanish women retrospectively reported following more appearance-focused Instagram accounts during COVID-19 compared to before, and that higher use of Instagram was predictive of higher drive for thinness during COVID-19, compared to before (Vall-Roqué et al., 2021). Despite these findings, little research has explored the impact of lockdown on adolescent body image concerns, or included the impact of social media on this relationship (Schneider et al., preprint). Another possible element in the relationship between COVID-19 and body image is objectification. Research has previously highlighted the role of objectification in body image concerns (Calogero, 2012; Slater & Tiggemann, 2011; Tiggemann & Lynch, 2001), however it is possible that increased time online due to COVID-19 may have an impact on self-surveillance tendencies. With recent research conducted with adults during COVID-19 exploring this relationship in relation to video chatting (Pfund et al., 2020). The researchers found that there was an indirect association between overall time video chatting and appearance satisfaction, which was mediated

by self-objectification (Pfund et al., 2020), highlighting its importance during a time with increased online activity.

COVID-19 and wellbeing

Another important relationship to explore is that between COVID-19 and wellbeing. Indeed, a systematic review which explored research conducted in eight countries found in general, studies reported relatively high rates of anxiety, depression, and psychological distress during COVID-19 (Xiong et al., 2020). Furthermore, research explored self-reported pre-pandemic wellbeing compared to self-reported wellbeing during the pandemic, with a sample aged 14 – 28 years, and found that wellbeing deteriorated over this period (Hawke et al., 2020). The non-clinical sample included in this study reported unmet support needs as the biggest underlying cause for reduced wellbeing during the pandemic (Hawke et al., 2020).

One particular aspect of wellbeing which has been explored during COVID-19 is loneliness. Considering the stay-at-home mandates that were enforced in many countries at various times during the pandemic, and the lack of support experienced by individuals (Hawke et al., 2020), level of perceived loneliness is an important aspect of wellbeing to explore during COVID-19. There have been incongruent findings regarding self-reported loneliness during COVID-19, with some research suggesting no change in self-reported levels of loneliness (Luchetti et al., 2020), and some reporting increased self-reported loneliness during COVID-19 (Groarke et al., 2020; Killgore et al., 2020). Some research has suggested these differences could be due to time spent using technology to connect with others, finding that the use of digital technology during lockdown reduced adults' feelings of loneliness, and increased feelings of belongingness through perceived social support (Gabbiadini et al., 2020). Therefore, more research is needed to explore the relationship between SNS use and wellbeing during COVID-19, compared to before COVID-19. Furthermore, research which has started to explore the relationship between SNS during the pandemic, and wider measures of wellbeing, includes cross-country research conducted with adults living in Norway, USA, UK, and Australia which suggested that adults with higher rates of SNS during the COVID-19 outbreak were more likely to report increased rates of emotional distress, and loneliness, as well as poorer mental health, quality of life, and wellbeing, compared to those reporting lower SNS use (Geirdal et al., 2021). Although this research is unable to explore the direction of these relationships, it highlights the importance of further exploring this relationship. Moreover, the research revealed differences in participants ratings for these measures by country, highlighting the importance of having country specific findings.

One behaviour which could have an influence on wellbeing during COVID-19 is social comparison, which has been highlighted as a factor contributing to wellbeing levels in the past (Mccarthy & Morina, 2020). Online platforms allow individuals to construct the reality they show others. If individuals are spending more time online during COVID-19, it is particularly important to explore their comparison tendencies. Recent longitudinal research conducted with adults in Italy over COVID-19 suggests that social comparison online increased over time during the COVID-19 lockdown, and that comparison was positively associated with loneliness (Ruggieri et al., 2021). To date, research has yet to examine these relationships with an adolescent sample.

COVID-19 and psychosocial functioning

Very little research has explored the impact of COVID-19 on psychosocial functioning in individuals, with even less exploring this in adolescents. However, one study which explored various aspects of adolescents' psychosocial functioning, and how this compared to pre-COVID-19, found that adolescents reported increased substance use and parental conflict (Kapetanovic et al., 2021). Although scant research has explored this topic, some research has started to explore adults' alcohol consumption during COVID-19, and this research may suggest whether COVID-19 is likely to negatively affect adolescent psychosocial functioning. Although alcohol consumption isn't as relevant for young adolescents, the findings may give suggestions for how adolescents have coped and adjusted during the pandemic. The research conducted with adults exploring COVID-19 alcohol consumption has found mixed results. In a population-based study conducted in Australia it was suggested that drinking habits during COVID-19 were higher than reported rates from 2017/2018 (Biddle et al., 2020). However, research which looked at drinking habits at an individual level, rather than population level, found that only 30% of Polish participants changed their drinking habits during COVID-19, and of those that did, there was a fairly even split of increasing and decreasing drinking habits (Chodkiewicz et al., 2020). However, the study did highlight that the average age of individuals who reduced their drinking habits was lower than the average age of those who increased their drinking habits (Chodkiewicz et al., 2020), possibly suggesting differences in coping styles for different ages, highlighting the importance of exploring different aspects of psychosocial functioning (other than alcohol consumption) for adolescents during the COVID-19 pandemic. Considering the role of belonging on adolescent behaviours (Bergman et al., 2018b), and barriers to this which could be experienced through the COVID-19 lockdown, it is important to include adolescents' perceptions of belonging in the exploration.

Research question and aims

This study was guided by the following research question:

Research question: How do the associations between SNS and body image, wellbeing, and psychosocial functioning differ during two distinct contexts (pre- and during the COVID-19 pandemic)?

This led to the development of the study aim which was:

Aim: To evaluate the relationship between SNS use, body image, well-being, and psychosocial functioning, pre-COVID-19, compared to during COVID-19, for adolescents.

Hypotheses:

H1: Social media use will increase from Time 1 to Time 2.

H2: There will be higher reported body image concerns at Time 2 compared to Time 1, and a decrease in reported wellbeing and psychosocial functioning at Time 2 compared to Time 1, for both boys and girls.

H3: For both boys and girls higher SNS use will be associated with higher body image concerns and mediated by objectification at Time 1 and Time 2. The indirect effects will be stronger at Time 2, than Time 1.

H4: For both boys and girls higher SNS use will be associated with lower reported wellbeing and mediated by peer comparison at Time 1 and Time 2. The indirect effects will be stronger at Time 2 compared to Time 1.

H5: For both boys and girls higher SNS use will be associated with lower reported psychosocial functioning, moderated by belonging at Time 1 and Time 2. The direct effects will be stronger at Time 2 compared to Time 1.

Method

Design

This study evaluated SNS use in individuals aged 11 – 16 years at two timepoints over a one-year period. Adolescents completed an online questionnaire containing measures of body image, wellbeing, psychosocial functioning, objectification, peer comparison, and belonging at Time 1 (Oct 2019 – Feb 2020, pre-COVID-19 pandemic) and then again approximately 15 months later (Time 2, Feb – April 2021, during COVID-19 pandemic).

Research ethics

Study 4 was an extension of Study 1, therefore details of ethics are detailed in Study 1 (Chapter 4; ethics reference: HAS.19.04.169).

Participants

As the study was exploratory in nature and using regression and correlation to explore mediation, a minimum sample size of 179 participants were needed to detect moderate and medium effect sizes with at least 80% power (Fritz & MacKinnon, 2007). Participants from Year 7 (ages 11 – 12), Year 8 (ages 12 – 13) and Year 10 (ages 14 – 15) during Time 1 data collection, at three schools, were included in the study. At Time 1 there was a total of 1295 Participants, at Time 2 there was a total of 512 participants. Of these, 368 participants took part in both Time 1 and Time 2, giving an attrition rate of 71.6%.

Measures

Measures for Time 1 are reported in Chapter 5. A number of questions were removed at Time 2 in order reduce the length of the questionnaire due to the change in environment for questionnaire completion (participants completing the survey at home rather than in school in the presence of the researcher and teacher, as was the case at Time 1). The removed questions related to photo manipulation, body satisfaction, positive affect, type of usage, social norms, and behaviours seen online. The questions were removed as initial analysis on the Time 1 data had led the researcher to believe these were the variables which least strongly correlated with SNS use. Additionally, a few questions were added; four Likert style questions were added (I feel worse about my body during lockdown; I feel lonelier during lockdown; I feel like I am coping worse during lockdown; my parents have changed their restrictions for me on social media) and one question to determine participants' school year (this had previously been reported by the researcher during Time 1 data collection). Furthermore, the three-item self-esteem measure was replaced with a single item self-esteem measure (Robins et al., 2001).

Procedure

The study used an (approximately) 15-month longitudinal questionnaire design to evaluate the frequency and usage of SNS on individual wellbeing, body image concerns, and psychosocial functioning on adolescents aged 11-16. Originally, it was planned that data would be collected at three timepoints (approximately six-months apart) through online or paper questionnaires which participants completed individually. However, due to a global pandemic and closure of schools in the UK it was only possible to collect data twice.

The initial data collection for the longitudinal study took take place during class time, either on computers or iPads through Qualtrics, or on paper copies depending on school facilities. Time 2 took place entirely online as schools were closed. Time 1 data collection took place between October 2019 and February 2020, and Time 2 data collection took place from February to April 2021. Each individual created a unique ID made up of characters from their last name, first name, and date of birth. This enabled the data to be stored confidentially while allowing participants to be matched across the two time points.

All children taking part in the study were under 18 years, therefore parental informed consent was obtained. Parents were sent an informed consent sheet though the means preferred by the school, whether this be in the post, via the child, or through email. Whenever possible, multiple avenues were used for sending consent forms to parents. This allowed parents to opt their children out of the longitudinal study. In this consent form parents were made aware of their right to withdraw their child from the study at any point. Opt-out consent was used as all questions covered topics that it can reasonably be expected that the adolescents would have already come across. Opt-out consent forms were sent at Time 1, and these forms covered participants for the entirety of the study. Data collection at Time 1 occurred during class time with the researcher and a teacher present. Time 2 data collection was completed by participants at home. Participants completed the questionnaire 12 – 16 months apart (M=15 months), past research has supported the validity of a 12-month interval when evaluating media use and self-objectification (Trekels & Eggermont, 2018). Before each wave of data collection participants were told they were taking part in a study and anything they feel uncomfortable disclosing could be left blank. They were also made aware of their right to remove their data at any point during the study. The potential risks to participants were considered minimal, however, the researcher was available to answer any questions that arose, and gave each participant a sheet with websites or services that the participants may require if they felt

affected by the study. After data collection, all data was stored on the PhD student's UWE OneDrive account. Only the PhD student had the password for the computer.

Data collection Time 2

The same three schools were contacted in September to complete the second and final data collection. Schools reopened for a short time but due to students being behind with work and teachers being under additional stress this data collection was pushed back slightly. However, schools closed again when this data collection was rescheduled for, therefore this occurred purely online between February and April 2021. During this data collection participants were attending school virtually from their home, therefore in order to incentivise participants to complete the questionnaire a raffle of nine £50 amazon vouchers (allocated as one for each year at each school) was run alongside the questionnaire.

Longitudinal data. The longitudinal data will be used to test the proposed structural equation model fit, and mediation moderation models of Time 1 and Time 2.

Analysis plan

Due to the large attrition rate (71.6% attrition) multiple imputation was not employed for those who dropped out from Time 1 to Time 2. Instead, only participants who completed both timepoints were included in the longitudinal study.

Data was screened before it was analysed. All data was checked to ensure reported values fell within a realistic range. There were no problems with this, other than when participants rated how long they spend on SNS. A number of responses higher than realistically possible were given. Discussions were had with the supervisors, and it was decided this was not likely to be due to students purposely giving misleading answers, and more likely due to a lack of concept of time. Therefore, each individual that stated they spend more than 7 hours a day on any SNS had their time reduced to 7 hours. Three values were reduced to 7 hours at Time 1, and one value was reduced at Time 2. Little's MCAR test indicated that there was a missing value rate of 2.9%, as missing data correction is not considered relevant below 5% (Graham, 2003; White & Carlin, 2010) no multiple imputation was run, this also avoids potential bias related to data imputation. Screening of the data also showed there were no major violations to the underlying assumptions of the analyses (e.g., no significant outliers, approximately normally distributed DV for each group of the independent

variable, homogeneity of variances). Although some of the data was skewed, the proposed analyses are particularly robust to this violation (Zuur et al., 2010), therefore raw data was kept, in favour of transformation. Three participants were removed due to their gender identity changing from male to female from Time 1 to Time 2, changing the total sample size from 368 to 365. Self-reported gender at Time 2 was used for the gender split analysis.

Hypotheses 3, 4, and 5

The hypothesized model (Figure 30) was tested via Structural Equation Modelling (SEM) with AMOS for SPSS. Three SEMs were run. For all SEMs the two IVs were SNS time and SNS activity, and the one covariate was year group. The body image model included objectification as a mediator, and body appreciation, drive for thinness, and internalisation of muscular ideals as the dependent variables. The wellbeing model included peer comparison as a mediator, and loneliness, self-esteem, and negative affect as the dependent variables. The final model, which tested psychosocial functioning, included belonging as a moderator, and problem behaviour and functioning as the outcome variables. The models were tested with a gender split and a timepoint split. The gendered split models were then compared qualitatively for each timepoint. The models were compared qualitatively on the following outcomes: remaining pathways, Chi-squared distribution (χ^2), the root mean square error of approximation (RMSEA), the comparative fit index (CFI), and the Normed-Fit Index (NFI).

Data preparation. The total sample for the gender split analysis consisted of 361 participants (147 boys, 214 girls). The completion rate for each entire model is details in Table 83.

Table 83

Completion rate for all questions in each model at Time 1 and Time 2

	Boys (N= 147)		Girls (N=214)	
	Time 1 completion frequency (%)	Time 2 completion frequency (%)	Time 1 completion frequency (%)	Time 2 completion frequency (%)
Body image model	134 (91.2)	133 (90.5)	207 (96.7)	199 (93.0)
Wellbeing model	129 (87.8)	129 (87.8)	203 (94.9)	200 (93.5)
Psychosocial functioning model	127 (86.4)	134 (91.2)	203 (94.9)	200 (93.5)

Since the analyses were only slightly underpowered to run (127 participants compared to the ideal 179 participants for moderate and medium effect sizes; Fritz & MacKinnon, 2007), only the complete cases were included in the hypothesis testing to reduce additional bias.

Assumption testing. There are five assumptions for SEM analysis; Linear relationship between DV and IV, IVs not highly correlated, Variance of residuals is constant, Independence of observation, Multivariate normality. All assumptions were checked and met, other than the second assumption (IVs not highly correlated). No corrections were made for this violation as it would be expected that the variables were highly correlated as they are measuring two aspects of the same construct. The variables were, however, explored to evaluate whether any additional precautions were needed. The variables were mean centered to see if this would reduce the correlation. However, as it didn't, the raw data was used in order to avoid any additional bias. In SEM models, it was specified that these variables were correlated in order to control for the correlation.

SEM (AMOS 28) was employed to test the proposed theoretical models. To test the three hypotheses the models were tested at Time 1 and Time 2 separately, and also separately for gender. The models tested for each timepoint and for each gender were identical. The IVs were correlated for each model, as they are two measures of SNS use, and therefore it would be expected that these were correlated. The error terms of the mediator and dependent variables were allowed to correlate. Indications of a model with a satisfactory fit included a non-significant χ2, or a χ2/df ratio ≤ 3, an NFI ≥ 0.95, a CFI ≥ .90, and values of RMSEA less than .08 (Hu & Bentler, 1999; Schreiber et al., 2006).

Results

Demographics

A total of 365 participants took part in the Time 1 and Time 2 questionnaire. Of these participants at Time 2, 147 identified as male (39.9%), 214 identified as female (58.2%), and four participants did not identify their gender within the binary (1.1%). Of these, two identified as nonbinary, one identified as he/she/they and one specified they did not know how they identify themselves. Table 84 below shows the gender spread for each timepoint. Those whose gender was missing at Time 1 but reported it at Time 2 had their gender at Time 1 inputted by the researcher to match that at Time 2 (*N*=4). During the 12 months between Time 1 and Time 2, four individuals changed their gender identity to that outside the binary. These participants are included in the demographic data, but will be removed from any gender split hypothesis analysis as the numbers are too low for any meaningful conclusions.

Table 84

Number and percentage of each gender identification.

	Male (%)	Female %	Other (%)	Total (%)
Time 1	148 (40.2)	217 (59.0)	0	365 (100)
Time 2	147 (39.9)	214 (58.2)	4 (1.1)	365 (100)

The overall sample mean for the socio-economic status question for this sample at Time 1 was 2.88, which equates to between 2 and 3 cars (see Table 85). In 2019, the National Travel Survey estimated there are, on average, 1.39 cars/vans per household in the south-west (Transport, 2020), putting the sample for this study above the average (Transport, 2020). This measure was not included in the Time 2 questionnaire.

Table 85

Socio-economic Status Measure

SES	Frequency	Valid percent
No cars	4	1.2
1 car	93	27.2
2 cars	186	54.4
3 or more cars	59	17.3
Missing	23	
Total	365	

The sample ethnicity can be found in Table 86, this suggested that the sample was predominantly White (87.8%). The rates for the national average can also be seen below (Gov, 2018), demonstrating that the sample in the study is fairly representative of the diversity in the UK. There were a few individuals who changed their reported ethnicity from Time 1 to Time 2, in these cases it was thought that having completed the questionnaire at home, individuals may have been able to ask their parents specifically and therefore make small changes.

Table 86

Ethnicity of sample and UK national average.

Ethnicity	Time 1 Sample frequency (%)	Time 2 Sample frequency (%)	National average percent
Asian	10 (2.8)	11 (3.0)	7.5
Black African	4 (1.1)	4 (1.1)	1.8
Black Caribbean	-	-	1.1
Mixed Asian and Black African	1 (0.3)	1 (0.3)	-
Mixed White and Asian	15 (4.2)	14 (3.9)	0.6
Mixed White and Black African	7 (1.9)	9 (2.5)	0.3
Mixed White and Black Caribbean	5 (1.4)	3 (0.8)	0.8
White British or Irish	281 (77.8)	300 (83.1)	81.4
White European/ American/ Australian	36 (10.0)	17 (4.7)	4.4
White Gypsy/ traveller	-	-	0.1
Latin American	1 (0.3)	1 (0.3)	-
Middle Eastern	1 (0.3)	1 (0.3)	2
Missing	4	4	
Total	365	365	

The frequency of responses to the pubertal timing question for this sample can be found in Table 87. Just under 50% of students described their pubertal timing as 'about the same' as their peers, just over 20% reported developing much or somewhat earlier than their peers, and just over 30% of students reported developing much or somewhat later than their peers. A total of 33 students chose not to answer this question.

Table 87

Self-reported pubertal timing.

	Frequency	Valid percent
Much earlier	19	5.7
Somewhat earlier	49	14.8
About the same	164	49.4
Somewhat later	73	22.0
Much later	27	8.1
Total	332	100
Missing	33	
Total	365	

The frequency of the reported impact of COVID-19 on adolescents can be found in table 88. Just over 30% agreed that they felt worse about their body image during lockdown, just over 15% said they felt about the same, and under 50% disagreed that they felt worse about their body image during lockdown compared to before. Just over 35% agreed that they felt more lonely during lockdown compared to before, just over 20% said they felt about the same, and just over 35% disagreed with the statement that they felt more lonely during lockdown compared to before. Just over 40% agreed that they coped worse during lockdown compared to before, just over 15% said they coped about the same, and just over 40% disagreed with the statement that they coped worse during COVID-19, compared to before. Finally, just over 15% agreed that their parents' social media rules changed during COVID-19, just over 20% said there was no change, and just over 60% disagreed with the statement that their parents' social media rules changed during lockdown compared to before. Of those who stated there had been a change in social media rules, the direction (e.g., more lenient or more stringent) was not detailed.

Table 88

Self-reported retrospective COVID-19 impact.

	Feel worse about body/ appearance frequency	Loneliness increased frequency	Psychosocial functioning decreased frequency	Parents rules for SNS changed frequency
Definitely agree	23 (6.7)	36 (10.5)	34 (9.9)	17 (4.9)
Mostly agree	93 (27.0)	97 (28.2)	117 (33.9)	44 (12.8)
Neither agree nor disagree	59 (17.1)	78 (22.7)	55 (15.9)	70 (20.3)
Mostly disagree	64 (18.6)	70 (20.3)	59 (17.1)	47 (13.6)
Definitely disagree	106 (30.7)	63 (18.3)	80 (23.2)	167 (48.4)
Total	345 (100.0)	344 (100.0)	345 (100.0)	345 (100.0)
Missing	20	21	20	20
Total	365	365	365	365

SNS use

SNS engagement was assessed similarly to at Time 1, using a number of different measures to capture different elements of SNS usage. First, participants recorded the number of SNS they used. Of the 365 participants, 340 (93.2%) reported using at least one SNS at Time 1, and 354 (97.0%) reported using at least one SNS at Time 2. Of the boys, 131 (89.1%) reported using a SNS at Time 1, and 139 (94.6%) reported using at least one SNS at Time 2. For girls, 205 (95.8%) reported using at least one SNS at Time 1, and 211 (98.6%) reported using SNS at Time 2. Self-reported gender at Time 2 was used for the gender split analysis. All participants who identified outside of the gender binary reported using at least one SNS at Time 1 and Time 2.

Number of SNS platforms and Time online. The most commonly used SNS at Time 1 was Whatsapp, which was used by 80.8% of the sample, this was followed by YouTube (67.1%), then Instagram (65.2%). For boys at Time 1, WhatsApp was again the most popular (75.5%), followed by YouTube (67.3%) and then Instagram (61.2%). For girls WhatsApp was also the most popular (84.1%), however TikTok was the second most popular (74.8%) followed by Instagram (68.2%). For Time 2, WhatsApp was again the most popular SNS (90.4% of whole sample) followed by Instagram (77.3%) and then YouTube (71.0%). For boys at Time 2, WhatsApp was the most popular (88.4%), followed by YouTube (73.5%), and then Instagram (70.1%). For girls at Time 2, WhatsApp was the most popular SNS (91.6%), followed by Instagram (82.2%), and then TikTok (80.4%). Further breakdowns on specific site usage can be found in table 89 below.

Table 89

Frequency of each SNS.

	Time 1				Time 2			
	Whole sample frequency (%)	Boys frequency (%)	Girls frequency (%)	Other frequency (%)	Whole sample frequency (%)	Boys frequency (%)	Girls frequency (%)	Other frequency (%)
WhatsApp	295 (80.8)	111 (75.5)	180 (84.1)	4 (100.0)	330 (90.4)	130 (88.4)	196 (91.6)	4 (100.0)
YouTube	245 (67.1)	99 (67.3)	143 (66.8)	3 (75.0)	259 (71.0)	108 (73.5)	147 (68.7)	4 (100.0)
Instagram	238 (65.2)	90 (61.2)	146 (68.2)	2 (50.0)	282 (77.3)	103 (70.1)	176 (82.2)	3 (75.0)
Snapchat	210 (57.5)	65 (44.2)	143 (66.8)	2 (50.0)	247 (67.7)	79 (53.7)	165 (77.1)	3 (75.0)
TikTok	218 (59.7)	57 (38.8)	158 (73.8)	3 (75.0)	255 (69.9)	80 (54.4)	172 (80.4)	3 (75.0)
Facebook	50 (13.7)	18 (12.2)	32 (15.0)	4 (100.0)	87 (23.8)	30 (20.4)	57 (26.6)	-
FB Messenger	54 (14.8)	13 (8.8)	41 (19.2)	4 (100.0)	73 (20.0)	21 (14.3)	52 (24.3)	-
Other	67 (18.4)	27 (18.4)	40 (18.7)	-	K77 (21.1)	23 (15.6)	53 (24.8)	1 (25.0)

On average, YouTube was the SNS which had the most time spent on it at Time 1 and at Time 2 this was TikTok. For boys specifically YouTube was the SNS with the longest average amount of time spent at Time 1, and it was also YouTube at Time 2. For girls the most time was spent on TikTok at Time 1 and TikTok at Time 2. Table 90 below also highlights the overall and split of time online.

Table 90

Frequency of time online (measured in hours per day).

	Time 1				Time 2			
	All years	Boys frequency (SD)	Girls frequency (SD)	Other frequency (SD)	All years	Boys frequency (SD)	Girls frequency (SD)	Other frequency (SD)
WhatsApp	0.84 (1.13)	0.78 (0.85)	0.83 (1.16)	3.33 (3.33)	0.66 (0.82)	0.69 (0.75)	0.63 (0.85)	1.05 (1.69)
YouTube	1.69 (1.43)	2.18 (1.63)	1.37 (1.18)	0.56 (0.10)	1.81 (1.36)	2.14 (1.29)	1.58 (1.38)	0.72 (.033)
Instagram	0.91 (0.74)	0.89 (0.80)	0.92 (0.70)	1.75 (0.35)	0.94 (.76)	0.77 (0.64)	1.01 (0.78)	2.33 (1.53)
Snapchat	1.00 (1.09)	0.68 (0.93)	1.15 (1.14)	0.75 (0.35)	1.22 (1.33)	0.93 (1.03)	1.33 (1.42)	2.06 (1.63)
TikTok	1.44 (1.37)	1.05 (0.95)	1.55 (1.42)	3.17 (3.33)	2.10 (1.60)	1.43 (1.03)	2.38 (1.72)	3.00 (1.73)
Facebook	0.35 (0.43)	0.43 (0.62)	0.31 (0.30)	-	0.44 (0.49)	0.53 (0.71)	0.39 (0.34)	-
FB Messenger	0.38 (0.80)	0.26 (0.37)	0.43 (0.92)	-	0.32 (0.36)	0.39 (0.43)	0.30 (0.34)	-
Other	1.22 (1.79)	1.84 (2.34)	0.64 (0.69)	-	1.72 (1.76)	1.98 (1.79)	1.62 (1.77)	-

Individuals had on average four SNS at Time 1 and 5 at Time 2 (see Table 91 below). The number of SNS that individuals used increased from Time 1 to Time 2 for the whole sample, and for both boys and girls. The sample who identified their gender outside the binary did not have enough power to show small, medium or large effects and therefore was not included in the t-test, however the means have been reported. The table shows the average number of SNS for each gender and overall, at Time 1 and Time 2 each year group was collapsed for this analysis, paired sample t-tests were run to evaluate the strength of the difference.

Table 91

Average number of SNS.

| | Mean (SD) | | | | | |
	Time 1	Time 2	T	df	P	Effect size
Whole sample	4.05 (1.86)	4.73 (1.73)	-.82	330	<.001**	-.45
Boys	3.64 (1.79)	4.35 (1.77)	-5.15	125	<.001**	-.46
Girls	4.31 (1.87)	4.97 (1.67)	-6.17	200	<.001**	-.44
Other	3.50 (1.29)	4.50 (1.00)	-	-	-	-

* denotes p ≤ .05, ** denotes p ≤ .001.

H1: Social media use will increase from Time 1 to Time 2

Paired samples t-tests were run to explore any differences in rates of SNS engagement between Time 1 and Time 2. There was strong evidence that girls spent more time on SNS at Time 2 compared to Time 1, and some evidence that boys spent more time on SNS at Time 2 compared to Time 1. Furthermore, there was some evidence that girls reported higher SNS activity at Time 2 compared to Time 1. There was no evidence of a difference of reported usage for boys between Time 1 and Time 2 (see table 92).

Table 92

Paired samples t-tests to explore gender differences for both measures of SNS engagement from Time 1 to Time 2

	Boys						Girls					
	Time 1 mean (SD)	Time 2 mean (SD)	df	p	t	Cohen's d	Time 1 mean (SD)	Time 2 mean (SD)	df	p	T	Cohen's d
SNS time	.79 (.76)	.98 (.75)	112	.032*	-2.18	-.21	1.03 (.90)	1.47 (1.04)	194	<.001**	-5.06	-.36
SNS activity	2.97 (1.32)	3.15 (1.09)	120	.187	-1.33	-.12	3.58 (1.47)	3.82 (.98)	192	.045*	-2.02	-.15

* denotes p ≤ .05, ** denotes p ≤ .001.

H2: There will be higher reported body image concerns at Time 2 compared to Time 1, and a decrease in reported wellbeing and psychosocial functioning at Time 2 compared to Time 1, for both boys and girls.

Paired samples t-tests were run to explore any differences in rates of body image, wellbeing, and psychosocial behaviour measures between Time 1 and Time 2. For boys, in line with the hypothesis, there was higher reported functioning at Time 1 compared to Time 2, and lower internalisation of muscular ideals at Time 1 compared to Time 2. In contradiction to the hypothesis, there was higher drive for thinness and negative affect for boys at Time 1 compared to Time 2, and lower self-esteem at Time 1 compared to Time 2.

For girls, in line with the hypothesis, there was higher reported functioning, higher body appreciation, lower drive for thinness, lower internalisation of muscular ideals, and lower loneliness at Time 1 compared to Time 2. Contrary to the hypothesis, negative affect was higher at Time 1 compared to Time 2. Overall, there was mixed evidence for this hypothesis (see table 93).

Table 93

Paired samples t-tests to explore differences in reported body image, wellbeing, and psychosocial functioning between Time 1 and Time 2

	Boys						Girls					
	Time 1 mean (SD)	Time 2 mean (SD)	df	p	t	Cohen's d	Time 1 mean (SD)	Time 2 mean (SD)	df	p	T	Cohen's d
Body appreciation	3.80 (.80)	3.73 (.76)	137	.293	1.06	.09	3.42 (1.03)	3.26 (.99)	201	.012*	2.53	.18
Drive for thinness	2.47 (1.15)	2.02 (.89)	139	<.001**	5.01	.42	2.69 (1.28)	2.97 (1.39)	199	.003*	-3.02	-.21
Internalisation of muscular ideals	2.63 (.88)	2.96 (.78)	144	<.001**	-4.17	-.35	1.98 (.81)	2.21 (.82)	204	<.001**	-3.58	-.25
Loneliness	1.65 (1.00)	1.67 (.83)	140	.813	-.24	-.02	2.02 (1.20)	2.19 (1.22)	202	.042*	-2.05	-.14
Self-esteem	3.77 (.79)	4.28 (1.19)	138	<.001**	-5.36	-.45	3.40 (1.02)	3.57 (1.57)	202	.090	-1.70	-.12
Negative affect	2.10 (.68)	1.84 (.58)	136	<.001**	4.28	.37	2.36 (.76)	2.19 (.68)	197	<.001**	3.56	.25
Problem behaviour	1.71 (.64)	1.70 (.55)	132	.818	.23	.02	1.69 (.70)	1.75 (.61)	196	.124	-1.54	-.11
Functioning	4.56 (.91)	4.25 (.85)	129	<.001**	4.35	.38	4.40 (1.11)	4.01 (.98)	194	<.001**	5.52	.39

* denotes p ≤ .05, ** denotes p ≤ .001.

H3: For both boys and girls higher SNS use will be associated with higher BI concerns at Time 1 and Time 2. The indirect effects will be stronger at Time 2, than Time 1.

Testing the body image model for boys at Time 1. The model tested included both SNS activity and time on SNS as IVs, age as a covariate, objectification as a mediator, and body appreciation, drive for thinness and internalisation of muscular ideals as the three outcome variables.

First, an unconstrained saturated model was run (Figure 31), this was deemed unidentifiable by AMOS ($\chi2/df$ = .00/0, DEFAULT MODEL: NFI = 1.00 CFI = 1.00, RMSEA = .237). Of the 15 proposed paths and 6 proposed covariances, 10 paths and 4 covariances were non-significant.

Figure 31. *Boys' proposed body image model.*
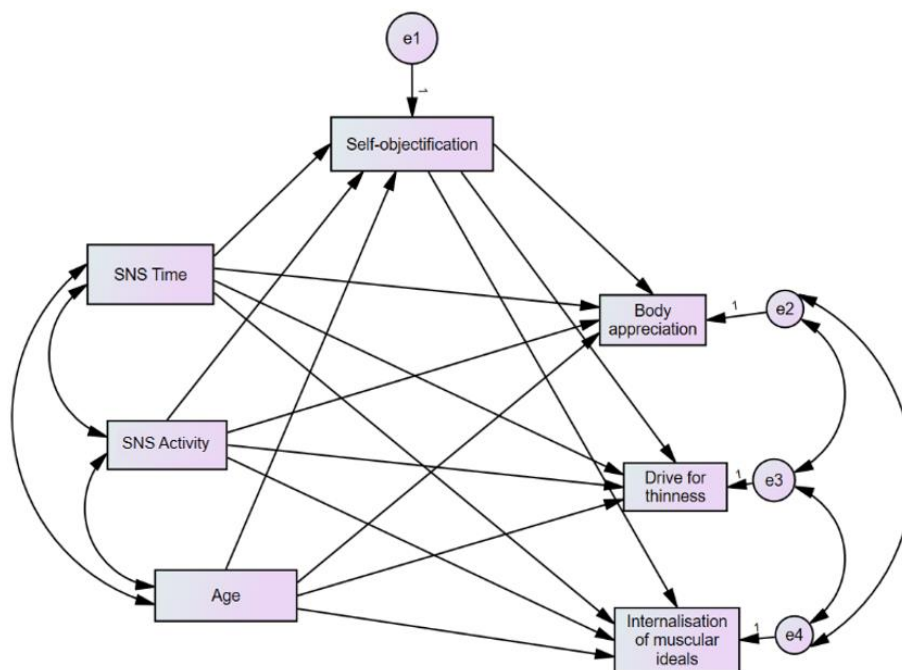
After inspecting this model (Figure 31), the non-significant paths were removed to increase parsimony ($\chi2/df$ = 1.97/6 = 0.33, p = .922; DEFAULT MODEL: NFI = .982, CFI = 1.00, RMSEA = .000). Modification indices did not suggest the inclusion of additional paths. Following this, the covariance between SNS time and age was removed. This resulted in a reduced model fit, ($\chi2/df$ = 5.084/7 = 0.73, p = .650; DEFAULT MODEL: NFI = .955 CFI = 1.00, RMSEA = .000). Given the preference for a

parsimonious model and the improved fit the previous model was carried forward (Figure 32; Table 94).
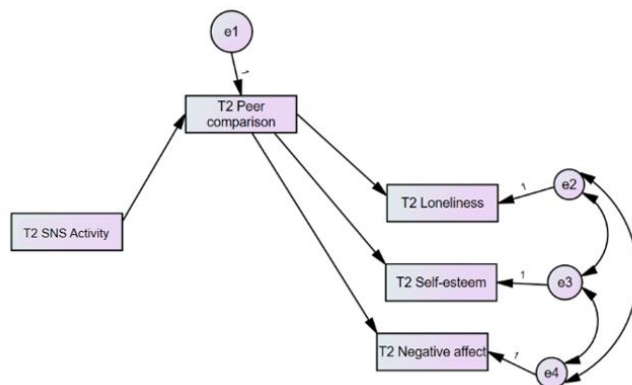
Figure 32. *Boys' Time 1 final body image model.*
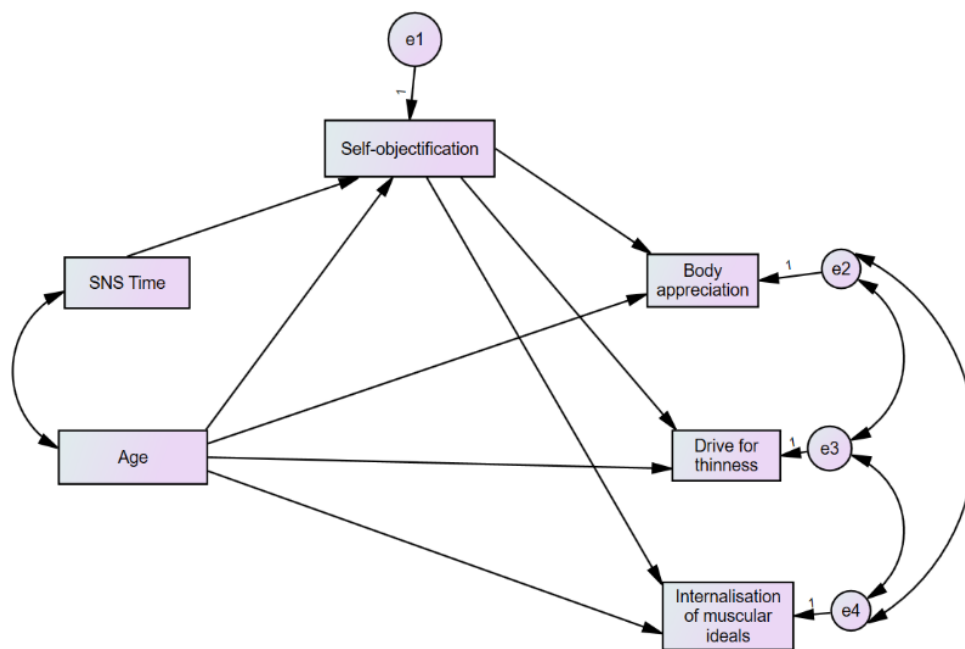
Table 94

Standardized direct, indirect, and total effects from the final significant parsimonious model for boys at Time 1.
SNS time on body image concerns, with objectification as mediator and age as covariate.

		Effects (β)		
Predictor	Predicted variable	Direct β	Indirect β	Total β
IV: SNS time	Objectification	.32**	-	.32
	Body appreciation	-	-.11	-.11
	Drive for thinness	-	.10	.10
	Internalisation of muscular ideals	-	.18	.18
Cov: Age	Objectification	-	-	-
	Body appreciation	-	-	-
	Drive for thinness	-.17*	-	-.17
	Internalisation of muscular ideals	-	-	-
Me: Objectification	Body appreciation	-.35**	-	-.35
	Drive for thinness	.31**	-	.31
	Internalisation of muscular ideals	.55**	-	.55

Note. Direct effect significance values taken from regression weights table. IV = Independent
Variable; Cov = Covariate; Me = Mediator. * denotes p ≤ .05, ** denotes p ≤ .001.

Testing the body image model for boys at Time 2. The model tested included both SNS
activity and Time on SNS as IVs, age as a covariate, objectification as a mediator, and body
appreciation, drive for thinness and internalisation of muscular ideals as the three outcome
variables.

First, an unconstrained saturated model was run Figure 31, this was deemed unidentifiable
by AMOS (χ2/df = .000/0, DEFAULT MODEL: NFI = 1.00 CFI = 1.00, RMSEA = .227). Of the 15
proposed paths and 6 proposed covariances, 12 paths and 1 covariances was non-significant.

After inspecting this model (Figure 31), the non-significant paths were removed to increase
parsimony (χ2/df = 3.80/2 = 1.90, p = .149; DEFAULT MODEL: NFI = .947, CFI = .972, RMSEA = .083).
Modification indices did not suggest the inclusion of additional paths. Given the preference for a

parsimonious model and the improved fit the second model was carried forward (Figure 33; Table 95).
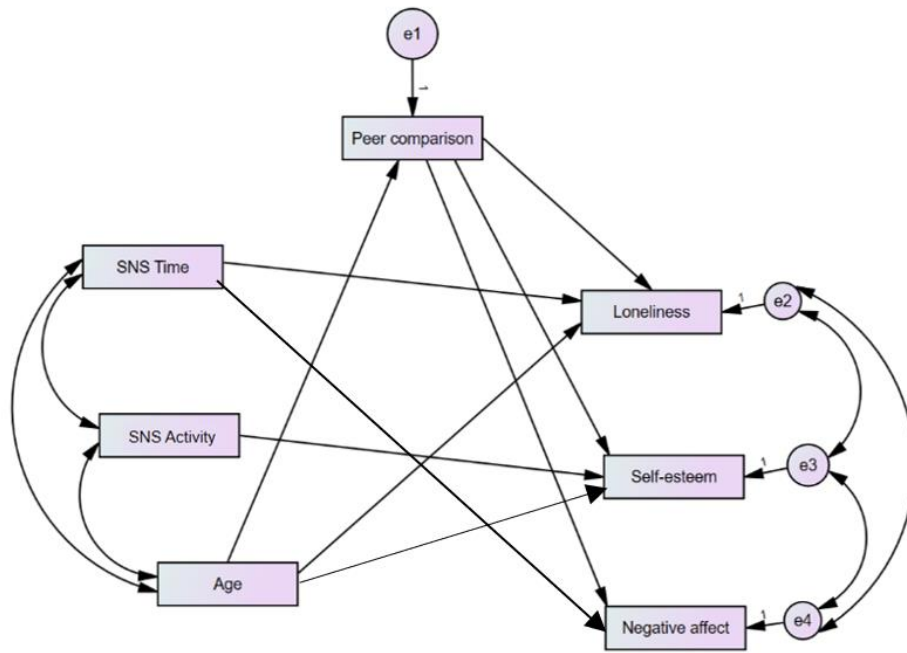
Figure 33. *Boys' Time 2 final model.*
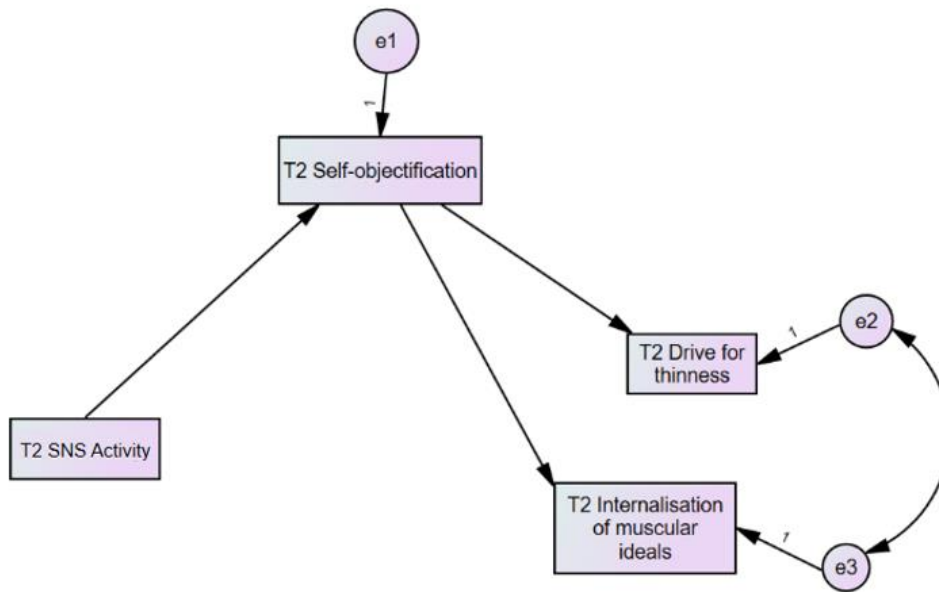
Table 95

Standardized direct, indirect, and total effects from the final significant parsimonious model for boys at Time 2. SNS activity on body image concerns, with objectification as mediator.

Predictor	Predicted variable	Effects (β)		
		Direct β	Indirect β	Total β
IV: SNS activity	Objectification	.33**	-	.33
	Drive for thinness	-	.12	.12
	Internalisation of muscular ideals	-	.14	.14
Me: Objectification	Drive for thinness	.37**	-	.37
	Internalisation of muscular ideals	.43**	-	.43

Note. Direct effect significance values taken from regression weights table. IV = Independent Variable; Cov = Covariate; Me = Mediator. * denotes $p \leq .05$, ** denotes $p \leq .001$.

Comparison between the body image models for boys at Time 1 and Time 2. There were a number of differences between the model at Time 1 and Time 2. At both timepoints the final model showed good model fit. The model at Time 1 showed a better fit compared to Time 2, however the model at Time 2 was more parsimonious than Time 1. Furthermore, at Time 1 there was evidence that age was a covariate for drive for thinness, but no other outcome variables, whereas at Time 2 age did not impact any variable. Furthermore, at Time 1 time on SNS was a better predictor of the relationship between SNS use and body image concerns that SNS activity, whereas at Time 2 SNS activity was the better predictor. Finally, at Time 1 body appreciation was predicted by SNS time, through the mediator objectification, however at Time 2 this relationship was not found. The indirect effect of SNS engagement to drive for thinness, through objectification, was stronger at Time 2 compared to Time 1, however the indirect effect of SNS engagement to internalisation of muscular ideals through objectification was stronger at Time 1 than Time 2.

Testing the body image model for girls at Time 1. The model tested included both SNS activity and time on SNS as IVs, age as a covariate, objectification as a mediator, and body appreciation, drive for thinness and internalisation of muscular ideals as the three outcome variables.

First, an unconstrained saturated model was run (Figure 34), this was deemed unidentifiable by AMOS ($\chi 2/df$ = .00/0, DEFAULT MODEL: NFI = 1.00 CFI = 1.00, RMSEA = .275). Of the 15 proposed paths and 6 proposed covariances, 9 paths and 2 covariances were non-significant.

Figure 34. *Girls' Time 1 proposed model.*
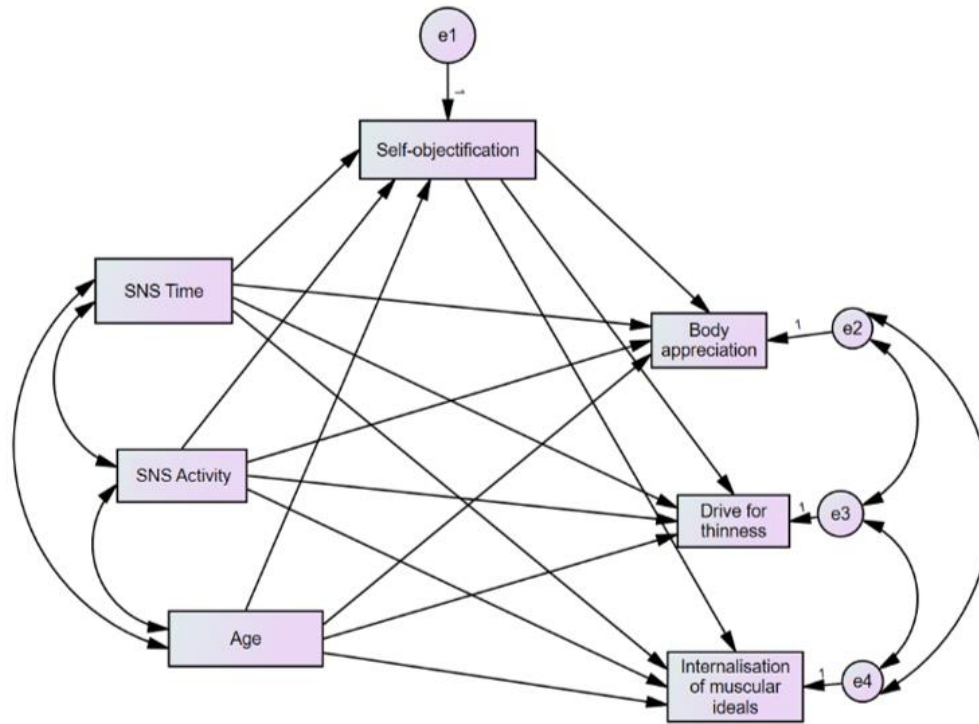
After inspecting this model (Figure 34), the non-significant paths were removed to increase parsimony ($\chi2$/df = 3.46/5 = 0.69, p = .629; DEFAULT MODEL: NFI = .987, CFI = 1.00, RMSEA = .000). Modification indices did not suggest the inclusion of additional paths. The two non-significant covariances between the DVs were removed, however this results in a reduced model fit ($\chi2$/df = 6.704/7 = 0.96, p = .460; DEFAULT MODEL: NFI = .974 CFI = 1.00, RMSEA = .000). Given the preference for a parsimonious model and the improved fit the previous model was carried forward (Figure 35; Table 96).

Figure 35. *Girls' Time 1 final body image model.*
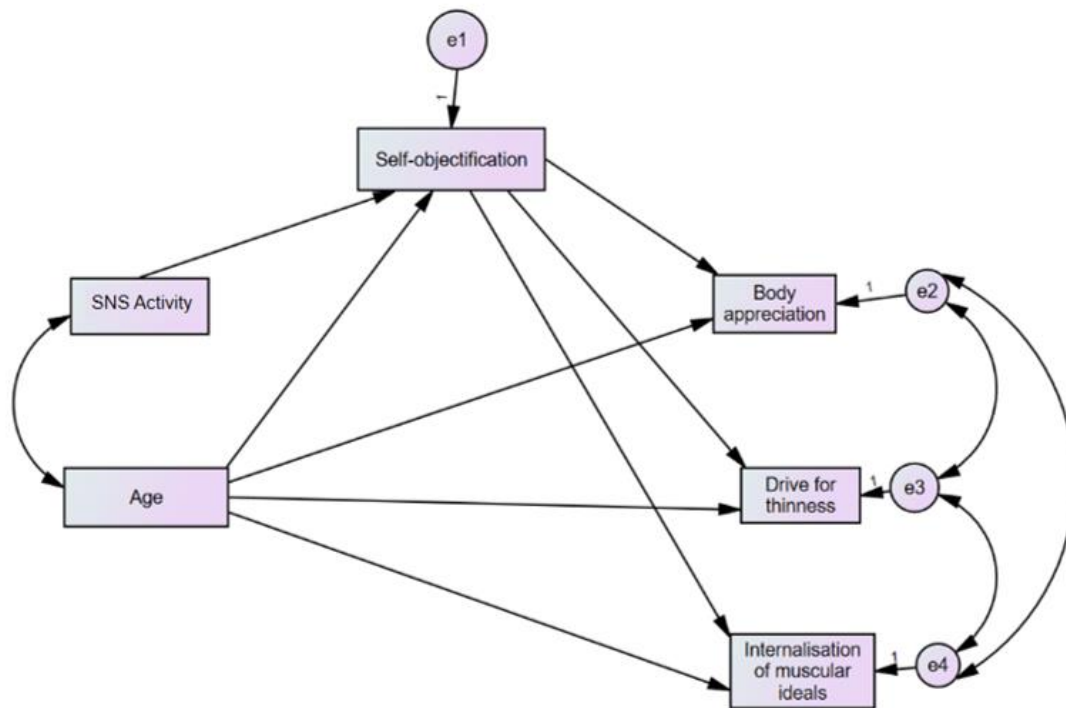
Table 96.

Standardized direct, indirect, and total effects from the final significant parsimonious model for girls at Time 1. SNS activity on body image concerns, with objectification as mediator.

Predictor	Predicted variable	Effects (β) Direct β	Indirect β	Total β
IV: SNS activity	Objectification	.26**	-	.26
	Body appreciation	-	-.17	-.17
	Drive for thinness	-	.12	.12
	Internalisation of muscular ideals	-	.06	.06
Cov: Age	Objectification	.17*	-	.17
	Body appreciation	-16**	-.11	-.27
	Drive for thinness	-	.08	.08
	Internalisation of muscular ideals	-	.04	.04
Me: Objectification	Body appreciation	-.63**	-	-.63
	Drive for thinness	.46**	-	.46
	Internalisation of muscular ideals	.25**	-	.25

Note. Direct effect significance values taken from regression weights table. IV = Independent Variable; Cov = Covariate; Me = Mediator. * denotes p ≤ .05, ** denotes p ≤ .001.

### Testing the body image model for girls at Time 2

The model tested included both SNS activity and time on SNS as IVs, age as a covariate, objectification as a mediator, and body appreciation, drive for thinness and internalisation of muscular ideals as the three outcome variables.

First, an unconstrained saturated model was run (Figure 34), this was deemed unidentifiable by AMOS ($\chi2/df$ = .000/0, DEFAULT MODEL: NFI = 1.00 CFI = 1.00, RMSEA = .288). Of the 15 proposed paths and 6 proposed covariances, 11 paths and 2 covariances were non-significant.

After inspecting this model (Figure 34), the non-significant paths were removed to increase parsimony ($\chi2/df$ = 4.24/4 = 1.06, p = .374; DEFAULT MODEL: NFI = .985, CFI = .992, RMSEA = .018). Modification indices did not suggest the inclusion of additional paths. Given the preference for a

parsimonious model and the improved fit the second model was carried forward (Figure 36; Table 97).
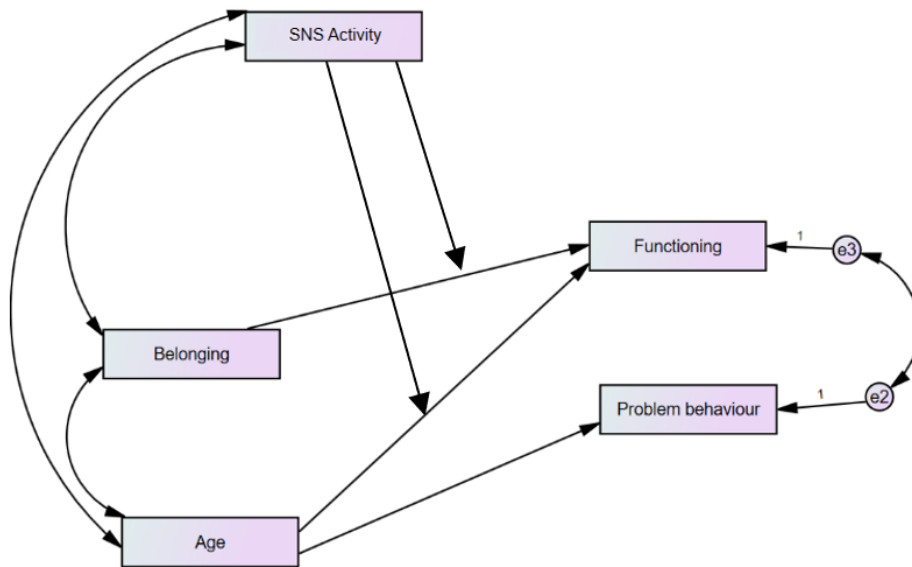
Figure 36. *Girls' Time 2 final model.*
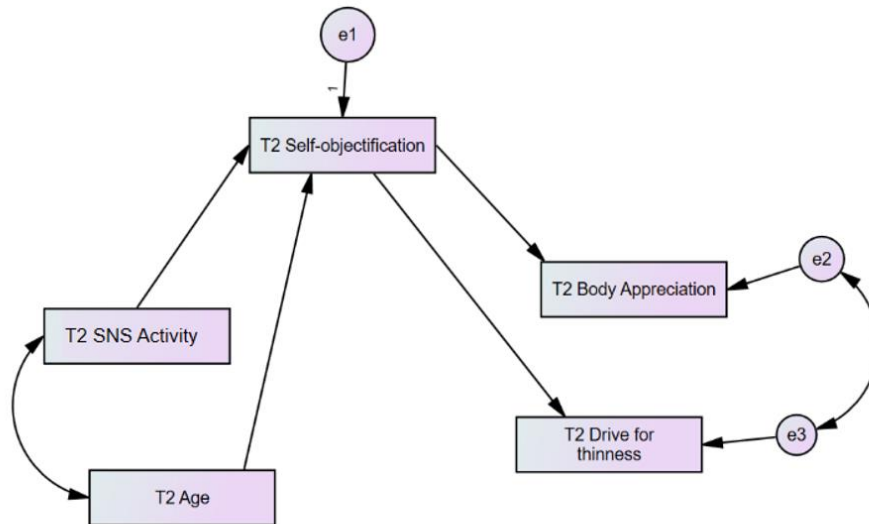
Table 97

Standardized direct, indirect, and total effects from the final significant parsimonious model for girls at Time 2. SNS activity on body image concerns, with objectification as mediator.

Predictor	Predicted variable	Effects (β)		
		Direct β	Indirect β	Total β
IV: SNS activity	Objectification	.35**	-	.35
	Body appreciation	-	-.23	-.23
	Drive for thinness	-	.22	.22
Cov: Age	Objectification	.16*	-	.16
	Body appreciation	-	-.11	-.11
	Drive for thinness	-	.10	.10
Me: Objectification	Body appreciation	-.65**	-	-.65
	Drive for thinness	.62**	-	.62

Note. Direct effect significance values taken from regression weights table. IV = Independent Variable; Cov = Covariate; Me = Mediator. * denotes p ≤ .05, ** denotes p ≤ .001.

Comparison between the body image models for girls at Time 1 and Time 2. There were a number of differences between the model at Time 1 and Time 2. At both timepoints there was good model fit for the final model. At Time 1 the model fit was stronger compared to Time 2, however Time 2 was more parsimonious than Time 1. Furthermore, at Time 1 there was evidence that age was a covariate for objectification and body appreciation, whereas at Time 2 age was a covariate only for objectification. Furthermore, Time 1 internalisation of muscular ideals was predicted by SNS time, through the mediator objectification, however at Time 2 this relationship was not found. At Time 2, all indirect relationships were stronger compared to Time 1.

H4: For both boys and girls higher SNS use will be associated with lower reported wellbeing at Time 1 and Time 2. The indirect effects will differ from Time 1 to Time 2.

Testing the wellbeing models for boys at Time 1. The model tested included both SNS activity and time on SNS as IVs, age as a covariate, peer comparison as a mediator, and loneliness, self-esteem, and negative affect as the three outcome variables.

First, an unconstrained saturated model was run (Figure 37). This was deemed unidentifiable by AMOS ($\chi2/df$ = .000/0, DEFAULT MODEL: NFI = 1.00 CFI = 1.00, RMSEA = .223). Of the 15 proposed paths and 6 proposed covariances, 12 paths and 2 covariances were non-significant.

Figure 37. *Boys' proposed wellbeing model.*
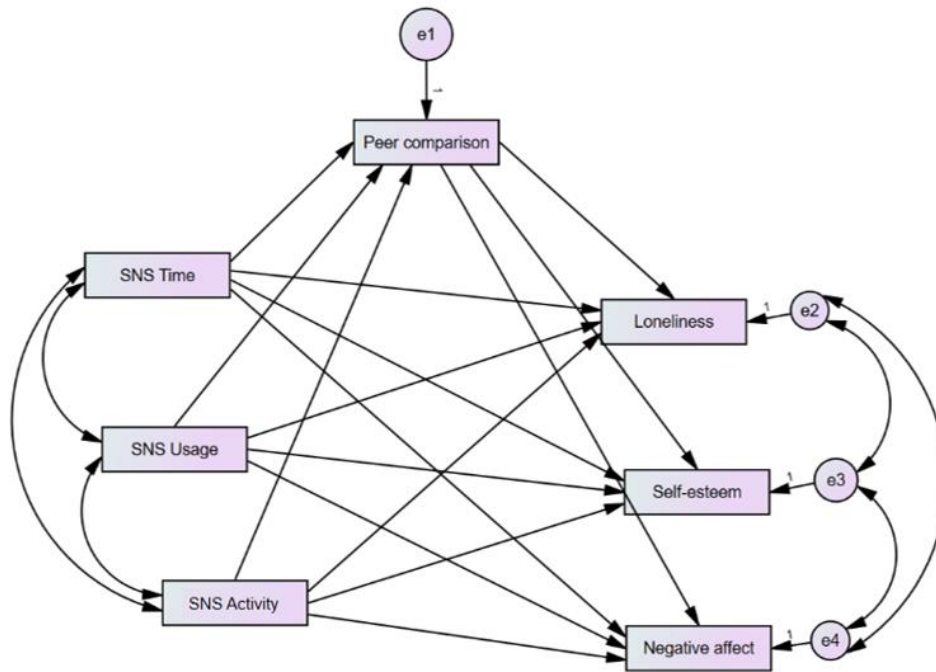
After inspecting this model (Figure 37), the non-significant paths were removed to increase parsimony (χ2/df = 2.72/5 = 0.54, p = .743; DEFAULT MODEL: NFI = .970, CFI = 1.000, RMSEA = .000). Modification indices did not suggest the inclusion of additional paths. The non-significant covariance path (between SNS time and age) was removed. This resulted in a worse fit (χ2/df = 5.89/6 = 0.98, p = .435; DEFAULT MODEL: NFI = .936, CFI = 1.000, RMSEA = .000). Given the preference for a parsimonious model and the improved fit the previous model was carried forward (Figure 38; Table 98).
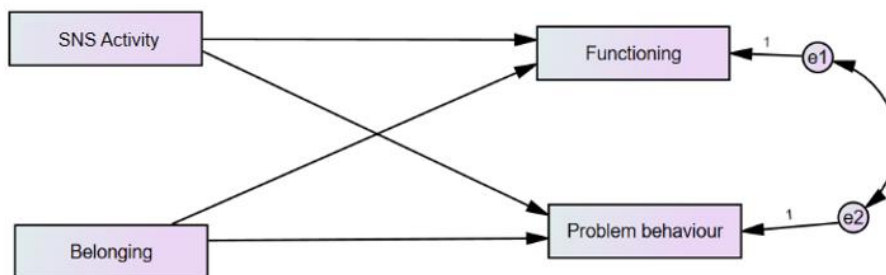
Figure 38. *Boys' Time 1 final wellbeing model.*
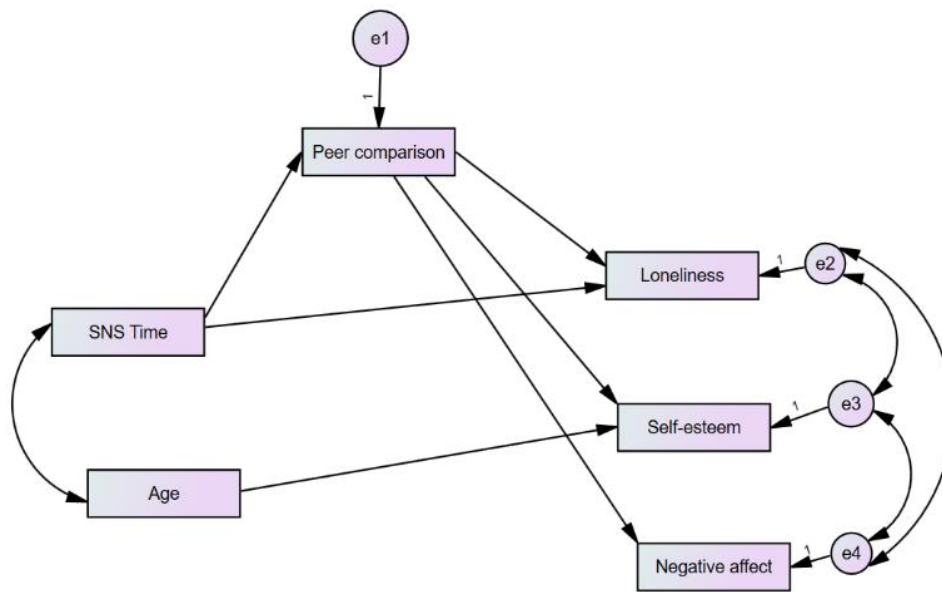
Table 98

Standardized direct, indirect, and total effects from the final significant parsimonious model for boys at Time 1. SNS time on wellbeing, with peer comparison as mediator and age as covariate.

| Predictor	Predicted variable	Effects (β) Direct β	Indirect β	Total β
IV: SNS time	Peer comparison	.21*	. -	.21
	Self-Esteem	-	-.06	-.06
	Negative affect	-	.04	.04
	Loneliness	-.22*	.05	-.17
Cov: Age	Peer comparison	-	-	-
	Self-Esteem	-.15*	-	-.15
	Negative affect	-	-	-
	Loneliness	-	-	-
Me: Peer comparison	Self-Esteem	-.29**	-	-.29
	Negative affect	.20*	-	.20
	Loneliness	.23*	-	.23

Note. Direct effect significance values taken from regression weights table. IV = Independent Variable; Cov = Covariate; Me = Mediator. * denotes p ≤ .05, ** denotes p ≤ .001.

Testing the wellbeing model for boys at Time 2. The model tested included both SNS activity and time on SNS as IVs, age as a covariate, peer comparison as a mediator, and loneliness, self-esteem, and negative affect as the three outcome variables.

First, an unconstrained saturated model was run (Figure 37). This was deemed unidentifiable by AMOS (χ2/df = .000/0, DEFAULT MODEL: NFI = 1.00 CFI = 1.00, RMSEA = .246). Of the 15 proposed paths, 11 paths were non-significant, all 6 of the covariances were significant.

After inspecting this model (Figure 37), the non-significant paths were removed to increase parsimony (χ2/df = 2.64/3 = 0.88, p = .451; DEFAULT MODEL: NFI = .976, CFI = 1.000, RMSEA = .000). Modification indices did not suggest the inclusion of additional paths. Given the preference for a parsimonious model and the improved fit the second model was carried forward (Figure 39; Table 99).

Figure 39. *Boys' Time 2 final model.*

Table 99

Standardized direct, indirect, and total effects from the final significant parsimonious model for boys at Time 2. SNS activity on wellbeing, with peer comparison as mediator.

		Effects (β)		
Predictor	Predicted variable	Direct β	Indirect β	Total β
IV: SNS activity	Peer comparison	.38**	-	.38
	Self-Esteem	-	-.09	-.09
	Negative affect	-	.17	.17
	Loneliness	-	.12	.12
Me: Peer comparison	Self-Esteem	-.23*	-	-.23
	Negative affect	.44**	-	.44
	Loneliness	.32**	-	.32

Note. Direct effect significance values taken from regression weights table. IV = Independent Variable; Me = Mediator. * denotes p ≤ .05, ** denotes p ≤ .001.

Comparison between the wellbeing models for boys at Time 1 and Time 2. The final model at both Time 1 and Time 2 had good fit. There were a number of differences between the model at Time 1 and Time 2. At Time 1 there was evidence that age was a covariate for self-esteem, whereas at Time 2 age was not a relevant covariate in the model at all. Furthermore, at Time 1, SNS time was a predictor of the three outcome variables, whereas at Time 2 SNS activity was a better predictor. Finally, at Time 1 peer comparison fully mediated the relationship between the SNS engagement measure and self-esteem and negative affect, and partially mediated the relationship between the SNS engagement measure and loneliness, however at Time 2 peer comparison fully mediated the relationship between the SNS engagement measure and all three outcome variables. All indirect effects at Time 2 were stronger than Time 1.

Testing the wellbeing model for girls at Time 1. The model tested included both SNS activity and time on SNS as IVs, age as a covariate, peer comparison as a mediator, and loneliness, self-esteem, and negative affect as the three outcome variables.

First, an unconstrained saturated model was run (Figure 40). This was deemed unidentifiable by AMOS ($\chi 2/df$ = .000/0, DEFAULT MODEL: NFI = 1.00 CFI = 1.00, RMSEA = .318). Of the 15 proposed paths, 8 paths were non-significant. All 6 proposed covariances were significant.

Figure 40. *Girls' proposed wellbeing model.*
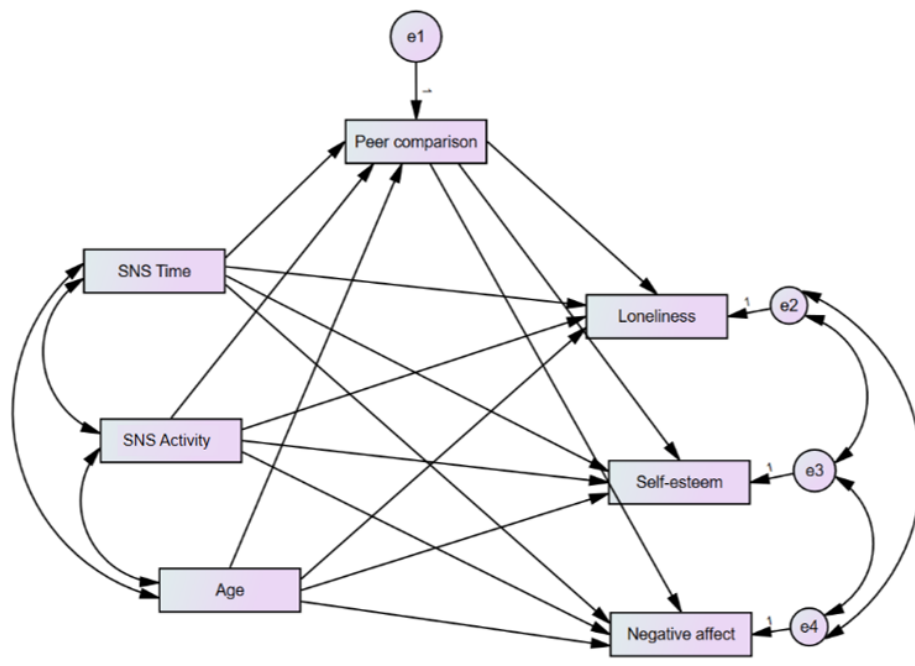
After inspecting this model (Figure 40), the non-significant paths were removed to increase parsimony ($\chi 2/df$ = 16.30/8 = 2.04, p = .038; DEFAULT MODEL: NFI = .964, CFI = .981, RMSEA = .072). Modification suggested the inclusion of two additional pathways, a pathway between age and loneliness, and a pathway between age and self-esteem. These were added and the model was rerun ($\chi 2/df$ = 8.05/6 = 1.34, p = .234; DEFAULT MODEL: NFI = .982, CFI = .995, RMSEA = .041). This improved the fit, therefore given the preference for a parsimonious model and the improved fit the last model was carried forward (Figure 41; Table 100)
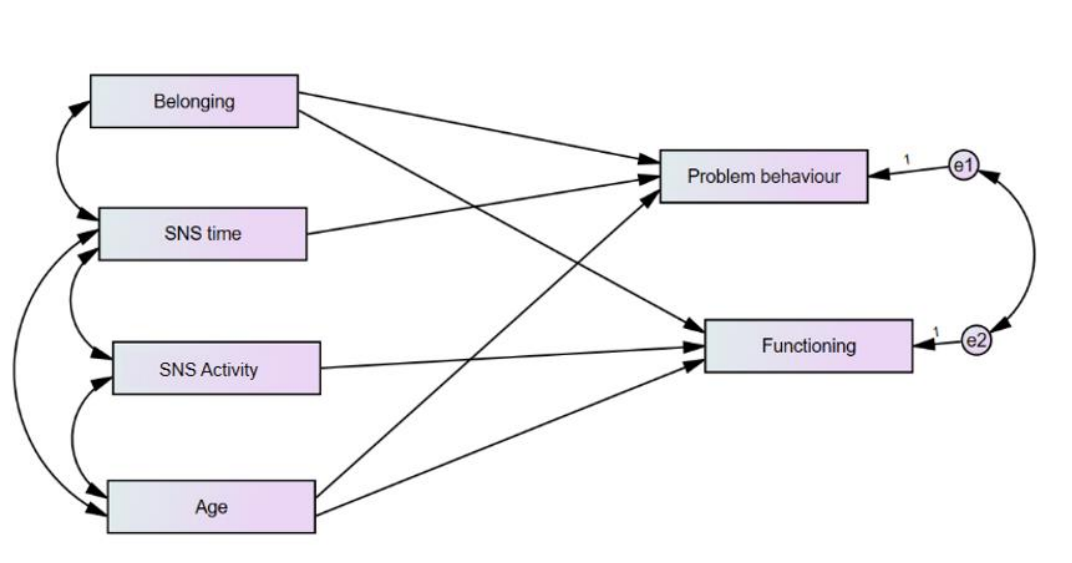
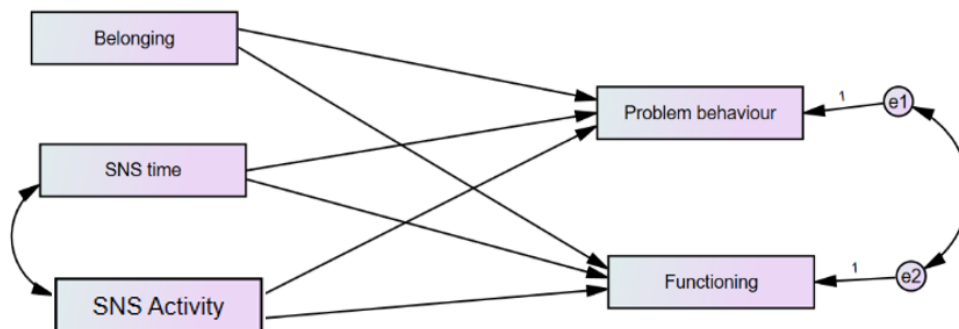**Figure 41**. *Girls' Time 1 final wellbeing model.*

Table 100

Standardized direct, indirect, and total effects from the final significant parsimonious model for girls at Time 1. SNS engagement on wellbeing, with peer comparison as mediator and age as covariate.

		Effects (β)		
Predictor	Predicted variable	Direct β	Indirect β	Total β
IV: SNS time	Peer comparison	-	-	-
	Self-Esteem	-	-	-
	Negative affect	.24**	-	.24
	Loneliness	.14*	-	.14
IV: SNS activity	Peer comparison	-	-	-
	Self-Esteem	-.20**	-	-.20
	Negative affect	-	-	-
	Loneliness	-	-	-
Cov: Age	Peer comparison	.31**	-	.31
	Self-Esteem	-.08	-.26	-.24
	Negative affect	-	.11	.11
	Loneliness	-.10	.11	.01
Me: Peer comparison	Self-Esteem	-.50**	-	.35
	Negative affect	.36**	-	.36
	Loneliness	.35**	-	-.50

Note. Direct effect significance values taken from regression weights table. IV = Independent Variable; Cov = Covariate; Me = Mediator. * denotes p ≤ .05, ** denotes p ≤ .001.

Testing the wellbeing model for girls at Time 2. The model tested included both SNS activity and time on SNS as IVs, age as a covariate, peer comparison as a mediator, and loneliness, self-esteem, and negative affect as the three outcome variables.

First, an unconstrained saturated model was run (Figure 40), this was deemed unidentifiable by AMOS ($\chi2/df$ = .000/0, DEFAULT MODEL: NFI = 1.00 CFI = 1.00, RMSEA = .248). Of the 15 proposed paths, 9 paths were non-significant, all 6 of the covariances were significant.

After inspecting this model (Figure 40), the non-significant paths were removed to increase parsimony ($\chi2/df$ = 4.89/5 = 0.98, p = .429; DEFAULT MODEL: NFI = .976, CFI = 1.000, RMSEA = .000). Modification indices did not suggest the inclusion of additional paths. Given the preference for a

parsimonious model and the improved fit the second model was carried forward (Figure 42; Table 101)

Figure 42. *Girls' Time 2 final model.*
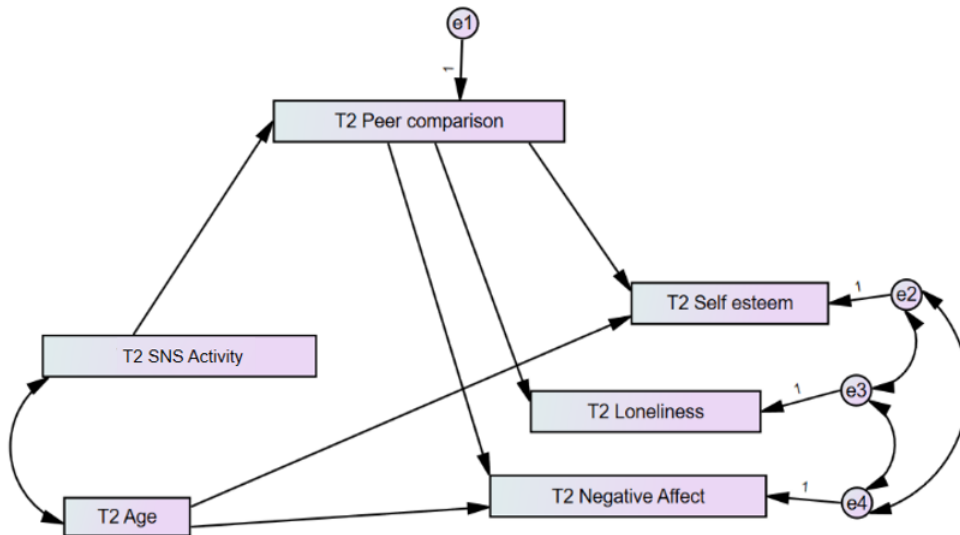
Table 101

Standardized direct, indirect, and total effects from the final significant parsimonious model for girls at Time 2. SNS activity on wellbeing, with peer comparison as mediator and age as covariate.

		Effects (β)		
Predictor	Predicted variable	Direct β	Indirect β	Total β
IV: SNS activity	Peer comparison	.34**	-	.34
	Self-Esteem	-	-.11	-.11
	Negative affect	-	.14	.14
	Loneliness	-	.13	.13
Cov: Age	Peer comparison	-	-	-
	Self-Esteem	-.18*	-	-.18
	Negative affect	.15*	-	.15
	Loneliness	-	-	-
Me: Peer comparison	Self-Esteem	-.32**	-	-.32
	Negative affect	.41**	-	.41
	Loneliness	.38**	-	.38

Note. Direct effect significance values taken from regression weights table. IV = Independent Variable; Cov = Covariate; Me = Mediator. * denotes p ≤ .05, ** denotes p ≤ .001.

Comparison between the wellbeing models for girls at Time 1 and Time 2. There were a number of differences between the model at Time 1 and Time 2. Both final models had a good fit, however the model at Time 2 had a better model fit, and was more parsimonious. At Time 1 there was evidence that both measures for SNS engagement (SNS time and SNS activity) were direct predictors of the outcome variables, whereas at Time 2 SNS activity was the only IV which predicted the outcome variables, and at Time 2 these relationships were fully mediated by peer comparison. Furthermore, at Time 1 there was evidence that age was a direct covariate on peer comparison, loneliness and self-esteem, and an indirect covariate on loneliness, self-esteem and negative affect, through peer comparison. At Time 2, this was only a direct covariate for self-esteem and negative affect. Due to the lack of mediation at Time 1, there was no indirect effect between either measure of SNS engagement and the outcome variables.

H5: For both boys and girls higher SNS use will be associated with lower reported psychosocial functioning at Time 1 and Time 2. The direct effects will be stronger at Time 2 compared to Time 1.

Testing the psychosocial functioning model for boys at Time 1. The model tested included both SNS activity and time on SNS as IVs, age as a covariate, belonging as a moderator, and problem behaviour and functioning as the two outcome variables.

First, an unconstrained saturated model was run (Figure 43). This was deemed unidentifiable by AMOS ($\chi2/df$ = .000/0, DEFAULT MODEL: NFI = 1.00 CFI = 1.00, RMSEA = .236). Of the 12 proposed paths and 16 proposed covariances, 8 paths and 11 covariances were non-significant.

Figure 43. *Boys' proposed model.*
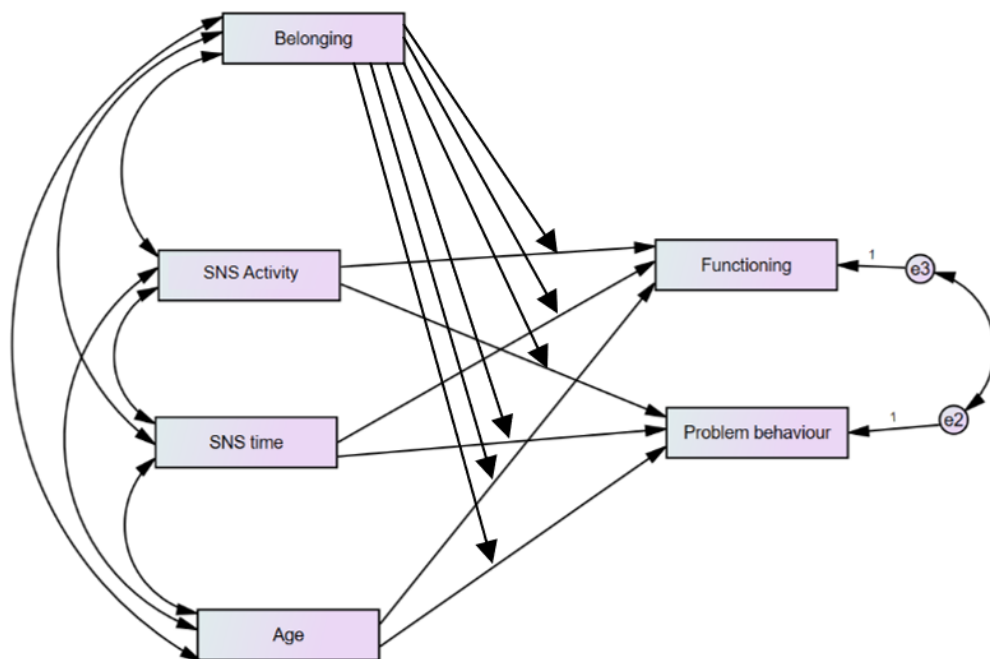
After inspecting this model (Figure 43), the non-significant paths were removed to increase parsimony ($\chi2/df$ = .770/2 = 0.385, p = .681; DEFAULT MODEL: NFI = .988, CFI = 1.000, RMSEA = .000). Modification indices did suggest the inclusion of additional pathways and these were included. This resulted in a slightly worse fit, but a more parsimonious model ($\chi2/df$ = 2.93/5 = 0.59, p = .710;

DEFAULT MODEL: NFI = .951, CFI = 1.000, RMSEA = .000). Given the preference for a parsimonious model and the acceptable fit the second model was carried forward (Figure 44; Table 102)

Figure 44. *Boys' Time 1 final psychosocial functioning model.*

Table 102

Standardized direct, indirect, and total effects from the final significant parsimonious model for boys at Time 1. Belonging on psychosocial functioning, SNS activity as moderator and age as covariate.

Predictor	Predicted variable	Direct β	Indirect β	Total β
		Effects (β)		
IV: Belonging	Problem behaviour	-	-	-
	Functioning	.44**	-	.44
Cov: Age	Problem behaviour	-.22*	-	-.22
	Functioning	-.20*	-	-.20
Mo: Belonging x SNS activity	Problem behaviour	-.23*	-	-.23
	Functioning	-	-	-

Note. Direct effect significance values taken from regression weights table. IV = Independent Variable; Cov = Covariate; Mo = Moderator. * denotes p ≤ .05, ** denotes p ≤ .001.

Testing the psychosocial functioning model for boys at Time 2. The model tested included both SNS activity and time on SNS as IVs, age as a covariate, belonging as a moderator, and problem behaviour and functioning as the two outcome variables.

First, an unconstrained saturated model was run (Figure 43). This was deemed unidentifiable by AMOS (χ2/df = .000/0, DEFAULT MODEL: NFI = 1.00 CFI = 1.00, RMSEA = .220). Of the 12 proposed paths and 16 proposed covariances, 9 paths and 10 covariances were non-significant.

After inspecting this model (Figure 43), the non-significant paths were removed to increase parsimony (χ2/df = .01/1 = 0.1, p = .919; DEFAULT MODEL: NFI = 1.00, CFI = 1.00, RMSEA = .000). Modification indices did not suggest the inclusion of additional paths. The non-significant covariance was removed (between SNS activity and belonging). This resulted in a very slightly worse fit but increased parsimony (χ2/df = 3.15/2 = 1.58, p = .207; DEFAULT MODEL: NFI = .942, CFI = .976, RMSEA = .066). Given the preference for a parsimonious model and the improved fit, the second model was carried forward (Figure 45; Table 103).

Figure 45. *Boys' Time 2 final psychosocial functioning model.*

Table 103

Standardized direct, indirect, and total effects from the final significant parsimonious model for boys at Time 2. SNS activity and belonging on psychosocial functioning.

		Effects (β)		
Predictor	Predicted variable	Direct β	Indirect β	Total β
IV: SNS activity	Problem behaviour	.24*	-	.24
	Functioning	-.24*	-	-.24
IV: Belonging	Problem behaviour	-	-	-
	Functioning	.39**	-	.39

Note. Direct effect significance values taken from regression weights table. IV = Independent Variable; Cov = Covariate; Mo = Moderator. * denotes p ≤ .05, ** denotes p ≤ .001.

Comparison between the psychosocial models for boys at Time 1 and Time 2. The final model at both Time 1 and Time 2 demonstrated a good fit, however the model at Time 2 suggested a better fit than Time 1. There were a number of differences between the model at Time 1 and Time 2. At Time 1 there was evidence that age was a covariate for both functioning and problem behaviour, whereas at Time 2 there was no evidence of age in the final model. For Time 1, the interaction between SNS activity and belonging was a predictor of problem behaviour, however neither SNS activity or SNS time were IVs. For Time 2, SNS activity was a predictor of both problem behaviour and functioning, however the interaction between SNS activity and belonging was not. At Time 1 there was direct effect between either measure of SNS engagement and the outcome variables, however the direct effect of belonging on functioning was stronger at Time 1 than at Time 2.

Testing the psychosocial functioning model for girls at Time 1. The model tested included both SNS activity and time on SNS as IVs, age as a covariate, belonging as a moderator, and problem behaviour and functioning as the two outcome variables.

First, an unconstrained saturated model was run (Figure 46). This was deemed unidentifiable by AMOS (χ2/df = .000/0, DEFAULT MODEL: NFI = 1.00 CFI = 1.00, RMSEA = .260). Of the 12 proposed paths and 16 proposed covariances, 5 paths were non-significant, and 8 covariances were non-significant.

Figure 46. *Girls' proposed psychosocial functioning model.*
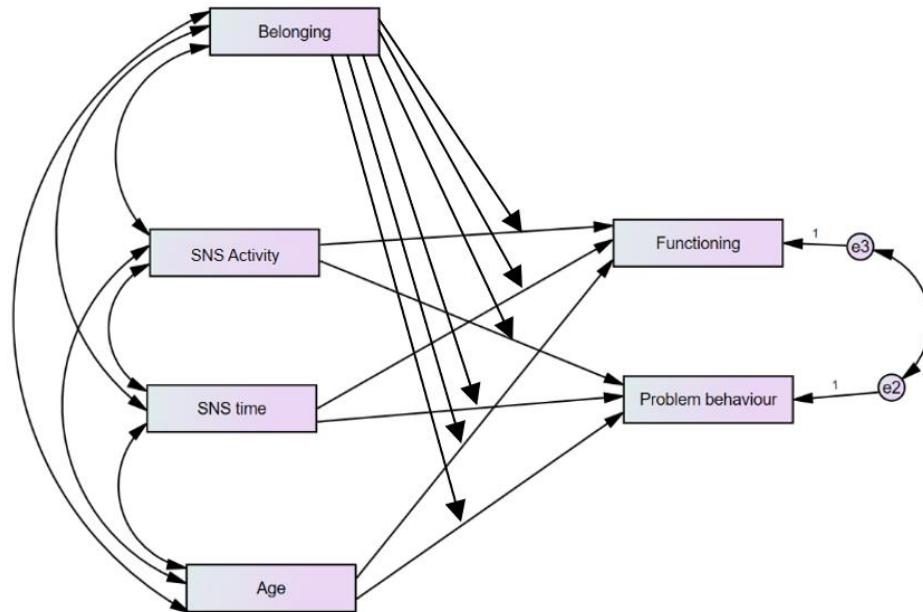
After inspecting this model (Figure 46), the non-significant pathways were removed to increase parsimony ($\chi2/df = 17.13/5 = 3.43$, p = .004; DEFAULT MODEL: NFI = .958, CFI = .968, RMSEA = .110). Following this, an additional path became non-significant (the moderation of belonging between SNS time and functioning). This was removed and the model was rerun ($\chi2/df = 19.21/6 = 3.20$, p = .004; DEFAULT MODEL: NFI = .953, CFI = .966, RMSEA = .104). Following this, an additional path became non-significant (the moderation of belonging between SNS activity and functioning). This was removed and the model was rerun ($\chi2/df = 22.94/7 = 3.28$, p = .002; DEFAULT MODEL: NFI = .944, CFI = .958, RMSEA = .106). Modification indices suggested the inclusion of additional pathways, a pathway between SNS activity and functioning, and a pathway between SNS time and functioning. These were added and the model was rerun ($\chi2/df = 12.51/5 = 2.50$, p = .028; DEFAULT MODEL: NFI = .970, CFI = .980, RMSEA = .086). Following this, the pathway between SNS time and functioning became non-significant. This was removed and the model was rerun ($\chi2/df = 13.31/6 = 2.22$, p = .038; DEFAULT MODEL: NFI = .968, CFI = .981, RMSEA = .078). Finally, the non-significant covariances were removed and the model was rerun ($\chi2/df = 3.43/4 = 0.86$, p = .448; DEFAULT MODEL: NFI = .986, CFI = 1.000, RMSEA = .000). This improved the fit, therefore given the preference for a parsimonious model and the improved fit the last model was carried forward (Figure 47; Table 104)

Figure 47. *Girls' Time 1 final psychosocial functioning model.*

Table 104

Standardized direct, indirect, and total effects from the final significant parsimonious model for girls at Time 1. SNS engagement and belonging on psychosocial function and age as covariate.

		Effects (β)		
Predictor	Predicted variable	Direct β	Indirect β	Total β
IV: SNS time	Problem behaviour	.25**	-	.25
	Functioning	-	-	-
IV: SNS activity	Problem behaviour	-	-	-
	Functioning	-.17*	-	-.17
IV: Belonging	Problem behaviour	-.23**	-	-.23
	Functioning	.53**	-	.53
Cov: Age	Problem behaviour	.15*	-	.15
	Functioning	-.19**	-	-.19

Note. Direct effect significance values taken from regression weights table. IV = Independent Variable; Cov = Covariate. * denotes p ≤ .05, ** denotes p ≤ .001.

Testing the psychosocial functioning model for girls at Time 2. The final model tested included both SNS activity and time on SNS as IVs, age as a covariate, belonging as a moderator, and problem behaviour and functioning as the two outcome variables.

First, an unconstrained saturated model was run (Figure 46). This was deemed unidentifiable by AMOS (χ2/df = .000/0, DEFAULT MODEL: NFI = 1.00 CFI = 1.00, RMSEA = .234). Of the 12 proposed paths and 16 covariances, 6 paths were non-significant, and 10 of the covariances were non-significant.

After inspecting this model (Figure 46), the non-significant paths were removed to increase parsimony (χ2/df = 00/0; DEFAULT MODEL: NFI = 1.00, CFI = 1.00, RMSEA = .000). Following this, the non-significant covariances were removed (between belonging and SNS time, and between belonging and SNS activity). Following this, the model was rerun (χ2/df = 0.16/2 = 0.08, p = .924; DEFAULT MODEL: NFI = .999, CFI = 1.00, RMSEA = .000). Modification indices did not suggest the inclusion of additional paths. Given the preference for a parsimonious model and the improved fit the final model was carried forward (Figure 48; Table 105).

Figure 48. *Girls' Time 2 final psychosocial functioning model.*

Table 105

Standardized direct, indirect, and total effects from the final significant parsimonious model for girls at Time 2. SNS engagement and belonging on psychosocial functioning.

Predictor	Predicted variable	Effects (β)		
		Direct β	Indirect β	Total β
IV: SNS activity	Problem behaviour	.21*	-	.21
	Functioning	-.17*	-	-.17
IV: SNS time	Problem behaviour	.20*	-	.20
	Functioning	-.18*	-	-.18
IV: Belonging	Problem behaviour	-.19*	-	-.19
	Functioning	.52**	-	.52

Note. Direct effect significance values taken from regression weights table. IV = Independent Variable. * denotes $p \leq .05$, ** denotes $p \leq .001$.

Comparison between the psychosocial functioning models for girls at Time 1 and Time 2.
Both final models showed a good fit, however the final model at Time 2 had a better fit than the final model at Time 1. There were a number of differences between the model at Time 1 and Time 2. At Time 1 age was a covariate for both problem behaviour and functioning, but at Time 2 there was no evidence that age was a covariant in the model. Furthermore, at Time 1 only SNS time was a predictor of problem behaviour, and only SNS activity was a predictor of functioning. At Time 2 both SNS time and SNS activity predicted both problem behaviour and functioning. All of the direct effects that were present at both Time 1 and Time 2 were stronger at Time 1 compared to Time 2.

Discussion

This study aimed to explore the relationship between SNS use, body image, wellbeing, and psychosocial functioning, pre-COVID-19 (Time 1), compared to during COVID-19 (Time 2). Three models were tested to explain the relationship between SNS engagement, body image, wellbeing, and psychosocial functioning. The models were tested on boys and girls separately, and tested on the sample before COVID-19, and retested on the same sample during COVID-19. Differences were found between the models at the two timepoints and between boys and girls.

Hypothesis 1: Social media use will increase from Time 1 to Time 2.

There was evidence to support the first hypothesis, that SNS engagement increased from Time 1 to Time 2, with both boys and girls reporting increased time on SNS at Time 2 compared to Time 1. This supports research conducted in Belgium which suggested that 73% of Belgian adolescents increased their SNS use during COVID-19, compared to before (Cauberghe et al., 2021). During the Time 2 data collection students were undergoing distance learning (i.e., remained at home, rather than at school), and stay at home restrictions were still in place for all aspects of individuals' lives (Doyle, 2021; Gov.uk, 2021). Therefore, it is unsurprising that technology was relied on for entertainment during the pandemic, much of adolescents' 'normal' hobbies and endeavours would have been cancelled or restricted. Girls also reported increases in SNS activity from Time 1 to Time 2, suggesting they were engaging with a wider variety of SNS activities, however for boys this was not the case. This suggests for girls both time on SNS and type of SNS activity increased and changed during COVID-19, compared to before, whereas for boys their time on SNS increased, but this did not also equate to a change in ways of using SNS. Little research has explored specific aspects of SNS engagement in adolescents during COVID-19. Considering type of engagement has been more strongly associated with associated outcomes, compared to time on SNS (Wang et al., 2018; Yoon et al., 2019), this difference between boys and girls is an important element in understanding this complex relationship during COVID-19. Further research should consider exploring how exactly girls SNS usage changed, whether this change was temporary due to COVID-19, or continued after, and the underlying reason girls increased their usage, but boys did not. It could be, for example, that SNS are used by boys to supplement other online behaviours, for example gaming, and therefore these are relied on less, whereas for girls SNS usage may be the main online behaviour. Furthermore, it is important to note that although SNS engagement increased from Time 1 to Time 2, how much this was above and beyond normative increases of SNS

engagement with age and overtime was not explored, this would be an interested addition to future research in the area.

Hypothesis 2: There will be higher reported body image concerns at Time 2 compared to Time 1, and a decrease in reported wellbeing and psychosocial functioning at Time 2 compared to Time 1, for both boys and girls.

There was mixed support for the second hypothesis, that reported levels of body image concerns would be higher at Time 2, compared to Time 1, and that reported levels of psychosocial functioning and wellbeing would be lower at Time 2, compared to Time 1. There were increased rates of reported internalisation of muscular ideals (for boys and girls), drive for thinness (for girls), loneliness (for girls), peer comparison (for boys and girls), and objectification (for boys and girls) at Time 2, compared to Time 1, and this supported the hypothesis. Furthermore, there were lower levels of functioning (for both boys and girls), and lower levels of body appreciation (for girls) at Time 2, compared to Time 1, again supporting the hypothesis. The increased rates of internalisation of muscular ideals, drive for thinness, peer comparison, and objectification supports previous findings with an older sample (Baceviciene & Jankauskiene, 2021; Keel et al., 2020), and this could be due to reduced opportunity for exercise due to lockdown restrictions at Time 2. Previous findings have supported the notion that exercise is a protective factor against body image concerns (Gaspar et al., 2011), it is possible that this protective factor may also extend to comparisons and objectification, two pathways known to impact on body image concerns (Fardouly & Vartanian, 2016; Jarman et al., 2021; Tiggemann & Lynch, 2001). Additionally, the increased time on SNS could have led to increased opportunities for comparisons or internalising objectification. Furthermore, the reported increase of internalisation of muscular ideas and drive for thinness supports research which suggests adult women experienced increased preoccupation with weight during lockdown (Czepczor-Bernat et al., 2021). This could have been due to the lack of distraction from everyday life, due to the decreased opportunity for exercise, a change in perception of one's own body (Keel et al., 2020; Lotrean et al., 2021), or due to the increased comparisons to others online. Finally, research has highlighted the comorbidity between social anxiety and body dissatisfaction (Levinson & Rodebaugh, 2012). Therefore, heightened social anxiety during lockdown could have contributed to increased body image concerns (Levinson & Rodebaugh, 2015). During lockdown, adolescents were confined to their home with family or those they lived with, with many opportunities for independence removed. This could have contributed to the increased rate of reported loneliness, and the deterioration in functioning, as independence is an important element in adolescent development (Sanders, 2013).

However, some of the findings opposed the hypothesis. Self-reported drive for thinness (for boys), and negative effect (for boys and girls) was higher at Time 1 compared to Time 2, and self-esteem (for boys) was higher at Time 2, compared to Time 1. Little research has explored drive for thinness in boys, especially during COVID-19. Given internalisation of muscular ideals increased during this period, it could be that this body ideal was more internalised for boys, thus drive for thinness reduced in favour of gaining more muscle (Klimek et al., 2018; Ricciardelli & McCabe, 2001b). The findings also suggest that negative affect was higher at Time 1, compared to Time 2. This is interesting considering Time 2 occurred during a global pandemic, and it might have been expected that fear and other associated emotions being captured by this measure would be higher during the pandemic. However, considering this data collection was conducted a year after the first restrictions were brought into place in the UK, it could be that earlier on in the pandemic negative affect had been considerably higher, however this had since reduced. Participants could therefore have a new perspective leading to this unexpected finding. Indeed, research with adults has suggested that self-reported subjective wellbeing changed throughout the pandemic, with early experiences of subjective wellbeing (December 2019 – March 2020) remaining consistent with pre-COVID-19 rates, and later subjective wellbeing (March – May 2020) reducing (Zacher & Rudolph, 2020). Finally, the findings also suggested that self-esteem was higher during Time 2 compared to Time 1. Little research has explored self-esteem during COVID-19, however considering research has highlighted retrospective drops in mental health (Hawke et al., 2020) and increased body image concerns (Keel et al., 2020) it was thought that self-esteem would also reduce, due to the reported association between self-esteem and body image (de Sousa Fortes et al., 2014) and wellbeing (Padhy & Rana, 2011). However, this incongruent finding could be due to increased parental involvement in children's education. Recent research has suggested during COVID-19 there were increased schooling demands for parents (Adams et al., 2021; Lee et al., 2021) and research has suggested that increased educational involvement from parents may lead to increased self-esteem for children (Mitina, 2021; Pek & Mee, 2020). These findings suggest that there were some deteriorations in body image concerns, wellbeing, and psychosocial functioning during COVID-19, compared to before, as well as some improvements in some body image measures.

Hypothesis 3: For both boys and girls higher SNS use will be associated with higher body image concerns and mediated by objectification at Time 1 and Time 2. The indirect effects will be stronger at Time 2, than Time 1.

The third hypothesis stated that higher SNS engagement will be associated with higher body image concerns at Time 1 and Time 2. Additionally, the indirect effects will be stronger at Time 2 compared to Time 1. There was evidence to support the first part of this hypothesis. The final model for boys at Time 1 suggested that self-objectification fully mediated the relationship between time on SNS and body appreciation, drive for thinness and internalisation of muscular ideals, and that age was a significant covariate of this model. At Time 2, the model suggested that self-objectification fully mediated the relationship between SNS activity and drive for thinness and internalisation of muscular ideals. For girls, the final model for Time 1 suggested that self-objectification fully mediated the relationship between SNS activity and body appreciation, drive for thinness and internalisation of muscular ideals, and that age was a significant covariate of this model. At Time 2, the model suggested that self-objectification fully mediated the relationship between SNS activity and body appreciation and drive for thinness, and age remained a covariate in this model. Interestingly, at Time 2, internalisation of muscular ideals did not remain in the model for girls, highlighting that this relationship was no longer significant. It is possible that this could have been due to increased presence of weight loss images of social media during COVID-19 (Lucibello et al., 2021) thus increasing girls idealisation of thin ideals over muscular ideals. These findings support previous findings which highlights the link between SNS engagement, objectification and body shame (Hanna et al., 2017; Salomon & Brown, 2020), and extends this to explore other aspects of body image concern, and this relationship during COVID-19. Interestingly, at Time 1 SNS time was a better predictor of the relationship between SNS engagement and body image concerns for boys, whereas at Time 2 this was SNS activity, as opposed to SNS time. This could be due to the increased time online during lockdown leading to a ceiling effect, with the underlying motivation therefore harder to untangle.

There was mixed evidence for the second part of the third hypothesis, which stated that the indirect effects will be stronger at Time 2 compared to Time 1. For boys, there was evidence that the indirect effect of SNS engagement on drive for thinness, through objectification, was stronger at Time 2 compared to Time 1. However, the indirect effect of SNS engagement to internalisation of muscular ideals through objectification was stronger at Time 1 than Time 2. Although the measure of SNS engagement differed between the two timepoints, there were still inconsistencies as to which timepoint had the strongest indirect effect. The findings suggest the relationship between SNS engagement and drive for thinness was stronger at Time 2 than at Time 1, suggesting an increased association between the two variables compared to Time 1. The opposing finding in relation to internalisation for muscular ideals suggests there could be an additional factor not measured which

has a larger impact at Time 2, compared to Time 1, especially considering internalisation of muscular ideals was higher at Time 2 than Time 1. Alternatively, the relationship is also likely to be different due to the change in IV (SNS time at Time 2 and SNS activity at Time 2). However, for girls, all indirect relationships were stronger at Time 2, compared to Time 1, suggesting there was a stronger association between SNS activity and the remaining body image concern measures at Time 2 compared to Time 1. It was hypothesised that this would be the case due to the negative implications associated with reduced time and space for being active, reduced time for partaking in activities that relieve stress, and increased stress and worry due to living through a pandemic. The findings for girls supported this.

Hypothesis 4: For both boys and girls higher SNS use will be associated with lower reported wellbeing and mediated by peer comparison at Time 1 and Time 2. The indirect effects will be stronger at Time 2 compared to Time 1.

The fourth hypothesis stated that higher SNS use will be associated with lower reported wellbeing at Time 1 and Time 2, and that the indirect effects will differ from Time 1 to Time 2. There was evidence to support the first half of this hypothesis. For boys at Time 1, peer comparison fully mediated the relationship between SNS time and self-esteem and negative affect, and partially mediated the relationship between SNS time and loneliness, age was a significant covariate in the model. For Time 2, peer comparison fully mediated the relationship between SNS activity and loneliness, self-esteem, and negative affect. For girls, at Time 1 there was a direct effect between SNS time and loneliness, and between SNS activity and self-esteem, and a direct effect of peer comparison on loneliness, self-esteem, and negative affect, and age remained a covariate in this model. At Time 2, peer comparison fully mediated the relationship between SNS activity and loneliness, self-esteem and negative affect. Age was also a covariate for loneliness and negative affect. These findings highlight that both during and pre-COVID-19, higher SNS engagement was associated with lower wellbeing, replicating findings with older samples (Engeln et al., 2020; Geirdal et al., 2021). Furthermore, peer comparison was shown to mediate this relationship in most cases, again highlighting the importance of this factor, and mostly supporting previous findings (Jarman et al., 2021). The inconsistent finding for girls at Time 1 could highlight the differences in SNS usage measurement, underscoring the need for academics within this field to create comprehensive and consistent measures for different aspects of SNS engagement. Furthermore, there was partial support for the second part of the hypothesis, as all indirect effects at Time 2 were stronger than Time 1 for boys. However, for girls, the direct effect was stronger for all outcome measures at Time 1, compared to the indirect effect at Time 2. This suggests for girls there may be an additional factor

influencing the relationship between SNS engagement and wellbeing at Time 2, which was not measured during this study. For example, this could be use of other online technologies, or relationship with siblings (if any; Magson et al., 2021). Furthermore, as past research with adults has highlighted the effect of lockdown stage on wellbeing (Zacher & Rudolph, 2020), it could be that different stages of lockdown had differing effects on adolescent boys' and girls' wellbeing.

Hypothesis 5: For both boys and girls higher SNS use will be associated with lower reported psychosocial functioning, moderated by belonging at Time 1 and Time 2. The direct effects will be stronger at Time 2 compared to Time 1.

The final hypothesis suggested that higher SNS engagement will be associated with lower reported psychosocial functioning at Time 1 and Time 2, moderated by belonging, and that the direct effects will be stronger at Time 2 compared to Time 1. For boys, there was no direct effect of SNS engagement on psychosocial functioning. However, there was a direct effect of belonging on functioning, and SNS activity moderated the relationship between belonging and problem behaviour. Age remained as a covariate in this model. At Time 2, the model suggested that higher levels of SNS activity were associated with higher levels of problem behaviour, and lower levels of functioning. The direct effect between belonging and functioning also remained at Time 2. For girls, the model suggested that higher levels of SNS activity were associated with decreased levels of functioning, and higher levels of time on SNS were associated with higher levels of problem behaviour. Higher levels of belonging were also found to be associated with increased functioning and decreased problem behaviour, however, there was no evidence of a moderation. The model also suggested that age was a covariate for girls at Time 1. The Time 2 model also gave some evidence to support the hypothesis, as both SNS time, and SNS activity were associated with increased problem behaviour, and decreased functioning, and higher levels of belonging were also associated with increased functioning and decreased problem behaviour, but there was no evidence of moderation. Scant research has explored the association between SNS activity and psychosocial functioning, and that which has is predominantly experimental research with university students. Therefore, although this research has inconsistencies with past research, it is novel in its exploration of these topics in such a young sample and suggests some of the differences that can be found between younger and older samples' SNS engagement and psychosocial functioning. It suggests there is a lesser influence in younger samples of SNS engagement on psychosocial functioning, with other factors perhaps playing a larger part, for example the role of educational ability or puberty being more important at this age. The second part of this hypothesis suggested that the direct effects would be stronger at Time 1, compared to Time 2. For boys, there was no direct effect of SNS

engagement at Time 1, however at Time 2 the total effect of belonging on functioning was weaker than the direct effect at Time 1. For girls there was no evidence to support the second part of the hypothesis, in fact there was evidence against this, suggesting that total effects were stronger at Time 1 compared to Time 2. It could be that, due to the change in environment and associated freedoms due to lockdown, the measures used to explore psychosocial functioning were not able to capture this as well at Time 2, compared to Time 1.

Chapter 7 field contribution:

The final study of this thesis was novel in its exploration of the associations between SNS use and body image, wellbeing, and psychosocial functioning at two distinct and significant timepoints. Little research has explored the impact of COVID-19 on the association between SNS use and body image, wellbeing, and psychosocial functioning in adolescents. The pandemic will likely have a long-term impact on many people's lives, and therefore this is an important field to continue to explore. This study did indeed highlight a number of ways that adolescent body image and wellbeing had decreased from pre-COVID to during COVID, with increased rates of internalisation of muscular ideals for boys and girls, and increased loneliness for girls, as well as decreased levels of functioning for both boys and girls. These important and novel findings highlight the importance of exploring new contexts and some of the ways that adolescents may need to be supported when transitioning out of COVID-19. However, there were also some important findings which highlight some positive impacts that COVID-19 may have had on adolescents. For example, self-reported drive for thinness for boys, and negative effect for boys and girls was higher at Time 1 compared to Time 2, and self-esteem for boys was higher at Time 2, compared to Time 1. These novel finding highlight some of the positive ways that COVID-19 may have impacted adolescents, and highlight some avenues to further explore in relation to how and why these facets appeared to improve during a time of national uncertainty. Further exploration of these topics may help to ensure any improvements continue following the emergence from formal restriction.

Limitations

There were a number of limitations with the current research which are worth noting. Due to school closures, the second wave of data collection occurred under different conditions to the first. Specifically, questionnaires were completed at home, without a teacher or researcher present. This could impact the findings as individuals may have felt more comfortable being truthful as they were not worried teachers would see their answers, or alternatively they may have not paid

attention to the questions as much as teachers were not ensuring they were concentrating. Furthermore, considerably fewer students took part in the second part of this study compared to the first. Some past studies have reported an average annual dropout rate of school-based body image longitudinal research as 15% (Diedrichs et al., 2021; Stice et al., 2000), whereas this study had a dropout rate of 72%. It should be noted that the sample could be a particular subsection of the population that was sampled in Chapter 5 i.e., more motivated and well-behaved children, however, this was not measured. This could lead to the sample being less representative of the population than the sample in Study 2 (Chapter 5).

The current study highlighted conflicting results regarding the difference between individuals self-reported body image, wellbeing, and psychosocial functioning at Time 1 compared to Time 2, and their retrospective COVID-19 impact ratings. Due to this, no measure of lockdown experience was included in the Time 2 SEM models. It had been planned that this would be included as a control variable to explore to what extent self-reported lockdown experience had on the models, however, it was deemed this was not appropriate as the self-reported validated measures and self-reported retrospective COVID-19 impact rating were contradictory. Considering a great deal of research covering COVID-19 experiences includes self-reported retrospective measures comparing wellbeing levels to pre-COVID-19 levels, this also questions the reliability of these findings.

The cross-sectional model comparison, although interesting to explore the differences in adolescent experiences pre-COVID-19 and during COVID-19, does mean that the direction of association was not explored. It could be that the reverse associations are more plausible, which has, in some cases, been suggested by recent research (Jarman, McLean, et al., 2021; Marques et al., 2022). Although testing the direction of associations had been the original plan of the study, due to the impact of COVID-19, it was felt that a change in analysis plan was more appropriate. Further research is still needed in order to explore the direction of association with SNS usage and body image, wellbeing, and psychosocial functioning outcomes, especially with a younger sample.

Within the psychosocial functioning umbrella, adolescent rule-breaking and risky behaviour was attempted to be measured. This is a particularly difficult outcome to measure due to the impressionability of adolescents, e.g., asking adolescents if they are drinking alcohol, smoking etc. may suggest to them that this is the norm and therefore they should be partaking in these behaviours. Additionally, adolescents may aim to project a 'cool' persona and report engaging in these behaviours when they do not. Furthermore, if using this approach there is a range of levels of

risky or rule-breaking behaviours at these ages and therefore capturing these can be difficult. For this reason, the current study also explored functioning as poorer functioning has been shown to be related to later increased risky behaviour (Hawkins et al., 1999; Holtmann et al., 2011; Pratt, 2002; Tarter et al., 2008), but further research should explore the validity of this association.

The current study was adjusted in order to respond to the changing climate in a more appropriate way. Due to the changing circumstance of the data collection, a number of measures which had previously been shown to impact on the relationship between SNS use and body image, wellbeing, and psychosocial functioning were removed from the questionnaire. This decision was made in order to shorten the questionnaire and make it more achievable for students to complete while at home. However, some of these measures may have been found to play a larger role in the relationship between SNS use and the outcome variables at Time 2 compared to Time 1, due to the extended time on SNS over this period.

Finally, the four item self-esteem measure was changed to a one item measure. The benefits in this decision were twofold. First of all, a number of participants reported difficulty understanding this question. As it has been previously reported that the one item self-esteem measure is appropriate for use with adolescents (Coker, 2021; Robins et al., 2002) this measure was changed. Additionally, this change also helped reduced the number of items in the questionnaire which was important considering this completed at home during the Time 2 data collection.

Conclusion

The current study adds to the existing literature regarding the relationship between SNS engagement and body image, wellbeing, and psychosocial functioning, and also explores these relationships during an unusual social climate. This study highlights some of the ways that adolescent SNS engagement and the associated outcomes may differ to that of adult samples, and also explores the ways these relationships vary during different social environments. Further research is still needed in this area, with gaps in this study highlighting the need for further exploration into the specific ways that girls changed their SNS usage over lockdown and the associated impact, as well as the longitudinal impact of COVID-19 on adolescent SNS engagement, and their body image, wellbeing, and psychosocial functioning.

Chapter 8 – General discussion and reflections

The final chapter of this thesis reflects on the research that has been conducted, explores the methodology used at each stage, considers the findings and their place in relation to current literature, and finally discusses research limitations, and avenues for future research to build on these findings.

Summary of research process

Having always been interested in the role of SNS in individuals' experiences (see chapter 1), when I came across this PhD which was advertised as exploring "The impact of social media on adolescent health and wellbeing" I was excited to apply. Considering this PhD was completed within a body image research centre, that body image is a huge concern impacting adolescents health and wellbeing, and that there are gaps within the literature around the impact of SNS on adolescent body image, the relationship between adolescent SNS use and their body image was an obvious avenue to research. However, it was clear there were other channels of research which seemed equally important in painting an overall picture of adolescent health and wellbeing, and some of these areas had gained considerably less research attention, for example self-esteem and loneliness. Due to this, it felt important to explore these areas as well, in order to gain a more holistic picture of the impact of SNS on adolescent health and wellbeing. The direction of the PhD later responded to the changed environment by including and investigating the way that the COVID-19 pandemic impacted on the relationships already being evaluated. In order to address some of the gaps in the literature, Study 1 and 2 explored relationships which had been previously studied with either female only samples, or older samples. The PhD expands the literature by looking at these topics in a younger cohort including boys' experiences as well as girls'. Following this, the third study responded to the changing climate and investigated adolescents' experiences of the COVID-19 pandemic and the way that social media use, and its role in their lives changed during the associated lockdown periods. Considering the extreme measures taken by world leaders in an attempt to curb the devastating impact of COVID-19, this was a particularly unique time and felt very important in order to help understand adolescents' experiences of social media use. At the time, and still, research has focused on adolescents' wellbeing during this pandemic, or their social media use, but considerably less research has brought the two together. This study was an important addition to

the field and fills a particularly interesting gap, not only in the literature, but also within this PhD. The final study, planned before COVID-19, aimed to add to the literature by exploring the longitudinal relationship between SNS and adolescent body image, wellbeing, and psychosocial functioning. There are sparse findings in relation to the direction of this relationship (Jarman, et al., 2021; Marques et al., 2022). However, as this project developed, there seemed to be a more empirical way to analyse this dataset, by looking at the two distinct timepoints comparatively.

Discussion of findings as a whole in relation to research questions and prior work

Two research questions guided this thesis:

1. How do (pre)adolescents use SNS, and how is this associated cross-sectionally with body image, wellbeing, and psychosocial functioning?
2. How does a significantly altered environment (global pandemic) influence adolescents' experiences, including their SNS use?

This PhD sought to further the understanding how (pre)adolescents use SNS and the relationship between SNS use, body image, wellbeing, and psychosocial functioning. Overall, the studies within this thesis suggest that SNS use is associated with aspects of body image, wellbeing, and psychosocial functioning in individuals as young as 10 years old. However, this is not wholly negative, and the findings also highlight that SNS can add great depth and richness to young people's lives.

SNS use was associated with aspects of body image, wellbeing, and psychosocial functioning for both boys and girls aged 10 – 16 years. However, there were differences in the ways usage was associated with these outcomes, further highlighting the importance of exploring relationships with both boys and girls separately. Although the findings from study 1 generally suggested a negative association between SNS use and the outcomes of interest, the direction of these associations were not explored in this study, and these associations were weaker, and fewer, than had been expected. Future research should expand on these findings with a larger, more diverse sample of young people. Further nuance was added to the relationships which were explored in Study 1, with a slightly older and considerably larger sample. Study 2 explored usage rates by age and gender,

adding further detail to the understanding of how SNS usage varies by age and gender, and explored further associations with a gender split. SNS usage was found to be associated with a higher number of outcome variables in Study 2, compared to Study 1. This could either be due to the increased sample size and thus power highlighting further relationships, the higher rate of SNS use, the higher cumulative effect of SNS use as these individuals will likely have been using SNS for longer than those in Study 1, or the additional developmental complexity of this age. The relationships tested within this thesis were based on past findings with either older samples, or female only samples. Therefore, there were some novel findings in relation to the associations between preadolescents, adolescents, and boys specifically. This thesis highlights the importance of continuing to focus research attention on these groups.

Research has more recently started to explore the more positive aspects of SNS (Weinstein, 2018) and this thesis is able to add further nuance to this field, highlighting some gender-based differences. For example, selfie taking was associated with increased wellbeing for both boys and girls, however the nuance of these relationships are different. For boys increased selfie-taking is associated with increased levels of self-esteem, whereas for girls increased selfie-taking is associated with decreased levels of loneliness.

In addition to the novel findings in relation to SNS use and body image, wellbeing, and psychosocial functioning, this thesis also explored a unique area, bringing together the impact of COVID-19 and SNS use on adolescents. The findings highlighted the important role that SNS can have, and some of the benefits that young people experienced, for example, finding new hobbies and the ability to feel connected to others. This built on the scant existing literature which had previously explored how technology may be used in times of isolation and the benefits that this can bring. Although this occurred during, and aimed to explore the impact of COVID-19, these consequences likely transcend this time and highlight some of the important benefits of SNS in adolescents lives.

This thesis also utilised longitudinal research methods to explore the impacts of COVID-19 on adolescent SNS use, body image, wellbeing, and psychosocial functioning. Much of the existing research evaluated the impact of COVID-19 cross-sectionally, asking (mainly adult) participants during COVID-19 to reflect on their previous wellbeing retrospectively. In general, adolescents reported increased body image concerns, as well as decreased wellbeing and psychosocial

functioning during COVID-19 compared to before. However, there were some exceptions which would be interesting to investigate further. By exploring the same proposed models pre-COVID-19 and during COVID-19, the findings were able to highlight how the relationship between SNS use, body image, wellbeing, and psychosocial functioning developed during COVID-19. This is an important step in understanding the application of research conducted during COVID-19 to after the pandemic. During the COVID-19 pandemic, adolescent wellbeing was of great discussion both within and outside of research, and for good reason. The complexities of adolescence were confounded with the additional difficulties of COVID-19 and the associated outcomes. These novel findings highlighting some positive and some negative associations are important contributions to understand the ways this time impacted on adolescents, in order to provide tailored support where it is needed.

Theoretical implications

Research within this field has started to move away from the reductionist approach that the impact of SNS use is based purely on time spent online, and has started to look at how the more nuanced aspects of SNS use may tell this story better (Mingoia et al., 2019; Thorisdottir et al., 2019). The current studies aimed to build on this literature by exploring a number of different aspects of SNS use, and testing a number of different measures. Unlike the body image and wellbeing field, there are few validated and universally used measures to explore SNS use. This PhD contributed to the evidence suggesting that an active versus passive dichotomous split may not be the most appropriate method for exploring SNS usage, suggesting that focusing more on specific behaviours and motivations may be more appropriate.

This thesis also contributed to the theoretical field by testing a number of models to evaluate some more complex relationships between SNS use and body image, wellbeing, and psychosocial functioning. The models tested were based on previous literature, mostly with older samples. It was found that objectification mediated the relationship between SNS use and body image concerns for both boys and girls, social comparisons mediated the relationship between SNS use and wellbeing for both boys and girls, and social norms mediated the relationship between SNS use and psychosocial functioning for both boys and girls. The work conducted during this PhD highlights the relevance of the theories tested (objectification theory, social comparison theory, and social norms theory) in explaining and understanding the relationships between SNS use and body

335

image, wellbeing, and psychosocial functioning in adolescents aged 11 – 16 years old. In particular, the research adds further support for these theories in relation to girls SNS use, and also highlights its application to young boys. In doing so, this suggests underlying mechanisms (objectification theory, social comparison theory, and social norms theory) which interventions can aim to address in order to reduce the negative impact of SNS use on body image, wellbeing, and psychosocial functioning. Interestingly, the only moderator that was found to show an effect was photo manipulation for boys, further reiterating the importance of focusing research attention on boys' social media practices. All three mediators have been supported in research with older samples (Hanna et al., 2017; Litt & Stock, 2011; Nesi & Prinstein, 2015), however this study sort to expand the findings to a younger sample and include boys who have often not been included in adolescent samples. Considering the moderators tested (photo manipulation, active vs passive usage, and belonging) were based on previous literature with adults, it is therefore particularly interesting that most of these did not demonstrate a moderation effect. It could be that different constructs are more important for young people, or perhaps some of the measures are not as sensitive to young people. However, the findings do highlight some of the pathways through which the associations between SNS use and body image, wellbeing, and psychosocial functioning may be occurring, and therefore add further guidance as to what interventions and education could aim to explore.

Implications for practice, intervention and policy

Considering the moderators tested were based on previous literature with adults, it is particularly interesting that most of these did not demonstrate a moderation effect. It could be that different constructs are more important for young people, or perhaps some of the measures are not as sensitive to young people. However, the findings do highlight some of the pathways through which the associations between SNS use and body image, wellbeing, and psychosocial functioning may be occurring (i.e., the mediators), and therefore adds further guidance as to what interventions and education could aim to explore.

As well as highlighting some of the pathways to target with interventions and education (e.g., self-objectification, photo manipulation, social comparison, and perceived social norms), the findings from the qualitative study also gave further evidence for the importance of SNS literacy lessons. In this study, participants reflected on how the tools they had learnt at school helped to protect them from some of the negative impacts of SNS, adding further to the growing evidence and

justification of media literacy, and specifically SNS literacy interventions. Media literacy interventions aim to help young people develop the skills to critically analyse media content (Gordon et al., 2021), with recent developments focusing specifically on social media literacy programmes (Gordon et al., 2020). This finding, along with the associations between aspects of SNS use and body image, wellbeing, and psychosocial functioning found with preadolescents as young as 10 years old in Study 1, call for implementation of lessons around SNS to younger ages. A great deal of research has highlighted the benefits of media literacy on (pre) adolescents' body image concerns (Kurz et al., 2021; Rodgers et al., 2018), with additional research starting to explore social media literacy in relation to body image and wellbeing with promising results (Bell et al., 2022; Gordon et al., 2021; Paxton et al., 2022). This thesis highlights some important aspects of SNS use that should be incorporated in social media literacy education. For example, education and awareness around photo-related behaviours are an important element to include for both boys and girls due to the increased rate of photo-based platforms, and the associations found between photo related behaviours and body image, wellbeing, and psychosocial functioning. As previously mentioned, the findings also highlight the importance of helping (pre) adolescents to challenge appearance pressures, reduce comparison tendencies, and resist sway from perceived social norms. The findings from this thesis supports previous recommendations for the incorporation of social media literacy, but furthers this by highlighting the need to start these interventions within primary school. In order to have the biggest impact on young people, social media literacy should start before individuals are using SNS platforms, which is below 10 years (year 6 in the UK). Although this is below the age limit for most SNS, there is clear evidence that many preadolescents already have accounts at this age, and therefore it is important that we equip young people with the tools they need to navigate these platforms in a positive way.

Finally, this thesis highlighted the vast impact of the COVID-19 pandemic on adolescents. Many aspects of adolescents' lives were affected, for example their friendship groups and family relationships, their school work, their body image, wellbeing, and psychosocial functioning. Therefore, it is important that schools and society more widely, are able to recognise the specific ways that the restrictions impacted on adolescents' development, so that they can be supported in a way that recognises, understands, and addresses their experiences, helping them to continue developing in a positive way.

Areas for future research

Each study chapter (Chapters 4, 5, 6, and 7) has identified research avenues which could build on the current research and add further detail to the literature. In addition to these areas, there are some more general areas for further research.

Having reviewed the broad literature regarding SNS use and (pre)adolescents, it is clear that research exploring SNS use in individuals under 13 years is sparse (Huk, 2016). The current thesis highlights the relationship between SNS use and body image, wellbeing, and psychosocial functioning in (pre) adolescents and demonstrates the need for further research to continue exploring this gap. As has been demonstrated in the current thesis, it cannot be assumed that these relationships will be the same for older adolescents compared to younger adolescents; the landscape of SNS are constantly changing, adolescents are now growing up with this form of technology more accessible and ingrained in their lives, and different generations will grow up with parents who have different levels of understanding and awareness around this technology. Suitable early interventions which target the most appropriate risk and protective factors can only be tailored to (pre) adolescents' experiences if they are based on research with this age group. The current lack of research with (pre) adolescents may be due to the age limit on most SNS being 13 years and above. However, considering individuals are clearly using SNS below this age, research needs to address this under researched group.

A great deal of past literature around SNS has focused on girls and women (e.g., Burnette et al., 2017; Fardouly et al., 2015), and only a small proportion has included boys and men (e.g., Jarman et al., 2021). When looking at the literature around photo related behaviours and SNS, even less has explored these relationships with boys and men. Considering research conducted in this thesis highlighted the associations between photo manipulation and body image concerns, and wellbeing in boys, this is an important avenue to further explore. In these studies, increased levels of photo manipulation were associated with increased body image concerns, and decreased wellbeing, highlighting the importance of further research to understand this relationship in more detail. Furthermore, considering the most popular SNS are photo or video based (Instagram, TikTok, and even YouTube), it is worth exploring whether there is an inherent difference between the associations with either photos or videos and body image, and wellbeing.

Although comparatively less research has explored the impact of SNS use on boys, compared to girls, even less research has explored this topic with transgender individuals or those who identify outside the gender binary. Past research has highlighted that transgender individuals and those with conflicted gender identities report higher levels of body dissatisfaction (Ålgars et al., 2010; Vocks et al., 2009) and lower rates of wellbeing (Kennis et al., 2021) compared to cisgender individuals. One benefit of SNS over traditional media is the ability for users to have more control over the content they see online, which could allow them to find and view content which matches how they identify themselves, making this a particularly important avenue for further research.

Finally, it is undeniable that the COVID-19 pandemic shifted the importance of SNS, leading individuals to use these platforms in different ways, or to rely on them for different reasons. This was evident in the studies detailed in Chapter 6 and Chapter 7. These two studies only started to explore the changing role and importance of SNS in adolescents' lives, and therefore more research should aim to unpick this in more detail, and to explore how these changes unfold long term, as we find the immediate threat of COVID-19 reducing, and restrictions lifting.

Reflection on research methods

This PhD included four separate studies to explore how social media impacted adolescent body image, wellbeing, and psychosocial functioning. Three of the four studies were quantitative in nature, evaluating associations and relationships between predictor and outcome variables, and one study was qualitative in nature, focusing on adolescents' experiences. This PhD took a multimethod approach to the research, rather than a mixed methods approach, the findings from each study aimed to inform and further the literature, but were not intended to be integrated due to the different topics covered by the different methodologies.

In this thesis, a number of different methodologies were utilised. Study 1 and 2 used cross-sectional quantitative design, Study 3 utilised qualitative online surveys and virtual interviews, and Study 4 utilised a longitudinal quantitative methodology. In each study, the methodology which best complimented the research question was utilised. Furthermore, the chosen methodologies allowed the later research studies (2 and 4) to add more complexities to the foundations, which built on Study 1, with Study 3 adding an interesting, although unique and distinct lens in order to explore SNS use. As well as using multiple methodologies, there were also various methods of recruitment used

in the different studies. Although all methods utilised opportunity sampling, multiple avenues were used to reach individuals. All studies used, at least to some extent, school-based opportunity sampling, with schools in the South West of England being contacted through email recruitment or the researchers own contacts. In addition to this approach, Study 3 also used online recruitment using university notice boards to recruit through parents.

Opportunity sampling is a time and cost-effective way of recruiting participants, however it does often have its drawbacks. Some of these drawbacks are alleviated by recruiting through schools, as this can lead to a fairly representative population (although this is not always the case, and depends on the particular schools and their demographics). This was found in the case of Study 1 and 2, where the sample population was generally representative of the UK population, however Study 3 and 4 were considerably less representative, this is unsurprising considering Study 3 relied less on school-based recruitment, and also used opt-in consent, as opposed to opt out consent, leading to a higher level of participation for certain demographic groups (Berry et al., 2012; Junghans et al., 2005; Sakshaug et al., 2016). Similarly, for Study 4 data collection occurred at home, without teacher supervision and therefore a response bias was visible, with certain demographic groups being more successfully recruited. Study 1 and 2 recruited a sample which was representative of the UK population, however, the lack of representation for the global population cannot be ignored. Although this PhD did not set out to represent the global population, this suggests the research should be replicated in other countries. A great deal of research has focussed on western, educated, industrialised, rich, and democratic populations (Clancy & Davis, 2019; Henrich et al., 2010). Considering this is only a small percentage of the global population, more work is needed to ensure that we represent populations often left behind in research.

Two additional methodological challenges are that of questionnaire layout and participant concerns. These relate to studies 1, 2 and 4 and therefore it felt more fitting to discuss them in this chapter rather than the individual study chapters. First, the questions were presented to individuals in a fixed order, rather than randomised. Although research has suggested that this can lead to bias (Bell, 2013; Carpenter & Blackwood, 1979), this decision was made due to the complexities of school-based data collection, and the specific topics covered. A number of measures were used to explore adolescent SNS use, and the researcher was prepared for adolescents to spend a long time on this section, however without these questions answered, the individual could not be included in

analysis. For these reasons, these questions were presented first, such that SNS questions were answered by all participants, and the researcher could (in Study 1 and 2) also track how long individuals were spending on these questions and prompt them to hurry up. Furthermore, it was clear that taking part in a research study during lesson time could interrupt students' routines and therefore could elicit disruption, cutting into lesson time allocated to the questionnaire. For this reason, the decision was made to put certain questions at the end, in case there was not time to complete the whole questionnaire. The researcher and supervisory team discussed this at length before deciding whether this was the most appropriate option, and if so which questions to include at the end. Secondly, while conducting the research in person, it became evident that (pre) adolescents were concerned about the aims of the study and the impact that their answers may have on their future SNS use. This challenge needed to be navigated so that individuals felt comfortable enough to rate answers honestly, but was also of particular interest to consider. Their worry over the impact of their answers could be due to the narrative around the negative impact of SNS frequently discussed by the media and parents. This could also suggest that they may expect the research findings to highlight a negative impact of SNS use, yet their reluctance to live without it suggests their enjoyment, possibly despite their awareness of the negative impact, or perhaps their view that positive aspects far outweigh the negatives. Indeed, in Study 3, participants did reflect on the negative aspects on SNS (e.g., appearance pressures), however, adolescents felt that they were able to manage these challenges and benefitted from using SNS (e.g., discovering new hobbies and communicating with friends/ family). In order to overcome the adolescents' concerns around their answers, the researcher stressed their own use, and enjoyment, of SNS, the fact that this study would be part of a larger breadth of literature which explores various aspects of SNS use, that the aim of this research was to highlight where more support may be needed in order to help younger people use SNS in a more positive way, and also a number of benefits that the researcher felt SNS provides (for example the ease of communication with others and inspiration for new hobbies and activities). This was highlighted in the preamble before each class completed the project.

Study 1 Reflections

Most primary schools that were contacted were interested in taking part in the research because SNS are a large part of the lives of preadolescents as young as 10 years old, and schools understand the importance of exploring how these affect children. This was also reflected in the low rate of parental opt-out from the study (roughly 2.4%). Some schools did request that certain

questions be removed from the study. In these cases a new version of the questionnaire, specific to that school, was created to accommodate this. A couple of parents contacted the researcher with concerns over the topics or questions that would be covered. In most cases the parents were happy for their child to be included in the research after communications with the researcher. However, one parent was particularly concerned about the possible topics and questions that could be asked and requested to see the questionnaire. The parent was unsatisfied with the way in which the questions were being asked, and the precautions put in place to protect the children from possible risk. The parent opted to remove their child from the study, and as a result the school opted to remove themselves completely from the study. During this process the researcher had a number of discussions with the parent to help understand and address their concerns regarding the research. Following this, some changes were made to the research and the way it was conducted. One of the changes made was that children would not only have a document with support services shown to them, but children would each be given a copy of this document to keep following completion of the questionnaire. Additionally, for Study 2 and 4 these lists were emailed to schools to send out to their students via email so that students could view these resources in a more discrete manner. The researcher spent a long time reflecting on this concern, both while developing the questionnaire, and also following discussions with the parent. From the start of the PhD it was decided that the researcher would be evaluating how SNS affect adolescent body image, wellbeing, and psychosocial functioning. This is a potentially sensitive topic, and especially sensitive to discuss with young adolescents. However, the increased SNS usage in this age, along with the lack of research that has evaluated this with (pre)adolescents made it apparent that this needed to be addressed. The researcher and supervisory team had regular discussions about the questions to be included and the possible distress they could cause to participants. Overall, the researcher endeavoured to use measures which explored positive states/traits rather than negative whenever possible, for example body satisfaction and peer belonging measures were utilised rather than more negative options. However, in order to truly evaluate the negative effects of SNS, some negative traits needed to be evaluated, for example loneliness and drive for thinness. When possible, the measure that was the least intrusive was used, for example drive for thinness (Garner et al., 1983) instead of the children's eating attitudes test (Maloney et al., 1988), or measures were altered, for example three items from the loneliness scale (Houghton et al., 2014) were removed as the questions were repetitive and it was thought the top loading three items would be enough to evaluate this trait and therefore additional questions were unnecessary. Although these decisions were made to reduce the

possibility of distress to participants, this consideration had to be balanced against rigour, considering using the entirety of the validated tool makes the findings more reliable. Furthermore, the researcher spent a long time looking at measures for depression that could be used, but each measure was deemed to be too sensitive and was thought that the possible risk to participants could not be justified. Therefore, the decision was made to not evaluate depression, but rather to measure negative affect. Although this is a different concept, both negative affect and depression are closely linked (Joiner et al., 1996) and therefore it was thought that this would be a better measure of some of the negative ways that SNS may affect adolescent wellbeing and thus was a more justifiable measure to use.

A final reflection on this study comes from schools' request to remove the question around preadolescents pubertal timing. This was the only question that schools requested to be removed, and came from more than one school. Considering all children will experience puberty, and many would have been going through it when completing the questionnaire (or shortly after), it was particularly interesting that schools requested for this topic to be removed, which raises questions about the extent to which puberty is included in learning. At the time of this study being conducted, parents were able to opt their children out of lessons about puberty, perhaps the schools requesting for these topics to be removed had high rates of parents opting children out of these lessons. It would be interesting to see the response from schools now that parents are unable to opt children out of these lessons (Department for Education, 2021), and also interesting to explore the impact of opting out of lessons around puberty on preadolescents understanding of their own body and the ways it changes, and how this could be associated with body image concerns.

Study 2 Reflection

Conducting a longitudinal study is a large task. Recruitment must accommodate for the large number of participants needed to give sufficient power to the analysis, and working to ensure none of the schools dropped out during the study is a challenge. Considering my previous experience as a Research Assistant on a longitudinal study I felt confident in this task, however, I was still surprised by the amount of planning that was required to ensure all schools were able to have data collection on the days they requested, the amount of kindly worded emails to ensure the research project was not forgotten about and the amount of printing and data entry required in order to actually use the

data collected. On reflection it was a busy, but exciting time. Watching something so large, that could be so impactful, come to fruition was incredibly rewarding.

Study 3 Reflection

It felt important to reflect on the lack of diversity of the sample recruited in Study 3. Due to the time constraints the first school that agreed to take part was utilised and little additional recruitment was initially sought. The school is based in a small town with little diversity, with most pupils at the school being white British. This is a significant weakness of the study, and of a great deal of psychology research in general, however, when time pressures are faced, it is far easier to recruit from easy to access groups. This does mean, of course, that the data is less generalisable, for example the transcript from the one individual that identified as Black African included important topics that did not arise in any other interview, due to their unique experiences. For example, they discussed the impact of growing up in a Eurocentric culture which endorses beauty ideals associated with whiteness (Craddock et al., 2018). However as there were no more participants, little could be done to explore this topic in more detail. Body image research, and research in general, does need to make a firm example of how this selective research is no longer acceptable. This is something I hope I can focus on in future, and hopefully there will be a systemic change where research is more inclusive (BPS, 2020), be that low SES, racial minorities, gender identities outside of the binary, and any other under researched groups. Only in doing this can we create a more inclusive world, where we understand and respect all individuals.

Study 4 reflection

Study 4 utilised the largest data set from my PhD (and my whole research experience) as the study integrated data from multiple timepoints. Matching the two timepoints for participants was more time-consuming than I had envisioned. However, one of the main challenges I felt with this study was around conducting research during a constantly changing environment. This is something, now looking back, I feel fortunate to have experienced during my PhD. Nothing could have prepared me for the flexibility and resourcefulness needed during this time, but this is something that will no doubt be valuable for my future. Research invariably does not go as planned, and I feel that I am more prepared to adjust my research to external pressures following this experience.

A reflection of conducting research during the COVID-19 pandemic is included in appendix E, as most of these reflections are included in a brief form in the COVID-19 Impacts Statement submitted alongside the thesis.

Final reflection

The aims of this PhD were to: (1) understand how adolescents use SNS, (2) further understand the associations between SNS, body image, wellbeing, and psychosocial functioning during adolescence, and (3) understand some of the factors that may be important in the relationship between SNS use, body image, wellbeing, and psychosocial functioning. These aims were guided by the overarching research questions;

1. How do (pre)adolescents use SNS, and how is this associated cross-sectionally with body image, wellbeing, and psychosocial functioning?
2. How does a significantly altered environment (global pandemic) influence adolescents' experiences, including their SNS use?

Understanding the relationship between SNS use and body image, wellbeing, and psychosocial functioning for adolescents is important as these relationships may not mirror that of adults due to the unique developmental stage of adolescence. Furthermore, adolescence is seen as a key time to provide interventions, due to the comparative ease of providing interventions to young people in schools due to their legal requirement to attend school (Yeager et al., 2018), the increased opportunity to benefit from interventions due to them occurring earlier on in an individual's life (Salam et al., 2016), and the increased malleability of adolescents due to their developmental stage and while they develop a sense of self (National Academies of Sciences, 2019).

Study 1 added to the literature by expanding research to a sample of boys and girls aged 10 – 11 years, exploring how elements of SNS use which had been limited to research with an older sample, may relate to preadolescents. Study 2 added to the current literature by testing some of the complex pathways for the association of SNS on body image, wellbeing, and psychosocial functioning in adolescent girls and boys, relationships which have previously mainly been examined with university students. In particular, these studies also expanded the sparse research evaluating these associations with boys. The third study explored a novel area, adding to the literature around SNS in

a unique environment and investigating how adolescent SNS use developed during the COVID-19 pandemic, and the importance of these platforms in order to help adolescents cope with a particularly difficult time. Finally, Study 4 assessed the difference in associations between SNS use and body image, wellbeing, and psychosocial functioning in adolescents pre-COVID-19 compared to during COVID-19. This added further depth to a novel area exploring changes in SNS use and the associations between body image, wellbeing, and psychosocial functioning during COVID-19. Understanding adolescents' SNS use, and how this is associated with different facets of their wellbeing, is important in helping to highlight and utilise the most positive aspects of SNS use, and protect individuals from the more damaging aspects. Without detailed understanding of how individuals use these platforms, and how that is associated with their wellbeing, we cannot create interventions with confidence that they are addressing the most important and influential aspects of these relationships.

This thesis has provided a critical overview of the current literature regarding the relationship between SNS use and body image, wellbeing, and psychosocial functioning, as well as the way COVID-19 and the associated lockdowns influenced these relationships. Throughout the thesis, there is evidence of conceptualisation of new ideas, design and creation of studies to explore these topics, and analysis and synthesis of the results with the knowledge being shared with the academic and wider community. The four studies that form this thesis utilised both quantitative and qualitative methods to develop original research and generated new learnings at the forefront of this field. This body of original work has expanded on current literature, as well as explored novel avenues in relation to adolescent SNS use and the relationship with body image, wellbeing, psychosocial functioning, and COVID-19 lockdowns, and highlights the importance of continuing to progress our enquiry in this field.

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Appendices

A. Study 1

A.i Conditional ethical approval letter

This document has been removed as it contains personal information.

A.ii Final ethical approval letter

This document has been removed as it contains personal information.

A.iii Approval of amendment to ethical application

Amendment to Existing Research Ethics Approval

Please complete this form if you wish to make an alteration or amendment to a study that has already been scrutinised and approved by the Faculty Research Ethics Committee and forward it electronically to the Officer of FREC (researchethics@uwe.ac.uk)

UWE research ethics reference number:	HAS.19.04.169
Title of project:	**Understanding how Social Networking Sites affect adolescents' body image, wellbeing and risky behaviours**
Date of original approval:	28th May 2019
Researcher:	*Sabrina Meechem*
Supervisor (if applicable)	*Associate Professor Amy Slater, Associate Professor Emma Halliwell, Dr Yvette Morey*

1. Proposed amendment: Please outline the proposed amendment to the existing approved proposal.

Opt-out consent has been approved by ethics. Requesting to also apply for opt-in consent for schools that may prefer this.

2. Reason for amendment. Please state the reason for the proposed amendment.

In order to allow a greater number of schools to take part.

3. Ethical issues. Please outline any ethical issues that arise from the amendment that have not already addressed in the original ethical approval. Please also state how these will be addressed.

All ethical issues previously discussed in original ethical application

To be completed by supervisor/ Lead researcher:

Signature:	*Sabrina Meechem*
Date:	*14/06/2019*

To be completed by Research Ethics Chair:

Send out for review:	☐ Yes
	☐ No
Comments:	
Outcome:	X Approve
	☐ Approve subject to conditions
	☐ Refer to Research Ethics Committee
Date approved:	24/6/19
Signature:	Issy Bray (by email)

Guidance on notifying UREC/FREC of an amendment.

Your study was approved based on the information provided at the time of application. If the study design changes significantly, for example a new population is to be recruited, a different method of recruitment is planned, new or different methods of data collection are planned then you need to inform the REC and explain what the ethical implications might be. Significant changes in participant information sheets, consent forms should be notified to the REC for review with an explanation of the need for changes. Any other significant changes to the protocol with ethical implications should be submitted as substantial amendments to the original application. If you are unsure about whether or not notification of an amendment is necessary please consult your departmental ethics lead or Chair of FREC.

UWE Bristol | University of the West of England

Centre for Appearance Research

Dear Parent/Guardian,

The Centre for Appearance Research (CAR), at the University of the West of England (UWE), is conducting an exciting new research study to explore how young people use the internet, and how this influences their thoughts and behaviours.

Early adolescence is a really important time for child development. Children start to become more independent and shape their own thoughts and beliefs. There are a number of factors that can influence this development and it's important we fully understand these. Young people are currently growing up surrounded by technology and the internet and it's crucial we understand the effect this could have on children's body image, their feelings and their behaviour. **Other than an online questionnaire, this study will not involve any internet use, and at no point will you child be asked to go on a website or app, or be encouraged to use one.** Instead, this study will ask children questions about their current internet use (for example online communications, and what sort of things they look at online) in order to examine how this might affect their development.

Your child's school has agreed to participate in this study, and we are now writing to ask for your permission to involve your child in this project.

 Your child will be asked a series of questions relating to their behaviour, their mood, their beliefs about appearance and their online activity.

The questionnaire will be completed by your child once. The whole class will complete the questionnaire at the same time, which will take no longer than **30 - 40 minutes** on each occasion. All information collected will be kept confidential so your child will not be able to be identified in the project. Participation in the task, and completion of the questionnaire, is voluntary and your child can choose not to take part or withdraw themselves from the project at any point. Your child's data will be anonymised and stored securely following the data protection guidelines. If you or your child would like to withdraw their data after completion of the questionnaire, you will have until January 2021 to request for their data to be removed. To do this please contact the lead researcher (details below).

What next?

If you have any questions regarding what your child will be asked, or any other questions related to the study, please contact the project manager, Sabrina Meechem, on 0117 328 5154 or email sabrina.meechem@uwe.ac.uk.

If you are happy for your child to participate, then you **do not** need to do anything. However, if you would like to exclude your child from the research, you will need to notify the research team by 9th July. To do this, you can either:

- Return the attached 'opt-out form' to your child's school.

- You can contact the lead researcher directly via the email address and phone number below.

Yours sincerely,

Sabrina Meechem
PhD Student
Centre for Appearance Research
University of the West of England, Frenchay Campus
Coldharbour Lane, Bristol, BS16 1QY, UK
EMAIL: sabrina.meechem@uwe.ac.uk
PHONE NUMBER: 0117 328 5154

A.v Parental consent form

If you would <u>NOT</u> like your child to take part in this study, please return this slip to your child's class teacher by 9th July. If you do not return this slip, your child will automatically be enrolled in the study.

☐ I **DO NOT** consent for my child …………………………………………………………………………………………

(please print name) in class……………………………. to take part in the study organised by the Centre for

Appearance Research.

Signed……………………………………….. (Parent/Guardian)

Date………………………………………........…………………………..

Print name……………………………………………………………………… (Parent/Guardian) Childs date of birth

(DD/MM/YY) …………………………

To help the research team improve school-based research, it would be extremely helpful to understand the reasons why parents may wish to remove their child from research of this nature. If you are happy to share your reasons, please use the space provided below:

The Social Media Project

The Centre for Appearance Research (CAR), at the University of the West of England (UWE), is conducting an exciting new study to explore how young people use social networking sites, and how this influences their thoughts and behaviours. To do this, we are going to ask you some questions relating to your behaviour, mood, appearance and your online behaviour.

This questionnaire should take no longer than 30- 40 minutes. You will not be able to be identified from this study as no name will be given. Instead you will create a unique participant code in order to keep all of your data anonymous.

If you have any questions during the study, or feel uncomfortable answering any questions, please let your teacher know. If you feel uncomfortable answering a question, please leave it blank.

Please answer all questions carefully. There are no right or wrong answers, and no one will know who you are. It is very important that you answer the questions as honestly as you can.

Informed consent

Your school and your parents are happy for you to take part in this study, however now it is up to you. If you are happy to take part in this study, please tick the box below and continue on to the next page. If you do not want to take part, please let your teacher know.

◯ I consent

Everything you say in this questionnaire will be confidential. In this space we would like you to create a unique code so that any answers you give will be anonymous.

For this we would like you to use the first two letter of your first name.
(EXAMPLE; if your first name is CHRIS, you would enter CH)

```
┌──────────────────────┐
│                      │
│                      │
│                      │
└──────────────────────┘
```

Next, please enter the first two letters of your last name.
(Example: If your last name is SMITH, you would enter SM)

```
┌──────────────────────┐
│                      │
│                      │
│                      │
└──────────────────────┘
```

Next, please enter the number of the month you were born in.
(For example, if you were born in JANUARY, you would enter 01)

```
┌──────────────────────┐
│                      │
│                      │
│                      │
└──────────────────────┘
```

Question 1

In this section, we're going to ask you a few questions about yourself. This is just so we have a bit of information about your background.

Please can you tick the box to show your age in years.

○ 9 years　　○ 10 years　　　○ 11 years　　　○ 12 years

Question 2

Please can you tell us your ethnicity.

○ White British or Irish

○ White Gypsy/ traveller

○ Mixed White and Black Caribbean

○ Mixed White and Black African

○ Mixed White and Asian

○ Asian

○ Black Caribbean

○ Black African

○ Other (Please specify) _____

Question 3

Thinking about the house you live in, how many cars are there? If your parents or guardians do not live together, please think of the house you spend most of your time at.

○ No cars

○ 1 car

○ 2 cars

○ 3 or more cars

Question 4

What gender do you identify as:

○ Male

○ Female

○ Other (please specify) _____

In this section we are going to ask you some questions about websites you use online.

Question 5

Do you have a profile on any social networking site? This could include Facebook, Facebook Messenger, Instagram, Whatsapp, Snapchat, YouTube, or any similar website/ app.

○ Yes

○ No

If you **do not** use any social networking sites, please skip on to question 14. If you do use social networking sites, please continue on the next page.

Question 6

Here are a few questions about which social networking websites you use, and how often you use them.

	Please tick which websites / apps you use or have a profile on
Instagram	
Snapchat	
Facebook	
Facebook Messenger	
YouTube	
WhatsApp	
Other	

Question 7

Please indicate roughly how much time you spend on each of these websites per day.

	I don't use this daily	0-1 hrs	1-3 hrs	3-5 hrs	I'm constantly on this
Instagram					
Snapchat					
Facebook					
Facebook Messenger					
YouTube					
WhatsApp					
Other					

Question 8

If you said "other", please indicate which other social networking websites you use:

_____

Question 9

Next we're going to ask you a few questions about how you spend your time on Social Networking sites. For each of these statements, please indicate how often you do each action.

	Once a month or less	Once a week or less	Once a day or less	A couple of times a day	Every couple of hours or more
Upload a photo to a profile or story?					
Scroll through a Social Networking Site page					
Upload a status					
Comment on other peoples photos/ status					
'Like' other people photos/ comments.					
Use private messaging facilities?					
Use private photo sharing (e.g. on snapchat)					

Question 10

Are there any other online activities you tend to use on social networking sites? If so, please explain what these are, and how often you tend to do this online.

_____

_____

_____

_____

_____

Question 11

How important is the number of likes you receive on a post?

	Extremely important	Very important	Quite important	Slightly important	Not at all important
How important is the number of likes you receive on a post?					

Question 12

	A great deal	A lot	A moderate amount	A little	Not at all
How much do you pay attention to how many likes other peoples posts/ photos have?					

Question 13

In this question, we want you to think about your general behaviour on social networking sites.

If we spilt behaviour into two general terms, either **"time spent looking"** which would include looking at other peoples posts or comments, but not adding any comments or posts yourself. The other broad term would be **"communicating with others"** and this can include sharing posts with others, posting, or commenting on others posts, or private messaging others, for example. Most people do both of these while they're online, however a lot of people tend to do one more than the other. Which do you think you do more?

○ Time spent looking

○ Time spent communicating

Question 14

The next questions are about photos - both "selfies" (photos you take by turning the camera around to point at yourself), and photos taken of you by other people. Please select the best response for you.

	How often do you take selfies with **only you** in the photo?	How often do you take selfies with you **and others** in the photo?
More than twice a day		
Twice a day		
Once a day		
Twice a week		
Once a week		
Once a fortnight (a fortnight is 2 weeks)		
Once a month		
Less than once a month		

Question 15

	Never	Rarely	Sometimes	Often	Always
Do you avoid putting photos of yourself on social media?					
Do you post photos of yourself online, or share them through services like "Snapchat" or "Instagram"?					

Question 16

Next we're going to ask you a bit about what you do to the photos you take.
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					
Make yourself look larger					
Highlight facial features e.g. cheekbones or eye colour/ brightness					
Use a filter to change the overall look of the photo e.g. making it black and white, or blurring and smoothing the image					
Make yourself look skinner					
Adjusting the light/ darkness of the photo					
Edit to hide blemishes like pimples					
Whiten your teeth					
Make specific parts of your body look larger or smaller					
Edit or use apps to smooth skin					

Question 17

Next we're going to ask you some questions about how you look at yourself compared to others. Lots of people compare themselves to others, we want to know a bit about when you compared yourself to others.

	Strongly Disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I often compare how I look with how other people look							
During the day, I think about how I look many times							
I often worry about whether the clothes I am wearing make me look good							
I often worry about how I look to other people							

Question 18

Next we're going to ask a couple of questions about how you want to look. Please read each of the following items carefully and indicate the number that best reflects your agreement with the statement.

	Definitely disagree	Mostly disagree	Neither agree nor disagree	Mostly Agree	Definitely agree
It is important for me to look muscular					
I think a lot about looking muscular					
I want my body to look muscular					
I don't want my body to look muscular					
I would like to have a body that looks very muscular					

Question 19

This set of questions asks what you think of your body. The options are 'Never,' 'Rarely,' 'Sometimes,' Often,' and 'Always.' Please click the option which shows how often you feel this way.

	Never	Rarely	Sometimes	Often	Always
I feel good about my body					
I respect my body					
I feel that my body has at least some good qualities					
I take a positive attitude towards my body					
I pay attention to what my body needs					
I feel love for my body					
	Never	Rarely	Sometimes	Often	Always
I appreciate the different and unique things about my body					
You can tell I feel good about my body by the way I behave					
I am comfortable in my body					
I feel like I am beautiful even if I am different from pictures and videos of attractive people (e.g. models/ actresses/ actors)					

Question 20

Next we're going to ask you about some of your behaviours towards food

	Always	Usually	Often	Sometimes	Rarely	Never
I eat sweets and carbohydrates without feeling nervous						
I am preoccupied with the desire to be thinner						
I think about dieting						
I exaggerate or magnify the importance of weight						
I am terrified of gaining weight						
If I gain a pound, I worry that I will keep gaining						
I feel guilty after overeating						

Question 21

Use this scale to indicate how dissatisfied or satisfied you are with each of the following areas or aspects of your body.
There are no right or wrong answers. Just give the answer that is most accurate for you.

	Very Dissatisfied	Most Dissatisfied	Neither Satisfied or Dissatisfied	Mostly Satisfied	Very Satisfied
Face					
Hair					
Lower Torso (buttocks, hips, thighs, legs)					
Mid Torso (waist, stomach)					
Upper Torso (chest, shoulders, arms)					
Muscle tone					
Weight					
Height					
Overall Appearance					

Question 22

The following three questions are about how alone you feel. Please state how often you feel you agree with the statements.

	Never	Rarely	Sometimes	Often	Very Often	Always
I feel like I do not have a friend in the world						
I am not close to anyone						
I have nobody to talk to						

Question 23

Next we want to know what you think about yourself.

Please use the rating scale below to answer the following questions about how you feel about yourself.

	Really sad sad	Sad	Neutral	Happy	Really happy
How do you feel about yourself?					
How do you feel about the kind of person you are?					
When you think about yourself, how do you feel?					
How do you feel about the way you are?					

Question 24

The next set of questions will give you a list of emotions and we would like you to describe how often you feel like this.

Thinking about yourself and how you normally feel, to what extent do you generally feel:

	Never	Sometimes	About half the time	Most of the time	Always
Joyful					
Cheerful					
Happy					
Lively					
Proud					
Miserable					
Mad					
Afraid					
Scared					
Sad					

Question 25

Please tick the behaviours you have seen a friend post about. This could include posting a photo, status or talking about it online.

☐   Rule breaking behaviour

☐   Inappropriate/ sexy or revealing images

Question 26

Please tick the behaviours you think most children your age take part in.

☐   Taking part in rule breaking behaviour

☐   Posting or sending Inappropriate/ sexy or revealing images

Question 27

Please rate the degree to which you have experienced the following (in the past 30 days)

	Not at all	Once or twice	Several Times	Often	Most of the time	All of the time
Arguing with others						
Getting into fights						
Yelling, swearing, or screaming at others						
Fits of anger						
Refusing to do things teachers or parents ask						
Causing trouble for no reason						
Using drugs or alcohol						
Breaking rules or breaking the law						
Skipping school or classes						
Lying						
Can't seem to sit still, having too much energy						
Hurting self (cutting or scratching self, taking pills)						
	Not at all	Once or twice	Several Times	Often	Most of the time	All of the time
Getting along with friends						
Getting along with family						
Getting along with adults outside the family (e.g. teachers, principal)						
Being motivated and finishing projects						
Accepting responsibility for actions						
Ability to express feelings						

Question 28

This question is about your development.

	Much earlier	Somewhat earlier	About the same	Somewhat later	Much later
Compared to most same sex individuals your age, would you say that your body has developed					

Question 29

For the final question we would like to ask you about your role model.

Please tell us who your role model is

_____

_____

_____

This is the end of the survey. Thank you for taking part.

Detailed on the next page is a list of support materials should you feel you need them.

We recognise that any participation in research can raise sensitive issues. If any part of this questionnaire caused you any personal distress, please see the below list of resources for you to resolve any concerns.

1. Talk to a teacher/ school counsellor.

2. Childline: A private and confidential service for children and young people up to the age of nineteen. Young people can contact a ChildLine counsellor about anything by phone, email or online chat.

     Free Helpline: 0800 1111

     http://www.childline.org.uk/Pages/Home.aspx

3. Off the Record: A Bristol based charity offering mental health information, counselling support, youth groups and workshops for young people up to the age of 25.

     http://www.otrbristol.org.uk/

4. YoungMinds: A UK based charity committed to improving the emotional wellbeing and mental health of children and young people and empowering their parents and carers. They provide expert knowledge to professionals, parents and young people through a Parents' Helpline, online resources, training and development, outreach work and publications.

     http://www.youngminds.org.uk/

5. BEAT: Beat provides helplines, online support and a network of UK-wide self-help groups to help adults and young people in the UK beat their eating disorders.

     http://www.b-eat.co.uk/

B. Study 2

B.i Parental information sheet

Dear Parent/Guardian,

The Centre for Appearance Research (CAR), at the University of the West of England (UWE), is conducting an exciting new research study to explore how young people use the internet, and how this influences their thoughts and behaviours.

Ages 11- 16 are really important times for child development. Children start to become more independent and shape their own thoughts and beliefs. There are a number of factors that can influence this development and it's important we fully understand these. Young people are currently growing up surrounded by technology and the internet and it's crucial we understand the effect this could have on children's body image, their feelings and their behaviour. **Other than an online questionnaire, this study will not involve any internet use, and at no point will your child be asked to go on a website or app, or be encouraged to use one.** Instead, this study will ask children questions about their current internet use (for example online communications, and what sort of things they look at online) in order to examine how this might affect their development.

Your child's school has agreed to participate in this study, and we are now writing to ask for your permission to involve your child in this project.

Your child will be asked a series of questions relating to their behaviour, their mood, their beliefs about appearance and their online activity.

The questionnaire will be completed by your child at three separate time points over the next 12 months. These sessions will occur during Friday tutor time. The whole class will complete the questionnaire at the same time, which will take no longer than **30 - 40 minutes** on each occasion.

All information collected will be kept confidential so your child will not be able to be identified in the project. Participation in the task, and completion of the questionnaire, is voluntary and your child can choose not to take part or to withdraw themselves from the project at any point. Your child's data will be anonymised and stored securely following the data protection guidelines. If you or your child would like to withdraw their data after completion of the questionnaire, you will have until January 2021 to request for their data to be removed. To do this please contact the lead researcher (details below).

What next?

If you have any questions regarding what your child will be asked, or any other questions related to the study, please contact the project manager, Sabrina Meechem, on 0117 328 5154 or email sabrina.meechem@uwe.ac.uk.

If you are happy for your child to participate, then you **do not** need to do anything. However, if you would like to exclude your child from the research, you will need to notify the research team by <insert date>. To do this, you can either:

- Return the attached 'opt-out form' to the class tutor, or <insert school lead>.
- You can contact the lead researcher directly via the email address and phone number below.

Yours sincerely,

Sabrina Meechem
PhD Student
Centre for Appearance Research, University of the West of England
Email: sabrina.meechem@uwe.ac.uk
Phone Number: 0117 328 5154

B.ii Parental consent form

If you would <u>NOT</u> like your child to take part in this study, please return this slip to your child's class teacher by <mark><inset date></mark>. If you do not return this slip, your child will automatically be enrolled in the study.

☐ I **DO NOT** consent for my child ……………………………………………………………………………………

(please print name) in class……………………………. to take part in the study organised by the Centre for

Appearance Research.

Signed……………………………………......……........................ (Parent/Guardian)

Date…………………………………......…………………………..

Print name…………………………………………………………… (Parent/Guardian) Childs date of birth

(DD/MM/YY) …………………

To help the research team improve school-based research, it would be extremely helpful to understand the reasons why parents may wish to remove their child from research of this nature. If you are happy to share your reasons, please use the space provided below:

The Social Media Project

The Centre for Appearance Research (CAR), at the University of the West of England (UWE), is conducting an exciting new study to explore how young people use social networking sites, and how this influences their thoughts and behaviours. To do this, we are going to ask you some questions relating to your behaviour, mood, appearance and your online behaviour.

This questionnaire should take no longer than 30- 40 minutes. You will not be able to be identified from this study as no name will be given. Instead you will create a unique participant code in order to keep all of your data anonymous.

If you have any questions during the study, or feel uncomfortable answering any questions, please let your teacher know. If you feel uncomfortable answering a question, please leave it blank.

Please answer all questions carefully. There are no right or wrong answers, and no one will know who you are. It is very important that you answer the questions as honestly as you can.

Informed consent

Your school and your parents are happy for you to take part in this study, however now it is up to you. If you are happy to take part in this study, please tick the box below and continue on to the next page. If you do not want to take part, please let your teacher know.

◯ I consent

Everything you say in this questionnaire will be confidential. In this space we would like you to create a unique code so that any answers you give will be anonymous.

(For example, if your full name is **CH**RIS Smith, you would enter | C | H |)

Next, please enter the first two letters of your **last name**.

(For example, If your full name is Chris **SM**ITH, you would enter | S | M |)

Next, please enter the **day of the month** you were born in.

(For example, if your birthday is **27**.01.07, you would enter | 2 | 7 |)

Next, please enter the number of the **month you were born** in.

(For example, if your birthday is 27.**01**.07, you would enter | 0 | 1 |)

In the first section we are going to ask you some questions about websites you use online.

Question 1

Do you have a profile on any social networking site? This could include Facebook, Facebook Messenger, Instagram, Snapchat, YouTube, TikTok, or any similar website/ app.

☐ Yes

☐ No

If you **do not** use any social networking sites, please skip on to **Question 21** (on page 13). If you do use social networking sites, please continue on the next page.

Next we're going to ask you some questions about which social networking websites you use, and how often you use them.

Question 2

Please tick to indicate which social networking site you have an account or profile on.

If you use one of these websites but do NOT have your own account or profile, please leave it blank.

☐ Instagram

☐ Snapchat

☐ Facebook

☐ Facebook Messenger

☐ Youtube

☐ TikTok

☐ Other (please specify

_____)

☐ Other (please specify

_____)

☐ Other (please specify

_____)

Question 3

Please indicate roughly how much **time (in hours)** you spend on each of these social networking sites each day. If you do not use a social networking site, please leave it blank.

	Hours per day
Instagram	
Snapchat	
Facebook	
Facebook Messenger	
YouTube	
TikTok	
Other	

Question 4

Next, we're going to ask you a few questions about how you spend your time on social networking sites. For each of these statements, please circle a number to indicate how often you do each action.

	Never	Once a month or less	Once a week or less	Once a day or less	A couple of times a day	Every couple of hours or more
Upload a photo to a profile or story?	1	2	3	4	5	6
Scroll through a Social Networking Site page	1	2	3	4	5	6
Upload a status	1	2	3	4	5	6
Comment on other peoples photos/ status	1	2	3	4	5	6
'Like' other people photos/ comments.	1	2	3	4	5	6
Use private messaging facilities? (e.g. Whatsapp)	1	2	3	4	5	6
Use private photo/ video sharing (e.g. snapchat)	1	2	3	4	5	6

Question 5

Are there any other online activities you tend to use on social networking sites? If so, please explain what these are, and how often you tend to do this online.

_____

_____

_____

_____

_____

Question 6

How important is the number of likes you receive on a post?

	Not at all important	Slightly important	Quite important	Very important	Extremely important
How important is the number of likes you receive on a post?	1	2	3	4	5

Question 7

How much do you pay attention to how many likes other peoples posts/ photos have?

	Not at all	A little	A moderate amount	A lot	A great deal
How much do you pay attention to how many likes other peoples posts/ photos have?	1	2	3	4	5

Question 8

In this question, we want you to think about your general behaviour on social networking sites.

If we spilt behaviour into two general terms, either **"time spent looking"** which would include looking at other peoples posts or comments), but not adding any comments or posts yourself

The other broad term would be **"communicating with others"** and this can include sharing posts with others, posting, or commenting on others posts, or private messaging others, for example. Most people do both of these while they're online, however a lot of people tend to do one more than the other. Which do you think you do more?

☐ Time spent looking

☐ Time spent communicating

Question 9

The next questions are about photos you take.

	Never	Rarely	Sometimes	Often	Always
Do you avoid putting photos of yourself on social media?	1	2	3	4	5
Do you post photos of yourself online, or share them through services like "Snapchat" or "Instagram"?	1	2	3	4	5

Question 10

The next questions are about photos - both "selfies" (photos you take by turning the camera around to point at yourself), and photos taken of you by other people. Please select the best response for you.

	How often do you take selfies with **only you** in the photo?	How often do you take selfies with you **and others** in the photo?
Less than once a month	1	1
Once a month	2	2
Once a fortnight (a fortnight is 2 weeks)	3	3
Once a week	4	4
Twice a week	5	5
Once a day	6	6
Twice a day	7	7
More than twice a day	8	8

Question 11

Next we're going to ask you a bit about what you do to the photos you take. 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 the image	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 smaller	1	2	3	4	5
Edit or use apps to smooth skin	1	2	3	4	5

Question 12

Next we're going to ask you some questions about how you look at yourself compared to others. Lots of people compare themselves to others, we want to know a bit about when you compared yourself to others

	Strongly Disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I often compare how I look with how other people look	1	2	3	4	5	6	7
During the day, I think about how I look many times	1	2	3	4	5	6	7
I often worry about whether the clothes I am wearing make me look good	1	2	3	4	5	6	7
I often worry about how I look to other people	1	2	3	4	5	6	7

Question 13

Next we're going to ask a couple of questions about how you want to look. Please read each of the following items carefully and indicate the number that best reflects your agreement with the statement.

	Definitely disagree	Mostly disagree	Neither agree nor disagree	Mostly Agree	Definitely agree
It is important for me to look muscular	1	2	3	4	5
I think a lot about looking muscular	1	2	3	4	5
I want my body to look muscular	1	2	3	4	5
I don't want my body to look muscular	1	2	3	4	5
I would like to have a body that looks very muscular	1	2	3	4	5

Question 14

This set of questions asks what you think of your body. The options are 'Never,' 'Rarely,' 'Sometimes,' 'Often,' and 'Always.' Please click the option which shows how often you feel this way.

	Never	Rarely	Sometimes	Often	Always
I feel good about my body	1	2	3	4	5
I respect my body	1	2	3	4	5
I feel that my body has at least some good qualities	1	2	3	4	5
I take a positive attitude towards my body	1	2	3	4	5
I pay attention to what my body needs	1	2	3	4	5
I feel love for my body	1	2	3	4	5
	Never	Rarely	Sometimes	Often	Always
I appreciate the different and unique things about my body	1	2	3	4	5
You can tell I feel good about my body by the way I behave	1	2	3	4	5
I am comfortable in my body	1	2	3	4	5
I feel like I am beautiful even if I am different from pictures and videos of attractive people (e.g. models/ actresses/ actors)	1	2	3	4	5

Question 15

Next we're going to ask you about some of your behaviours towards food

	Never	Rarely	Sometimes	Often	Usually	Always
I eat sweets and carbohydrates without feeling nervous	1	2	3	4	5	6
I am preoccupied with the desire to be thinner	1	2	3	4	5	6
I think about dieting	1	2	3	4	5	6
I exaggerate or magnify the importance of weight	1	2	3	4	5	6
I am terrified of gaining weight	1	2	3	4	5	6
If I gain a pound, I worry that I will keep gaining	1	2	3	4	5	6
I feel guilty after overeating	1	2	3	4	5	6

Question 16

Use this scale to indicate how dissatisfied or satisfied you are with each of the following areas or aspects of your body.

There are no right or wrong answers. Just give the answer that is most accurate for you.

	Very Dissatisfied	Most Dissatisfied	Neither Satisfied or Dissatisfied	Mostly Satisfied	Very Satisfied
Face	1	2	3	4	5
Hair	1	2	3	4	5
Lower Torso (buttocks, hips, thighs, legs)	1	2	3	4	5
Mid Torso (waist, stomach)	1	2	3	4	5
Upper Torso (chest, shoulders, arms)	1	2	3	4	5
Muscle tone	1	2	3	4	5
Weight	1	2	3	4	5
Height	1	2	3	4	5
Overall Appearance	1	2	3	4	5

Question 17

In this sections there are a list of appearance related attributes and social attributes. We want to know how frequently you think you compare yourself to models/ celebrities and to same sex peers on each of these attributes.

	Compared to same-sex peers				
	Never	Very Rarely	Rarely	Occasionally	A lot
Height	1	2	3	4	5
Weight	1	2	3	4	5
Shape or Build	1	2	3	4	5
Face	1	2	3	4	5
Personality	1	2	3	4	5
Intelligence	1	2	3	4	5
Style	1	2	3	4	5
Popularity	1	2	3	4	5

Question 18

The following three questions are about how alone you feel. Please state how often you feel you agree with the statements.

	Never	Rarely	Sometimes	Often	Very Often	Always
I feel like I do not have a friend in the world	1	2	3	4	5	6
I am not close to anyone	1	2	3	4	5	6
I have nobody to talk to	1	2	3	4	5	6

Question 19

Next we want to know what you think about yourself.

Please use the rating scale below to answer the following questions about how you feel about yourself.

	Really sad	Sad	Neutral	Happy	Really happy
How do you feel about yourself?	1	2	3	4	5
How do you feel about the kind of person you are?	1	2	3	4	5
When you think about yourself, how do you feel?	1	2	3	4	5
How do you feel about the way you are?	1	2	3	4	5

Question 20

The next set of questions will give you a list of emotions and we would like you to describe how often you feel like this.

Thinking about yourself and how you normally feel, to what extent do you generally feel:

	Never	Sometimes	About half the time	Most of the time	Always
Joyful	1	2	3	4	5
Cheerful	1	2	3	4	5
Happy	1	2	3	4	5
Lively	1	2	3	4	5
Proud	1	2	3	4	5
Miserable	1	2	3	4	5
Mad	1	2	3	4	5
Afraid	1	2	3	4	5
Scared	1	2	3	4	5
Sad	1	2	3	4	5

Question 21

Please tick the behaviours you have seen a friend post about online. This could include posting a photo, status or talking about it online.

- [ ] Rule breaking behaviour

- [ ] Inappropriate/ sexy or revealing images

- [ ] Taking drugs

- [ ] Smoking

- [ ] Drinking alcohol

- [ ] None of the above

Question 22

Please tick the behaviours you think most children your age take part in.

- [ ] Taking part in rule breaking behaviour

- [ ] Posting or sending Inappropriate/ sexy or revealing images

- [ ] Taking drugs

- [ ] Smoking

- [ ] Drinking alcohol

- [ ] None of the above

Question 23

Next we're going to ask you about your friends, please answer these questions truthfully.

	Not at all true	Slightly true	About halfway true	Mostly true	Always true
I feel part of a group of friends that does things together	1	2	3	4	5
I have a lot in common with other children	1	2	3	4	5
I feel in tune with other children	1	2	3	4	5
I feel like other children want to be me	1	2	3	4	5
I feel that I usually fit in with other children around me	1	2	3	4	5
When I want to do something for fun, I can usually find friends to join me	1	2	3	4	5
When I am with other children, I feel like I belong	1	2	3	4	5

Question 24

Please rate the degree to which you have experienced the following (in the past 30 days)

	Not at all	Once or twice	Several Times	Often	Most of the time	All of the time
Arguing with others	1	2	3	4	5	6
Getting into fights	1	2	3	4	5	6
Yelling, swearing, or screaming at others	1	2	3	4	5	6
Fits of anger	1	2	3	4	5	6
Refusing to do things teachers or parents ask	1	2	3	4	5	6
Causing trouble for no reason	1	2	3	4	5	6
Using drugs or alcohol	1	2	3	4	5	6
Breaking rules or breaking the law	1	2	3	4	5	6
Skipping school or classes	1	2	3	4	5	6
Lying	1	2	3	4	5	6
Can't seem to sit still, having too much energy	1	2	3	4	5	6
Hurting self (cutting or scratching self, taking pills)	1	2	3	4	5	6
	Not at all	Once or twice	Several Times	Often	Most of the time	All of the time
Getting along with friends	1	2	3	4	5	6
Getting along with family	1	2	3	4	5	6
Getting along with adults outside the family (e.g. teachers, principal)	1	2	3	4	5	6
Being motivated and finishing projects	1	2	3	4	5	6
Accepting responsibility for actions	1	2	3	4	5	6
Ability to express feelings	1	2	3	4	5	6
Posting revealing or inappropriate pictures	1	2	3	4	5	6

Question 25

This question is about your development.

	Much later	Somewhat later	About the same	Somewhat earlier	Much earlier
Compared to most same sex individuals your age, would you say that your body has developed	1	2	3	4	5

Question 26

In this section, we're going to ask you a few questions about yourself. This is just so we have a   bit of information about your background.

Please can you tick the box to show your age in years.

☐ Under 10 years   ☐ 10 years   ☐ 11 years   ☐ 12 years

☐ 13 years   ☐ 14 years   ☐ 15 years   ☐ 16 years

☐ 17 years   ☐ 18+

Question 27

Please can you tell us your ethnicity.

	White British or Irish
	White European
	White Gypsy/ Traveller
	Mixed White and Black Caribbean
	Mixed White and Black African
	Mixed White and Asian
	Asian
	Black Caribbean
	Black African
	Other (Please specify) _____

Question 28

Thinking about the house you live in, how many cars are there? If your parents or guardians do not live together, please think of the house you spend most of your time at.

	No cars
	1 car
	2 cars
	3 or more cars

Question 29

What gender do you identify as:

☐ Male

☐ Female

☐ Other (please specify) _____

Question 30

For the final question we would like to ask you about your role model.

Please tell us who your role model is

_____

_____

_____

This is the end of the survey. Thank you for taking part.

Detailed on the next page is a list of support materials should you feel you need them.

We recognise that any participation in research can raise sensitive issues. If any part of this questionnaire caused you any personal distress, please see the below list of resources for you to resolve any concerns.

1. Talk to a teacher/ school counsellor.

2. Childline: A private and confidential service for children and young people up to the age of nineteen. Young people can contact a ChildLine counsellor about anything by phone, email or online chat.

     Free Helpline: 0800 1111

     http://www.childline.org.uk/Pages/Home.aspx

3. Off the Record: A Bristol based charity offering mental health information, counselling support, youth groups and workshops for young people up to the age of 25.

     http://www.otrbristol.org.uk/

4. YoungMinds: A UK based charity committed to improving the emotional wellbeing and mental health of children and young people and empowering their parents and carers. They provide expert knowledge to professionals, parents and young people through a Parents' Helpline, online resources, training and development, outreach work and publications.

     http://www.youngminds.org.uk/

5. BEAT: Beat provides helplines, online support and a network of UK-wide self-help groups to help adults and young people in the UK beat their eating disorders.

     http://www.b-eat.co.uk/

B.iv Study 2 moderation and mediation analyses

H4: Higher levels of SNS engagement will predict higher body image concerns, mediated by body surveillance, and moderated by photo manipulation. This relationship will be found for boys and girls.

Boys Moderation:

Before running the moderation analysis, correlations were run to explore the relationship between the variables included in the moderation. All variables showed strong evidence for a positive correlation and were therefore carried forward to the moderation.

Table 106

Correlations between SNS measures moderator and dependent variable for boys

	Time on SNSs			SNS activity			Objectification			Photo manipulation		
	Pearson r	*p*	N	Person r	*p*	N	Pearson r	*p*	N	Person r	*p*	N
Time on SNSs	1		466									
SNS activity	.31	<.001**		1	490							
Objectification	.19	<.001**	462	.36	<.001**	487	1		490			
Photo manipulation	.24	<.001**	453	.36	<.001**	487	.44	<.001**	478	1		481

* denotes p ≤ .05, ** denotes p ≤ .001

Following this, moderation analysis was run using PROCESS macro in order to see if photo manipulation moderated the relationships between the social media measures and objectification. All moderations were run with standardised values.

The moderation model suggested there was evidence that photo manipulation moderated the relationship between time online and objectification, the addition of the interaction was a significant change to the model; R^2 change = .01, suggesting a small effect. This suggests that photo manipulation moderates the causal effect of time online on objectification (see figure 49 for model).

Figure 49. *Moderation model 1 for boys' body image pathway*
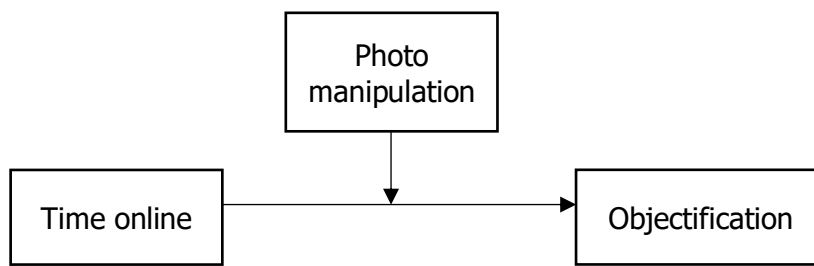
Time on SNSs is a significant predictor of objectification, photo manipulation is a significant predictor of objectification, the interaction also showed evidence of a relationship. As both time on SNSs and photo manipulation increases, objectification increases. Furthermore, as photo manipulation increases, the effect of time on SNSs on objectification decreases (see table 107).

The simple slopes in graph 1 below highlights the way that photo manipulation interacts with time online:

- 1SD below mean (Photo manipulation = 1.00 below mean); *b* = 0.32, t (394)= 2.75, p = .006
  For low photo manipulation (photo manipulation below mean), social media time predicts objectification. As time on SNSs increases, objectification increases.

- Average (photo manipulation – 0 below mean); *b* = 0.22, t (394) = 2.26, p = .025
  For average photo manipulation, time on SNSs predicts objectification. As social media time increases, objectification increases.

- 1SD above mean; *b* = 0.08, t (394)= .79, p = .43

For high photo manipulation time on SNSs does not predict objectification

The graph below shows the simple slopes in graphical form. The gradients of the graphic show that when photo manipulation levels are average or below, as this behaviour increases along with time on SNSs, together it leads to increased levels of objectification, until a level of photo manipulation where increases in time on SNSs do not add to objectification levels. As photo manipulation increases, the strength of the relationship between time on SNSs and objectification decreases. The regression lines also do not overlap, which shows the direct relationship between photo manipulation and objectification.

Graph 1. *Simple slopes graph showing moderation of photo manipulation on the relationship between time online and objectification*
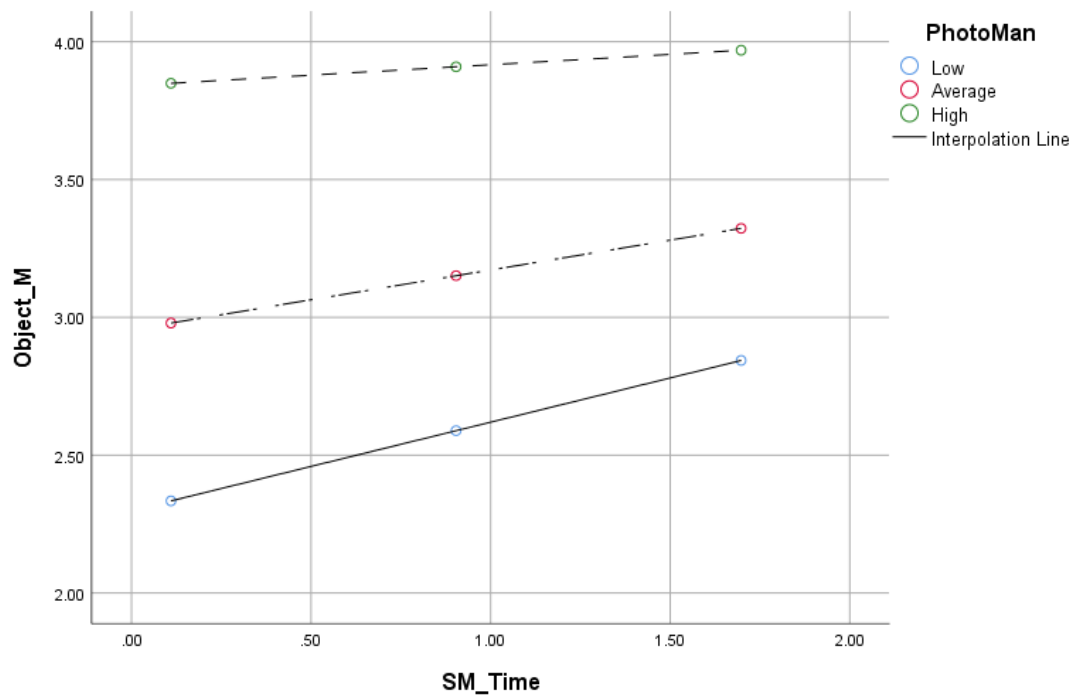
SNS activity model summary

The moderation model suggested there was strong evidence that photo manipulation moderated the relationship between SNS activity and objectification. The addition of the interaction was a significant change to the model; R^2 change = .01, suggesting a small effect. This suggests that

photo manipulation moderates the causal effect of time on SNSs on objectification (see figure 50 for model).

Figure 50. *Moderation model 2 for boys' body image pathway*
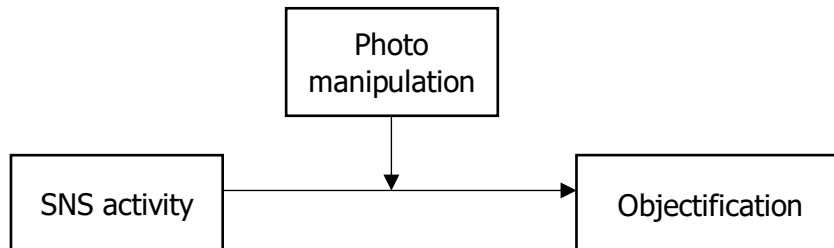
SNS activity is a significant predictor of objectification, photo manipulation is a significant predictor of objectification, and the interaction also showed evidence of a relationship. As both SNS activity and photo manipulation increases, objectification increases. Furthermore, as photo manipulation increases, the effect of SNS activity on objectification decreases (see table 107).

The simple slopes in graph 2 below highlight the way that photo manipulation interacts with SNS activity:

- 1SD below mean (Photo manipulation = 1.00 below mean); b = 0.52, t (413)= 6.06, p <.001
  For low photo manipulation (photo manipulation below mean), SNS activity predicts objectification. As SNS activity increases, objectification increases.

- Average (photo manipulation average mean); b = 0.37, t (413) = 5.11, p <.001
  For average photo manipulation, SNS activity predicts objectification. As SNS activity increases, objectification increases.

- 1SD above mean; b = 0.18, t (413)= 1.63, p = .103
  For high photo manipulation SNS activity does not predict objectification

The graph below shows the simple slopes in graphical form. The gradients of the graphic show that when photo manipulation levels are average or below, as this behaviour increases along with SNS activity, together it leads to increased levels of objectification, until a level of photo manipulation where increases in time on SNSs does not add to objectification levels. As photo

manipulation increases, the strength of the relationship between SNS activity and objectification decreases. The regression lines also do not overlap, which shows the direct relationship between photo manipulation and objectification.

Graph 2. *Simple slopes graph showing moderation of photo manipulation on the relationship between SNS usage and objectification*
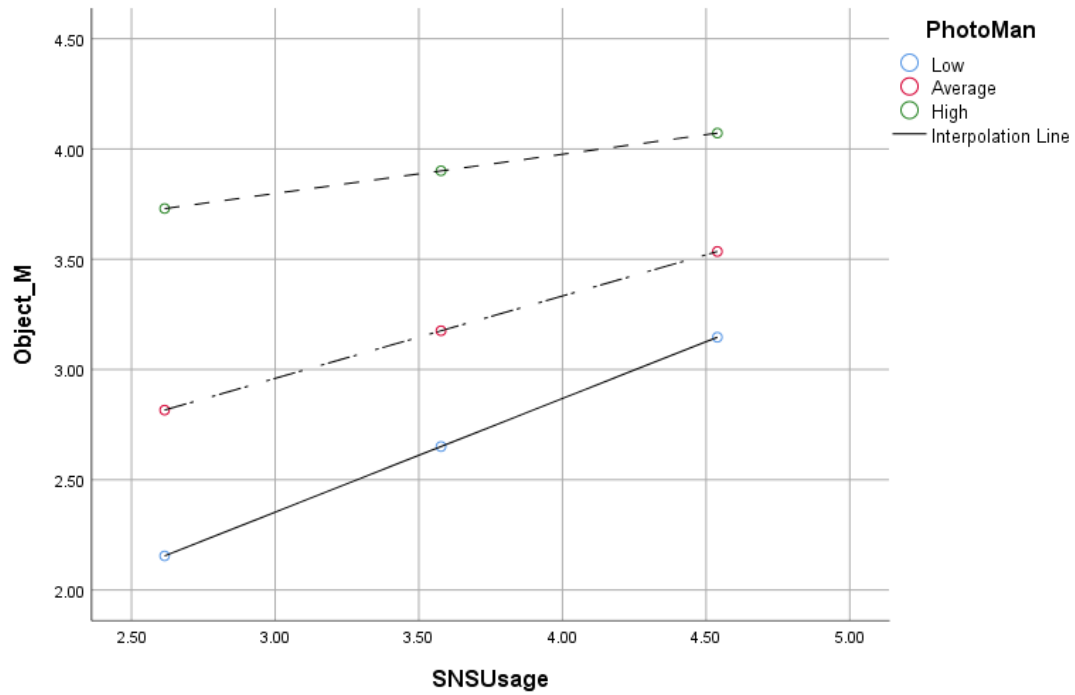
Table 107

Moderation analysis for boys' body image pathway

	b	T	Df	p	R^2	p
Time online (model 1)					.24	<.001
Time online SNSs → Objectification	0.11	2.29	394	.023**		
Photo manipulation → Objectification	0.57	9.66	394	<.001**		
Interaction	-0.22	-2.39	394	.017**		
Covariates						
Y7	-0.43	-3.91	394	<.001		
Y8	-0.24	-2.22	394	.027		
Puberty early	0.05	.37	394	.715		
Puberty same	-0.11	-.99	394	.322		
SNS Activity (model 2)					.28	<.001
SNS activity → Objectification	0.23	5.20	413	<.001**		
Photo manipulation → Objectification	0.45	8.91	413	<.001**		
Interaction	-0.11	-2.69	413	.007**		
Covariates						
Y7	-0.41	-3.87	413	<.001		
Y8	-0.21	-2.04	413	.042		
Puberty early	-.06	-0.49	413	.626		
Puberty same	-.16	-1.54	413	.124		

* denotes p ≤ .05, ** denotes p ≤ .001.

Following this, mediations were run for relationships which suggested evidence for a regression relationship between the IV (SNS measure) and DV (Body image measure).

Time on SNSs:

The first mediation models tested included time online as the predictor, objectification as the mediator, scholastic year and puberty as covariates, and internalisation of muscular ideals, drive for thinness, and body satisfaction as the outcome variables (see figures 51 – 53, and table 108).

The first model tested internalisation of muscular ideals as the dependent variable. There was evidence of an indirect effect of time online on internalisation of muscular ideals, and objectification was shown to partially mediate the relationship between time online and internalisation of muscular ideals due to the direct effect remaining significant after objectification was added into the model (see figure 51).

Figure 51. *Boys' mediation model with time online as IV and internalisation of muscular ideals as DV.*

Note. * denotes p ≥ .05, ** denotes p ≥ .001
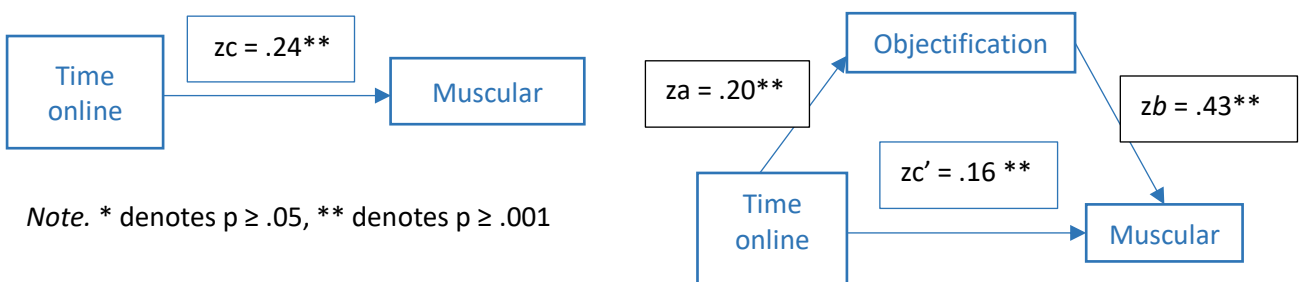
The next mediation tested drive for thinness as the dependent variable. There was evidence to suggest there was an indirect effect of time on SNSs on drive for thinness. Objectification fully mediated the relationship between time on SNSs and drive for thinness due to the direct effect not remaining significant after objectification was added into the model (see figure 52).

Figure 52. *Boys' mediation model with time online as IV and drive for thinness as DV.*
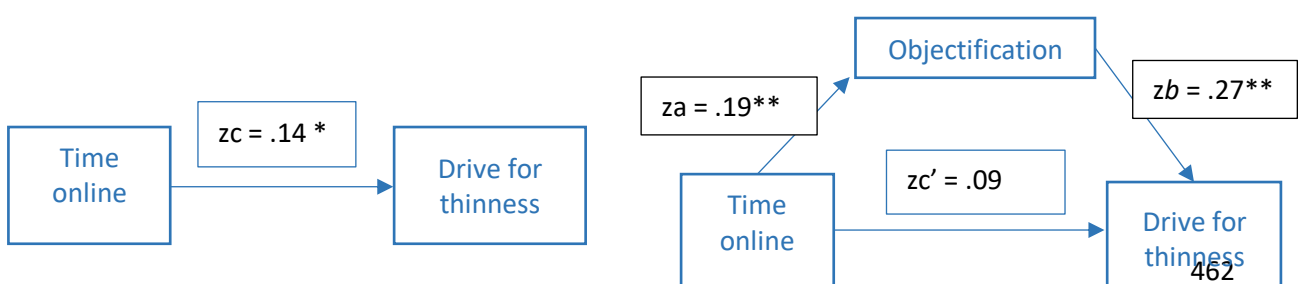
The final mediation in this section explored body satisfaction and gave evidence of the indirect effect of time on SNSs on body satisfaction. Objectification was shown to partially mediate the relationship between time on SNSs and body satisfaction due to the direct effect reducing but remaining significant after objectification was added into the model (see figure 53).

Figure 53. *Boys' mediation model with time online as IV and body satisfaction as DV.*
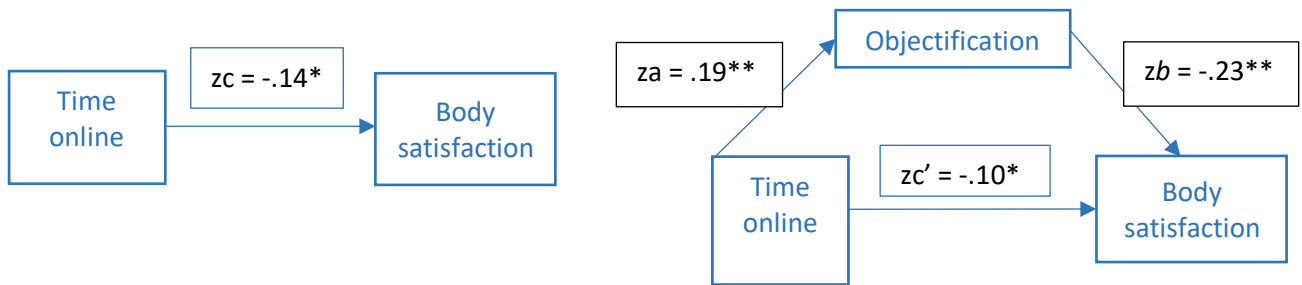
Table 108

Mediation analysis for boys' body image pathway with time on SNSs as IV

	Direct effect (X, M → Y)				Direct model		Total effect (X → Y)				Total model	
	β	SE	t	p	R²	p	β	SE	t	p	R²	p
Body Appreciation					.12	<.001					.02	.114
A	0.20	.05	4.04	<.001	.06	<.001						
B	-0.32	.05	-6.79	<.001								
c'	0.02	.05	0.41	.681								
c							-0.04	.05	-0.90	.370		
Year 7	0.22	.11	1.96	.051			0.30	.12	2.49	.013		
Year 8	0.06	.11	0.51	.613			0.10	.12	0.84	.403		
Puberty early	0.04	.14	0.26	.794			-0.01	.14	-0.06	.954		
Puberty same	0.11	.12	0.96	.338			0.13	.12	1.04	.302		
Muscular Ideals					.24	<.001					.07	<.001
A	0.20	.05	3.99	<.001	.05	<.001						
B	0.43	.04	9.56	<.001								
c'	0.16	.05	3.43	**<.001**								
c							0.24	.05	4.89	<.001**		
Year 7	-0.09	.11	-0.84	.402			-0.18	.12	-1.57	.118		
Year 8	0.00	.10	0.02	.985			-0.05	.12	-0.43	.670		
Puberty early	-0.11	.13	-0.85	.397			-0.05	14	-0.35	.724		
Puberty same	-0.12	.11	-1.12	.264			-0.14	.12	-1.20	.231		
Drive for thinness					.16	<.001					.09	<.001
A	0.19	.05	3.94	<.001	.05	<.001						
B	0.27	.05	5.72	<.001								
c'	0.09	.05	1.81	**.072**								
c							0.14	.05	2.85	.005*		
Year 7	0.64	.11	5.58	<.001			0.57	.12	4.86	<.001		
Year 8	0.39	.11	3.51	<.001			0.35	.12	3.05	.003		
Puberty early	-0.21	.13	-1.50	.133			-0.17	.14	-1.19	.235		
Puberty same	-0.26	.12	-2.24	.025			-0.27	.12	-2.28	.023		
Body satisfaction					.09	<.001					.04	.011
A	0.19	.05	3.93	<.001	.05	<.001						
B	-0.23	.05	-4.78	<.001								
c'	-0.10	.05	-2.08	**.038**								
C							-0.14	.05	-2.98	.003*		
Year 7	-0.01	.12	-0.06	.950			0.04	.12	0.37	.712		
Year 8	0.06	.11	0.49	.621			0.09	.12	0.77	.439		
Puberty early	0.38	.14	2.76	.006			0.35	.14	2.49	.013		
Puberty same	0.19	.12	1.65	.100			0.21	.12	1.71	.088		

Note. IV = Time on SNSs, Mediator = objectification. * denotes p ≤ .05, ** denotes p ≤ .001 for overall model.

The next set of mediation models tested included SNS activity as the predictor, objectification as the mediator, and scholastic year and puberty as covariates. Appreciation, internalisation of muscular ideals and drive for thinness were included as the outcome variables (see figures 54 -56 and table 109). There was evidence of an indirect effect of SNS activity on body appreciation, and objectification was to fully mediate the relationship between SNS activity and body appreciation due to the direct effect not remaining significant after objectification was added into the model (see figure 54).

Figure 54. *Boys' mediation model with SNS activity as IV and body appreciation as DV.*
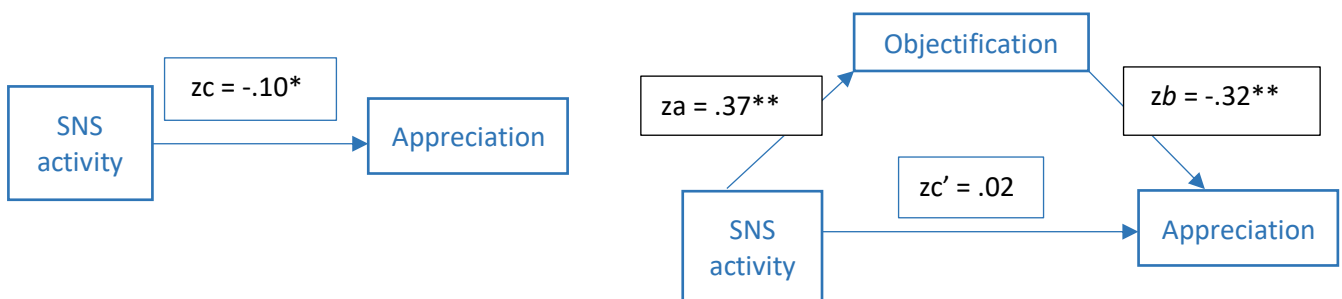
The next mediation gave evidence of the indirect effect of SNS activity on internalisation of muscular ideals and objectification was shown to partially mediate the relationship between SNS activity and internalisation of muscular ideals due to the direct effect reducing but remaining significant after objectification was added into the model (see figure 55).

Figure 55. *Boys' mediation model with SNS activity as IV and internalisation of muscular ideals as DV.*
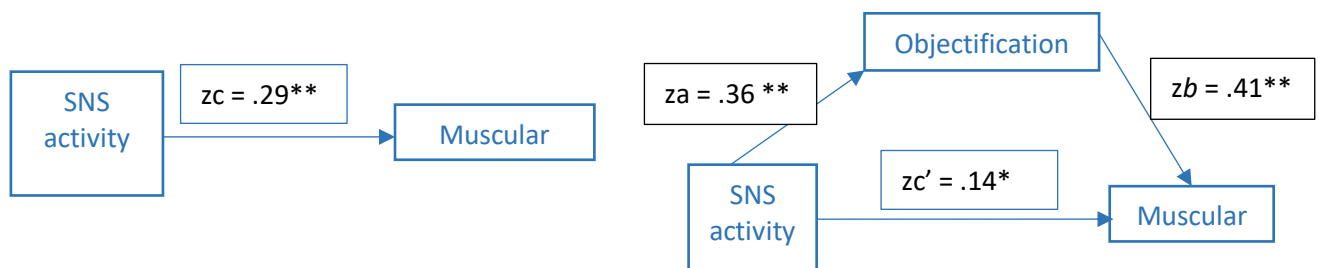
The final mediation model gave evidence of the indirect effect of SNS activity on drive for thinness and suggested that objectification fully mediate the relationship between SNS activity and

drive for thinness due to the direct effect not remaining significant after objectification was added into the model (see figure 56).

Figure 56. *Boys' mediation model with SNS activity as IV and drive for thinness as DV.*
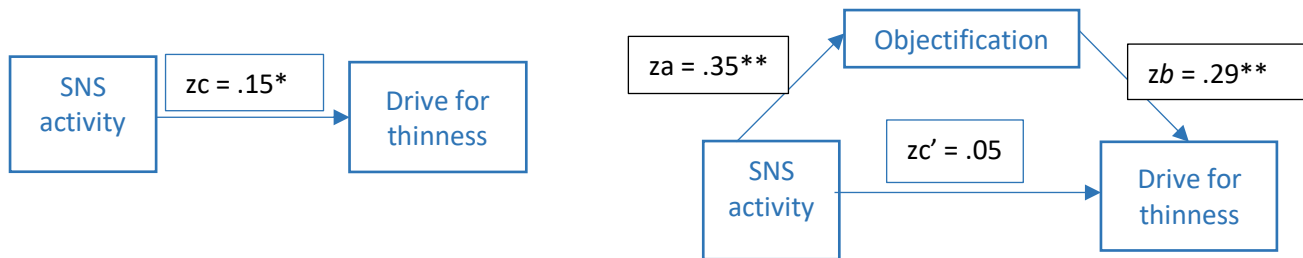
Table 109

Mediation analysis for boys' body image pathway with SNS activity as IV

	Direct effect (X, M → Y)				Direct model		Total effect (X → Y)				Total model	
	β	SE	t	p	R^2	p	β	SE	t	p	R^2	p
Appreciation					.12	<.001					.03	.030
a	0.37	.05	7.97	<.001	.15	<.001						
b	-0.32	.05	-6.58	<.001								
c'	0.02	.05	0.34	**.731**								
C							-0.10	.05	-2.08	.038*		
Year 7	0.21	.11	1.83	.068			0.30	.12	2.51	.012		
Year 8	0.09	.11	0.78	.433			0.14	.11	1.25	.212		
Puberty early	0.02	.14	0.18	.856			0.02	.14	0.14	.891		
Puberty same	0.11	.11	0.98	.328			0.16	.12	1.31	.192		
Muscular Ideals					.24	<.001					.09	<.001
a	0.36	.05	7.84	<.001	.14	<.001						
b	0.41	.05	8.95	<.001								
c'	0.14	.05	3.09	**.002**								
c							0.29	.05	6.16	<.001**		
Year 7	-0.11	.11	-1.01	.312			-0.22	.12	-1.88	.061		
Year 8	-0.05	.10	-0.53	.597			-0.12	.11	-1.09	.275		
Puberty early	-0.16	.13	-1.23	.219			-0.15	.14	-.107	.284		
Puberty same	-0.14	.11	-1.29	.199			-0.20	.12	-1.69	.092		
Drive for thinness					.16	<.001					.09	<.001
a	0.35	.05	7.69	<.001	.14	<.001						
b	0.29	.05	5.97	<.001								
c'	0.05	.05	1.07	**.284**								
c							0.15	.05	3.25	.001**		
Year 7	0.63	.11	5.59	<.001			0.56	.12	4.74	<.001		
Year 8	0.36	.11	3.30	.001			0.31	.11	2.73	.007		
Puberty early	-0.20	.14	-1.47	.141			-0.19	.14	-1.38	.169		
Puberty same	-0.27	.11	-2.41	.017			-0.32	.12	-2.67	.008		
Body satisfaction					.07	<.001					.02	.119
a	0.35	.05	7.69	<.001	.14	<.001						
b	-0.24	.05	-4.85	<.001								
c'	0.01	.05	0.21	.831								
c							-0.74	.05	-1.55	.121		
Year 7	-0.21	.11	-2.27	.024			0.04	.12	0.34	.731		
Year 8	0.07	.11	-1.66	.097			0.11	.11	1.01	.316		
Puberty early	0.01	.14	0.05	.958			0.35	.14	2.54	.012		

Puberty same	-0.15	.11	-1.31	.189	0.23	.12	1.99	.048

Note. IV = SNS activity, Mediators = objectification. * denotes p ≤ .05, ** denotes p ≤ .001 for overall model.

Before running the moderation analysis, correlations were run to explore the relationship between the variables included in the moderation. All variables showed strong evidence for a positive correlation and were therefore taken on to the next stage of analysis.

Table 110

Correlations between SNS measures moderator and dependent variable for girls

	Time online			SNS usage			objectification			Photo manipulation		
	Pearson r	*p*	N	Person r	*p*	N	Pearson r	*p*	N	Person r	*p*	N
Time online	1		578									
SNS usage	.38	<.001**	.58	1		582						
Objectification	.20	<.001**	570	.36	<.001**	574	1		576			
Photo manipulation	.17	<.001**	568	.29	<.001**	571	.35	<.001**	569	1		573

* denotes p ≤ .05, ** denotes p ≤ .001

Following this, moderation analysis was run through PROCESS macro in order to see if photo manipulation moderated any of the relationships between the social media measures and objectification. All moderations were run with standardised values. The first pathway tested examined whether photo manipulation moderated the relationship between time online and objectification (see figure 57).

Figure 57. *Girls' moderation model with time online as IV, photo manipulation as moderator and objectification as DV.*
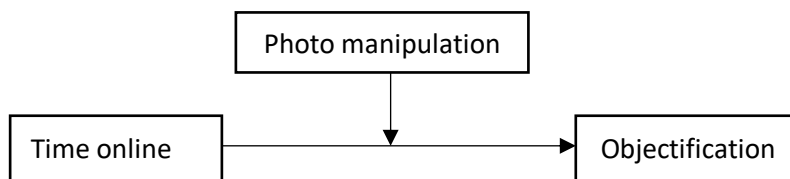
The moderation model suggested there was evidence of a relationship between time on SNS and objectification, but there was no evidence that photo manipulation moderated this relationship. However, there was evidence of a main effect of photo manipulation on objectification (shown in figure 58 below). As both time on SNS and photo manipulation increases, objectification increases. School year was a significant covariate, self-reported puberty was not (see table 111).

Figure 58. *Final moderation model with time online and photo manipulation as IV, and objectification as DV.*
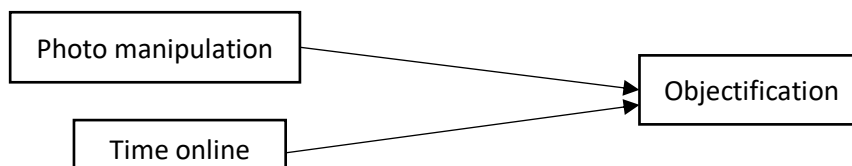
The next pathway tested examined whether photo manipulation moderated the relationship between SNS activity and objectification (see figure 59).

Figure 59. *Girls' moderation model with SNS activity as IV, photo manipulation as moderator and objectification as DV.*
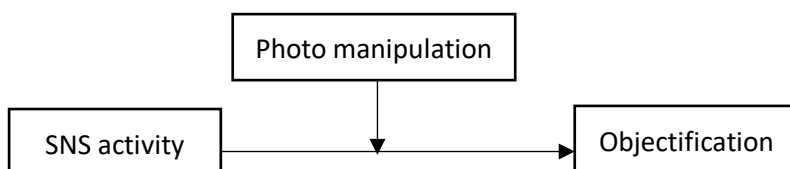
The moderation model suggested there was evidence of a relationship between SNS activity and objectification, but there was no evidence that photo manipulation moderated this relationship, instead there was an additional main effect of photo manipulation on objectification (shown in figure 60 below). As both time on SNS and photo manipulation increases, objectification increases. School year is a significant covariate, self-reported puberty was not (see table 111).

Figure 60. *Final moderation model with SNS activity and photo manipulation as IV, and objectification as DV.*
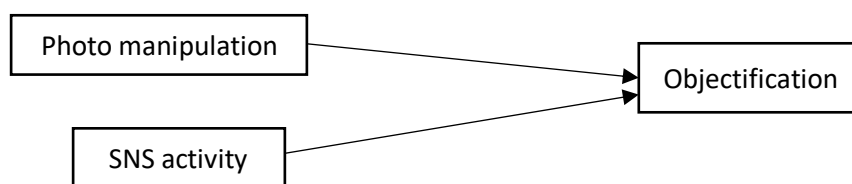
Table 111

Moderation for body image measures for girls

	b	T	Df	p	R²	p
Time on SNSs					.20	<.001
Time on SNSs → Objectification	0.12	2.49	521	.013		
Photo manipulation → Objectification	0.36	8.79	521	<.001		
Interaction	-.67	-1.63	521	.103		
Covariates						
Y7	-0.59	-5.98	521	<.001		
Y8	-0.20	-2.08	521	.038		
Puberty early	0.15	1.38	521	.170		
Puberty same	0.01	0.12	521	.904		
SNS Activity					.23	<.001
SNS activity → Objectification	0.21	5.31	524	<.001		
Photo manipulation → Objectification	0.31	7.65	524	<.001		
Interaction	-0.57	-1.76	524	.080		
Covariates						
Y7	-0.56	-5.83	524	<.001		
Y8	-0.17	-1.83	524	.067		
Puberty early	0.09	0.84	524	.402		
Puberty same	<0.01	0.04	524	.969		

472

H5: Higher levels of SNS engagement will predict lower wellbeing, mediated by comparisons, and moderated by SNS activities. This relationship will be found for boys and girls

Boys' moderation

Before running the moderation analysis, correlations were run to explore the relationship between the variables included in the moderation. There was no evidence of a linear relationship between the moderator (active vs passive) or the outcome variable (peer comparison), therefore moderation was not explored (see table 112).

Table 112

Correlations between SNS measures moderator and dependent variable for boys

	Time on SNSs			SNS activity			Peer comparison			Active vs passive		
	Pearson r	*p*	N	Person r	*p*	N	Pearson r	*p*	N	Person r	*p*	N
Time on SNSs	1		466									
SNS activity	.31	<.001**	462	1		490						
Peer comparison	.19	<.001**	444	.27	<.001**	466	1		470			
Active vs passive	.08	.099	447	.19	<.001**	468	<.01	.960	450	1		473

* denotes p ≤ .05, ** denotes p ≤ .001

Before running the moderation analysis, correlations were run to explore the relationship between the variables included in the moderation. There was no evidence of a linear relationship between time on SNSs and the moderator (active vs passive), therefore moderation was only tested with SNS activity (see table 113).

Table 113

Correlations between SNS measures moderator and dependent variable for boys

	Time on SNSs			SNS activity			Peer comparison			Active vs passive		
	Pearson r	*p*	N	Person r	*p*	N	Pearson r	*p*	N	Person r	*p*	N
Time on SNSs	1		578									
SNS activity	.33	<.001**	576	1		582						
Peer comparison	.20	<.001**	556	.26	<.001**	559	1		561			
Active vs passive	.03	.449	549	.21	<.001**	553	.09	.046*	537	1		554

* denotes p ≤ .05, ** denotes p ≤ .001

SNS activity model summary

Figure 61. *Moderation model 1 for wellbeing pathway for girls'*
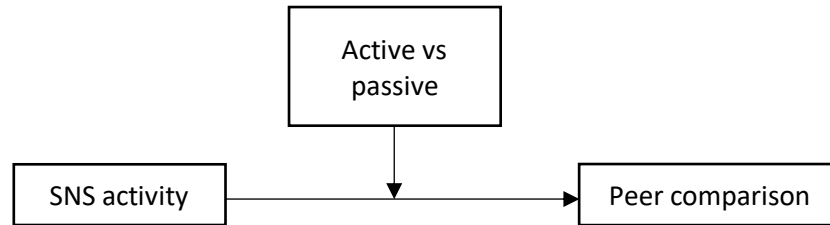
Although the overall moderation model suggested there was evidence that 'active vs passive' moderated the relationship between SNS activity and peer comparison; R^2=.18. The addition of the interaction was not a significant change to the model, this suggests that 'active vs passive' did not moderate the causal effect of SNS activity on peer comparison (see table 114). SNS activity is a significant predictor of peer comparison, 'active vs passive' is not a significant predictor of peer comparison, and the interaction did not showed evidence of a relationship.

Table 114

Moderation for wellbeing measures for girls

	b	T	Df	p	R^2	p
SNS Activity					.18	<.001
SNS activity → peer comparison	.15	2.45	502	.015		
active vs passive → peer comparison	-.05	-0.59	502	.554		
Interaction	.09	1.05	502	.296		
Covariates						
Y7	-.89	-8.80	502	<.001		
Y8	-.43	-4.40	502	<.001		
Puberty early	.09	.0.79	502	.429		
Puberty same	.03	0.37	502	.709		

H6: Higher levels of SNS engagement will predict lower psychosocial functioning, mediated by social norms, and moderated by perceived risky behaviours seen online and peer belonging. This relationship will be found for boys and girls.

Boys moderation

Before running the moderation analysis, correlations were run to explore the relationship between the variables included in the moderation. All variables that were required to be correlated, showed strong evidence for a correlation and were therefore carried through to the next stage of analysis (see table 115).

Table 115

Correlations between SNS measures moderator and dependent variable for boys

	Time on SNSs			SNS activity			Behaviours seen online			Social norms			Belonging		
	Pearson r	p	N	Pearson r	p	N	Person r	p	N	Person r	p	N	Person r	p	N
Time on SNSs	1		466												
SNS activity	.31	<.001**	462	1		490									
Behaviours seen online	.12	.014*	453	.27	<.001**	474	1		478						
Social norms	.12	.011*	452	.15	<.001**	472	.63	<.001**	474	1		467			
Belonging	.06	.239	447	.06	.221	470	-.07	.125	467	-.12	.001**	465	1		473
Problem Behaviour	.25	<.001**	445	.33	<.001**	466	.27	<.001**	464	.21	<.001**	462	-.24	<.001**	465
Functioning	-.16	<.001**	438	-.01	.865	460	-.11	.021*	457	-.14	.003*	455	.40	<.001**	459

* denotes p ≤ .05, ** denotes p ≤ .001

Following this, the moderation analysis was run (see figures 62 -65, and table 116). No models gave evidence of a moderation. The first model tested examined whether seen behaviours moderated the relationship between SNS activity and social norms (see figure 62).

Figure 62. *Boys' moderation model with SNS activity as IV, seen behaviours as moderator and social norms as DV.*
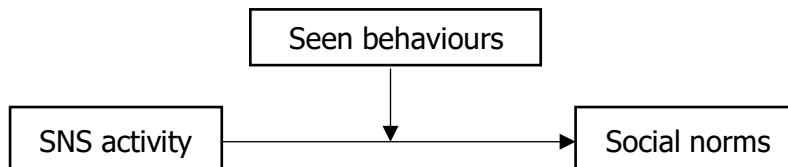
There was no evidence of a relationship between SNS activity and social norms, or of a moderation. However, there was evidence of a direct effect of seen behaviour on social norms.

The next model tested examined whether seen behaviours moderated the relationship between time online and social norms (see figure 63).

Figure 63. *Boys' moderation model with time online as IV, seen behaviours as moderator and social norms as DV.*
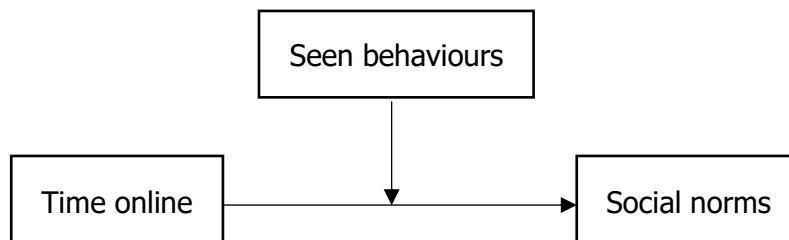
There was no evidence of a relationship between time on SNSs and social norms, or of a moderation. However, there was evidence of a direct effect of seen behaviour on social norms.

The next model tested in this section examined whether belonging moderated the relationship between social norms and problem behaviour (see figure 64).

Figure 64. *Boys' moderation model with social norms as IV, belonging as moderator and problem behaviour as DV*
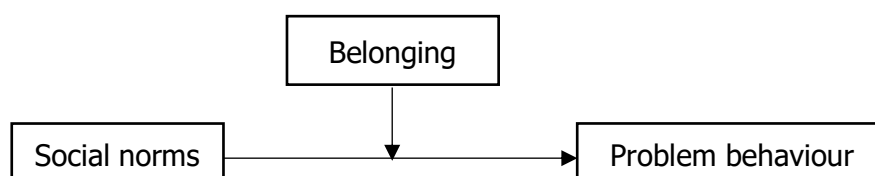
The moderation model suggested there was evidence of a relationship between social norms and problem behaviour, but there was no evidence that belonging moderated this relationship. However, there was evidence of a main effect of belonging on problem behaviour. As reported social norms increase problem behaviour also increases, alternatively, as belonging increased, problem behaviour decreased. School year was a significant covariate, self-reported puberty was not. Despite the evidence of a main effect of belonging on problem behaviour, belonging will not be tested as a mediator as the correlations above (in table 115) show no evidence of a relationship between either measure of SNS use and belonging.

The final model tested in this section examined whether belonging moderated the relationship between social norms and functioning (see figure 65).

Figure 65. *Boys' moderation model with social norms as IV, belonging as moderator and functioning as DV.*
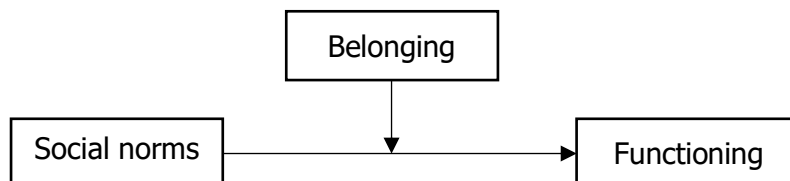
There was no evidence of a relationship between time on social norms and functioning, or of a moderation. However, there was evidence of a direct effect of belonging on functioning.

Table 116

Moderation for psychosocial functioning measures for boys

	b	T	P	Df	R^2	p
Moderation 1				7, 414	.48	<.001
SNS activity → social norms	0.08	1.01	.313			
Seen behaviours → social norms	0.41	10.04	<.001			
Interaction	0.01	0.27	.789			
Covariates						
Y7	-1.49	-8.17	<.001			
Y8	-0.89	-5.34	<.001			
Puberty early	0.02	.11	.911			
Puberty same	-0.18	-1.16	.247			
Moderation 2				7, 397	.49	<.001
Time on SNSs → social norms	0.05	0.63	.530			
Seen behaviours → social norms	0.44	11.25	<.001			
Interaction	0.03	0.85	.397			
Covariates						
Y7	-1.44	-7.99	<.001			
Y8	-0.81	-5.00	<.001			
Puberty early	0.04	0.22	.823			
Puberty same	-0.16	-1.00	.319			
Moderation 3				7, 414	.14	<.001
Social norms → Problem behaviour	0.16	5.10	<.001			
Belonging → Problem behaviour	-0.26	-3.96	<.001			
Interaction	<0.01	0.06	.955			
Covariates						
Y7	0.51	3.70	<.001			
Y8	0.35	2.96	.003			
Puberty early	0.13	0.93	.351			
Puberty same	-0.03	-0.23	.816			
Moderation 4				7, 411	.19	<.001
Social norms → Functioning	-0.06	-1.96	.051			
Belonging → Functioning	0.43	6.90	<.001			

Interaction	-0.03	-1.04	.297
Covariates			
Y7	0.13	1.01	.313
Y8	-0.04	-0.37	.714
Puberty early	-.22	1.70	.091
Puberty same	-.11	1.03	.301

Girls' moderation

Before running the moderation analysis, correlations were run to explore the relationship between the variables included in the moderation. All variables that were required to be correlated, showed strong evidence for a correlation and were therefore carried through to the next stage of analysis (see table 117).

Table 117

Correlations between SNS measures moderator and dependent variable for boys

	Time on SNSs			SNS activity			Behaviours seen online			Social norms			Belonging		
	Pearson r	*p*	N	Pearson r	*p*	N	Person r	*p*	N	Person r	*p*	N	Person r	*p*	N
Time on SNSs	1		578												
SNS activity	.33	<.001**	576	1		582									
Behaviours seen online	.15	<.001**	556	.31	<.001**	560	1		562						
Social norms	.19	<.001**	557	.19	<.001**	560	.71	<.001**	557	1		562			
Belonging	.03	.474	563	.03	.434	567	-.03	.511	558	-.08	.062	558	1		569
Problem behaviour	.23	<.001**	564	.39	<.001**	568	.44	<.001**	558	.40	<.001**	558	-.17	<.001**	563
Functioning	-.11	.013*	560	-.17	<.001**	565	-.23	<.001**	554	-.28	<.001**	554	.52	<.001**	559

* denotes p ≤ .05, ** denotes p ≤ .001

Following this, the moderation analysis was run (see figures 66 - 69, and table 118). No models gave evidence of a moderation. The first model tested examined whether seen behaviours moderated the relationship between SNS activity and social norms (see figure 66).

Figure 66. *Girls' moderation model with SNS activity as IV, seen behaviours as moderator and social norms as DV (moderation model 1)*
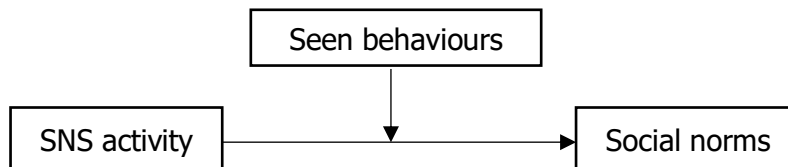
The moderation model suggested there was evidence of a relationship between SNS activity and social norms, but there was no evidence that seen behaviours moderated this relationship. However, there was evidence of a main effect of seen behaviours on social norms. As reported SNS activity increased social norms increased, additionally, as seen behaviours increased social norms increased.

The next model examined whether seen behaviour moderated the relationship between time online and social norms (see figure 67).

Figure 67. *Girls' moderation model with time online as IV, seen behaviours as moderator and social norms as DV (moderation model 2)*
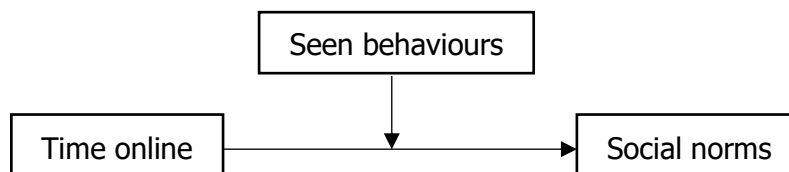
There was no evidence of a relationship between time on SNSs and social norms, or of a moderation. However, there was evidence of a direct effect of seen behaviour on social norms, such that as seen behaviour increased, perceived social norms increased.

The next model examined whether belonging moderated the relationship between social norms and problem behaviour (see figure 68).

Figure 68. *Girls' moderation model with SNS activity IV, seen behaviours as moderator and social norms as DV (moderation model 3)*
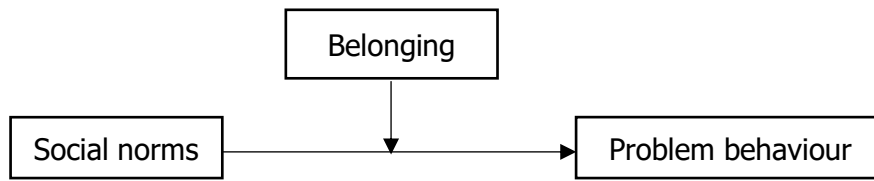
```
                    ┌─────────────┐
                    │  Belonging  │
                    └─────────────┘
                           │
                           ▼
┌───────────────┐                    ┌─────────────────────┐
│ Social norms  │───────────────────▶│  Problem behaviour  │
└───────────────┘                    └─────────────────────┘
```

The moderation model suggested there was evidence of a relationship between social norms and problem behaviour, but there was no evidence that belonging moderated this relationship. However, there was evidence of a main effect of belonging on problem behaviour. As reported social norms increases problem behaviour also increases, alternatively, as belonging increased, problem behaviour decreased. Self-reported puberty was a significant covariate, scholastic year was not. Despite the evidence of a main effect of belonging on problem behaviour, belonging will not be tested as a mediator as the correlations above (in table [x]) show no evidence of a relationship between either measure of SNS use and belonging.

The final model tested whether belonging moderated the relationship between social norms and functioning (see figure 69).

Figure 69. *Girls' moderation model with SNS activity IV, seen behaviours as moderator and social norms as DV (moderation model 4)*
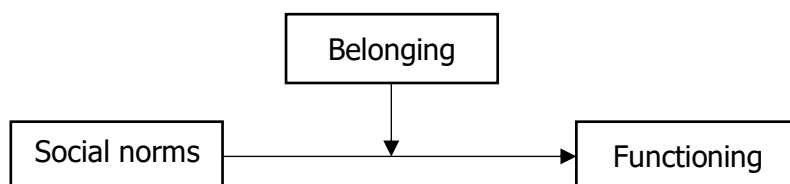
```
                    ┌─────────────┐
                    │  Belonging  │
                    └─────────────┘
                           │
                           ▼
┌───────────────┐                    ┌─────────────────┐
│ Social norms  │───────────────────▶│   Functioning   │
└───────────────┘                    └─────────────────┘
```

The moderation model suggested there was evidence of a relationship between social norms and functioning, but there was no evidence that belonging moderated this relationship. However, there was evidence of a main effect of belonging on functioning. As reported social norms increases functioning decreases, alternatively, as belonging increased, functioning increased.

Table 118

Moderation for psychosocial functioning measures for girls

	b	T	P	Df	R²	p
Moderation 1				7, 520	.63	<.001
SNS activity → social norms	0.16	2.34	.020			
Seen behaviours → social norms	0.36	9.52	<.001			
Interaction	0.06	9.52	.064			
Covariates						
Y7	-2.11	12.75	<.001			
Y8	-1.31	-9.59	<.001			
Puberty early	-0.07	-0.50	.618			
Puberty same	-0.08	-0.67	.500			
Moderation 2				7, 516	.62	<.001
Time on SNSs → social norms	0.13	1.59	.113			
Seen behaviours → social norms	0.40	11.56	<.001			
Interaction	0.04	1.44	.151			
Covariates						
Y7	-2.00	-11.98	<.001			
Y8	-1.22	-8.88	<.001			
Puberty early	-0.03	-0.20	.838			
Puberty same	-0.08	-0.71	.479			
Moderation 3				7, 520	.23	<.001
Social norms → Problem behaviour	0.22	7.51	<.001			
Belonging → Problem behaviour	-0.19	-3.27	.001			
Interaction	0.03	1.65	.100			
Covariates						
Y7	0.11	0.76	.446			
Y8	0.16	1.44	.150			
Puberty early	0.31	2.89	.004			
Puberty same	-0.10	-1.10	.270			
Moderation 4				7, 519	.33	<.001
Social norms → Functioning	-0.12	-4.41	<.001			
Belonging → Functioning	0.50	9.53	<.001			

Interaction	<-0.01	-0.17	.865
Covariates			
Y7	0.07	0.57	.569
Y8	-0.15	-1.44	.151
Puberty early	-0.01	-1.24	.216
Puberty same	-0.01	-0.13	.897

C. Study 3

C.i Conditional ethical approval letter

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C.ii Final ethical approval letter

This document has been removed as it contains personal information.

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Bristol

Amendment to Existing Research Ethics Approval

Please complete this form if you wish to make an alteration or amendment to a study that has already been scrutinised and approved by the Faculty Research Ethics Committee and forward it electronically to the Officer of FREC (researchethics@uwe.ac.uk)

UWE research ethics reference number:	*HAS.20.05.181*
Title of project:	*Understanding Social Networking Site use and adolescents' body image, wellbeing and behaviours in a time of global pandemic*
Date of original approval:	*19ᵗʰ June 2020*
Researcher:	*Sabrina Meechem*
Supervisor (if applicable)	Associate Professor Amy Slater, Associate Professor Emma Halliwell, Dr Yvette Morey

1. Proposed amendment: Please outline the proposed amendment to the existing approved proposal.

1- Move the questionnaire from an online qualitative survey to a virtual interview. This would be held either over the phone, or over a video call (for example Microsoft Teams), depending on what the participant feels most comfortable with. The questions will remain the same as the original approved online survey, however, as with most qualitative research this will be a semi-structured interview, thus there may be prompts added to help the participant to give more detail in certain areas if they feel comfortable. Please see supporting document 1 for original questions and additional prompts which are highlighted.

2- Additional methods for recruitment. Recruitment will occur through advertisements on a number of different places. The advert will go to parents, and if they are happy for their child to complete the study they will then pass the information on. Some options for recruitment are advertising on the Centre for Appearance Research's social media pages and participant pool, through the UWE newsletter, and any other UWE staff networks. Please see supporting document 2 for advert.

3- Give small reimbursement in the form of a £10 Amazon voucher to participants for their time.

2. Reason for amendment. Please state the reason for the proposed amendment.

1- The amendment will allow participants to give more in-depth detail in their answers, providing they feel comfortable. This will compliment the research that has already taken place by allowing the researcher to gain a deeper understanding of the areas that have already come up in the research.

2- As the main method for recruitment was through schools and schools are now on summer holiday, the recruitment strategy will need to change slightly.

3- As an interview will take more time to complete than the online survey, it is thought that participants should be given a small amazon voucher for taking part, which will help to compensate them for their time.

3. Ethical issues. Please outline any ethical issues that arise from the amendment that have not already addressed in the original ethical approval. Please also state how these will be addressed.

Participants may feel more pressure to answer questions during an interview, therefore before the interview starts, the researcher will let the participant know why the research is being conducted, what the questions will cover, and also let them know that they can ask to skip any question and will ensure they feel comfortable with this before continuing. The researcher will also pay attention to any cues from the participant that may suggest they feel uncomfortable during any part of the interview.

To be completed by supervisor/ Lead researcher:

Signature:	*Amy Slater*
Date:	*21/08/2020*

To be completed by Research Ethics Chair:

Send out for review:	☐ *Yes*
	X No
Comments:	*Any ethical issues associated with these amendments have been addressed sp this can be approved*
Outcome:	*X Approve*
	☐ *Approve subject to conditions*
	☐ *Refer to Research Ethics Committee*
Date approved:	*7th September 2020*
Signature:	*Dr Julie Woodley (via e-mail)*

Guidance on notifying UREC/FREC of an amendment.
Your study was approved based on the information provided at the time of application. If the study design changes significantly, for example a new population is to be recruited, a different method of recruitment is planned, new or different methods of data collection are planned then you need to inform the REC and explain what the ethical implications might be. Significant changes in participant information sheets, consent forms should be notified to the REC for review with an explanation of the need for changes. Any other significant changes to the protocol with ethical implications should be submitted as substantial amendments to the original application. If you are unsure about whether or not notification of an amendment is necessary please consult your departmental ethics lead or Chair of FREC.

Demographic questions

1. Do you use any social networking sites (for example Instagram, Facebook, Snapchat, TikTok)

2. Please detail which SNS you are using the most at the moment and how often you use them

3. How old are you?

4. What is your gender?

5. How would you describe your ethnic background? (your ethnic background is based on the social and cultural groups you belong to)

Quali interview questions

6. How would you describe your experience of social isolation? by social isolation we mean being less able to see your friends and family outside of your house)?

7. How do you think lockdown has affected how you use social networking sites and how they influence how you feel?

8. Do you think during lockdown you are interacting with different people online to normal? If so, here are some things to consider;
   o How are they different to the people you normally interact with?
   o Why don't you normally interact with these people?
   o Why have you started interacting with them now? Have you started using any new social networking sites during lockdown? If so, what?

9. Have you started using social networking sites in a different way during lockdown? If so, How?

10. Are the sort of things you're posting online now different to what you used to post before lockdown? For example, please think about:
   o What were you posting before and what are you posting now?
   o Why has this changed?
   o Is this due to how you feel, or simply due to not being able to post what you used to?

11. How would you say your social media feed has changed during lockdown?. I.e. has the content you are seeing changed? If so, how and why?

12. Do you think social media use has helped you cope with isolation in any way? Please explain why and how it has, or hasn't.

13. Do you think social media use has made coping with isolation harder in any way? Please explain why and how it has or hasn't.

14. Do you think being in isolation and using social networking sites has affected how you feel about your body and appearance? Is this in a good or a bad way?

15. What have been the biggest positive and negatives of lockdown for you?

16. Has your view on the importance of social networking sites changed due to lockdown? Please explain how.

17. Is there anything else you would like to say about using social networking sites during lockdown?
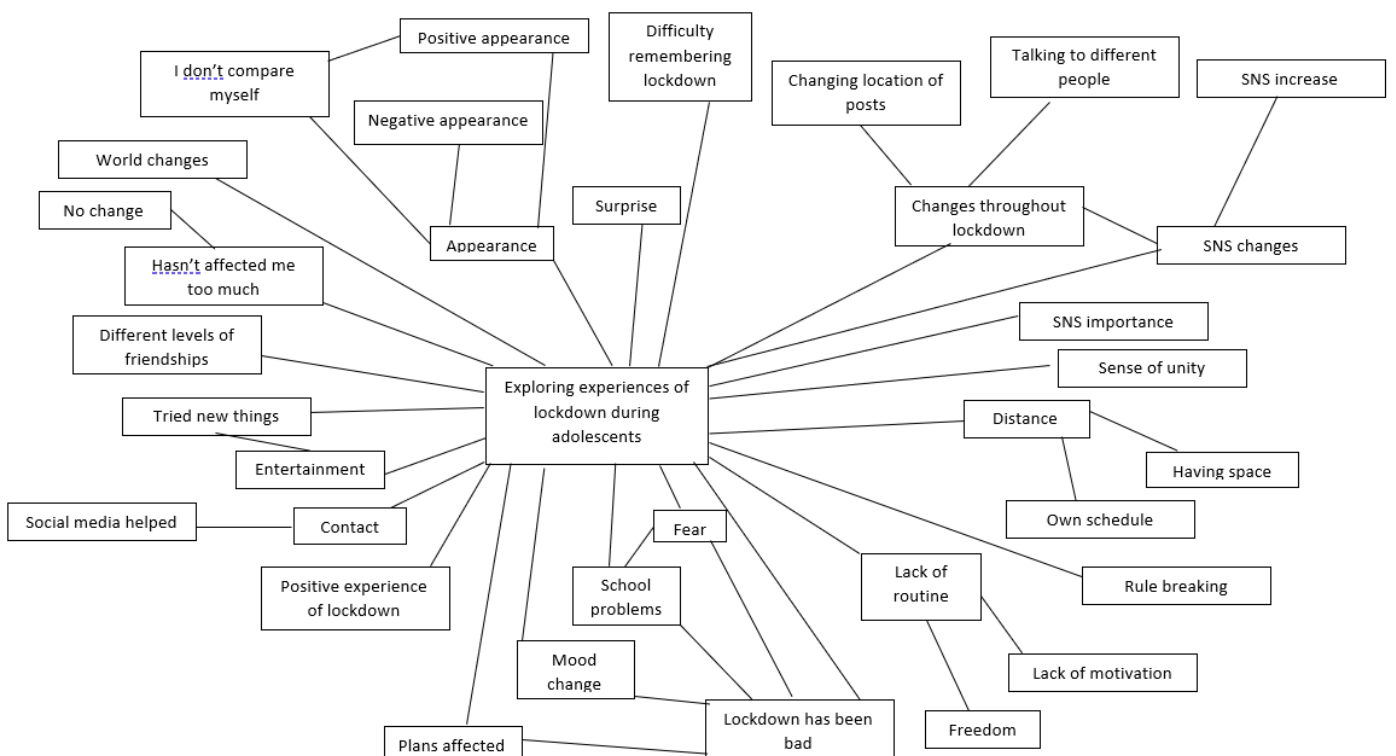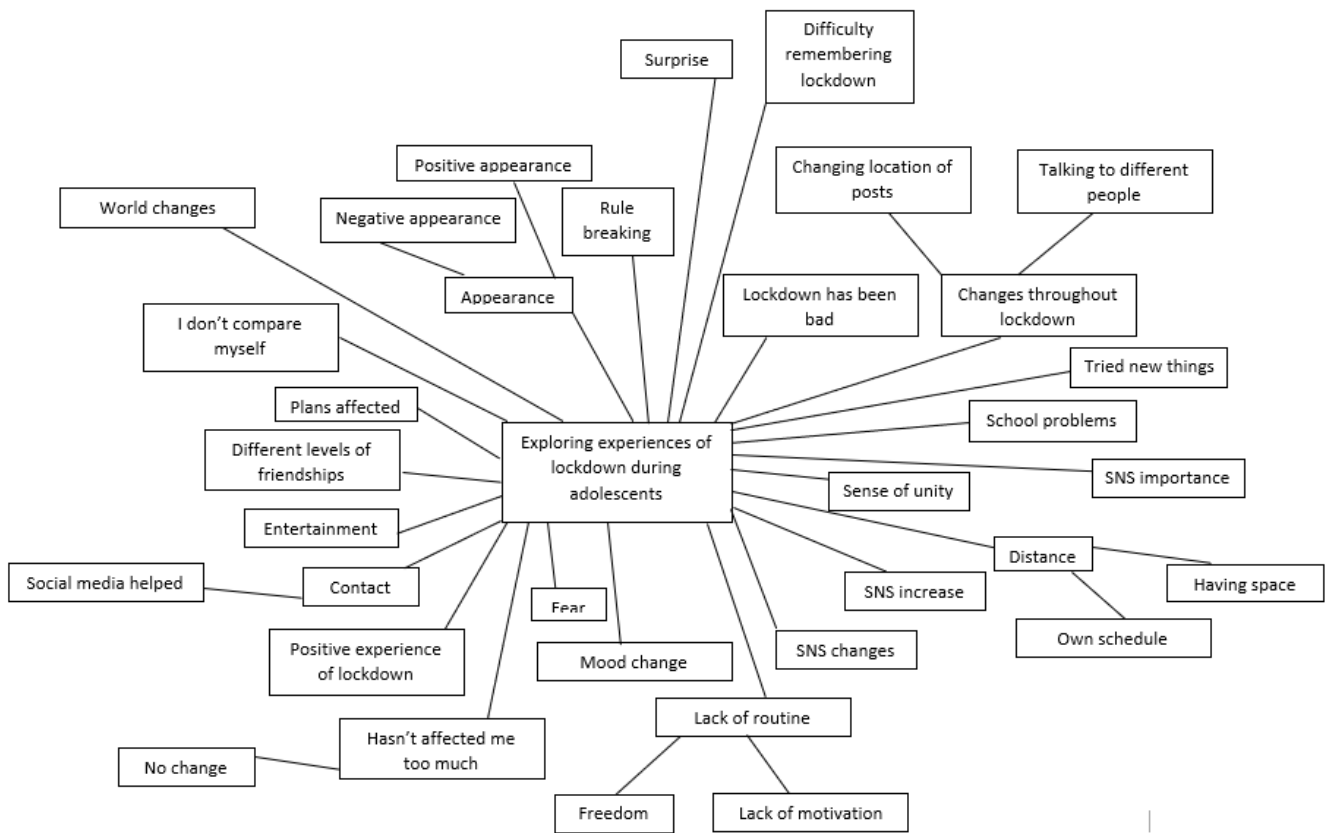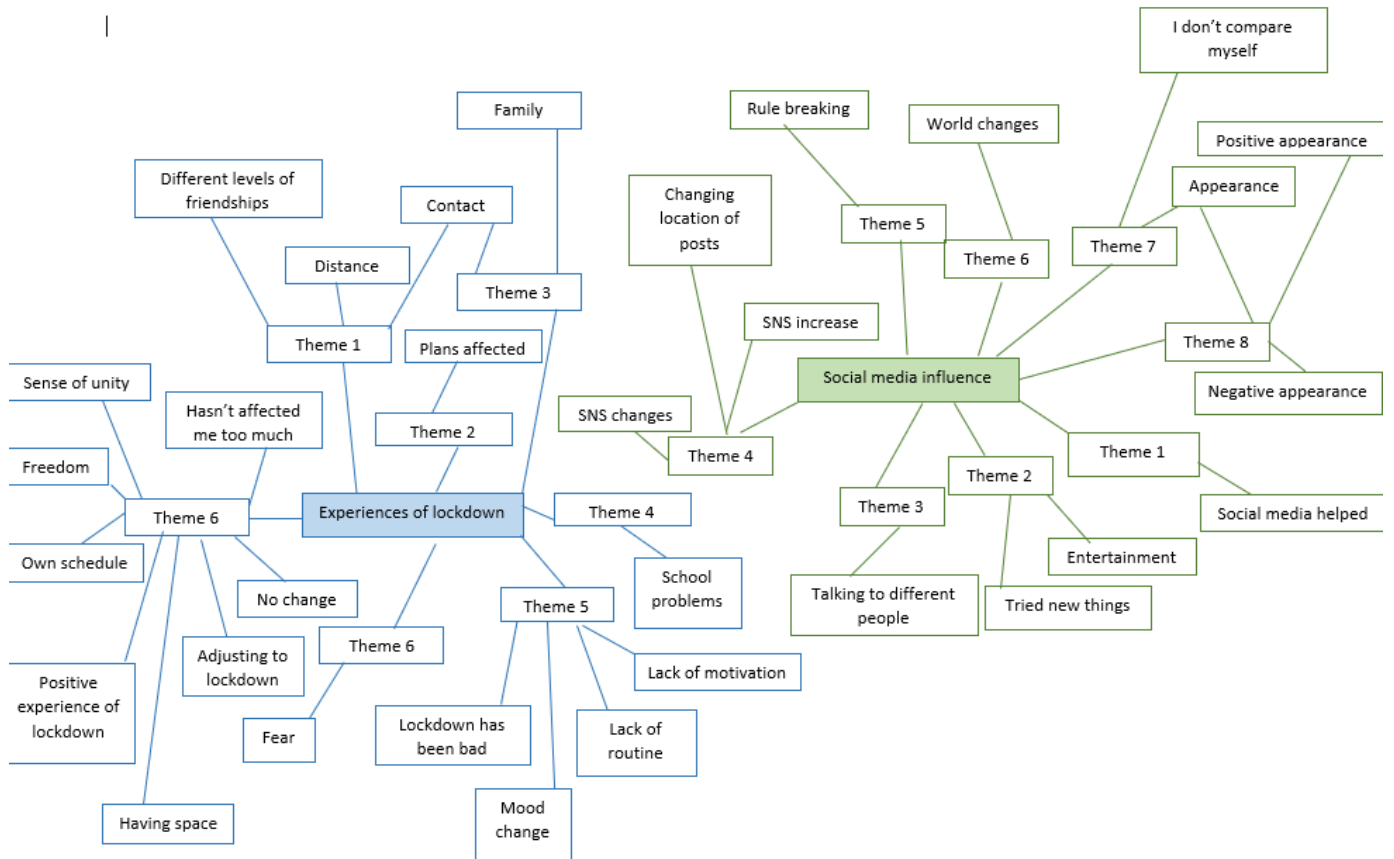
C.vii Thematic map theme development stage 4
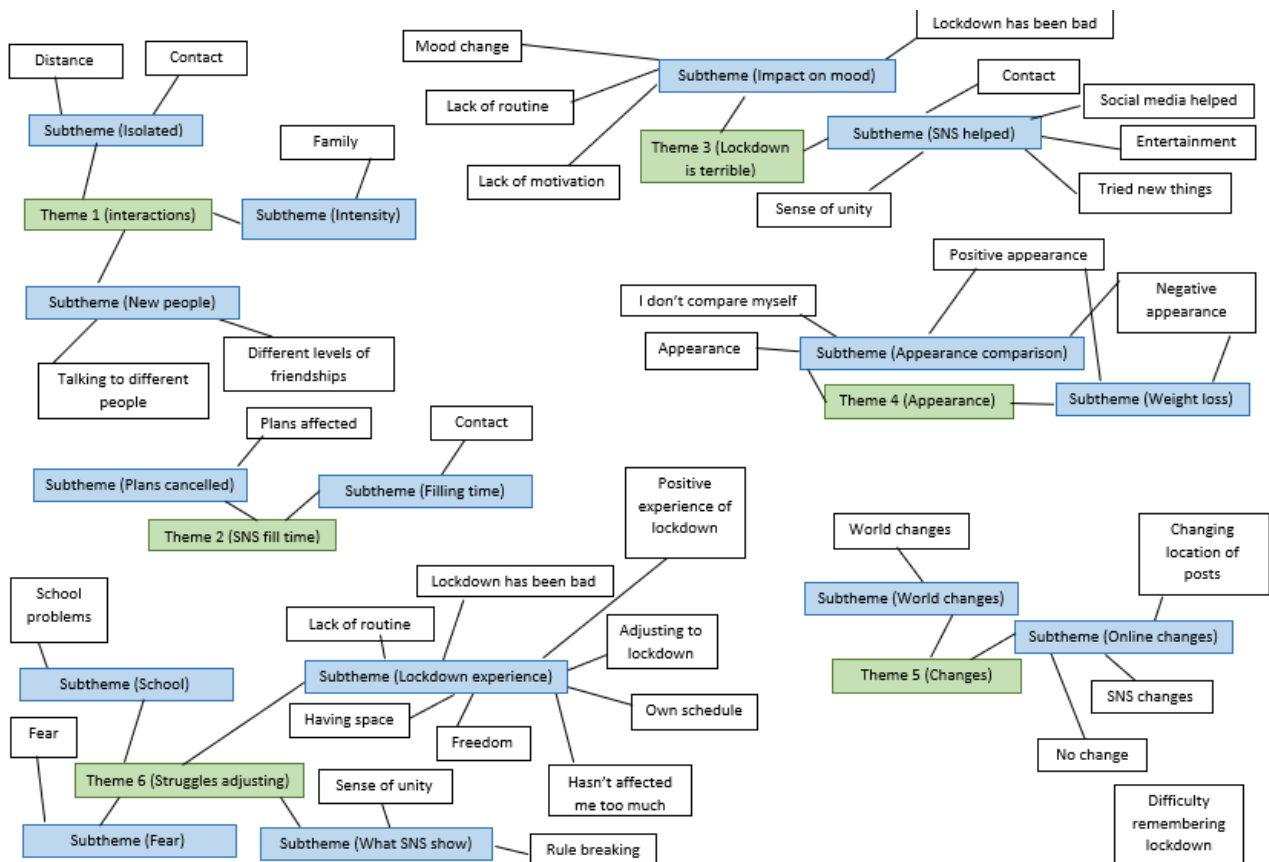
C.viii Thematic map theme development stage 5

C.ix Thematic map theme development stage 6

C.x Thematic map theme development stage 7

Amendment to Existing Research Ethics Approval

Please complete this form if you wish to make an alteration or amendment to a study that has already been scrutinised and approved by the Faculty Research Ethics Committee and forward it electronically to the Officer of FREC (researchethics@uwe.ac.uk)

UWE research ethics reference number:	*HAS.20.05.181*
Title of project:	*Understanding Social Networking Site use and adolescents' body image, wellbeing and behaviours in a time of global pandemic*
Date of original approval:	*19th June 2020*
Researcher:	*Sabrina Meechem*
Supervisor (if applicable)	Associate Professor Amy Slater, Associate Professor Emma Halliwell, Dr Yvette Morey

1. Proposed amendment: Please outline the proposed amendment to the existing approved proposal.

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>
> 5- Additional methods for recruitment. Recruitment will occur through advertisements on a number of different places. The advert will go to parents, and if they are happy for their child to complete the study they will then pass the information on. Some options for recruitment are advertising on the Centre for Appearance Research's social media pages and participant pool, through the UWE newsletter, and any other UWE staff networks. Please see supporting document 2 for advert.
>
> 6- Give small reimbursement in the form of a £10 Amazon voucher to participants for their time.

2. Reason for amendment. Please state the reason for the proposed amendment.

> 4- The amendment will allow participants to give more in-depth detail in their answers, providing they feel comfortable. This will compliment the research that

has already taken place by allowing the researcher to gain a deeper understanding of the areas that have already come up in the research.

5- As the main method for recruitment was through schools and schools are now on summer holiday, the recruitment strategy will need to change slightly.

6- As an interview will take more time to complete than the online survey, it is thought that participants should be given a small amazon voucher for taking part, which will help to compensate them for their time.

3. Ethical issues. Please outline any ethical issues that arise from the amendment that have not already addressed in the original ethical approval. Please also state how these will be addressed.

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To be completed by supervisor/ Lead researcher:

Signature:	Amy Slater
Date:	21/08/2020

To be completed by Research Ethics Chair:

Send out for review:	☐ Yes
	X No
Comments:	Any ethical issues associated with these amendments have been addressed sp this can be approved
Outcome:	X Approve
	☐ Approve subject to conditions
	☐ Refer to Research Ethics Committee
Date approved:	7th September 2020
Signature:	Dr Julie Woodley (via e-mail)

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of an amendment is necessary please consult your departmental ethics lead or Chair of FREC.

The Social Media Project Time 2 (COVID update)

Q1 Informed consent

Last year you completed some questions about how you use social media and how you feel about your body, your mood and your offline behaviours. Now we're asking you to complete the questionnaire again, we have removed a number of questions to make this quicker for you. This will be the last time you complete a questionnaire for this project. Your answers will have no impact on your future social media use, so please be honest.

This questionnaire should take no longer than 30 minutes. You will not be able to be identified from this study as no name will be given. Instead you will create a unique participant code in order to keep all of your data anonymous. If you would like to be entered into the raffle to win a £50 amazon voucher, you will be asked to provide your email address. If you provide your email address this will be stored separately to your answers so your answers will remain anonymous. The further you get through the questionnaire, the more entries to the raffle you will have. If you get ¼ of the way through you will get one raffle entry, if you get ½ way through you will get two raffle entries, if you get ¾ of the way through you will get four raffle entries, and if you complete the questionnaire you will be allocated 15 raffle entries. There are 18 amazon vouchers to be won.

If you feel uncomfortable answering a question, please leave it blank.

Please answer all questions carefully. There are no right or wrong answers, and no one will know who you are. It is very important that you answer the questions as honestly as you can.

Your school and your parents are happy for you to take part in this study, however now it is up to you. If you are happy to take part in this study, please tick the box below and continue on to the next page.

If you are happy to take part in this study, please click 'I consent' below and continue on to the next page.

○ I consent

Question 1

If you would like to be entered into the raffle to win a £50 amazon voucher please leave your email address below.

Email address will only be used to provide winners with their prize. Your data will not be linked to your email address.

 If you would prefer not to leave your email address you can skip this, unfortunately this will mean you will not be entered into the raffle.

The further through the questionnaire you get, the more entries to the raffle you'll be given.

25% of the questionnaire = 1 entry

50% of the questionnaire = 2 entries

75% of the questionnaire = 4 entries

100% of the questionnaire = 15 entries

Email address: _____

Question 2

Everything you say in this questionnaire will be confidential. In this space we would like you to create a unique code so that any answers you give will be anonymous.

 For this we would like you to use the first two letter of your **first name**.   (EXAMPLE; if your first name is **CHRIS**, you would enter **C H**)

_____

Question 3

Next, please enter the first two letters of your **last name**. (Example: If your last name is **SMITH**, you would enter **S M**)

_____

Question 4

Next, please enter the number of the **month you were born** in.
 (For example, if you were born in **JANUARY**, you would enter **01**)

_____

Question 5

First, we're going to ask you a few questions about yourself. This is just so we have a bit of information about your background.

Please choose your age in years from the drop-down menu. For example 10 years old or 15 years old

☐ Under 10 years   ☐ 10 years   ☐ 11 years   ☐ 12 years

☐ 13 years   ☐ 14 years   ☐ 15 years   ☐ 16 years

☐ 17 years   ☐ 18+

Question 6

What gender do you identify as

○ Male

○ Female

○ Other (please specify) _____

Question 7

What school year are you in?

○ Year 8

○ Year 9

○ Year 10

○ Year 11

Question 8

In this section we are going to ask you some questions about websites you use online.
Do you have a profile on any social networking site? This could include Facebook, Facebook Messenger, Instagram, Snapchat, Whatsapp, Youtube or any similar website/app.

○ Yes

○ No

Skip To: End of Block If In this section we are going to ask you some questions about websites you use online.   Do you h... = No

Question 9

Here are a few questions about which social networking websites you use, and how often you use them.

Please tick to indicate which social networking site you have an account or profile on. If you use one of these websites but do not have your own account or profile, please leave it blank.

☐ Instagram

☐ Youtube

☐ TikTok

☐ Snapchat

☐ Facebook

☐ Facebook Messenger

☐ WhatsApp

☐ Other (Please specify) _____

☐ Other (Please specify) _____

☐ Other (Please specify) _____

Question 10

Please indicate roughly how much time (in hours) you spend on each of these social networking sites each day. Please estimate (guess) this, you do not need to look up an exact time. If you spend less than an hour on something, please write the time in minutes, and write 'min' after.

Question 11

Please indicate roughly how much **time (in hours)** you spend on **Instagram** each day.

_____

Question 12

Please indicate roughly how much time (in hours) you spend on **Youtube** each day.

_____

Question 13

Please indicate roughly how much time (in hours) you spend on **TikTok** each day.

_____

Question 14

Please indicate roughly how much time (in hours) you spend on **Snapchat** each day.

_____

Question 15

Please indicate roughly how much time (in hours) you spend on **Facebook** each day.

_____

Question 16

Please indicate roughly how much time (in hours) you spend on **Facebook Messenger** each day.

_____

Question 17

Please indicate roughly how much time (in hours) you spend on **WhatsApp** each day.

_____

Question 18

Please indicate roughly how much time (in hours) you spend on **other social media sites** each day.

_____

Question 19

Next we're going to ask you a few questions about how you spend your time on social networking sites. For each of these statements, please indicate how often you do each action.

	Never (6)	Rarely (once a month or less) (1)	Sometimes (once a week or less) (2)	Occasionally (once a day or less) (3)	Frequently (a couple of times a day) (4)	Very often (every couple of hours or more) (5)
Upload a photo to a profile or story. (1)	○	○	○	○	○	○
Scroll through a social networking site page. (2)	○	○	○	○	○	○
Upload a status. (3)	○	○	○	○	○	○
Comment on other peoples photos/ status. (4)	○	○	○	○	○	○
'Like' other people photos/ comments. (5)	○	○	○	○	○	○
Use private messaging facilities? (6)	○	○	○	○	○	○
Use private photo/ video sharing (e.g. on snapchat). (7)	○	○	○	○	○	○

Question 20

Next we're going to ask you a few questions about how the time you spend on social networking sites has changed because of COVID-19. For each of these statements, please indicate whether your frequency has changed.

	Yes, I do this less (6)	No change (1)	Yes, I do this more (7)
Upload a photo to a profile or story. (1)	○	○	○
Scroll through a social networking site page. (2)	○	○	○
Upload a status. (3)	○	○	○
Comment on other peoples photos/ status. (4)	○	○	○
'Like' other people photos/ comments. (5)	○	○	○
Use private messaging facilities? (6)	○	○	○
Use private photo/ video sharing (e.g. on snapchat). (7)	○	○	○

Question 21

Next we're going to ask you some questions about when you use social media

	Not at all important (1)	Slightly important (2)	Quite important (3)	Very important (4)	Extremely important (5)
How important is the number of likes you receive on a post/ photo? (5)	○	○	○	○	○

Question 22

	None at all (1)	A little (2)	A moderate amount (3)	A lot (4)	A great deal (5)
How much do you pay attention to how many likes other peoples posts/ photos have? (5)	○	○	○	○	○

Question 23

In this question, we want you to think about your general behaviour on social networking sites.
 If we spilt behaviour into two general terms, either **"time spent looking"** which would include looking at other peoples posts or comments, but not adding any comments or posts yourself. The other broad term would be **"communicating with others"** and this can include sharing posts with others, posting, or commenting on others posts, or private messaging others, for example.

Most people do both of these while they're online, however a lot of people tend to do one more than the other. Which do you think you do more?

○ Time spent looking (1)

○ Time spent communicating (2)

Question 24

Next we're going to ask you a bit about what you do to the photos you take.

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 (1)	Rarely (2)	Sometimes (3)	Often (4)	Always (5)
Get rid of red eye (1)	○	○	○	○	○
Make yourself look larger (2)	○	○	○	○	○
Highlight facial features e.g. cheekbones or eye colour/ brightness (3)	○	○	○	○	○
Use a filter to change the overall look of the photo e.g. making it black and white, or blurring and smoothing the image (4)	○	○	○	○	○
Make yourself look skinnier (5)	○	○	○	○	○
Adjusting the light/ darkness of the photo (6)	○	○	○	○	○
Edit to hide blemishes like pimples (7)	○	○	○	○	○
Whiten your teeth (8)	○	○	○	○	○
Make specific parts of your body look larger or smaller (9)	○	○	○	○	○

Edit or use apps to smooth skin (10)	○	○	○	○	○

Great! You're a quarter of the way through. That gives you 1 entry to the raffle. Continue with the questionnaire to get more entries, so a bigger chance of winning a £50 amazon voucher!

Question 25

Next we're going to ask a couple of questions about how you want to look. Please read each of the following items carefully and indicate the number that best reflects your agreement with the statement.

	Definitely disagree (1)	Mostly disagree (2)	Neither agree nor disagree (3)	Mostly Agree (4)	Definitely agree (5)
It is important for me to look muscular (1)	○	○	○	○	○
I think a lot about looking muscular (2)	○	○	○	○	○
I want my body to look muscular (3)	○	○	○	○	○
I don't want my body to look muscular (4)	○	○	○	○	○
I would like to have a body that looks very muscular (5)	○	○	○	○	○

Question 26

The following three questions are about how alone you feel. Please state how often you feel you agree with the statements.

	Never (1)	Rarely (2)	Sometimes (3)	Often (4)	Very Often (5)	Always (6)
I feel like I do not have a friend in the world (1)	○	○	○	○	○	○
I am not close to anyone (2)	○	○	○	○	○	○
I have nobody to talk to (3)	○	○	○	○	○	○

Question 27

Next we're going to ask you about your friends, please answer these questions truthfully.

	Not at all true (1)	Slightly true (2)	About halfway true (3)	Mostly true (4)	Always true (5)
I feel part of a group of friends that does things together (1)	○	○	○	○	○
I have a lot in common with other children (2)	○	○	○	○	○
I feel in tune with other children (3)	○	○	○	○	○
I feel like other children want to be me (4)	○	○	○	○	○
I feel that I usually fit in with other children around me (5)	○	○	○	○	○
When I want to do something for fun, I can usually find friends to join me (6)	○	○	○	○	○
When I am with other children, I feel like I belong (7)	○	○	○	○	○

Great! You're half of the way through. That gives you 2 entries to the raffle. Continue with the questionnaire to get more entries, so a bigger chance of winning a £50 amazon

voucher!

Question 28

Next we want to know what you think about yourself.

Please use the rating scale below to answer the following questions about how you feel about yourself.

	Not very true of me (1)	A little untrue of me (3)	A little true of me (4)	Quite true of me (5)	Very true of me (6)
I have high self-esteem (1)	○	○	○	○	○

Question 29

This set of questions asks what you think of your body. The options are 'Never,' 'Rarely,'

'Sometimes,' Often,' and 'Always.' Please click the option which shows how often you feel this way.

	Never (1)	Rarely (2)	Sometimes (3)	Often (4)	Always (5)
I feel good about my body (1)	○	○	○	○	○
I respect my body (2)	○	○	○	○	○
I feel that my body has at least some good qualities (3)	○	○	○	○	○
I take a positive attitude towards my body (4)	○	○	○	○	○
I pay attention to what my body needs (5)	○	○	○	○	○
I feel love for my body (6)	○	○	○	○	○
I appreciate the different and unique things about my body (7)	○	○	○	○	○
You can tell I feel good about my body by the way I behave (8)	○	○	○	○	○
I am comfortable in my body (9)	○	○	○	○	○

| I feel like I am beautiful even if I am different from pictures and videos of attractive people (e.g. models/ actresses/ actors) (10) | ○ | ○ | ○ | ○ | ○ |

Question 30

Please rate the degree to which you have experienced the following (in the past 30 days)

	Not at all (1)	Once or twice (2)	Several Times (3)	Often (4)	Most of the time (5)	All of the time (6)
Arguing with others (1)	○	○	○	○	○	○
Getting into fights (2)	○	○	○	○	○	○
Yelling, swearing, or screaming at others (3)	○	○	○	○	○	○
Fits of anger (4)	○	○	○	○	○	○
Refusing to do things teachers or parents ask (5)	○	○	○	○	○	○
Causing trouble for no reason (6)	○	○	○	○	○	○
Using drugs or alcohol (7)	○	○	○	○	○	○
Breaking rules or breaking the law (8)	○	○	○	○	○	○
Skipping school or classes (9)	○	○	○	○	○	○
Lying (10)	○	○	○	○	○	○

Can't seem to sit still, having too much energy (11)	○	○	○	○	○	○
Hurting self (cutting or scratching self, taking pills) (12)	○	○	○	○	○	○
Getting along with friends (13)	○	○	○	○	○	○
Getting along with family (14)	○	○	○	○	○	○
Getting along with adults outside the family (e.g. teachers, principal) (15)	○	○	○	○	○	○
Being motivated and finishing projects (16)	○	○	○	○	○	○
Accepting responsibility for actions (17)	○	○	○	○	○	○
Ability to express feelings (18)	○	○	○	○	○	○
Posting inappropriate or revealing pictures (19)	○	○	○	○	○	○

Question 31

Next we're going to ask you about some of your behaviours towards food.

	Never (6)	Rarely (5)	Sometimes (4)	Often (3)	Usually (2)	Always (1)
I eat sweets and carbohydrates without feeling nervous (1)	○	○	○	○	○	○
I am preoccupied with the desire to be thinner (2)	○	○	○	○	○	○
I think about dieting (3)	○	○	○	○	○	○
I exaggerate or magnify the importance of weight (4)	○	○	○	○	○	○
I am terrified of gaining weight (5)	○	○	○	○	○	○
If I gain a pound, I worry that I will keep gaining (6)	○	○	○	○	○	○
I feel guilty after overeating (7)	○	○	○	○	○	○

Question 32

The next set of questions will give you a list of emotions and we would like you to describe how often you feel like this.

Thinking about yourself and how you normally feel, to what extent do you generally feel:

	Never (1)	Sometimes (2)	About half the time (3)	Most of the time (4)	Always (5)
Miserable (6)	○	○	○	○	○
Mad (7)	○	○	○	○	○
Afraid (8)	○	○	○	○	○
Scared (9)	○	○	○	○	○
Sad (10)	○	○	○	○	○

Great, you're three quarters of the way through! That gives you 4 entries to the raffle. If you finish the questionnaire you'll get 15 entries! So you'll have a much bigger chance of winning a £50 amazon voucher!

Question 33

Next we're going to ask you some questions about how you look at yourself compared to others. Lots of people compare themselves to others, we want to know a bit about when

you compared yourself to others.

	Strongly Disagree (1)	Disagree (2)	Somewhat disagree (3)	Neither agree nor disagree (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
I often compare how I look with how other people look (1)	○	○	○	○	○	○	○
During the day, I think about how I look many times (2)	○	○	○	○	○	○	○
I often worry about whether the clothes I am wearing make me look good (3)	○	○	○	○	○	○	○
I often worry about how I look to other people (4)	○	○	○	○	○	○	○

Question 34

In this section there are a list of appearance related qualities and social qualities. We want to know how **frequently** you think you compare yourself to same gender peer**s** on each of these qualities.

	Never (1)	Very rarely (2)	Rarely (3)	Occasionally (4)	A lot (5)
Height (1)	○	○	○	○	○
Weight (2)	○	○	○	○	○
Shape / Build (3)	○	○	○	○	○
Face (4)	○	○	○	○	○
Personality (5)	○	○	○	○	○
Intelligence (6)	○	○	○	○	○
Style (7)	○	○	○	○	○
Popularity (8)	○	○	○	○	○

Question 35

Please rate how much you agree to the below statements.

	Definitely disagree (1)	Mostly disagree (2)	Neither agree nor disagree (3)	Mostly agree (4)	Definitely disagree (5)
I have been feeling worse about my body/ appearance during lockdown (1)	○	○	○	○	○
I have been feeling lonelier during lockdown (2)	○	○	○	○	○
I have not been coping as well as normal during lockdown (3)	○	○	○	○	○
The rules my parents set for social media has changed during lockdown (4)	○	○	○	○	○

You're nearly finished! We just want to ask you a couple more questions about yourself. This is just so we have a bit of information about your background.

Question 36

Please can you tell us your ethnicity.

○ White British or Irish (1)

○ White European or American (10)

○ White Gypsy/ traveller (2)

○ Mixed White and Black Caribbean (3)

○ Mixed White and Black African (4)

○ Mixed White and Asian (5)

○ Asian (6)

○ Black Caribbean (7)

○ Black African (8)

○ Other (Please specify) (9)

_____

Question 37

Finally, we would like to ask you about your role model.

Please tell us who your role model is.

_____

Please continue on to the final page. Your 15 raffle entries will automatically be assigned to your email address. Winners will be contacted at the end of March.

After reading this page, please continue on to the final page. Please feel free to copy this page if you think it will be helpful to refer back to.

We recognise that any participation in research can raise sensitive issues. If any part of this questionnaire caused you any personal distress, please see the below list of resources for you to resolve any concerns.

1. Talk to a teacher/ school counsellor.

2. Childline: A private and confidential service for children and young people up to the age of nineteen. Young people can contact a ChildLine counsellor about anything by phone, email or online chat. Free Helpline: 0800 1111
http://www.childline.org.uk/Pages/Home.aspx

3. Off the Record: A Bristol based charity offering mental health information, counselling support, youth groups and workshops for young people up to the age of 25.
http://www.otrbristol.org.uk/

4. YoungMinds: A UK based charity committed to improving the emotional wellbeing and mental health of children and young people and empowering their parents and carers. They provide expert knowledge to professionals, parents and young people through a Parents' Helpline, online resources, training and development, outreach work and publications.
http://www.youngminds.org.uk/

5. BEAT: Beat provides helplines, online support and a network of UK-wide self-help groups to help adults and young people in the UK beat their eating disorders. http://www.b-eat.co.uk/

E. Research during COVID-19 reflection

It would not be possible to reflect on the current research without also acknowledging the large effect that COVID-19 had on the PhD. This unprecedented event affected everyone in a dramatic way, of course, and the extreme lengths that countries went to in order to protect their population was a shock for the world. With China locking down a province, and Italy following with lockdown shortly after, there was uncertainly of what would happen in the UK. COVID-19 was a pandemic like none we have ever experienced in our lifetime. The Spanish Flu in 1918, is the last pandemic that included similar restrictions, with many communities urged to stay at home and schools and other social places closed (BBC News, 2020). Therefore, COVID-19 is the first experience most have of such a restricted period of time. This has affected people both mentally and physically, with work being unable to continue in many professions, and many areas of research also being affected. Some research could not be conducted due to logistics, for example being unable to get the equipment needed in order to conduct the research, but also being unable to access participants for example school students. In addition, some research could not continue because the results would be affected by the influence of lockdown. Any research looking at wellbeing could be affected due to the change in environment and individuals' feelings towards that. The current research was heavily impacted by COVID-19. First, I was conducting research in schools, the uncertainty of when/ if lockdown would occur in the UK impacted recruitment of a final school due to reluctance to commit to taking part in a research project, especially a longitudinal one. Discussions were had around moving the T1 data collection for the final school completely online, however, for many reasons it was felt this was not appropriate. First of all, it was felt that the uncertainty in the situation could lead to a great variation in results compared to the rest of the data; wellbeing measures would be largely affected by the lockdown. Additionally, due to the nature of home schooling and the lockdown it was thought students were likely to be on SNS more often than they normally would, these two factors could skew the results. Additionally, students were answering questions about delicate topics, and some questions required participants to answer questions they may not want their parents to know about. It was thought that having parents present in the house while the study was going on could affect how children completed the questionnaire, whether this is due to them not wanting parents to see certain questions and therefore speeding through, skipping some questions, or not answering some truthfully. Finally, it was also thought that having children complete the questionnaire on their own, without a teacher around who could lead informed discussions about topics that came up was unethical as this can be a really important part of the process. In the end, it felt unethical to ask children such sensitive questions in a time of global

unrest. For this reason, further recruitment was closed and analysis commenced on the participants that had already taken part. Although this was the decision made in February 2020, these conversations were revisited the following year when planning the second data collection timepoint. At this point a decision was made to move data collection online. The change in decision was made for several reasons, first of all as this was a distinct timepoint all participants would be completing the questionnaire online at home, rather than a mixture of two different locations (at home versus at school). Furthermore, as students had been working from home for over a year, it was thought that schools would have adjusted more to distance learning. Finally, it looked unlikely schools would reopen in the near future, therefore the researcher felt that data collection would need to move fully online if the longitudinal study was to go ahead.

At this point, one wave of data had been collected for Study 1, and another wave was planned in order to achieve the expected sample size. This was planned to be during summer term 2020 to keep it as similar to the first data collection as possible (which was collected in summer term of 2019). However, this was also not possible due to schools closing, and thus this data collection was moved to Autumn term 2020 as this was the next possible time for data collection. During this term, it was deemed schools would be unable to take part in the project due to the large amount of teaching they needed to catch up on. At this point, analysis was carried out with the current sample.

Study 3 was originally planned to qualitatively evaluate the transition from year 6 (primary school) to year 7 (secondary school) and how this transition affects SNS use. However, following the implementation of lockdown restrictions it was thought that the research needed to address the inevitable impact COVID-19 would have on adolescent's mental health and SNS use, as this felt like an important and unique opportunity.

The final study (Study 4) started before COVID-19, and was due to involve three timepoints. Due to school closures the decision was made to remove one of the data collection timepoints from the longitudinal study. This was a hard decision as being able to follow students at 6-month intervals would allow more detailed mapping of the associations, nevertheless, the three timepoints were reduced to two, with T1 and T2 spaced roughly 15 months apart. When the study was completed, it was felt that a comparison of the timepoints would be a more appropriate analysis to conduct, rather than the initially planned longitudinally modelling because significant differences in circumstances means adolescents experiences of the two timepoints may be particularly influenced by the pandemic, leading to findings that would not be generalisable. Instead, it was felt that the

alternative analysis would provide more important knowledge on how COVID-19 affected

adolescents. Furthermore, this was a unique opportunity to explore this topic and add more nuance

to the field.