What is the relationship between social media and body image dissatisfaction among adolescents? A Systematic Review.

Holly Lynch

Holly is passionate about promoting the voices of the younger generation in our society and the current difficulties they are experiencing. The reason Holly decided to study a Masters in Child and Adolescent Mental Health and Wellbeing stems from both personal experience and working with various children and young people in residential care. Today, technology is rapidly evolving with social media becoming more popular among the younger generation. The dissertation and its findings present how damaging social media can be on both emotional and physical health. Evolving technology is important overall for the wider society to understand the different aspects of social media and how damaging it can be on views on the body and the impact it can have on a child's development. Holly feels that research can have a highly positive impact to promote the voices and lived experiences of younger individuals to push for more positive change and to highlight the importance of how rapid changes in society can impact a young person's mental and physical health.

Abstract

Background

Social media use has increased dramatically in the last decade with data suggesting that as of January 2022, globally, 74.8% of adolescents have some form of social media platform, raising concerns about the negative impact it can have on adolescents' body image (Chaffey, 2022). Social media increasingly taken over adolescents' daily lives in recent years enabling the opportunity to upload and view visual content through photographs or videos. Social media platforms such as Facebook and Instagram have multiple features enable their users to like and comment and to modify their content before unloading it, blurring the line between reality and fantasy which has been known to trigger body image dissatisfaction (McCrory et al, 2022).

Aim

The primary aim of this structured systematic review is to synthesise findings from qualitative and quantitative studies that explore the association between social media and body image dissatisfaction among both female and male adolescents.

Methods

A database search for qualitative and quantitative studies using CINAHL, PsycINFO, PubMed and Science Direct from 2015 to present day was conducted using a search strategy of keywords, social media OR social networking sites OR social media platforms OR high visual social media AND body image OR body dissatisfaction OR body satisfaction OR body image dissatisfaction OR self-esteem OR self-image OR body confidence OR negative body image AND adolescents OR adolescence OR teenagers OR young people OR young adults.

Results

Studies needed to include these search terms in the title or abstract relating to the association between social media and body image dissatisfaction among adolescents; the role of social media and it's contributing factors to body image dissatisfaction among adolescents, high visual social media use and its impact on adolescents' body image, and social media trends/features contributing to body image dissatisfaction among adolescents. A total of 6,833 articles were identified of which 9 were included (7 quantitative studies, 1 qualitative study and 1 mixed method study).

Conclusion

Findings highlight the need to promote more positive social media use to strengthen the ability to deal with the negative impact social media has on adolescent's body image, reducing the risk of more serious psychological symptoms. There is a particular need to encourage interventions from trained practitioners and other professionals to ensure adolescents have efficient access to services that specialise in the effects social media has on adolescents and their self-image. Finally, future research is needed to focus on relevant concerns for boys as it is evident in limited studies that boys' and girls' body image is both negatively impacted by social media platforms.

Introduction

The term ‘’social media’’ was first used on a Tokyo online media environment, called Matisse in 1994, when the first social media platforms were developed and launched. (Aichner et al, 2021). Social media can be defined as, ‘’websites and applications that allow users to opportunistically interact and selectively self-present in real time or asynchronously, with both broad and narrow audiences who derive value from user-generated content and the perception of interaction with others’’. (Carr & Hayes 2015, pp 50). There has been a dramatic growth over the past decade with figures indicating that 3.96 billion people globally use social media, a 10.5% growth since 2021. (McCrory et al, 2022). High visual social media platforms such as Instagram and Facebook are most used by adolescents with figures indicating that in the US, 72% of 13–17-year-olds use Instagram and 51% use Facebook, both platforms that focus on visual content, creating an increasing concern over the growing number of adolescents' experiencing body image dissatisfaction. (Anderson & Jiang, 2018). Adolescence is a critical period of development and when individuals are most vulnerable to the influences of social media. (Hoc, 2019). Although all social media platforms allow their users to create a public or private profile and permit the uploading and sharing of photos and videos, high visual social media offers features such as ‘likes’ and ‘comments and provides users with the opportunity to digitally modify their content by using filters contributing to body image concerns among the younger generation worldwide. (McCrory et al, 2022). Among adolescents, social media use has dramatically risen and has received a lot of research attention as a contributing risk factor for body image dissatisfaction. In the US, research has suggested there has been an 1000% increase from 2005 to 2013 and since then, social media use among adolescents has risen faster than ever before. (Plaisime et al, 2020). Easton et al (2018) found that 70% of UK adolescents reported spending a minimum of 2 hours per day on social media and becoming embedded in their daily lives, leading to concerns about its potential impact. To date, both problematic and beneficial implications of social media use have been identified. For example, it has been

related to greater social connectedness but also, increased loneliness and feelings of jealously regarding the unattainable 'ideal' body appearance. (Easton et al, 2018). Body image can be defined as an individual's thoughts, feelings and perceptions about their body. Body dissatisfaction is an internal emotional and cognitive process, and it occurs when an individual's views on the body are negative, assumed to originate from a perceived discrepancy between the actual and desired physical appearance. (Plaisime et al, 2020). Relatively high prevalence rates of body image dissatisfaction have been reported among adolescent boys and girls. The Mental Health Foundation (2019) reported that in the UK, 40% of young people (26% of boys and 54% of girls) stated that viewing images on social media had caused them to worry in relation to their body image. To date, research continues to debate the influence social media has on adolescents' views of the body. For example, high visual platforms contain idealised body related content and exposes adolescents to the socio-cultural model of aesthetic perfection in force within western society, with girls admiring and seeking a thin figure, and boys having a drive for muscularity. (Schreurs & Vandenbosch, 2022). Additionally, social media use has also been associated with positive body image through receiving positive feedback on their posts and utilising their profile as a way of expressing themselves, increasing feelings of acceptance and validation (McCrory et al, 2022). The ways in which adolescents use social media and the amount of time spent is associated with positive and negative impacts on body image. Previous research has found that adopting the role of 'viewer', spending a lot of time scrolling through a feed and utilising the feature of likes and comments instigates longer-lasting feelings of jealously and an increased pressure to be accepted. (McCrory et al, 2021). However, adopting the role of a 'contributor', utilising filters and adjusting one's persona created short term feelings of high self-esteem and greater acceptance, suggesting that the amount of time spent and the ways in which adolescents use social media appears to trigger a process of emotional highs and lows. (McCrory et al, 2022). Existing research has mainly focused on adolescent females, suggesting that the impact of social media on the male body may be underestimated

because of the stigma surrounding it. (Mahon & Hevey, 2021). Nevertheless, a small number of studies have explored the impact of social media on male adolescents' body image, identifying that social media's influence on body image was the same for boys and girls. The present paper aims to systematically review previous literature that has investigated the relationship between social media and body image dissatisfaction among both male and female adolescents. Specifically, the present paper seeks to review studies investigating the amount of time spent, and the ways in which adolescents use social media and how it contributes to the positive and negative impacts on body image.

Review of the Literature

Adolescence

According to the World Health Organisation (2022) adolescence is the ages from 10 to 19 and is considered an important stage for development and good health. Additionally, the House of Commons (2019) expressed that adolescence is a critical period and when individuals are most vulnerable to the influences of social media, which heightens the risk of developing bod image concerns. Over the past decade, many more researchers are focusing on the impact that social media has on body image, especially among adolescents as this age group takes up the highest number of social media users and are most likely to engage with image-based platforms. (Pew Research Center, 2018., and Burnette et al, 2017). In the UK, a survey conducted by the Pew Research Center (2018) found that 71% of adolescents preferred to use Facebook and 52% preferred to just Instagram in comparison to any other social media platform which both focus on visual content and is known for encouraging unattainable and unrealistic bodies. (Burnette et al, 2017., Jarman et al, 2021). Puberty is a major life event and adolescents experience constant changes in their physical appearance and mood and researchers have highlighted that puberty may be associated with heightened appearance concerns due to adolescents being more aware of their bodies changing and the pressure to meet unrealistic body ideals. (Jarman et al, 2021., Burnette et al, 2017). During the period of adolescence, individuals are in the depth of the developmental stage in their life. A study conducted by Makinen et al (2012) examined body image dissatisfaction and its relationship with self-esteem in 659 girls and 711 boys in Finland during the transition period from early to mid-adolescence. The study identified that during the adolescence transitional phase from early to mid-adolescence, body image dissatisfaction was a main concern, mainly among girls suggesting that adolescent females tend to experience much more extreme changes in their bodies during puberty, making them more vulnerable to the 'ideal' body they are frequently exposed to. (Makinen et al, 2012). Moreover, both adolescent males and females experience transitions during puberty that affect their body

shape, weight and appearance. Although researchers indicate that adolescent boys report higher self-esteem, they are not immune from body image concerns. For instance, according to Voelker et al (2015), adolescent boys tend to experience an increase in height and muscle mass during puberty, moving them closer to the current cultural expectations to be tall and in muscular shape. However, in the study conducted by Voelker et al (2015), adolescent boys who experience late maturing and have not achieved the physical attributes of the male 'ideal' body have reported feelings of dissatisfaction with their current bodies, placing importance on the physical changes that adolescents experience, plays an important role in shaping body image during adolescence developmental stage in both males and females.

Social Media and Body Image Dissatisfaction

Adolescents in this current generation have been described as 'digital natives', growing up surrounded by user-friendly digital technology. (House of Commons, 2019). Nowadays, people all over the globe spend a lot of time on the internet, especially using smartphones. According to Pew Research Center (2018), in the US, 95% of adolescents have a smartphone or access to one and 45% report being online constantly. Decades of research have explored the impacts of traditional media (television and magazines) however, with the increasing popularity of social media and how easily accessible it is on any device that has internet access, this has raised concerns about its potential consequences. (Rodgers et al, 2020). The causes of body image dissatisfaction are considered to include biological, psychological, evolutionary and sociocultural factors. (Mahon & Hevey, 2021). Social media is a sociocultural factor that reaches a maximum audience and is a highly interactive form of media, enabling users to keep in touch with family and friends and providing them with the opportunity to create and share content. (Fardouly & Vartanian, 2016) The UK Government expressed that social media can be a source of learning, advice and support for individuals, but an increasingly important topic raised in research was the amount of heavily edited content exposed to users utilising photoshop

and filters. (House of Commons, 2022; Rodgers et al, 2020). Social media is a direct form of online self-presentation for its users, however, specifically high visual platforms (such as Instagram and snapchat) that focuses on visual content, have unique features available to users to manipulate photos using retouching techniques creating the 'perfect' picture. (Rodgers et al, 2020). With just a few taps on a screen, filters on social media alongside photo-editing apps, allow face and body features to be altered and sculpted which is surprisingly normalised globally in today's generation, creating the 'ideal' view of beauty. (The Priory Group, 2022). According to the Tripartite model, social media influences views on body image by transmitting messages that accentuate the importance of appearance and create pressure to attain unrealistic body ideals. (Roberts et al, 2022). A survey conducted by Case24 in the UK found that 71% of people edit their photos before posting them, creating pressure to look 'perfect', influencing perceptions of body image. (Apsinall, 2020). A growing body of research has expressed that body image perceptions and experiences tend to differ for both boys and girls reporting that social media platforms influence the internalisation of appearance ideals that typically promote thinness in females and muscularity in males. (Vuong et al, 2021). Because of this, social media platforms are encouraging a stream of unrealistic content, holding significant power to influence both male and female adolescents. (Spurr et al, 2013).

Individuals are constantly faced with appearance-based discrimination daily whether that be at work, school or in public. (House of Commons, 2021). There are very limited mixed gender studies that explore the relationships between social media and body image dissatisfaction. The House of Commons (2021) alongside with a growing body of research found that globally, females tend to experience higher negative feelings towards their body image in comparison with males (62% females compared to 53% males). A study conducted by McCrory et al (2022) of nine focus groups in Northern Ireland found that females tend to engage and invest more time in body-related content and sociocultural theories of body image have suggested that due

to higher societal pressures on females to look a certain way, the impact of social media is stronger, creating higher levels of social comparison. In comparison, some studies have found that males have a positive experience with social media, motivating influence on their body image. (Saiphoo & Vahedi, 2019). Although a collection of researchers found that females tend to have more negative experiences with social media regarding their body image, a very small amount of research has found that social media's influence on body image is the same for males and females suggesting that there is a stigma surrounding male body image and creating the need for more research to be focused on males. (McCrory et al, 2022). Additionally, sexualisation surrounding the male body image has increased in recent years, increasing the drive for a muscular physique. According to McCrory et al (2022), a males' drive for a muscular physique can be a positive experience, with some feeling more encouraged to adopt a healthier lifestyle and an increase in motivation, however, a limited but growing body of research has identified this experience to be negative. These negative experiences have led to higher levels of social comparison and body image dissatisfaction when one's perception of their own body image fails to match their expectations of the 'ideal' body. (Spurr et al, 2013). This emphasises a current gap in literature and the importance of more mixed gender, specifically male studies to be conducted to explore the associations between social media and body image dissatisfaction to extend the existing literature on adolescents.

There are on average 10 million new photographs uploaded on social media sites every hour. (RSPH, 2017). According to The Mental Health Foundation UK (2021), 25% of adolescents (13% males and 37% females) reported that celebrities had caused them to worry in relation to their own body image. In research, celebrities have been considered one of the main causes of body image dissatisfaction in adolescent users. Adolescents tend to learn about their own bodies by observing and comparing themselves celebrities' physical appearance, understanding what physical attributes are associated with popularity and social privilege, encouraging body image

dissatisfaction. (Kenny et al, 2016). Moreover, social media enabling their users to follow their favourite celebrity on an interpersonal level may seem like a positive and enjoyable thing for some, but interpersonal surveillance and interaction with celebrities on these platforms have been known to facilitate social comparison. (Ho et al, 2016). Celebrities receive a huge amount of attention, are well-known for their photoshopping and retouching techniques, promoting cosmetic surgery and are considered the current definition of beauty. (Ho et al, 2016). Over the past decade, researchers and policies have raised their concerns regarding celebrities posting damaging content, highlighting that exposure to unrealistic and unattainable appearance ideals has led to adolescents formulating a view of what is socially accepted. (Ho et al, 2016). A recent survey conducted in the UK by The Mental Health Foundation (2021) found that 36% of adolescents agreed to doing 'whatever it took' to look good, with 57% reporting they had considered going on a diet, 10% had considered cosmetic surgery, and 10% of adolescent males considered taking steroids to 'live up' to the current 'ideal' bodies posted by their favourite celebrities. All social media platforms currently have community guidelines determining what is acceptable for users to post, attempting to reduce the availability of damaging body image content by removing them or adding a sensitive content screen before users view the related content. (House of Commons, 2021). Regardless of this, the UK Government expressed that despite the number of safeguarding and advertising policies social media platforms have put in place, there is still a current gap between policies and real-life experiences for young people suggesting that social media platforms aren't doing enough to protect young people from body image harms. (House of Commons, 2021).

To fully understand how social media impacts adolescents' body image, it is therefore important not only to focus on the content they are exposed to, but also the ways in which adolescents interact with social media due to the possible body-related outcomes. (Goodyear, 2019). It is evident in existing literature that self-presentation on social media is highly important to

adolescents in this generation and can drive the ways in which they participate, interact and communicate. (Goodyear, 2019). Additionally, a small number of researchers have elaborated that the difference between active and passive social media use seems to be important when discussing the consequences, in this case, body image dissatisfaction. (Goodyear, 2019., Trifiro & Prena, 2021). An active user is defined as an individual who actively engages with social media, including behaviours such as, taking and editing photographs, uploading them and sending private messages. (Trifiro & Prena, 2021). Multiple studies have agreed that active use has been associated with positive user outcomes in comparison to passive use that has often resulted in negative outcomes on body image. For example, two previous studies conducted by Verduyn et al (2017) and Trifiro and Prena (2021) found that active behaviours on social media had resulted in users feeling a higher sense of social connectedness, leading to enhanced positive self-esteem. Researchers have found that adolescent girls are more obsessed with how they present themselves on social media in comparison with boys. Regardless of gender, when both adolescent boys and girls actively engage with social media by posting photographs using filters and constantly receiving likes and positive feedback on posts it has been considered as an indicator of popularity, having a positive impact on self-esteem and body image. (Santarossa & Woodruff, 2017., Verduyn et al, 2017., Trifiro & Prena, 2021). However, a study conducted by Steinsbekk et al (2021) found that these positive effects of active social media use have been known to wear off quite quicky, indicating that receiving positive feedback on posts and positing edited images in ways that conform body ideals, created 'in the moment' increases in self-esteem. The downside to social media is that not all feedback will be positive. Webster et al (2020) highlighted that adolescents' experience some form of negative feedback on their posts, and some will experience a lack of feedback which will determine whether the impact on body image will be positive or negative. Within the small number of studies that have explored the types of social media use, negative and lack of feedback has led to adolescents questioning their appearance and led to more social comparison with other users. (Steinsbekk et al, 2021).

On the other hand, a passive user usually spends most of their time on social media viewing other user's content, 'monitoring' the online life of others without engaging directly. (Trifiro & Prena, 2021). Social media users only tend to upload their 'best' images. A survey conducted in the UK by the CBBC of 1001 adolescents reported that more than four out of five said that when they take a picture to post on social media, it was 'important' to look good, contributing to the development of unrealistic expectations and manipulative content. (British Youth Council, 2017). When adolescents constantly observe and view this type of content it has been known to create negative social comparison and a feeling of being in competition on who can upload the most attractive and appealing content. (British Youth Council, 2017). Although only a small number of researchers have debated how adolescents engage with social media it is evident that it determines whether the impact on body image will be either positive or negative, creating the importance of more research to be conducted to add to the existing literature.

Overall, the literature concludes that the adolescence is a period of development with young people experiencing constant changes in their bodies which has been found to heighten the risk of social comparison and body image concerns. In this generation of adolescents, social media has become hugely popular and normalised. The damaging content to which young people are exposed to, involving exposure of the 'ideal' body and the features that social media platforms offer to users such as photoshop and filters has been evident to be associated with body image dissatisfaction. Researchers have also branched out to explore the associations between the ways in which adolescents engage with social media (active and passive use) and body image dissatisfaction. It is evident in the existing literature that active and passive use both contribute to body image concerns, however there are currently different views and findings between researchers which indicates the need for more research to be conducted on social media behaviours to add to the existing literature. Lastly, there is very limited mixed gender studies, especially among male adolescents. it is evident that researchers tend to assume that adolescent

females are most likely to experience concerns with their body image (which is evident in most findings), however, researchers tend to neglect studies focused on male adolescents suggesting that this is associated with current stereotypes related to males. Studies that have conducted mixed gender studies have found that social media is associated with body image concerns in both male and female adolescents, raising the importance of more mixed gender (specifically male) studies to be conducted to extend the existing literature on adolescents.

The purpose of this study is to systematically review both qualitative and quantitative literature exploring the relationship between social media and body image dissatisfaction among both male and female adolescents. The aim of this systematic review, therefore, is to investigate and synthesise the available qualitative and quantitative literature that focused on social media use among adolescents, ways in which adolescents engage with social media, the content adolescents are exposed to, and the current features available to adolescents on social media platforms and how these relate to body image dissatisfaction across both genders.

Methods

This systematic review was conducted following the PRISMA checklist. [Appendix 1].

Search Strategy

The search was limited to literature published from the year 2015 to 2022, to include more recent research for the systematic review. The PICO framework was used to develop the search strategy for the current systematic review and focused on four key elements: population (adolescents), exposure (social media), and outcome (body image dissatisfaction). (Icahn School of Medicine, 2022). A search was performed in June 2022 using the following databases: CINAHL, PsycInfo, PubMed and Science Direct. Databases were searched using all combinations of the terms:

I. Social media OR social networking sites OR social media platforms OR high visual social media

II. Body image OR body dissatisfaction OR body image dissatisfaction OR body satisfaction OR self-esteem OR self-image OR body confidence OR negative body image

III. Adolescents OR adolescence OR teenagers OR young people OR young adults

Search terms within each of the three categories were combined using 'AND' to search titles/abstracts. Searches were also limited to studies published in English.

Study Eligibility

Across all four databases, the search strategy generated a total of 6,883 studies. A study was selected for inclusion if:

I. Adolescents were participants. Studies were excluded if the mean age of the adolescents was over 19 years old. Studies including adults were excluded.

II. A study explored the relationship between social media and body image dissatisfaction among adolescents.

III. A study focused on social media platforms. Studies were excluded if the focus was on traditional media.

IV. A study measured levels of body image dissatisfaction and social media use among adolescents. Studies that measured BMI/body weight were excluded.

V. A study explored adolescents' experiences with social media and the impact on body image.

VI. Qualitative and quantitative studies (or both).

VII. Studies written in English.

Additionally, there was no requirement to how social media is associated with body image dissatisfaction among adolescents. Qualitative and Quantitative studies that focused on either social media use, social media content, social media engagement and behaviours and social media features and their relationship with body image dissatisfaction among adolescents were included. Quantitative and qualitative studies were selected for the systematic review to gain a deeper insight, to better understand the correlational relationship between variables, and to seek and understand from a real-world context. Studies that focused on eating disorders, anorexia, bulimia and measurements of BMI/body weight were excluded, for the reason to keep the focus on the relationship between social media and body image dissatisfaction.

Selection of Studies

Firstly, the titles of the overall 6,833 studies were screened and any that did not meet the inclusion criteria were removed, leaving 1,157 studies. Abstracts were then screened and those not meeting the inclusion criteria were removed, resulting in 42 studies. After filtering titles and abstracts, the remaining 42 studies were reviewed in full to confirm they met the inclusion criteria. 33 studies did not meet the inclusion criteria after screening the full text. If a study failed to meet the inclusion criteria, the reason for exclusion was recorded. Reasons for studies being excluded is demonstrated in the PRISMA flowchart in the findings [Fig.1]. In total, 9

studies (7 quantitative, 1 qualitative and 1 mixed method) met criteria for inclusion in the review.

Data Extraction

A data extraction table was developed for both qualitative and quantitative studies. [Appendix 2]. The data extraction table was first drafted and then later refined after the initial piloting by one reviewer. The reviewer (HL), then independently extracted data from each individual study that met the inclusion criteria. The following data was extracted from each study: (1) author/year, (2) social media platform (Instagram, Facebook or all social media), (3) gender, (4) age (mean/range), (5) study setting (e.g., secondary school), (6) country, (7) sample size, (8) study design, (9) study method (e.g. Interview, questionnaire, survey), (10) study focus/aims (e.g., high visual social media, interactions with social media), (11) and outcomes/findings from the study (positive and negative influences on body image). Additionally, the data extraction table included an additional comments section to record the findings regarding gender (e.g., adolescent girls versus boys' results) as previous literature has indicated that the findings among girls compared to the findings among boys are often different.

Critical Appraisal

One reviewer (HL) also assessed the quality of all studies meeting the inclusion criteria. The CASP Qualitative Study Checklist [Appendix 3] was used to assess the quality of the single qualitative study. (CASP, 2022). The CASP tool enabled the reviewer to appraise any strengths and limitations of the qualitative studies and was chosen because it is one of the most used checklists for quality appraisal. (Long et al, 2020). The CASP checklist included 10 questions and focused on three broad issues that needed to be considered when critically appraising the qualitative study:

1) Are the results of the study valid?

2) What are the results?
3) Will the results help locally?

Additionally, a search was conducted by the reviewer when deciding what quantitative critical appraisal tool to use. After searching, the reviewer decided to utilise the McMaster's Critical Review Form for Quantitative Studies (1998) [Appendix 4] to assess the quality of all quantitative studies that met the inclusion criteria. (Law et al, 1998). The critical review form included 15 questions and focused on 8 concepts: (1) study purpose, (2) literature (the justification of the study), (3) study design, (4), sample, (5) outcomes, (6) intervention, (7) results, (8) and conclusions and clinical implications to enable the reviewer to collect analytical evaluations of the quality of the quantitative studies. Because all studies did not include an intervention, the category for assessing intervention quality was not utilised.

For the single included mixed method study, the Mixed Methods Appraisal Tool (MMAT) 2018 version was utilised to assess the quality of the study [Appendix 5]. (Hong et al, 2018). The tool included 22 questions and focused on concepts: (1) screening questions, (2) qualitative, (3) quantitative non-randomized, (4), quantitative descriptive, and (5) mixed methods. The tool included a section primarily for quantitative randomized controlled trials which was not utilised due to the mixed method study using a cross-sectional study design.

All three quality appraisal tools did not include scores and instead used ''yes'' ''no'' and ''can't tell'' options for each question to guide the reviewer to determine the study quality. The quality of the studies was determined by one reviewer (HL) (e.g., strong, moderate, or weak) based on the answers among each of the categories for each quality appraisal tool. For example, for the McMaster's Critical Review Form for Quantitative Studies, if a study answered ''yes'' on seven to eight of the categories, the study would receive a strong rating. Furthermore, if a study only

answered ‘’yes’’ on five to six categories and ‘’no’’ or ‘’can’t tell’’ on the remaining categories, the study would receive a moderate rating. Lastly, if a study answered ‘’no’’ or ‘’can’t tell on most of the categories (7-8) the study would receive a weak rating. This strategy was used to assess the quality of all studies and was performed on all critical appraisal tools by one reviewer (HL).

Data Synthesis

The systematic review used a narrative synthesis to synthesize the findings of the nine included studies. Narrative synthesis refers to an approach to the synthesis of findings from multiple studies, relying primarily on the use of words and text to summarise and explain the findings of the synthesis. (Popay et al, 2006). First, a preliminary synthesis was undertaken including the search of the studies and listing and presenting results in a tabular form which is demonstrated in the data extraction [Appendix 2] and the study characteristics tables [Table 2]. Secondly, the results from the nine included studies were then structured into themes and then summarised by one reviewer (HL). The following themes were found when conducting a narrative synthesis of the nine included studies: social media content (such as exposure to appearance-ideal content from celebrities/influencers), adolescents' engagement with behaviours (such as self-objectification, other-oriented, self-oriented, active, and passive use) and social media use (such as general, frequent, and problematic (addictive)).

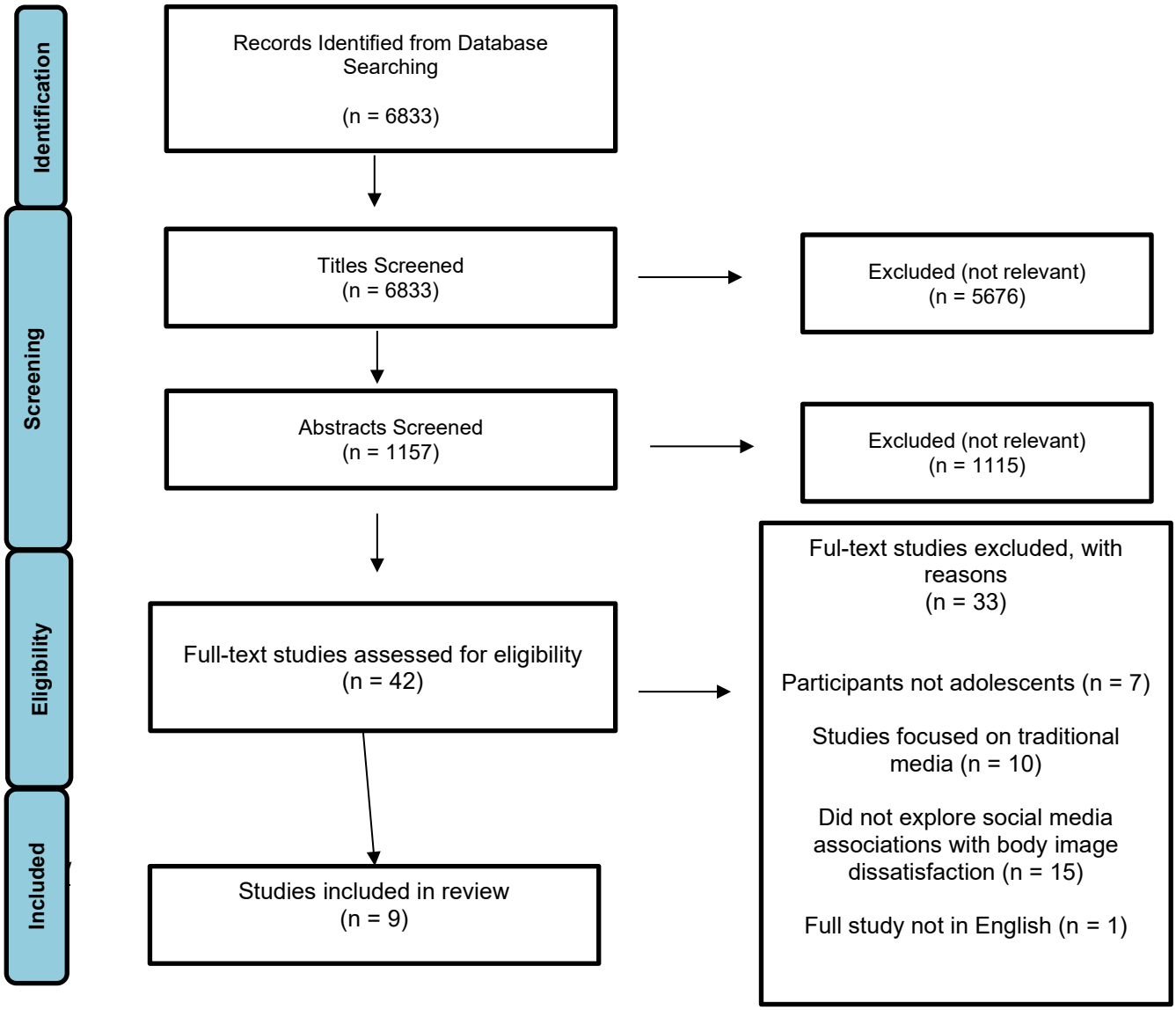
Findings

Study Selection

The study selection process is demonstrated in Figure 1. During the initial database search, 6,833 articles were identified. After screening the titles, 5,676 articles were excluded, resulting in 1,157 articles. The abstracts of the 1,157 articles were then screened, 1,115 were excluded. 42 studies remained for full-text examination and 33 studies did not meet the inclusion criteria.

In total, 9 studies published between 2016 and 2022 satisfied the inclusion criteria of which 7 were quantitative, 1 qualitative and 1 mixed method (both quantitative and qualitative). All quantitative studies and the mixed method study used questionnaires and survey data, whereas the single qualitative study was based on an online focus group.

Figure 1. PRISMA flowchart summary of search results.



Study Characteristics

Study characteristics are displayed in Table 2. Studies were conducted in eight countries:

Northern Ireland (n=1), Australia (n=1), USA (n=2), Singapore (n=1), Northern Italy (n=1), Turkey (n=1), Belgium (n=1), and Norway (n=1). Sample sizes ranged from 47 to 1,059, with a combined sample size of 5,672 from all studies. The combined mean age across all studies was 14.39 years, covering adolescents aged from 10 to 19 years. All studies were conducted with male and female participants (n=9). Only two studies recruited more male participants than females with the remaining studies recruiting a higher sample size of females compared to males (n=7). The quality assessment score consisted of five studies being rated moderate and four studies rated strong. Seven studies used a quantitative methodology, with one study using a qualitative methodology and one using a mixed methodology. Additionally, seven studies used a cross-sectional study design to measure the following variables at a single point in time which include: social media use/frequency (n=5), social media behaviours (n=1), exposure to appearance-ideal content (celebrities/influencers) (n=2) and engagement with social media features/enhancers (n=1). Moreover, two studies used a cohort study design starting with participants free of a condition of interest: body dissatisfaction (n=1) and physical appearance self-esteem (n=2), and exposure to a causative factor: appearance-focused content (n=1) and self-oriented and other-oriented social media use (n=1) and was followed up overtime to establish cause and effect relationships. Eight studies were delivered in schools for purposes to recruit participants at adolescent stage and the use of school equipment. The eight studies used online focus groups via Microsoft teams (n=1), online questionnaires (n=4), paper-and-pencil questionnaires (n=1) and surveys (n=2). One study (Steinsbekk et al, 2021) was conducted at participants homes due to school closures during the COVID-19 pandemic and participants were provided with questionnaires at ages 10, 12, and 14 years with the study duration being followed up over 4 years.

Table 2. Study Characteristics

Author	Year	Age (mean/range)	Sample Size	Gender	Female % or total	Male % or total	Setting	Country	Methods	Study Design	Quality Assessment Sc
McCrory et al	2022	14-15 years	47	Male and Female	28	19	Secondary School	Northern Ireland (UK)	Qualitative	Cross-Sectional	Strong
Rodgers et al	2020	12.76 mean age	681	Male and Female	49%	51%	School	Australia	Quantitative	Cross-Sectional	Moderate
Salomon & Brown	2018	11-14 years (12.44 mean age)	142	Male and Female	99	43	Secondary School	USA	Quantitative	Cross-Sectional	Strong
Ho et al	2016	12-19 years	1,059	Male and Female	492	567	Secondary School	Singapore	Quantitative	Cross-Sectional	Moderate
Marengo et al	2018	14.82 mean age	523	Male and Female	53.50%	46.50%	Secondary School	Northern Italy	Quantitative	Cross-Sectional	Moderate
Yurdagül et al	2021	14-19 years (15.92 mean age)	491	Male and Female	288	203	Secondary School	Turkey	Quantitative	Cross-Sectional	Strong
Schreurs & Vandenbosch	2022	14.55 mean age	1032	Male and Female	57.80%	42.20%	Secondary School	Belgium	Quantitative	Cohort	Moderate
Charmaraman et al	2021	11-14 years	700	Male and Female	52%	48%	Secondary School	USA	Mixed Methods	Cross-Sectional	Strong
Steinsbekk et al	2021	10, 12 and 14 years	997	Male and Female 0 - 52.3%, Age 12 - 51.9% and Age 14 - 0 - 47.7%, Age 12 - 48.1% and Age 14 - -			Participants Homes	Norway	Quantitative	Cohort	Moderate

Author/Year	Social Media Platform	Social Media Content	Type of Social Media Use
McCrory et al (2022)	Instagram, Snapchat, TikTok	High visual content: celebrities, peers and influencers	1) Active Use Editing, Staging and Manipulation of Images/Videos (2) Passive use: viewing user's content (celebrity/peers/influencers liking/commenting
Rodgers et al	Snapchat, Facebook, Instagram Youtube, Twitter, Tumblr and Pinterest	Appearance-focused	General social media use
Salomon & Brown (2018)	Twitter, Facebook and Instagram	All social media content	Self-objectification behaviors
Ho et al (2016)	All social media platforms	Celebrity and peer content	Social comparison with peers/celebrities
Marengo et al (2018)	Facebook, Instagram and Snapchat	Highly-visual social media content	High-visual social media use
Yurdagül et al (2021)	Instagram	Instagram Content (High-Visual	High-visual social media use
Schreurs & Vandenbosch (2022)	All social media platforms	Appearance-focused content	Exposure to appearance-focused content Engagement in liking, positively commenting, and posting
Charmaraman et al (2021)	Instagram, Snapchat and Facebook	Appearance-focused Content posted by celebrity /peers	General social media use on high-visual platforms
Steinsbekk et al (2021)	All social media platforms	All social media content	Self-oriented use (posting updates and photos) Other-oriented use (social media activities: liking, commenting on other's social media content)

Author/Year	Social Media/Type Measure	Body Image Measure
McCrory et al (2022)	(1) Reasons for use of social media (2)Experience with social media features (3)Social media image enhancers 40-55 min focus group	(1) Presentations of self (2) Emotional Impact (3) Self-esteem 40-55 min focus group
Rodgers et al	Social media use *5 point scale - 1 (never) - 5 (always)*	Self-esteem *(Single item approach)* Muscular ideal Internalization *(Muscular/Athletic Internalization subscale of the Sociocultural Attitudes Towards Appearance Questionnaire-4* Social media ideal internalization *(General subscale of the Sociocultural Attitudes Towards Appearance Questionnaire - 5-item vesion)* Body Dissatisfaction *(Weight and shape concern subscales from Eating Disorders Examination Questionnaire)* Upward Appearance Comparison *(Upward Physical Appearance Comparison Scale - Modified Version)* Muscle-building Behaviors *(Body Change Inventory Subscale)*
Salomon & Brown (2018)	Social media frequency *(Self-report approach)* Self-objectification behaviors *(Self-report approach)*	Body surveillance *(Body Surveillance Subscale from the Objectified Body Consciousness Scale (OBC)* Body shame *(Body Shame Subscale from the youth version of OBC).* Self-monitoring *(Junior Self-Monitoring Scale by Graziano et al (1987).*
Ho et al (2016)	Social media use *(Self-report approach)* Social Comparison with Celebrities and Peers *(Four items from the Physical Appearance Comparison Scale)*	Female Body Image Dissatisfaction and Drive to be Thin *(Two Subscales from the Eating Disorders Inventory (EDI) - BID - nine statements subscale, DT - seven item subscale)* Male Body Image Dissatisfaction and Drive to be Muscular *(Muscularity and Body Fat Subscales of the Male Body Attitudes Scale (MBAS)*
Marengo et al (2018)	Social media use *(Self-report approach)*	Body image concerns *(Body Shape Questionnaire (BSQ))*
Yurdagül et al (2021)	Problematic Instagram Use *(Bergen Facebook Addiction Scale (BFAS) replaced the word 'Facebook with Instagram')*	Body Image Dissatisfaction *(Body Image Dissatisfaction Scale (BIDS))*
Schreurs & Vandenbosch (2022)	Interactions with appearance-focused social media content *(Self-report approach - 5 point scale)* *(Online Questionnaires)*	Body Dissatisfaction *(Online Questionnaires and calculated the current-ideal discrepancy by subtracting the ideal figure rating)*
Charmaraman et al (2021)	Social media use/frequency Engagement with Celebrities/Peers *(40 min Online Survey)*	Social media-related body dissatisfaction *(40 min Online Survey)*
Steinsbekk et al (2021)	Social media use, self-oriented use, and other-oriented use *(Interviews, self-report approach)*	Physical appearance self-esteem *(Physical Appearance Subscale of the Self Description Questionnaire (SDQ-1)* - measured at age 10. *(Subscale of the Revised Self-Perception Profile for Adolescents (SPPA-R))* - measured at ages 12 and 14

Synthesis of Studies

Key findings of the studies were classified into three common themes including: (1) social media content which refers to content posted by peers, celebrities/influencers which has been found to be focused physical appearance and the impact it has on adolescents' body image, (2) social media use (general, frequent or problematic (addictive)), (3) and adolescents' engagement with behaviours (self-objectification, self-oriented use, other-oriented use, active use, and passive use). The results from all nine studies have been discussed in relation to each key theme and their relationship with body image dissatisfaction among the adolescent population.

Social Media Content

Five out of the nine included studies produced opposing evidence on the relationship between the type of content adolescents are exposed to on social media and its impact on body image. The common types of content that emerged from the five studies included idealized appearance content that was posted by celebrities and social media influencers. A sample of 1,059 adolescents from Singapore, Ho et al (2016) found that social media facilitated social comparison due to the exposure to the ideal body. Ho et al (2016) reported that social comparison with celebrities was positively associated with female body image dissatisfaction ($B=.11$, $p<.05$) and drive to be thin ($B=.13$, $p<.05$) but was not significant for males. Within a qualitative study conducted by McCrory et al (2022) the thematic analysis of nine focus groups (n=47) in Northern Ireland yielded the overarching theme of 'competitive comparison' and was reported to emerge after viewing appearance-focused content on social media. Celebrities and influencers on social media were reported as a contributory factor to the comparison of appearance which had a negative impact on how adolescents viewed their own bodies, especially on female adolescents. (McCrory et al, 2022). Moreover, Charmaraman et al

(2021) with a sample of 700 adolescents in the USA found that 19% (n=70) reported feeling down about their body image after viewing appearance-focused social media with more females (84%, n = 59) reporting higher body image dissatisfaction compared to males (16%, n = 11). Out of the 19% (n=70) that reported body image dissatisfaction, 54% identified the source as a celebrity photo. (Charmaraman et al, 2021). With an Australian sample of 681 adolescents, Rodgers et al (2020) reported social media revealed a direct effect on both internalization of the social media ideal and internalization of the muscular ideal that mediated the effects on body dissatisfaction in females (SE = 0.056, 90% CI [0.03-0.09], p = 0.002) and males (SE = 0.058, 90% CI [0.04-0.09], p = 0.002). On the other hand, a three-wave panel study on a sample of 1032 adolescents in Belgium, Schreurs & Vandenbosch (2022) reported that exposure (W1/W2) and body dissatisfaction (W2/W3) were significant and negative for boys (W1-W2: B= -.187, SE = 0.092, p < .05; W2/W3: B = -.257, SE = .112, p <.05) but were non-significant for girls (W1/W2: B = .143, SE = .100, p > 05; W2/W3: B = .111, SE = .122, p > .05). However, Schreurs & Vandenbosch (2022) found no significant increase in body dissatisfaction over 4 years when exposed to appearance-focused content in both adolescent males and females.

Social Media Use

Four out of the nine included studies revealed that either general, frequent or problematic (addictive) social media use contributed to adolescents' body image concerns and dissatisfaction. Additionally, to the study conducted by Charmaraman et al (2021), the content on social media led to feelings of body dissatisfaction in adolescents, but in turn, used social media more frequently [F (1,354) = 5.11, p = .024] compared to those who did not feel social media-related body dissatisfaction. Highlighting that more frequent use of social media contributed to greater negative feelings on body image in both boys and girls. (Charmaraman et al, 2021). Additionally, a sample of 523 adolescents from Northern Italy, Marengo et al (2018) evaluated the association between time spent on high visual social media (Snapchat and

Instagram) and body image concerns. The study reported that frequent use of high visual social media (>2hr/day) positively predicted body image concerns (B = 00.33, SE = 0.13, p = 0.01, 95% CI [0.07, 0.59[) and moderate use (≤2h/day) showed a positive non-significant effect (B = 0.22, SE = 0.11, p = 0.06, 95% CI [-0.01, 0.44]) but did not specify on gender differences. The study conducted by Yurdagül et al (2021) on 203 Turkish adolescents focused on the effects of problematic (addictive) Instagram use and found a significant moderating effect of gender on the direct relationship between problematic Instagram use and body image dissatisfaction (B = -.63, p < .05; 95% CI [.37, .85]) and reported that females reported higher on both variables compared to males. Lastly, a sample of 681 Australian adolescents, Rodgers et al (2020) revealed significant indirect effects between general social media use and body dissatisfaction among females (SE = 0.056, 90% CI [0.03 – 0.09], p = 0.002) and males (SE=0.058, 90% CI [0.04-0.09], p = 0.002). The study also found that social media use was correlated weakly to moderately with lower self-esteem among both male and female adolescents.

Adolescents' Engagement with Behaviours

Only three out of the nine included studies produced opposing evidence to the relationship between social media behaviours (self-objectification, self-oriented use, other-oriented use, active use, and passive use) and body image dissatisfaction among adolescents. Although only two studies reported social media behaviours, the evidence is important to answer the current research question. A three-wave community study conducted by Steinsbekk et al (2021) on a sample of 997 adolescents in Norway explored two types of ''active'' social media use, self-oriented (those who actively post updates and photographs on one's own profile on social media) and other-oriented (observing and liking or commenting on other's pictures) and their association with appearance self-esteem. Steinsbekk et al (2021) reported other-oriented social media use increased at each time point (age 10-12: <. 001; 12 to 14: p < .001) and participants with more frequent other-oriented social media use at ages 10 to 12 reported lower levels of

appearance self-esteem than others two years later (B = 0.11, p = .02 and B = -0.14, p < -001, respectively). Moreover, Steinsbekk et al (2021) hypothesized that self-oriented social media use would positively effect appearance self-esteem, but no evidence was found revealing that the impact of other-oriented social media use on appearance self-esteem was higher than the impact of self-oriented social media use (10–12 years: $\Delta\chi^2 = 4.05$ (df=1), $p = .04$, and 12–14 years: $\Delta\chi^2 = 11.14$ (df = 1), $p = .001$, respectively). Additionally, the study reported that self-oriented social media use did not buffer against the negative impact of other-oriented social media use. Furthermore, a sample of 142 adolescents from the USA, Salomon & Brown (2018) revealed that overall, participants reported engaging in a mean of 2.18 (SD = 1.63) self-objectification behaviours on social media. Self-objectification behaviours involved posting images of oneself on social media and showcasing their bodies as an object for others viewing it. (Salomon & Brown, 2018). The study found that girls reported engaging in significantly more self-objectification behaviours than boys ($X\text{——}girls\bar{X}$girls = 2.44, $X\text{——}boys\bar{X}$boys = 1.55), $t(136) = 3.0$, $p = .003$) and this predicted body surveillance and in turn, body shame more strongly for girls than boys. (Salomon & Brown, 2018). McCrory et al (2022) reported when adolescents adopted the role as a 'passive viewer' (observing, absorbing and processing information) it resulted in feelings of jealousy, inferiority and pressure to be accepted. Whereas, when adolescents adopted the role of a 'active contributor' (designing their perfect persona using features such as filters), it revealed feelings of higher self-esteem, however participants reported these positive feelings as being short-lived, and experienced prolonged negative experiences relating to appearance.

Quality Assessment

Scores for each quality assessment component for the nine included studies are presented in Table 3. Three different critical appraisal tools were utilized to assess the quality of the nine included studies including, McMasters Critical Review Form (1998) for all quantitative studies (n=7), CASP Qualitative Study Checklist for qualitative studies (n=1), and the Mixed Methods Appraisal Tool (MMAT) for mixed methods studies (n=1). Components for all three tools were categorised into eight components (e.g., study purpose, background literature, study design, sampling, study methods, results, dropouts and withdrawals, and implications/conclusions). Four studies received a ‘’strong’’ rating and the remaining five received a ‘’moderate’’ rating. One study received a ‘’weak’’ rating on study methods due to data being self-measured which led to implications in the reliability of the results. Moreover, another study received a ‘’weak’’ rating on the results component due to results not being reported in terms of statistical significance and very limited information was reported regarding the analysis method. Overall, the quality assessment table presents that study purpose and background literature were an area of strength as all studies received a ‘’strong’’ rating whereas the remaining components had a combination of ‘’strong’’, ‘’moderate’’ and ‘’weak’’ ratings.

Table 3 | Quality Assessment.

Author/Year	Study Purpose	Background Literature	Study Design	Sampling	Study Methods	Results	Drop-Outs and Withdrawals	Implications/Conclusions	Overall
Salomon & Brown (2018)	Strong	Strong	Strong	Moderate	Strong	Moderate	Moderate	Strong	Strong
Rodgers et al (2020)	Strong	Strong	Moderate	Strong	Weak	Strong	Moderate	Strong	Moderate
Ho et al (2016)	Strong	Strong	Strong	Moderate	Moderate	Strong	Moderate	Strong	Strong
Marengo et al (2018)	Strong	Strong	Moderate	Moderate	Moderate	Strong	Moderate	Moderate	Moderate
Yurdagül et al (2021)	Strong	Strong	Moderate	Strong	Strong	Moderate	Moderate	Moderate	Moderate
Schreurs & Vandenbosch (2022)	Strong	Strong	Strong	Strong	Moderate	Weak	Moderate	Moderate	Moderate
Charmaraman et al (2021)	Strong	Strong	Strong	Strong	Moderate	Strong	Moderate	Strong	Strong
McCrory et al (2022)	Stong	Strong	Moderate	Moderate	Strong	Moderate	Moderate	Moderate	Moderate
Steinsbekk et al (2021)	Strong	Strong	Strong	Strong	Strong	Moderate	Moderate	Strong	Strong

Discussion

The focus of the current systematic review was to explore the relationship between social media and body image dissatisfaction among adolescents. The review highlighted a limited amount of moderate to high quality evidence from quantitative, qualitative and mixed method studies to demonstrate how certain aspects regarding social media can contribute to how adolescents feel about their own body image. Three key themes emerged across all nine studies including social media use, engagement with behaviours, and social media content.

Social media platforms are well-known for their over exposure of the ideal body type and the amount of time adolescents are spending has led to constant comparison to unrealistic standards. (Fleps, 2021). Four of the studies in this review focused on how the amount of time spent on social media contributed to adolescents' feelings regarding their body image with three types of use emerging: general, frequent and problematic. (Yurdagül et al, 2021., Marengo et al, 2018., Rodgers et al, 2020., Charmaraman et al, 2021). It should be noted that all studies focused on high visual social media platforms (Instagram, Snapchat and Facebook) which focus on appearance-focused content and is suggested to be the most damaging platforms to adolescents' perceptions of their appearance due to the over exposure of unrealistic expectations of the 'ideal' body. (Jiotsa et al, 2021). Across all four of the studies presented, all types of use were associated with body image dissatisfaction. This correlates with previous research suggesting that regardless of how long individuals spend on high visual social media platforms, they are still exposed to damaging content, so no matter if individuals spend less time than others, they are still at a heightened risk of social comparison. (Fardouly & Vartanian, 2016., Jiotsa et al, 2021., Eckler et al, 2017). It is important to note that by only relying on reports of usage, it is difficult to pinpoint the severity of which appearance-based social media platforms impacts body image satisfaction without taking into consideration the type of activities (e.g.,

engagement with celebrity content). (Ellis et al, 2018). One study within the present review (Charmaraman et al, 2021) determined that content that focused on physical appearance led to body dissatisfaction among participants which in turn, led to more frequent use of social media. This finding adds to the knowledge base of suggesting that this generation of adolescents associate the negative feelings towards their appearance and the level of pressure to conform to the 'idealized' body as a normal aspect of growing up in this era, hence not decreasing the frequency of use. (Martinez et al, 2019., Vuong et al, 2021). Additionally, previous research has highlighted that adolescents tend to base their self-esteem on comments and judgements made by their peers or family, and in turn, tend to turn to social media to receive positive feedback on posts. (University of Alberta, 2022., Vuong et al, 2021., Goodyear, 2019). The constant need adolescents' feel to always seek validation to counteract their negative feelings towards their appearance is suggested to increase the frequency of use on social media platforms. (University of Alberta, 2022). Although the finding reported by Charmaraman et al (2021) Is important to consider, only 19% (n=70) of participants reported using social media more often after experiencing feelings of body dissatisfaction due to a cross-sectional study design, making it difficult to determine the reliability of the finding. Therefore, further longitudinal research is recommended whereby usage is measured directly through electronic devices to enable social media use to be monitored in real time to provide insight into adolescents' social media use before and after experiencing feelings of body dissatisfaction, to enhance the quality and extend the knowledge base.

Moreover, across the four studies that examined social media frequency, a lack of agreement in establishing the baseline between the different types of use was highlighted. The present studies self-measured the frequency of social media use, by asking participants about the number of hours/minutes spent or their frequency of checking social media platforms on a daily or weekly basis to estimate the type of use adolescents engage with. (Yurdagül et al, 2021., Marengo et al, 2018., Rodgers et al, 2020., Charmaraman et al, 2021). Although the findings show that all

social media use contributes to body image dissatisfaction, it is recommended for further researchers to implement a standardized baseline regarding social media use to enable a comprehensive comparison across findings to distinguish the difference between general, frequent and problematic use. Additionally, it should be highlighted that one study within the review although self-measured, determined that over 2-hrs spent on social media was an indication for frequent use (Marengo et al, 2018), whereas the other studies (Yurdagül et al, 2021., Rodgers et al, 2020., Charmaraman et al, 2021) did not specify. Therefore, it may be suggested that spending more than 2 hrs on social media may be considered a recommended cut-off time in determining frequent social media use. Furthermore, further research should utilize reliable assessment scales, such as the Social Media Addiction Questionnaire (Hawi & Samaha, 2017) which has been widely used in previous research whereby use and activities across all types of social media have been assessed, to gain a more enhanced, multidimensional understanding of social media use. (Casale et al, 2015).

Regarding gender and social media use, three studies in the present review (Charmaraman et al, 2021., Yurdagül et al, 2021., and Marengo et al, 2018) found that females had greater frequency of social media use, which in turn, led to higher levels of body image dissatisfaction compared to male adolescents. Findings suggest that females tend to spend more time on social media because they engage more with body-related content compared to males, resulting in higher body image concerns and may be argued to contribute to the motivations of using social media more frequently. (Mahon & Hevey, 2021). The current findings correlate with existing research that has suggested that females are more likely to utilize social media to search for body-related content and compare themselves to other users compared to males, which may explain the higher levels of social media use. (Mahon & Hevey, 2021., Murray et al, 2016). Historically, females are labelled as more avid users of social media than males with consistent researchers finding the same outcome across several surveys. (Pew Research Center, 2015).

This was further supported by one included study (Marengo et al, 2018) that found that female adolescents were more likely to use social media compared to males and in turn, experienced higher body dissatisfaction, which the effects were much greater when social media use was over 2 hours a day. Although all nine studies included in this review included both male and female adolescents, only three studies assessed gender differences regarding social media use and all three studies found that females reported higher social media use compared to males. The studies all received a moderate to strong quality rating and used a moderate sample size ranging from 491 to 700. Studies included a fair percentage of male adolescents ranging from 41.3% to 48% which highlights the importance and validity of the findings. Although recent researchers have begun to include more male-focused samples, further research is still needed to capture social media use and body image outcomes in males.

Although some of the studies (n=3) included in the present systematic review supported the association between social media use and body image dissatisfaction, different types of social media content were also highlighted.

Social media is widely known for its content surrounding unattainable body ideals which exert great pressure on adolescent males and females. (Pan et al, 2022). Within this present review, five studies explored the associations between exposure to appearance-focused content posted by celebrities/influencers and peers, and body image dissatisfaction among both male and female adolescents. (Ho et al, 2016., Schreurs & Vandenbosch, 2022., Charamaraman et al, 2021., McCrory et al, 2022., Rodgers et al, 2020). Social media users tend to present an idealized version of themselves, only uploading their most attractive photographs and removing the ones that they deem to be unattractive. (Fardouly & Vartanian, 2016., Pan et al, 2022). Although social media contains a wide range of images posted by all different types of people, adolescents tend to focus more on following their favourite celebrities/influencers which are known to be the main source of social comparison. (Fardouly & Vartanian, 2016). Existing

theories have found that adolescents tend to turn to their favourite celebrities/influencers for inspiration on how they should look physically, but their common overuse of filters and photoshop to modify their content has created body ideals that are unrealistic for adolescents to attain. (Kleemans et al, 2016). According to the social comparison theory, individuals tend to compare themselves to those who are perceived to be better than oneself such as celebrities, who are labelled to be standard bearers of beauty and are known to be a contributory factor to adolescents' body image dissatisfaction. (Prieler & Jounghwa, 2014). This was further supported by four studies in the review (Ho et al, 2016., McCrory et al, 2022., Charmaraman et al, 2021., Schreurs & Vadenbosch, 2022) that found that content posted by celebrities, led to high levels of body dissatisfaction among the adolescent population. The present review hypothesized that females would experience higher levels of body dissatisfaction when exposed to celebrity content due to existing theories suggesting that females are more prone to comparing themselves to celebrities who utilize filters and photoshop, which is usually associated with and aimed towards females. This was further supported by three of the present studies (Charmaraman et al, 2021., Ho et al, 2016., Schreurs & Vadenbosch, 2022) that found adolescent females reported higher levels of body dissatisfaction compared to males when exposed to content posted by celebrities, correlating with the existing research. This suggests that female adolescents are more vulnerable compared to males due to the over exposure to photoshopped and modified images, tricking females into thinking that the 'perfect' body does exist, when in fact, females are constantly chasing an unattainable and unrealistic appearance. (Djoukoue, 2012).

It is relevant to point out that all three studies used a reasonable sample size of adolescents ranging from 700 to 1059, with two studies receiving a strong quality rating and one receiving a moderate quality rating, enhancing the reliability of the findings. Although the studies add high quality findings to the knowledge base, two studies used a cross-sectional study design, with limited time to conduct the studies. (Ho et al, 2016., Charmaraman et al, 2021). Therefore,

longitudinal research is recommended to allow a better understanding of the association between celebrity content and body image dissatisfaction among adolescents. it is important to note that all three studies found a correlation between celebrity content and male body dissatisfaction, although three studies found levels were higher among females, placing the importance for future researchers to continue to include male participants. Additionally, one study (McCrory et al, 2022) found no gender differences and reported that males and females both experienced the same levels of body dissatisfaction but did not specify on differences regarding celebrity content. Additionally, another present study (Ho et al, 2016) found exposure to celebrity content and body dissatisfaction was non-significant for male adolescents. Limited research has found that male adolescents tend to have positive experiences with appearance-focused content on social media, reporting that they adopt more feelings of encouragement and motivation to achieve a muscular physique, (Spurr et al, 2016) however this study found the opposite, suggesting that there is a stereotype surrounding gender and body image concerns. Although females reported higher body image dissatisfaction, it may be that male adolescents find it more difficult to talk about their feelings, which has been widely reported by medical professionals. (Mental Health Foundation, 2019). This suggests that there is still a current stigma surrounding the male body image and stereotypical ideas that society continues to hold about how males should respond to negative experiences. (Newport Institute, 2021). Very limited research has found positive experiences linked to male adolescents and celebrity content, and this finding demonstrates that this may not be the case. It is important to report that the current studies had limitations. The study conducted by McCrory (2022) had a small sample size of 47 participants and used a very limited age range of 14 to 15 years, which makes it difficult to determine if the outcome was reliable, compared to the other studies who found females reported higher body image dissatisfaction. Furthermore, the study conducted by Ho et al, 2016 adopted the use of convenience sampling and only used adolescents from Singapore, creating the inability to generalise the results to the wider population which may have produced

biased data. This suggests that more future research needs to be conducted among a larger sample size of male adolescents with more geographical inclusion to reduce the risk biased groups. Additionally, future qualitative researchers and medical professionals should explore the real-life experiences male adolescents' have when exposed to celebrity content to bring more awareness to the wider community, breaking the stigma surrounding the male body image, aiming to remove assumptions.

In addition to social media content and gender differences, social media still tends to expose adolescents to two types of 'ideal' bodies that are associated with males and females which tends to focus on thinness in females and muscularity in males. (Vuong et al, 2021., Negrin et al, 2018). However, recent research has brought to light that internalization of the muscular physique has begun to have a negative affect not just on males' body image, but also females body image. (Peadalino & Camerini, 2022). This was further supported by one study within this review (Rodgers et al, 2020), that found that internalization of the muscular ideal on social media platforms led to body image dissatisfaction in both males and females, with females reporting higher. This suggests that the reason females tend to experience higher levels of dissatisfaction compared to males, is down to the constant shifts in what is deemed as ''perfection''. This finding correlates with existing theories that suggests the societal ideal body figure for females is constantly evolving with the recent body ''trend'' moving towards a more muscular and toned physique, with females feeling increased pressure to conform to the ''muscular ideal'' body type, heightening body dissatisfaction. (Negrin et al, 2018., Fardouly & Vartanian, 2016., Benton & Karazsia, 2015). It is important to note that only one study in the review found a correlation between internalization of the muscular-ideal and body image dissatisfaction among female adolescents. Therefore, it is recommended for further research to consider the inclusion of females when exploring associations between variables. Although this finding is important to consider it should be noted the study adopted a cross-sectional study

design and received a moderate quality rating due to data being self-measured. Therefore, longitudinal research is recommended whereby reliable assessment scales are utilized to assess females' engagement with muscular-ideal content over time to enhance the quality of the findings.

Furthermore, this present review highlighted the importance of understanding the types of behaviours adolescents engage with on social media platforms and how it has an impact on their body image. Active and passive use has been known to differentiate when it comes to adolescents' feelings regarding body image, with passive use being the most damaging type of social media behaviour. (Vornholt, 2018). Indeed, longitudinal research has indicated that passive use predicts an increase in appearance-comparisons among adolescents through observing and absorbing other users' content on social media. (Vornholt, 2018., Valkenburg et al, 2022., Bodroža et al, 2022). Existing theories, specifically, the social comparison theory has found that when adopting the role of a passive user, the level of competitiveness with others is dramatically heightened due to the frequent observation of other users' content and absorption of the quantity and quality of likes and comments they receive. (Valkenburg et al, 2022). When adolescents are frequently observing the high amounts of likes and positive comments on other users' profiles and in turn, are not receiving the same, this can lead to negative feelings regarding their own personal worth. (Thorisdottir et al, 2019). This was further supported by two studies in the present review (McCrory et al, 2022., Steinsbekk et al, 2021), which correlated with the existing research surrounding passive social media use, reporting that when adolescents' activity with social media was focused on the absorption and frequent viewing of other users' content, this led to lower levels of appearance-self-esteem, mediating the effects of body image dissatisfaction across both genders. This suggests that during the adolescence period, the tendency to compare and self-evaluate physical appearance is heightened due to the constant change's adolescents experience with their bodies, and when only viewing these

idealized bodies on social media, adolescents are particularly vulnerable to social comparison, heightening the risk of body image dissatisfaction over time. (Valkenburg et al, 2022). One study that found a positive correlation between variables. McCrory et al, 2022 conducted a qualitative study design and captured authentic responses from adolescents. Adolescents reported feeling jealous when viewing the quantity of likes and positive comments on other users' posts, which led them to believe those images receiving them, is what would deem them as attractive and socially accepted by the social media community. (McCrory et al, 2022). As a result of this, this suggests that social media features such as likes, and comments are highly important to adolescents for them to feel satisfied with their own bodies. It could be argued that this could lead to higher self-esteem if users are receiving their desired frequency of likes and positive comments on social media, however this may only be in the moment short-term positive experiences, leading to longer negative effects. (Bodroža et al, 2022). Both studies correlate with the existing literature, however the present studies utilized self-report measures, which led to the potential of social desirability bias, recommending to future researchers to utilize more reliable report measures to minimise bias. Nonetheless, these findings are still important to consume as the possible long-term negative effects that adolescents can experience from observing other users content indicates that social media platforms are unwilling to take necessary steps to protect their users from harmful content. Very limited research has been conducted on the effects of passive social media use, so it is important for further research to be conducted to provide additional evidence to policies and practice to drive the need for change. This creates the need for an increased action for social media companies to improve their practice about how their platforms are utilized for advertising an unhealthy body image, and to find solutions to minimise the negative effects of damaging content on social media, with recommendations of removing images that are photoshopped and modified to expose adolescents to more realistic bodies. (Mental Health Foundation, 2022).

Regarding active social media use, researchers have considered this engagement a behaviour

whereby an individual with actively engage with social media, posting content on their profiles and engaging with other users through likes, comments and direct messages. (Houge & Mills, 2019., Vornholt, 2018). As stated previously throughout the discussion of the present systematic review, social media allows users to actively modify and photoshop their content, which is associated with active use on social media. Social media platforms enabling their users to photoshop their content, is allowing them to create their own persona of themselves that they want others to see, mediating the effects of body image dissatisfaction among those viewing and observing them (passive use). (Bodroža et al, 2022). Adopting the role of an active user has been known to heighten body dissatisfaction among adolescents due to the modification of images before uploading them and the attempt to seek constant validation from others to enhance their feelings of self-worth and attractiveness. (Vornholt, 2016., Bodroža et al, 2022). This was further supported by one study (Salomon & Brown, 2018) that reported, those who posted images of themselves, specifically their bodies, led to high levels of body surveillance and dissatisfaction. This suggests that adolescents are posting these types of images in attempt to meet the cultural beauty standards that are in place in current society, with the hope of receiving attention through positive comments and likes to heighten their feelings towards their own bodies, but failure to meet those expectations and the current standards of beauty, this would have the complete opposite effect. (Salomon & Brown, 2018., Escobar-Viera et al, 2018). It could also be suggested that engaging with social media features that allow users to photoshop content before uploading, adolescents may still be aware that what they are posting is not their real selves, heightening feelings of body dissatisfaction when they switch off from social media. This highlights the importance for policy and practice to be aware of the different social media behaviours that adolescents currently engage in, to minimize the effects of body image dissatisfaction among the younger generation, and to put interventions in place to reduce risks. Although one study correlated with existing theories of active social media use being associated with heightened body image dissatisfaction, two studies in the review Steinsbekk et

al, 2021., McCrory et al, 2022) disagreed and in fact, found the complete opposite effect. Both studies found a positive correlation between active social media use and higher self-esteem in both male and female adolescents, suggesting that actively positing on their feeds and utilizing features such as photoshop and filters, enables adolescents to adjust their personas online. This indicates that for adolescents to compensate for their insecurities, engagement with filters and photoshop and adjusting how they perceive online, can lead to heightened feelings of social acceptance and high self-esteem. (McCrory et al, 2022., Escobar-Viera et al, 2018). The types of images that meet the cultural beauty standards, often receive positive feedback which may predict increases in self-esteem for those posting them. (Steinsbekk et al, 2021., Taylor-Jackson & Moustafa, 2021). Only a very limited amount of research has found active social media use to be associated with positive self-esteem among adolescents. Only one included study (Steinsbekk et al, 2021) offered a four-year longitudinal investigation within a large community sample of 997 adolescent participants, adding important contribution to the growing literature on adolescents' engagement with active social media use and appearance-related outcomes over time. (Steinsbekk et al, 2020) However, throughout the study the COVID-19 pandemic led to the need for a change of scenery, which may have caused implications with the data collection process. Additionally, the other included study (McCrory et al, 2022) used a cross-sectional study design which also experienced changes due to the pandemic, with focus group sessions being held online. It can be argued that the positive experiences adolescents feel when adopting active social media use, these experiences may have short-term and, in the moment, positive effects on self-esteem, whereby when adolescents switch off, this may create longer lasting negative effects on body image over time. This creates the need for future longitudinal and qualitative research to be conducted to collect rich and in-depth descriptions of adolescences experiences with different types of social media use and their associations with body image. The study conducted by Salomon & Brown (2018) that found active use led to higher self-esteem, this was conducted between two and four years earlier than the other studies that found

an association with low self-esteem. Social media and technology rapidly evolve constantly, and it may be that the use and photoshop and filters has become more normalized and realistic in recent years which can potentially increase positive self-esteem over time. Whereas in 2018, the quality may have been less realistic and not as normalized than in recent years. This may have led to the over analysation of content before posting, to ensure the images were not noticeably photoshopped, creating higher feelings of anxiety and worry regarding how adolescents perceive to others online. (Jiang & Ngien, 2020). Nonetheless, due to the different outcomes of active social media use, future researchers should explore more individual differences regarding the type of behaviours adolescents engage with online, and their individual associations with body image to enhance the knowledge base.

Limitations of the Review

Overall, the current discussion has highlighted how social media use, exposure to appearance-focused content, and engagement with different types of social media behaviours can contribute to adolescents' feelings regarding their body image. The present systematic review adds important findings and contribution to the growing literature on how social media can have a damaging impact on adolescent's views on their own bodies. However, a few limitations of the review have emerged. Firstly, the current review only included nine studies which were not focused on one attribute of social media. By focusing on one variable of social media for example, social media content with the inclusion of more studies, this may have enhanced the quality of the findings by providing more evidence to one specific area of social media. Additionally, seven of the included studies used a cross-sectional study design, which could not determine a cause-and-effect relationship and did not examine the impact on adolescents' body image overtime, which could of increased the quality of the findings.

Conclusions and Future Recommendations

Overall, the present review provides moderate to strong quality evidence to the knowledge base on the association between social media and body image dissatisfaction among adolescents. The review covered three common themes including, social media use, content, and behaviours that have found to have both negative and positing effects on adolescents' body image. Furthermore, more future longitudinal research with larger sample sizes of the overall adolescent population should be conducted among all three themes to collect and evaluate more in-depth, and real-life experiences with social media and how this effects views on the body and the potential long-term effects regarding physical and mental health. It is evident that social media companies are not doing enough to protect adolescents from body image harms, and there is a current gap between policies and the real-life experiences of users. This concludes that social media platforms need to do better to protect users against the over exposure and promotion of unrealistic and unattainable body ideals. Additionally, for overall cultural change, more research and evidence needs to be collected and collaborative industry action to find effective solutions to minimise the negative effects of current social media platforms.

References

Aichner, T., Grünfelder, M., Maurer, O., and Jegeni, D (2021) *'Twenty-Five Years of Social Media Applications and Definitions from 1994-2019'.* Cyberpsychology, Behavior and Social Networking. Vol: 24(4), pp 215-222. [online] Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8064945/ (Accessed July 16, 2022).

Anderson, M and Jiang, J (2018) *'Teens, Social Media & Technology 2018'.* Pew Research Center. [online] Available from: https://www.pewinternet.org/wp-content/uploads/sites/9/2018/05/PI_2018.05.31_TeensTech_FINAL.pdf (Accessed July 16, 2022).

Aspinall, G (2020) *'I Was Obsessed with Facetune': 71% Of People Won't Post A Picture Online Without Photoshopping it – That Needs to Change'.* Grazia. [online] Available from: https://graziadaily.co.uk/life/in-the-news/photoshop-instagram-facetune/ (Accessed August 5, 2022).

Benton, C., and Karazsia, B.T (2015) 'The effect of thin and muscular images on women's body satisfaction'. Body Image. Vol 13(1), pp 22-27. [online] Available from: https://www.sciencedirect.com/science/article/abs/pii/S1740144514001430 (Accessed August 30, 2022).

Bodroža, B., Obradović, V., and Ivanović, S (2022) *'Active and passive selfie-related behaviors: Implications for body image, self-esteem and mental health'.* Cyberpsychology. Vol: 16(2), pp 1-25. [online] Available from: https://www.researchgate.net/publication/359939618_Active_and_passive_selfie-related_behaviors_Implications_for_body_image_self-esteem_and_mental_health/stats (Accessed August 30, 2022).

British Youth Council (2017) *'A Body Confident Future'.* [online] Available from: http://www.byc.org.uk/wp-content/uploads/2017/11/Youth-Select-Committee-A-Body-Confident-Future.pdf (Accessed August 10, 2022).

Burnette, C., Kwitowski, M., and Mazzeo, S (2017) *'I don't need people to tell me I'm pretty on social media': A qualitative study of social media and body image in early adolescent girls'.* Body Image. [online] Available from: https://doi.org/10.1016/j.bodyim.2017.09.001 (Accessed August 10, 2022).

Carr, C.T and Hayes, R.A (2015) *'Social Media: Defining, Developing, and Divining'.* Atlantic Journal of Communication. Vol: 23(1), pp 46-65. [online] Available from: https://www.tandfonline.com/doi/abs/10.1080/15456870.2015.972282 (Accessed July 16, 2022).

Casale, S., Primi, C., and Fioravanti, G (2015) *'Generalized Problematic Internet Use Scale 2: update on the psychometric properties among Italian young adults' In: Rivera, G., Wiederhold, B.K., and Cipresso, P (Eds)'.* The Psychology of Social Networking. Vol 2. Berlin, Germany: De Gruyter Open SP. pp. 202-216. [online] Available from: https://www.researchgate.net/publication/263672739_Generalized_Problematic_Internet_Use_Scale_2_update_on_the_psychometric_properties_among_Italian_young_adults (Accessed August 27, 2022).

CASP (2022) *'CASP Checklists'.* [online] Available from: https://casp-uk.net/casp-tools-checklists/ (Accessed August 8, 2022).

Chaffey, D (2022) *'Global social media statistics research summary 2022'.* Smart Insights. [online] Available from: https://www.smartinsights.com/social-media-marketing/social-media-strategy/new-global-social-media-research/ (Accessed July 15, 2022).

Charmaraman, L., Richer, A.M., Liu, C., Lynch, A.D., and Moreno, M.A (2021) *'Early Adolescent Social Media-Related Body Dissatisfaction: Associations with Depressive Symptoms, Social Anxiety, Peers, and Celebrities'.* Journal of Developmental and Behavioral Pediatrics. Vol: 42(5), pp 401-407. [online] Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8196598/ (Accessed June 19, 2022).

Djoukoue, A (2012) *'Keep it real challenge: Photoshop's impact on body image'.* University

of Missouri-Kansas City. [online] Available from: https://info.umkc.edu/womenc/2012/06/29/keep-it-real-challenge-photoshops-impact-on-body-image/ (Accessed August 30, 2022).

Easton, S., Morton, K., Tappy, Z., Francis, D., and Dennison, L (2018) *'Young People's Experiences of Viewing the Fitspiration Social Media Trend: Qualitative Study'.* Journal of Medical Internet Research. [online] Available from: https://www.jmir.org/2018/6/e219/ (Accessed July 19, 2022).

Eckler, P., Kalyango, Y., and Paasch, E (2017) *'Facebook use and negative body image among U.S. college women'.* Women Health. Vol: 57(2), pp 249-267. [online] Available from: https://pubmed.ncbi.nlm.nih.gov/26933906/ (Accessed August 27, 2022).

Ellis, D.A., Kaye, L.K., Wilcockson, T.D., and Ryding, F.C (2018) *'Digital Traces of Behaviour Within Addiction: Response to Griffiths (2017)'.* International Journal of Mental Health and Addiction. [online] Available from: https://link.springer.com/article/10.1007/s11469-017-9855-7 (Accessed August 27, 2022).

Escobar-Viera, C.G., Shensa, A., Bowman, N.D., Sidani, J.E., Knight, J., James, A.E., and Primack, B.A (2018) *'Passive and Active Social Media Use and Depressive Symptoms Among United States Adults'.* Cyberpsychology, Behavior, and Social Networking. Vol: 21(7), pp 437-443. [online] Available from: https://www.liebertpub.com/doi/full/10.1089/cyber.2017.0668 (Accessed August 31, 2022).

Fardouly, J and Vartanian, L.R (2016) *'Social Media and Body Image Concerns: Current Research and Future Directions'.* Current Opinion in Psychology. [online] Available from: https://www.sciencedirect.com/science/article/pii/S2352250X15002249?casa_token=5746CLz4UI4AAAAA:P8NHKuVMVGe1_hXm5M_d1eietGc2zODhM3E1YmemcydygivD7v4f-X9_fDXrzU9lWOi124PfBa0 (Accessed August 4, 2022).

Fleps, B (2021) *'Social media effects on body image and eating disorders'.* [online] Available from: https://news.illinoisstate.edu/2021/04/social-media-effects-on-body-image-and-eating-

disorders/ (Accessed August 27, 2022).

Goodyear, V (2019) *'Narrative Matters: Young people, social media and body image'*. Child and Adolescent Mental Health. Vol: 25(1), pp 48-50. [online] Available from: https://acamh.onlinelibrary.wiley.com/doi/full/10.1111/camh.12345 (Accessed August 9, 2022).

Hawi, N.S., and Samaha, M (2017) *'The Relations Among Social Media Addiction, Self-Esteem, and Life Satisfaction in University Students'*. Social Science Computer Review. [online] Available from: https://journals.sagepub.com/doi/10.1177/0894439316660340 (Accessed August 27, 2022).

Ho, S.S., Lee, E.W.J., and Liao, Y (2016) *'Social Network Sites, Friends, and Celebrities: The Roles of Social Comparison and Celebrity Involvement in Adolescents' Body Image Dissatisfaction'*. Social Media and Society. Vol: 2(3), pp 1-10. [online] Available from: https://journals.sagepub.com/doi/10.1177/2056305116664216 (Accessed June 19, 2022).

Hong, Q.N., Pluye, P., Fàbregues, S., Barlett, G., Boardman, F., Cargo, M., Dagenais, P., Gagnon, M.P., Griffiths, F., Nicolau, B., O'Cathain, A., Rousseau, M.C., and Vedel, I (2018) *'MIXED METHODS APPRAISAL TOOL (MMAT) VERSION 2018'*. [online] Available from: https://www.google.co.uk/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwijkb-zmvL5AhWMJcAKHakRAXkQFnoECAsQAQ&url=http%3A%2F%2Fmixedmethodsappraisaltoolpublic.pbworks.com%2Fw%2Ffile%2Ffetch%2F127916259%2FMMAT_2018_criteria-manual_2018-08-01_ENG.pdf&usg=AOvVaw3ZIEn1eu4AX51A5yvRDpb9 (Accessed August 8, 2022).

Houge, J.V., and Mills, J.S (2019) *'The effects of active social media engagement with peers on body image in young women'*. Body Image. [online] Available from: https://www.sciencedirect.com/science/article/pii/S174014451730517X?via%3Dihub (Accessed August 31, 2022).

House of Commons (2019) *'Impact of social media and screen-use on young people's health'.* [online] Available from: https://publications.parliament.uk/pa/cm201719/cmselect/cmsctech/822/822.pdf (Accessed July 18, 2022).

House of Commons (2021) *'Changing the perfect picture: an inquiry into body image'.* [online] Available from: https://committees.parliament.uk/publications/5357/documents/53751/default/ (Accessed August 8, 2022).

House of Commons (2022) *'The impact of body image on mental and physical health'.* [online] Available from: https://committees.parliament.uk/publications/23284/documents/170077/default/ (Accessed August 7, 2022).

Icahn School of Medicine (2022) *'Evidence Based Medicine: The PICO Framework'.* [online] Available from: https://libguides.mssm.edu/ebm/ebp_pico (Accessed August 10, 2022).

Jarman, H., Marques, M., McLean, S., Slater, A., and Paxton, S (2021) *'Motivations for Social Media Use: Associations with Social Media Engagement and Body Satisfaction and Well-Being Among Adolescents'.* Journal of Youth and Adolescence. Vol: 50(1), pp 2279-2293. [online] Available from: https://link-springer-com.edgehill.idm.oclc.org/article/10.1007/s10964-020-01390-z (Accessed August 10, 2022).

Jiang, S., and Ngien, A (2020) *'The Effects of Instagram Use, Social Comparison, and Self-Esteem on Social Anxiety: A Survey Study in Singapore'.* Social Media and Society. Vol: 6(2), pp 1-10. [online] Available from: https://journals.sagepub.com/doi/full/10.1177/2056305120912488 (Accessed August 31, 2022).

Jiotsa, B., Naccache, B., Duval, M., Rocher, B., and Bronnec, M.G (2021) *'Social Media Use and Body Image Disorders: Association between Frequency of Comparing One's Own Physical*

Appearance to That of People Being Followed on Social Media and Body Dissatisfaction and Drive for Thinness'. International Journal of Environmental Research and Public Health. Vol: 18(6), pp 1-14. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8001450/ (Accessed August 27, 2022).

Kenny, U, O'Malley, M.P., Molcho, M., and Kelly, C (2016) *'Peer Influences on Adolescent Body Image: Friends or Foes?'* Journal of Adolescent Research. Vol: 32(6), pp 768-799. [online] Available from: https://journals.sagepub.com/doi/10.1177/0743558416665478 (Accessed August 8, 2022).

Kleemans, M., Daalmans, S., Carbaat, I., and Anschüz (2016) *'Picture Perfect: The Direct Effect of Manipulated Instagram Photos on Body Image in Adolescent Girls'.* Media Psychology. Vol: 21(1), pp 93-110. [online] Available from: https://www.tandfonline.com/doi/full/10.1080/15213269.2016.1257392 (Accessed August 30, 2022).

Law, M., Stewart, D., Pollock, N., Letts, L., Bosch, J., and Westmorland, M (1998) *'Critical Review Form – Quantitative Studies'.* McMaster University. [online] Available from: https://www.unisa.edu.au/siteassets/episerver-6-files/global/health/sansom/documents/icahe/cats/mcmasters_quantitative-review.pdf (Accessed August 8, 2022).

Long, H.A., French, D.P., and Brooks, J.M (2020) *'Optimising the value of the critical appraisal skills programme (CASP) tool for quality appraisal in qualitative evidence synthesis'.* Research Methods in Medicine and Health Sciences. [online] Available from: https://journals.sagepub.com/doi/10.1177/2632084320947559 (Accessed August 19, 2022).

Mahon, C., and Hevey, D (2021) *'Processing Body Image on Social Media: Gender Differences in Adolescent Boys' and Girls' Agency and Active Coping'.* Frontiers in Psychology. [online] Available from: https://www.frontiersin.org/articles/10.3389/fpsyg.2021.626763/full (Accessed July 19, 2022).

Makinen, M., Viertomies, L., Siimes, M., and Aalberg, V (2012) *'Body dissatisfaction and body mass in girls and boys transitioning from early to mid-adolescence: additional role of self-esteem and eating habits'.* BMC Psychiatry. Vol: 12(1), pp 1-8. [online] Available from: https://bmcpsychiatry.biomedcentral.com/articles/10.1186/1471-244X-12-35 (Accessed August 11, 2022).

Marengo, D., Longobardi, C., and Settanni, F.M (2018) *'Highly-visual social media and internalizing symptoms in adolescence: The mediating role of body image concerns'.* Computers in Human Behavior. [online] Available from: https://www.sciencedirect.com/science/article/abs/pii/S0747563218300037 (Accessed June 19, 2022).

Martinez, P.A., Perea-Moreno, A.J., Martinez-Jimenez, M.P., Redel-Macías, M.D., Pagliari, C., and Vaquero-Abellan, M (2019) *'Social Media, Thin-Ideal, Body Dissatisfaction and Disordered Eating Attitudes: An Exploratory Analysis'.* International Journal of Environmental Research and Public Health. Vol: 16(21), pp 41-77. [online] Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6861923/ (Accessed August 27, 2022).

McCrory, A., Best, P., and Maddock, A (2022) *'It's just one big vicious circle': young people's experiences of highly visual social media and their mental health'.* Health Education Research. Vol: 37(3), pp 167-184. [online] Available from: https://academic.oup.com/her/article-abstract/37/3/167/6583538?redirectedFrom=fulltext (Accessed June 19, 2022).

Mental Health Foundation (2019) *'Millions of men in the UK affected by body image issues – Mental Health Foundation survey'.* [online] Available from: https://www.mentalhealth.org.uk/about-us/news/millions-men-uk-affected-body-image-issues-mental-health-foundation-survey (Accessed August 30, 2022).

Mental Health Foundation (2019) *'Millions of teenagers worry about body image and identify social media as a key cause – new survey by the Mental Health Foundation'.* [online] Available from: https://www.mentalhealth.org.uk/about-us/news/millions-teenagers-worry-about-body-

image-and-identify-social-media-key-cause-new-survey-mental (Accessed July 19, 2022).

Mental Health Foundation (2021) *'Body image in childhood'.* [online] Available from: https://www.mentalhealth.org.uk/explore-mental-health/articles/body-image-report-executive-summary/body-image-childhood (Accessed August 8, 2022).

Mental Health Foundation (2022) *'implications and recommendations for policy and action'.* [online] Available from: https://www.mentalhealth.org.uk/our-work/research/body-image-how-we-think-and-feel-about-our-bodies/implications-and-recommendations-policy-and-action (Accessed August 30, 2022).

Murray, M., Maras, D., and Goldfield, G.S (2016) *'Excessive Time on Social Networking Sites and Disordered Eating Behaviors Among Undergraduate Students: Appearance and Weight Esteem as Mediating Pathways'.* Cyber Psychology, Behavior, and Social Networking. Vol: 19(12), pp 709-715. [online] Available from: https://www.liebertpub.com/doi/10.1089/cyber.2016.0384 (Accessed August 29, 2022).

Negrin, A.R., Skemp, K.M., and Baumann, D.D (2018) 'The effect of media exposure on body satisfaction and drive for muscularity in women'. Frontiers in Women's Health. [online] Available from: https://www.oatext.com/pdf/FWH-3-138.pdf (Accessed August 30, 2022).

Newport Institute (2021) *'The Truth About Male Body Image Issues'.* [online] Available from: https://www.newportinstitute.com/resources/co-occurring-disorders/male-body-issues/ (Accessed August 30, 2022).

Pedalino, F., and Camerini, A.L (2022) *'Instagram Use and Body Dissatisfaction: The Mediating Role of Upward Social Comparison with Peers and Influencers among Young Females'.* International Journal of Environmental Research and Public Health. Vol: 19(3), pp 15-43. [online] Available from: https://www.mdpi.com/1660-4601/19/3/1543/htm (Accessed August 30, 2022).

Pew Research Center (2015) *'Men catch up with women on overall social media use'.* [online] Available from: https://www.pewresearch.org/fact-tank/2015/08/28/men-catch-up-with-

women-on-overall-social-media-use/ (Accessed August 29, 2022).

Pew Research Center (2018) *'Teens, Social Media and Technology 2018'*. [online] Available from: https://www.pewresearch.org/internet/2018/05/31/teens-social-media-technology-2018/ (Accessed August 10, 2022).

Plaisime, M., James, C.R., Mejia, L., Núñez, A., Wolf, J., and Reels, S (2020) *'Social Media and Teens: A Needs Assessment Exploring the Potential Role of Social Media in Promoting Health'*. Social Media and Society. Vol 6(1), pp 1-11. [online] Available from: https://journals.sagepub.com/doi/10.1177/2056305119886025 (Accessed July 18, 2022).

Prieler, M., and Choi, J (2014) *'Broadening the Scope of Social Media Effect Research on Body Image Concerns'*. Sex Roles. Vol 71(1), pp 378-388. [online] Available from: https://link.springer.com/article/10.1007/s11199-014-0406-4 (Accessed August 30, 2022).

PRISMA (2021) *'PRISMA CHECKLIST'*. [online] Available from: https://prisma-statement.org/PRISMAStatement/Checklist.aspx (Accessed August 8, 2022).

Roberts, S.R., Maheux, A.J., Hunt, R.A., Ladd, B.A., and Bradley, S.C (2022) *'Incorporating social media and muscular ideal internalization into the tripartite influence model of body image: Towards a modern understanding of adolescent girls' body dissatisfaction'*. Body Image. [online] Available from: https://www.sciencedirect.com/science/article/pii/S1740144522000584 (Accessed August 7, 2022).

Rodgers, R.F., Slater, A., Gordon, C.S., McLean, S.A., Jarman, H.K., and Paxton, S.J (2020) *'A Biopsychosocial Model of Social Media Use and Body Image Concerns, Disordered Eating, and Muscle-Building Behaviors among Adolescent Girls and Boys'*. Journal of Youth and Adolescence. Vol: 49(2), pp 399-409. [online] Available from: https://pubmed.ncbi.nlm.nih.gov/31907699/ (Accessed June 19, 2022).

RSPH (2017) *'#StatusOfMind: Social media and young people's mental health and wellbeing'*. Young Health Movement. [online] Available from:

https://www.rsph.org.uk/static/uploaded/d125b27c-0b62-41c5-a2c0155a8887cd01.pdf (Accessed August 8, 2022).

Salomon, I., and Brown, C.S (2018) *'The Selfie Generation: Examining the Relationship Between Social Media Use and Early Adolescent Body Image'.* The Journal of Early Adolescence. Vol: 39(4), pp 539-560. [online] Available from: https://journals.sagepub.com/doi/abs/10.1177/0272431618770809 (Accessed June 19, 2022).

Santarossa, S., and Woodruff, S.J (2017) *'#SocialMedia: Exploring the Relationship of Social Networking Sites on Body Image, Self-Esteem, and Eating Disorders'.* Social Media and Society. Vol: 3(2), pp 14-23. [online] Available from: https://journals.sagepub.com/doi/full/10.1177/2056305117704407 (Accessed August 10, 2022).

Schreurs, L., and Vadenbosch, L (2022) *'Different interactions with appearance-focused social media content and adolescents' body dissatisfaction: A within-person perspective'.* Computers in Human Behavior. [online] Available from: https://www.sciencedirect.com/science/article/abs/pii/S0747563222001868 (Accessed June 19, 2022).

Spurr, S., Berry, L., and Walker, K (2013) *'Exploring adolescent views of body image: the influence of media'.* Comprehensive Child and Adolescent Nursing. Vol: 36(1), pp 17-36. [online] Available from: https://www.tandfonline.com/doi/full/10.3109/01460862.2013.776145 (Accessed August 7, 2022).

Steinsbekk, S., Wichstrøm, L., Stenseng, F., Nesi, J., Hygen, B.W., Skalická, V (2021) *'The impact of social media use on appearance self-esteem from childhood to adolescence – A 3-wave community study'.* Computers in Human Behavior. [online] Available from: https://www.sciencedirect.com/science/article/pii/S0747563220302806 (Accessed June 19, 2022).

Taylor-Jackson, J., and Moustafa, A.A (2021) *'The relationships between social media use and factors relating to depression'.* The Nature of Depression. [online] Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7562923/ (Accessed August 31, 2022).

The Priory Group (2022) *'Can online image editing on social media contribute to eating disorders?'.* [online] Available from: https://www.priorygroup.com/blog/can-online-image-editing-on-social-media-contribute-to-eating-disorders (Accessed August 4, 2022).

Thorisdottir, I.E., Sigurvinsdottir, R., Asgeirsdottir, B.B., Allegrante, J.P., and Sigfusdottir, I.D (2019) 'Active and Passive Social Media Use and Symptoms of Anxiety and Depressed Mood Among Icelandic Adolescents'. Cyberpsychology, Behavior, and Social Networking. Vol: 22(8), pp 535-542. [online] Available from: https://www.liebertpub.com/doi/full/10.1089/cyber.2019.0079 (Accessed August 30, 2022).

Trifiro, B.M and Prena, K (2021) *'Active Instagram Use and It's Association with Self-Esteem and Well-Being'.* Technology, Mind and Behavior. Vol: 2(3), pp 1-5. [online] Available from: https://tmb.apaopen.org/pub/65mgoajz/release/2?readingCollection=39d6342b (Accessed August 10, 2022).

University of Alberta (2022) *'Life Lines – The Impact of Social Media on Body Image & Mental Health'.* [online] Available from: https://www.ualberta.ca/human-resources-health-safety-environment/news/2022/01-january/february-2022-life-lines.html (Accessed August 27, 2022).

Valkenburg, P.M., Beyens, I., Pouwels, J.L., Driel, I., and Keijsers, L (2021) 'Social Media Browsing and Adolescent Well-Being: Challenging the ''Passive Social Media Use Hypothesis''. Journal of Computer-Mediated Communication. Vol: 27(1), pp 1-19. [online] Available from: https://academic.oup.com/jcmc/article/27/1/zmab015/6413702 (Accessed August 30, 2022).

Verduyn, P., Ybarra, O., Résibois, M., Jonides, J., and Kross, E (2017) *'Do Social Network Sites Enhance or Undermine Subjective Well-Being? A Critical Review'.* Social Issues and

Policy Review. Vol: 11(1), pp 274-302. [online] Available from: https://spssi.onlinelibrary.wiley.com/doi/10.1111/sipr.12033 (Accessed August 10, 2022).

Voelker, D.K., Reel, J.J., and Greenleaf, C (2015) *'Weight status and body image perceptions in adolescents: current perspectives.'* Adolescent Health, Medicine and Therapeutics. Vol: 6(1), pp 149-158. [online] Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4554432/ (Accessed August 10, 2022).

Vornholt, L (2018) *'The relationship between highly visual social media and body image concerns with active versus passive use as a moderating variable'*. [online] Available from: https://essay.utwente.nl/75162/ (Accessed August 30, 2022).

Vuong, A.T., Jarman, H.K., Doley, J.R., and McLean, S.A (2021) *'Social Media Use and Body Dissatisfaction in Adolescents: The Moderating Role of Thin- and Muscular-Ideal Internalisation'*. Environmental Research and Public Health. Vol: 18(24), pp 2-14. [online] Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8701501/ (Accessed August 7, 2022).

World Health Organisation (2022) *'Adolescent Health'*. [online] Available from: https://www.who.int/health-topics/adolescent-health#tab=tab_1 (Accessed August 10, 2022).

World Health Organization (2021) *'Adolescent mental health'*. [online] Available from: https://www.who.int/news-room/fact-sheets/detail/adolescent-mental-health (Accessed August 8, 2022).

Yurdagül, C., Kircaburun, K., Emirtekin, E., Wang, R., and Griffiths, M.D (2021) *'Psychopathological Consequences Related to Problematic Instagram Use Among Adolescents: The Mediating Role of Body Image Dissatisfaction and Moderating Role of Gender'*. International Journal of Mental Health and Addiction. [online] Available from: https://link.springer.com/article/10.1007/s11469-019-00071-8#citeas (Accessed June 19, 2022).

Appendices

Appendix 1. PRISMA Checklist

PRISMA 2020 Checklist

Section and Topic	Item #	Checklist item	Location where item is reported
TITLE			
Title	1	Identify the report as a systematic review.	
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)).	
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	

PRISMA 2020 Checklist

Section and Topic	Item #	Checklist item	Location where item is reported
RESULTS			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	
Study characteristics	17	Cite each included study and present its characteristics.	
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	
DISCUSSION			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	
	23b	Discuss any limitations of the evidence included in the review.	
	23c	Discuss any limitations of the review processes used.	
	23d	Discuss implications of the results for practice, policy, and future research.	
OTHER INFORMATION			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	
Competing interests	26	Declare any competing interests of review authors.	
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	

From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi: 10.1136/bmj.n71
For more information, visit: http://www.prisma-statement.org/

Appendix 2. Data Extraction Table

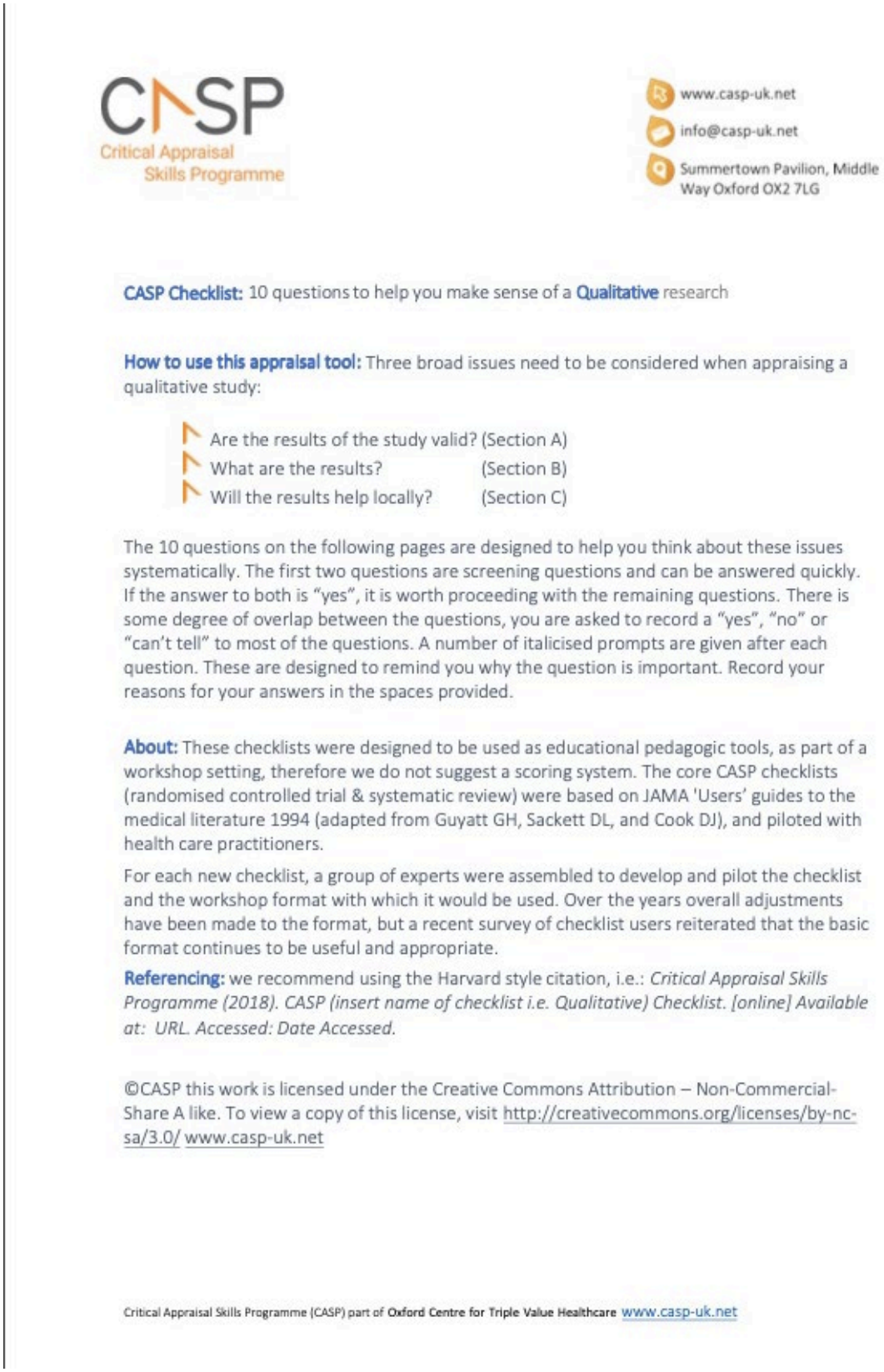
Study Title/Author/Year	Social Media Platform	Gender	Age (mean/range)	Setting	Country	Sample Size	Study Design	Study Method
McCrory et al (2022) *'It's just one big vicious cycle': young people's experiences of highly visual social media and their mental health'.*	Instagram, Snapchat and TikTok	Male and Female	14-15 years	Secondary school (participants recruited from 5 different schools)	Northern Ireland (UK)	47 Participants - nine focus groups (4-8 participants)	Qualitative (Cross-Sectional Study Design)	Online focus group (microsoft teams)
'A Biopsychosocial Model of Social Media Use and Body Image Concerns, Disordered Eating, and Muscle-Building Behaviors	7 social media platforms (Snaptchat, Instagram, Facebook, YouTube, Twitter, Tumblr, and Pinterest).	Male and Female	12.76 Mean age	Schools (participants recruited from 8 different schools)	Melbourne, Austrailia	681 participants (49% female, 51% male)	Quantitative (Cross-Sectional Study Design)	Questionnaires
Salomon & Brown (2018) *'The Selfie Generation: Examining the Relationship Between Social Media Use and Early Adolescent Body Image'*	3 social media platforms (Twitter, Facebook and Instagram).	Male and Female	11-14 years (12.44 mean age)	Secondary School (participants recruited from 4 schools).	USA	142 participants (43 boys and 99 girls).	Quantitative (Cross-Sectional Study Design)	Survey's (50 minute duration)
Ho et al (2016) *'Social Network Sites, Friends, and Celebrities: The Role of Social Comparison and Celebrity Involvement in Adolescents' Body Image Dissatisfaction'*	All social media platforms	Male and Female	12-19 years.	Secondary school. (participants recruited from 1 public secondary school).	Singapore (Asia)	1,059 participants (567 boys and 492 girls).	Quantitative (Cross-Sectional Study Design)	Questionnaires
Marengo et al (2018) *'Highly-visual social media and internalizing symptoms in adolescence: The mediating role of body image conerns'*	3 social media platforms (Facebook, Instagram and Snapchat)	Male and Female	14.82 mean age	Secondary School (participants recruited from 2 large secondary schools).	Northern Italy (EU)	523 participants (53.5% females and 46.5% males)	Quantitative (Cross-Sectional Study Design)	Questionnaires
Yurdagül et al (2021) *'Psychopathological Consequences Related to Problematic Instagram Use Among Adolescents: The Mediating Role of Body Image Dissatisfaction and Moderating Role of Gender'*	Instagram	Male and Female	14-19 years (15.92 mean age)	Secondary School	Turkey	491 participants (203 male and 288 female)	Quantitative (Cross-Sectional Study Design)	Paper and pencil' Questionnaires

Schreurs & Vadenbosch (2022) *'Different interactions with appearance-focused social media content and adolescents' body dissatisfaction: A within-person perspective'*	All social media platforms	Male and Female	14.55 mean age	Secondary School (participants recruited from 24 Flemish seconday schools)	Belgium (EU)	1895 adolescents (Wave 1), 1677 adolescents (Wave 2), and 966 adolescents (Wave 3). Overall, 1032 adolescents were included in the analytical sample. (57.8% girls, 42.2% boys).	Quantitative (Cohort Study Design)	Online questionnaires conducted at school during Wave 1 and Wave 2. Online questionnaires taken place at participants homes during Wave 3 due to closure of schools during COVID-19 pandemic.
Charmaraman et al (2021) *'Early adolescent social-media related body dissatisfaction: Associations with depressive symptoms, social anxiety, peers and celebrities'*	Instagram, Snapchat and Facebook	Male and Female	11-14 years	Secondary School	USA	700 participants (52% female and 48% male)	Mixed Methods (Qualitative and Quantitative) - Cross-Sectional Study Design	Online Survey (40 minute duration)
Steinsbekk et al (2021) *'The impact of social media use on appearance self-esteem from childhood to adolescence - A 3-wave community study'*	All social media platforms	Male and Female	Ages 10, 12 and 14 years.	Participants homes	Norway (EU)	997 familes (Children born in 2003 and 2004 and their parents).	Quantitative (Cohort Study Design)	Questionnaires (Children were provided with questionnaires at ages 10, 12, and 14 years)

Study Title/Author/Year	Study Focus/Aims	Study Outcomes/Findings	Comments
McCrory et al (2022) *'It's just one big vicious cycle': young people's experiences of highly visual social media and their mental health'.*	Using focus groups to explore how high visual social media contributes to adolescents' presentation of self.	(1) 'Competition' and 'comparison' was associated with the constant process of viewing content on social media. (2) Adolescents reported taking part in editing, staging and manipulating content to enhance popularity and the attempt to feel good about their body image. (3) Study yeilded two overreaching themes: 'Competitive Comparison' and 'Designed Perfection'. (4) likes,	(1) Both male and female adolescents expressed that competitive comparison was associated with the number of likes and comments received on social media. (2) To combat negative feelings regarding body image, young people turned to the role of an 'contrbutor', creating temporary feelings of high
Rodgers et al (2020) *'A Biopsychosocial Model of Social Media Use and Body Image Concerns, Disordered Eating, and Muscle-Building Behaviors among Adolescent Girls and Boys'*	biopsychosocial model of the relationships between social media, body image concerns and muscle-building behaviors among adolescent boys and girls.	associated with ideal-internalization which led to appearance upward comparisons and body dissatisfaction. (2) Among boys, the internalization of the muscular-ideal led to feelings of negative body image (non significant among girls). (3) Appearance ideals related to thinness had a negative	internalization of social media ideal, muscular ideal and appearance comparisons were all positively correlated with body dissatisfaction. (2) Internalization of the muscular-ideal led to upward comparisons in both boys and
Salomon & Brown (2018) *'The Selfie Generation: Examining the Relationship Between Social Media Use and Early Adolescent Body Image'*	(1) Explored how the amount of time spent on social media is related to body surveillance and body shame among adolescents. (2) Explored how the frequency of behaviors on social media (those that involve self-objectification) is related to body surveillance and body shame.	(1) 65 participants spent 0-3 hours per week on social media. (2) 73 participants spent 4-10+ hours per week (no significant differences between boys and girls). (2) Those who spent 4-10+ hours had higher levels of body surveillance and body shame compared to those who spent 0-3 hours. (3) Self-objectified social media use only predicted body shame in boys with higher sensitvity to social cues (self-monitoring).	(1) Self-objectified social media use (posting self-images etc.) which predicted body shame was stronger in girls than boys. (2)
Ho et al (2016) *'Social Network Sites, Friends, and Celebrities: The Role of Social Comparison and Celebrity Involvement in Adolescents' Body Image Dissatisfaction'*	(1) Examined the effects of adolescents' engagement in comparison with peers and celebrities on body image and the drive to be thin and muscular.	(1) Social comparison with peers on social media was associated with body image dissatisfaction in both genders. (2) Among boys, celebrity involvement was associated with body image dissatisfaction. (3) Girls were more likely to engage in social comparison with peers compared to celebrities.	(1) girls engaged in more social comparison on social media than boys.
Marengo et al (2018) *'Highly-visual social media and internalizing symptoms in adolescence: The mediating role of body image conerns'*	(1) Evaluate the association between high visual social media use, with body image concerns and internalizing symptoms among adolescents in grades 6-11.	(1) Frequent use (>2hrs/day) of social media predicted body image concerns compared to moderate use (<2hrs/day) showed a positive non-significant effect. (2) Girls had higher body image concerns compared to boys. (3) Body image concerns mediated the link between high visual social media and interalising symptoms. (4) Girls more exposed to body ideals than boys. More pressure on girls to attain unrealistic ideals.	(1) Girls were more likely to use high visual social media than boys. (Explanation for higher levels of body image concerns).
Yurdagül et al (2021) *'Psychopathological Consequences Related to Problematic Instagram Use Among Adolescents: The Mediating Role of Body Image Dissatisfaction and Moderating Role of Gender'*	(1) Examine the direct and indirect effects of problematic Instagram use on body image dissatisfaction. (conducted separately on boys and girls)	(1) Problematic Instagram use was positvely associated with lower self-esteem in adolescent males (was more associated to viewing people on social media who were rich and very successful). (2) Females felt higher sense of belonging when interacting on Instagram. (3) Problematic Instagram use led to elavated body image dissatisfaction and was higher among females. (4) Exposure to celebrity and peer images on Instagram explained elavated body image dissatisfaction associated with problematic Instagram use.	(1) Female adolescents had significantly higher scores on all study variables compared to males. (2) Females more vulnerable to become obsessed with celebrities and higher desire for fame, contributing to higher involvement in social media compared to adolescent boys. (3) Overall, females experienced body image dissatisfaction related to viewing celebrities and peers via Instagram, males experienced lower self-esteem through viewing successful individuals on Instagram.

Schreurs & Vadenbosch (2022) *'Different interactions with appearance-focused social media content and adolescents' body dissatisfaction: A within-person perspective'*	(2) Tested within-person relations between different interactions with appearance-focused social media content (exposure, liking, positive commenting and posting) and adolescents' body dissatisfaction.	(1) Neither an increase in exposure to appearance-related content or an increase in liking or commenting predicted an increase in body dissatisfaction overtime. (2) Liking/commenting were routinized behaviors behaviors and did not lead to body dissatisfaction among adolescents. (3) An increase in posting appearance-focused content led to a decrease in body dissatisfaction four months later (led to higher self-esteem). (4) Girls reported significantly higher body dissatisfaction than boys. Liking, commenting did not seem to trigger long-term changes in body dissatisfaction	(1) Adolescents become desensitized to appearance-related content. (2) Girls post appearance-related content to receive positive feedback, leading to higher levels of body-esteem. (3) Increase in exposure to appearance-focused content reduced feelings of body dissatisfaction in boys four months later (seen this content as motivating).
Charmaraman et al (2021) *'Early adolescent social-media related body dissatisfaction: Associations with depressive symptoms, social anxiety, peers and celebrities'*	(1) Explore what percentage of early adolescents have ever felt body dissatisfaction after using social media (2) What types of body dissatisfaction is experienced and from what sources of social media exposure (3) Explore trends regarding gender (4) Explore if body dissatisfaction, exposure to social media, and following celebrities co-occur with frequency of social media use and socioeconomic health.	(1) 84% of females reported more social media-related body dissatisfaction compared to males (16%). (2) 64% females reported reasons being not being thin enough, 63% not attrative enough, 59% disliking their body shape. (3) 73% males reported not liking their body shape because they felt they weren't thin enough, 55% not being attractive enough, and 46% disliking face/hair. (4) Early adolescents who felt body dissatisfaction after viewing social media checked it more often.	(1) Adolescents reported that social media-related body dissatisfaction was caused by celebrity photos (54%), peers' photos (11%) and another individuals' body/shape/type (26%). 54% of adolescents reported online-induced body dissatisfaction was caused by viewing image-based sources (specifically celebirty photos).
Steinsbekk et al (2021) *'The impact of social media use on appearance self-esteem from childhood to adolescence - A 3-wave community study'*	(1) Examined whether self-oriented social media use (posting content) versus other-oriented social media activities (liking/commenting on others content) was associated with appearance self-esteem over four years.	(1) Instagram and Snapchat - most frequently used social media sites. More than 40% at age 10, percentage was doubled by the age of 14 years. (2) Girls had slightly lower appearance self-esteem than boys at age 14. (3) No gender differences revelaed at ages 10-12. (3) The impact of self-oriented use on appearance self-esteem was higher than the impact of self-oriented use. (4) Self-oriented use did not affect appearance self-esteem in girls.	(1) Other-oriented use had an impact on appearance self-esteem from age 10-12 and from age 12-14 (strong in girls and absent in boys). (2) Self-oriented use had no effect.

Appendix 3. Completed CASP Qualitative Study Checklist.



CASP
Critical Appraisal Skills Programme

www.casp-uk.net
info@casp-uk.net
Summertown Pavilion, Middle Way Oxford OX2 7LG

CASP Checklist: 10 questions to help you make sense of a **Qualitative** research

How to use this appraisal tool: Three broad issues need to be considered when appraising a qualitative study:

- Are the results of the study valid? (Section A)
- What are the results? (Section B)
- Will the results help locally? (Section C)

The 10 questions on the following pages are designed to help you think about these issues systematically. The first two questions are screening questions and can be answered quickly. If the answer to both is "yes", it is worth proceeding with the remaining questions. There is some degree of overlap between the questions, you are asked to record a "yes", "no" or "can't tell" to most of the questions. A number of italicised prompts are given after each question. These are designed to remind you why the question is important. Record your reasons for your answers in the spaces provided.

About: These checklists were designed to be used as educational pedagogic tools, as part of a workshop setting, therefore we do not suggest a scoring system. The core CASP checklists (randomised controlled trial & systematic review) were based on JAMA 'Users' guides to the medical literature 1994 (adapted from Guyatt GH, Sackett DL, and Cook DJ), and piloted with health care practitioners.

For each new checklist, a group of experts were assembled to develop and pilot the checklist and the workshop format with which it would be used. Over the years overall adjustments have been made to the format, but a recent survey of checklist users reiterated that the basic format continues to be useful and appropriate.

Referencing: we recommend using the Harvard style citation, i.e.: *Critical Appraisal Skills Programme (2018). CASP (insert name of checklist i.e. Qualitative) Checklist. [online] Available at: URL. Accessed: Date Accessed.*

CASP
Critical Appraisal Skills Programme

Paper for appraisal and reference: McCrory et al (2022) 'it's just one big vicious cycle'.....

Section A: Are the results valid?

1. Was there a clear statement of the aims of the research?

Yes ✔ | Can't Tell | No

HINT: Consider
- what was the goal of the research
- why it was thought important
- its relevance

Comments: aims of the study: explore young people's (aged 14-15) experience with high visual social media and the features high-visual social media inherent and how engagement with these impact mental health (body image), develop a conceptual model based on the results that explains actions/emotions.

2. Is a qualitative methodology appropriate?

Yes ✔ | Can't Tell | No

HINT: Consider
- If the research seeks to interpret or illuminate the actions and/or subjective experiences of research participants
- Is qualitative research the right methodology for addressing the research goal

Comments: the research aimed to explore young people's experiences with high-visual social media and qualitative methodology was appropriate to address the research goal.

Is it worth continuing?

3. Was the research design appropriate to address the aims of the research?

Yes ✔ | Can't Tell | No

HINT: Consider
- if the researcher has justified the research design (e.g. have they discussed how they decided which method to use)

Comments: the study used an thematic analysis approach, collecting data from all focus groups which were then checked and re-checked to ensure accuracy and uploaded to a computer software package and coded each segment of data relevant to the research aims.

CASP
Critical Appraisal Skills Programme

4. Was the recruitment strategy appropriate to the aims of the research?

Yes	✔
Can't Tell	
No	

HINT: Consider
- If the researcher has explained how the participants were selected
- If they explained why the participants they selected were the most appropriate to provide access to the type of knowledge sought by the study
- If there are any discussions around recruitment (e.g. why some people chose not to take part)

Comments: **recruitment strategy was employed in the recruitment of five secondary schools with informed consent gained and ethical approval, nine focus groups of 4-8 participants were formed. Study focused on ages 14-15 which is why participants were recruited from secondary schools.**

5. Was the data collected in a way that addressed the research issue?

Yes	✔
Can't Tell	
No	

HINT: Consider
- If the setting for the data collection was justified
- If it is clear how data were collected (e.g. focus group, semi-structured interview etc.)
- If the researcher has justified the methods chosen
- If the researcher has made the methods explicit (e.g. for interview method, is there an indication of how interviews are conducted, or did they use a topic guide)
- If methods were modified during the study. If so, has the researcher explained how and why
- If the form of data is clear (e.g. tape recordings, video material, notes etc.)
- If the researcher has discussed saturation of data

Comments: **focus groups were carried out in an online environment due to ongoing COVID-19. Focus group sessons conducted via Microsoft Teams with a semi-structured format to help ensure discussions stayed on track and addressed overall research objectives. Analysis involved the transcription of audio-recorded data collection.**

CASP
Critical Appraisal Skills Programme

6. Has the relationship between researcher and participants been adequately considered?

Yes	
Can't Tell	✔
No	

HINT: Consider
- If the researcher critically examined their own role, potential bias and influence during (a) formulation of the research questions (b) data collection, including sample recruitment and choice of location
- How the researcher responded to events during the study and whether they considered the implications of any changes in the research design

Comments:. First bullet point unclear in study. Study was conducted online due to COVID-19 (considered a implication and a change in research design).

Section B: What are the results?

7. Have ethical issues been taken into consideration?

Yes	✔
Can't Tell	
No	

HINT: Consider
- If there are sufficient details of how the research was explained to participants for the reader to assess whether ethical standards were maintained
- If the researcher has discussed issues raised by the study (e.g. issues around informed consent or confidentiality or how they have handled the effects of the study on the participants during and after the study)
- If approval has been sought from the ethics committee

Comments: semi-structured format, and due to online video conferencing software, basic tips were shared with all participants on how best to communicate. Out of five secondary schools, nine focus groups (4-8) gave consent (no issues raised) ethical approval obtained from University Research Ethics Committee.

CASP
Critical Appraisal Skills Programme

8. Was the data analysis sufficiently rigorous?

Yes	☐
Can't Tell	☑
No	☐

HINT: Consider
- If there is an in-depth description of the analysis process
- If thematic analysis is used. If so, is it clear how the categories/themes were derived from the data
- Whether the researcher explains how the data presented were selected from the original sample to demonstrate the analysis process
- If sufficient data are presented to support the findings
- To what extent contradictory data are taken into account
- Whether the researcher critically examined their own role, potential bias and influence during analysis and selection of data for presentation

Comments: thematic analysis was used. the themes 'Competitve Comparison' and 'Designed Perfection' were derived from the data. Researcher explained how there has been quantitative results in the field. Sufficient data was presented to support findings.

9. Is there a clear statement of findings?

Yes	☑
Can't Tell	☐
No	☐

HINT: Consider whether
- If the findings are explicit
- If there is adequate discussion of the evidence both for and against the researcher's arguments
- If the researcher has discussed the credibility of their findings (e.g. triangulation, respondent validation, more than one analyst)
- If the findings are discussed in relation to the original research question

Comments: there is evidence both for and against researcher's arguments and discussed in relation to the research question. Transcripts were checked and re-checked to ensure accuracy, relevant data to the research aims were coded.

CASP
Critical Appraisal Skills Programme

Section C: Will the results help locally?	
10. How valuable is the research?	HINT: Consider • If the researcher discusses the contribution the study makes to existing knowledge or understanding (e.g. do they consider the findings in relation to current practice or policy, or relevant research-based literature • If they identify new areas where research is necessary • If the researchers have discussed whether or how the findings can be transferred to other populations or considered other ways the research may be used
Comments:	Could employ more random sampling approach for wider geographical area. The need to address the 'vicious cycle' depicated in the findings of the study. Research needed on the concept of fragile high self-esteem and how this can be addressed. Studies that are intervention-based within school programmes (future research). Finding a way to break the cycle urgently needed.

Appendix 4. Completed McMasters Quantitative Critical Review Forms. No. 1

Critical Review Form – Quantitative Studies

Law, M., Stewart, D., Pollock, N., Letts, L. Bosch, J., & Westmorland, M. McMaster University

- Adapted Word Version Used with Permission –

The EB Group would like to thank Dr. Craig Scanlan, University of Medicine and Dentistry of NJ, for providing this Word version of the quantitative review form.

Instructions: Use tab or arrow keys to move between fields, mouse or spacebar to check/uncheck boxes.

CITATION Salomon & Brown (2018)	Provide the full citation for this article in APA format: Salomon, I., and Brown, C.S (2018) *'The Selfie Generation: Examining the Relationship Between Social Media Use and Early Adolescent Body Image'*. The Journal of Early Adolescence.
STUDY PURPOSE Was the purpose stated clearly? [x] Yes [ ] No	Outline the purpose of the study. How does the study apply to your research question? Purpose of the study was to explore how the amount of time spent using social media and the frequency of specific behaviours on social media (behaviours that involve self-objectification) were related to body surveillance and body shame among a sample of early adolescents. This applies to my research question because it explores how social media can contribute to body image dissatisfaction among adolescents by exploring the ways in which adolescent's engage in social media and the amount of time spent.
LITERATURE Was relevant background literature reviewed? [x] Yes [ ] No	Describe the justification of the need for this study: 1) Adolescents experience physical changes and social media contributes to negative body image concerns due to its influence on shaping individuals' attitudes by establishing cultural standards for ideal body types. 2) Previous literature found that behaviours that trigger self-objectification are common on social media, justifying the need to explore whether self-objectified behaviours on social media relates to body shame in adolescents.

DESIGN ☐ Randomized ☐ (RCT) cohort ☐ single case ☐ design before ☒ and after case- ☐ control cross- ☐ sectional case study	Describe the study design. Was the design appropriate for the study question? (e.g., for knowledge level about this issue, outcomes, ethical issues, etc.): Specify any biases that may have been operating and the direction of their influence on the results: The study used a cross-sectional design. Participants were given 50 minutes during school hours to complete a survey. Cross-sectional was most suitable for this study because it was conducted during school hours and would not require a lot of time. Previous literature highlighted the importance for this study to be conducted and there was a high level of knowledge surrounding the research question. The study focused on recruiting participants who were in a vulnerable period, during puberty (adolescence). Could potentially influence the results however, the study was focused on adolescents so there was a justification for this. All participants who returned parental consent forms (regardless of parental approval or disapproval of participation) were entered into a drawing of US$50 Amazon gift card. (was used to incentivize participants to return the forms).
SAMPLE N = Was the sample described in detail? ☒ Yes ☐ No Was sample size justified? ☒ Yes ☐ No ☐ N/A	Sampling (who; characteristics; how many; how was sampling done?) If more than one group, was there similarity between the groups?: Describe ethics procedures. Was informed consent obtained?: The study focused on individuals in a vulnerable period (adolescence). Participants were 142 seventh-grade students from four public middle schools in a medium-sized city in the Upper South (USA). Consisted of 43 boys and 99 girls. (more girls than boys, no justification as to why was given). All participants were given a parental consent form to take home. Consent rates were low at some of the schools, ranging from 15% to 53% across schools. Low consent rates across four schools resulted in a small sample size and introduced the possibility of selection bias. Those with parental consent were asked to sign an assent form before completing the survey. Only participants with a signed consent and assent form were allowed to take the survey. (informed consent was obtained).

OUTCOMES Were the outcome measures reliable? [x] Yes [ ] No [ ] Not addressed Were the outcome measures valid? [x] Yes [ ] No [ ] Not addressed	Specify the frequency of outcome measurement (i.e., pre, post, follow-up): Participants were given 50 minutes each day to complete the survey. (no follow up)	
	Outcome areas: List measures used.: Social media frequency and self-objectification behaviours (self-report approach) Body surveillance – (OBC) Body shame – (youth version of OBC). Self-monitoring – (Junior Self-Monitoring Scale).	

	Justification for using self-report measures was reported (used in previous studies) and were val id for the research question. OBC and Junior Self-Monitoring scale measurements were reported as acceptable reliability for the study.
INTERVENTION Intervention was described in detail? [ ] Yes [ ] No [ ] Not addressed Contamination was avoided? [ ] Yes [ ] No [ ] Not addressed [ ] N/A Cointervention was avoided?	Provide a short description of the intervention (focus, who delivered it, how often, setting). Could the intervention be replicated in practice? Not applicable.

RESULTS Results were reported in terms of statistical significance? [v] Yes [ ] No [ ] N/A [ ] Not addressed Were the analysis method(s) appropriate? [ ] Yes [ ] No [x] Not addressed	What were the results? Were they statistically significant (i.e., $p < 0.05$)? If not statistically significant, was study big enough to show an important difference if it should occur? If there were multiple outcomes, was that taken into account for the statistical analysis? Study reported that the hypothesized model predicted that the association between social media use and body shame would be mediated by body surveillance, and that the association between body surveillance and body shame would be moderated by gender and self-monitoring. – a moderated mediation model was tested using the PROCESS macro for SPSS to assess the primary hypothesis. – PROCESS provided conditional indirect effects for the two moderators acting in parallel on the same pathway. Sample size consisted of 142 participants. (43 boys and 99 girls). Sample size was a moderate size but there was a big difference in the number of boys compared to girls. So, the results regarding gender were not fair.

	The analysis methods were appropriate to gather data on social media use, however, it did not fully capture the rich, complex nature. Individuals can engage in several behaviours online and by generalizing across behaviours available on a number of popular social media platforms, the study lost some of the detail in all the behaviours available to individuals using specific types of social media.
Clinical importance was reported? [ ] Yes [ ] No [ ] Not addressed	What was the clinical importance of the results? Were differences between groups clinically meaningful? (if applicable) Not applicable
Drop-outs were reported? [X] Yes [ ] No	Did any participants drop out from the study? Why? (Were reasons given and were drop-outs handled appropriately?) Study stated that only a few parents actively declined participation, no reasons were given.

CONCLUSIONS AND IMPLICATIONS Conclusions were appropriate given study methods and results [x] Yes [ ] No	What did the study conclude? What are the implications of these results for practice? What were the main limitations or biases in the study? Study concluded that cultural pressures associated with body image concerns differ among girls and boys. The study only looked at two individual differences among participants: gender and self-monitoring. Sample size was not large enough, and the study concluded that future research should explore the associations between social media use, body surveillance and body shame with larger, more diverse samples, to explore whether the results of the study generalize to the adolescent population more broadly. Low consent rates across four schools resulted in a small sample size and

No. 2

Critical Review Form – Quantitative Studies

Law, M., Stewart, D., Pollock, N., Letts, L. Bosch, J., & Westmorland, M. McMaster University

- Adapted Word Version Used with Permission –

The EB Group would like to thank Dr. Craig Scanlan, University of Medicine and Dentistry of NJ, for providing this Word version of the quantitative review form.

Instructions: Use tab or arrow keys to move between fields, mouse or spacebar to check/uncheck boxes.

CITATION Rodgers et al (2020)	Provide the full citation for this article in APA format: Rodgers, R.F., Slater, A., Gordon, C.S., McLean, S.A., Jarman, H.K., and Paxton, S.J (2020) *'A Biopsychosocial Model of Social Media Use and Body Image Concerns, Disordered Eating, and Muscle-Building Behaviours among Adolescent Girls and Boys'*. Journal of Youth and Adolescence.
STUDY PURPOSE Was the purpose stated clearly? ☒ Yes ☐ No	Outline the purpose of the study. How does the study apply to your research question? to test a model among adolescent girls and boys, in which social media use, as well as negative affect (self-esteem) were predicted to be associated with body image concerns and body change behaviours through the internalization of appearance ideals related to thinness and muscularity, as well as upwards appearance comparisons.
LITERATURE Was relevant background literature reviewed? ☒ Yes ☐ No	Describe the justification of the need for this study: (1) Literature found: social media has been increasing among adolescent boys and girls and is associated with and predictive of body image concerns. The study stated, thus understanding the pathways from social media use to these negative outcomes is essential. (2) Literature found: effects of traditional media on body image concerns have been described within integrated models that bring together influences (sociocultural, psychological and biological) – Study's reason for testing a biopsychosocial model of the relationship between social media and body image concerns.
DESIGN ☐ Randomized (RCT) cohort ☐ single case ☐ design before and after case- ☐ control cross- ☐ sectional case ☒ study	Describe the study design. Was the design appropriate for the study question? (e.g., for knowledge level about this issue, outcomes, ethical issues, etc.): Specify any biases that may have been operating and the direction of their influence on the results: Study design was cross sectional. Study stated that data was self-reported and cross-sectional, which prevented authors from investigating the directionally of the relationships. Cohort study design would have been more suitable to answer the research question to collect more clear findings. There was a moderate amount of

	knowledge from previous literature that informed the research question. Overall, the starting sample size was 770 but 7% of parents chose to opt their child out the study, with 681 remaining in the sample.
SAMPLE N = Was the sample described in detail? [x] Yes [ ] No Was sample size justified? [x] Yes [ ] No [ ] N/A	Sampling (who; characteristics; how many; how was sampling done?) If more than one group, was there similarity between the groups?: Describe ethics procedures. Was informed consent obtained?: Participants were recruited from 8 schools to ensure participants age was during adolescence period. Parental consent was required for six of the eight schools in which 43% of parents provided active parental consent. The remaining two schools, parent-informed opt out consent was used to recruit participants and only 7% of parents chose to opt out their child from the study. Participants included 49% females and 51% males. Majority of participants were born in Australia. Aim of the study was based on adolescent boys and girls, this justified the sample size of the mean age being 12.76 years and the recruitment from schools.

OUTCOMES Were the outcome measures reliable? [ ] Yes [x] No [ ] Not addressed Were the outcome measures valid? [ ] Yes [x] No [ ] Not addressed	Specify the frequency of outcome measurement (i.e., pre, post, follow-up): No details were provided on the frequency of the study.	
	Outcome areas: List measures used.: !) Social media use and self-esteem was measured by a 5-point scale (self-reported). 2) Muscular Ideal Internalization: Sociocultural attitudes towards appearance questionnaire. Social media ideal internalization: general Subscale of the sociocultural attitudes towards Appearance questionnaire. Body dissatisfaction: weight and shape concern subscale From the eating disorders examination questionnaire. Data was self-reported and cross-sectional, was not fully suitable to answer the research question, prevented authors from investigating the directionally of the relationships between variables.	

INTERVENTION Intervention was described in detail? ☐ Yes ☐ No ☐ Not addressed Contamination was avoided? ☐ Yes ☐ No ☐ Not addressed ☐ N/A Cointervention was avoided? ☐ Yes ☐ No ☐ Not addressed ☐ N/A	Provide a short description of the intervention (focus, who delivered it, how often, setting). Could the intervention be replicated in practice? Not applicable – no intervention used in the study.
RESULTS Results were reported in terms of statistical significance? ☒ Yes ☐ No ☐ N/A ☐ Not addressed Were the analysis method(s) appropriate? ☒ Yes ☐ No ☐ Not addressed	What were the results? Were they statistically significant (i.e., $p < 0.05$)? If not statistically significant, was study big enough to show an important difference if it should occur? If there were multiple outcomes, was that considered for the statistical analysis? Among females, significant indirect effects were found between social media use and upward appearance comparison (0.067, 90%, CI [0.04-0.11], p=0.002, social media use and body dissatisfaction (0.056, 90% CI [0.03-0.09], p = 0.002. Among boys, social media use revealed a direct effect of both internalization of the muscular ideal and internalization of the social media ideal. Significant indirect effects were found between social media use and upward appearance comparison (0.165, 90% CI [0.13-0.23] p, <0.001), social media use and body dissatisfaction (0.058, 90% CI [0.04-0.09] p = 0.002). – results were statistically significant. Path analysis was used which was appropriate to test the model and descriptive statistics were computerised and correlations among the study variables were examined among boys and girls separately. Path analysis was stated to be a good fit after modification, although gender differences emerged.
Clinical importance was reported? ☐ Yes ☐ No ☐ Not addressed	What was the clinical importance of the results? Were differences between groups clinically meaningful? (if applicable) Not applicable.

Drop-outs were reported? [x] Yes [ ] No	Did any participants drop out from the study? Why? (Were reasons given and were drop-outs handled appropriately?)

	7% of parents from two schools where participants were recruited chose to opt their child out of the study. – no reasons were given as to why they decided to opt their children out.
CONCLUSIONS AND IMPLICATIONS Conclusions were appropriate given study methods and results [x] Yes [ ] No	What did the study conclude? What are the implications of these results for practice? What were the main limitations or biases in the study? Study concluded that social media use, as well as negative effects (self-esteem) was predicted to be associated with outcomes through the internalization of appearance ideals related to thinness and muscularity. Only a small amount of information was included in the conclusion, creating implications for practice. Study stated that a larger number of participants was needed to strengthen the results. As the data was self-reported and cross-sectional, it prevented the authors from investigating the directionally of the relationships. Developing increasingly sensitive measures related to social media usage was suggested to support additional research.

No. 3

Critical Review Form – Quantitative Studies

Law, M., Stewart, D., Pollock, N., Letts, L. Bosch, J., & Westmorland, M. McMaster University

- Adapted Word Version Used with Permission –

The EB Group would like to thank Dr. Craig Scanlan, University of Medicine and Dentistry of NJ, for providing this Word version of the quantitative review form.

Instructions: Use tab or arrow keys to move between fields, mouse or spacebar to check/uncheck boxes.

CITATION Ho et al (2016)	Provide the full citation for this article in APA format: Ho, S.S., Lee, E.W., and Liao, Y (2016) *'Social Network Sites, Friends, and Celebrities: The Roles of Social Comparison and Celebrity Involvement in Adolescents' Body Image Dissatisfaction'*. Social Media and Society.
STUDY PURPOSE Was the purpose stated clearly? [x] Yes [ ] No	Outline the purpose of the study. How does the study apply to your research question? The purpose of the study was to apply social comparison theory to examine the effects of adolescents' engagement in comparison with friends and celebrities on social media on their body image dissatisfaction and their drive to be thin or muscular. The study also examined whether there are gender differences in the social comparison processes and their associations with the outcome variables. This applies to my research question because it explores the different kinds of content adolescents (boys and girls) are exposed to on social media and how engagement with celebrities and peers contribute to body image dissatisfaction among adolescents.
LITERATURE Was relevant background literature reviewed? [x] Yes [ ] No	Describe the justification of the need for this study: The prevalence of body image dissatisfaction and the drive to achieve idealized body types among adolescents has been largely recognised in previous research and the background literature shows that. Many studies have focused on the effects of the manipulation of media images and only few have accounted for how social comparison with adolescents' peers and celebrities on social media influence outcomes of body image dissatisfaction and the drive to achieve an idealized body shape. Therefore, the study aimed to address the gaps in the literature including, (1) using social comparison as the theoretical framework to understand how adolescents' social comparison with peers and celebrities relate to body image dissatisfaction, drive to be thin or muscular. (2) examine how

1

	adolescents' use social media for celebrity involvement. (3) examine whether there are gender differences in the social comparison processes and their association with the two outcome variables.
DESIGN ☐ Randomized ☐ (RCT) cohort ☐ single case ☐ design before ☐ and after case- ☒ control cross- sectional case study	Describe the study design. Was the design appropriate for the study question? (e.g., for knowledge level about this issue, outcomes, ethical issues, etc.): Specify any biases that may have been operating and the direction of their influence on the results: The study used a cross-sectional study design. Participants completed the questionnaire in a supervised classroom setting which was appropriate for the research question to recruit participants at adolescent age and to ensure those who gave consent were able to complete the questionnaire in a supervised setting at one point in time. Because the study was held in schools the study design was appropriate to ensure the length of the study was inexpensive and quick to conduct and it enabled the researcher to study the associations between the multiple exposures and outcomes. The study was ethically approved and were given consent forms and could chose to decline participation. No information was given on the risks of worsening body image dissatisfaction after the study was conducted.
SAMPLE N = Was the sample described in detail? ☐ Yes ☒ No Was sample size justified? ☐ Yes ☒ No ☐ N/A	Sampling (who; characteristics; how many; how was sampling done?) If more than one group, was there similarity between the groups?: Describe ethics procedures. Was informed consent obtained?: Participants consisted of 567 boys and 492 girls aged 12-19 years and the average age of the female participants was 14.78 years and 14.70 for males. Participant were not described in a lot of detail, the study only stated how many participants took part and their ages and gender. The sampling was done via a letter that was distributed along with a consent form to the parents of the students and students were allowed to decline participation in the study. Out of 1,156 students who were eligible for the study, 1,059 agreed to participate with a participation rate of 91.5%. The age of the participants justified the sample size however, 12-19 was a wide age range and adolescents could be experiencing different changes in their bodies and thoughts from age 12 to the age of 19. The sample size was 1,059 which was justifiable for the aims and purpose of the study to ensure more reliable results. The study did not provide statistical justification for the sample size.

OUTCOMES Were the outcome measures reliable? ☐ Yes ☐ No ☒ Not addressed Were the outcome measures valid? ☐ Yes ☐ No ☒ Not addressed	Specify the frequency of outcome measurement (i.e., pre, post, follow-up): Outcomes were not measured and short-term and/or long-term effects were not considered. Outcome areas: List measures used.: Social media usage was self-reported And measured by stating the average Number of hours spent on social media. Social comparison with friends was Measured using four items from the Physical appearance comparison scale. Social comparison with celebrities was Self-reported and self-measured. Celebrity involvement was measured using the celebrity attitude scale. Female drive to be thin and body image dissatisfaction was measured with two adapted subscales from the eating disorders inventory (EDI) and male body image dissatisfaction and drive to be muscular was measured using the muscularity and body fat subscales of the male body attitudes scale (MBAS). The reliability and validity were not addressed in this study, the study only addressed the measures used however, the study used different measures representing each variable, capturing what they are intended to measure.

INTERVENTION Intervention was described in detail? ☐ Yes ☐ No ☐ Not addressed Contamination was avoided? ☐ Yes ☐ No ☐ Not addressed ☐ N/A Cointervention was avoided? ☐ Yes ☐ No ☐ Not addressed ☐ N/A	Provide a short description of the intervention (focus, who delivered it, how often, setting). Could the intervention be replicated in practice? Not applicable to the current study.
RESULTS Results were reported in terms of statistical significance? ☒ Yes ☐ No ☐ N/A ☐ Not addressed Were the analysis method(s) appropriate? ☒ Yes ☐ No ☐ Not addressed	What were the results? Were they statistically significant (i.e., $p < 0.05$)? If not statistically significant, was study big enough to show an important difference if it should occur? If there were multiple outcomes, was that taken into account for the statistical analysis? The results consisted of social comparison with friends on social media sites was a significant antecedent for all the dependant variables, namely female BID (b=35, p <.001) male BID (b=29, p <.001) and drive to be muscular (b=.28, p <.001). Social comparison with celebrities and males body image dissatisfaction and drive to be muscular was not significant. Celebrity involvement was positively associated with BID among male adolescents (b=.11, p <.05) but not among females. The results were reported in terms of statistical significance. Hierarchical linear regression analyses were conducted which showed modest explanatory power for the dependant variables. It explained 40% of the variance of female BID and 24% of the variance of male BID and accounted for 32% of the variance of DT and 29% of the variance of DM.
Clinical importance was reported? ☐ Yes ☐ No ☐ Not addressed	What was the clinical importance of the results? Were differences between groups clinically meaningful? (if applicable) Not applicable for the current study.

Drop-outs were reported? ☐ Yes [x] No	Did any participants drop out from the study? Why? (Were reasons given and were drop-outs handled appropriately?) No dropouts were reported. 97 participants decided not to take part in the survey which was reported in the study. No reasons were given as to why participants decided not to participate.
CONCLUSIONS AND IMPLICATIONS Conclusions were appropriate given study methods and results [x] Yes ☐ No	What did the study conclude? What are the implications of these results for practice? What were the main limitations or biases in the study? The interpretation of findings may have been limited using convivence sampling. Participants were not asked if their favourite celebrities were male or female and if which platforms the participants used for what purpose and if their favourite celebrities were on social media sites. – this creates an implication for practice because the information is not reliable regarding where the impact of celebrities was caused using social media sites. The study contributes to media effects and body image research by focusing on social media sites as a new medium that can generate BID among adolescents and extended social comparison theory to the context of social media and highlighted how the unique affordances of social media such as self-presentation manipulation, uninterrupted flow of information, as well as perceived realism facilitate social comparison with peers and celebrities and the effects on BID and their drive to achieve an ideal body. The study reported that the findings yielded practical implications for policymakers and educators seeking to anticipate and respond to the outcomes of social media use with regard to adolescents' psychological well-being.

No. 4

Critical Review Form – Quantitative Studies

Law, M., Stewart, D., Pollock, N., Letts, L. Bosch, J., & Westmorland, M. McMaster University

- Adapted Word Version Used with Permission –

The EB Group would like to thank Dr. Craig Scanlan, University of Medicine and Dentistry of NJ, for providing this Word version of the quantitative review form.

Instructions: Use tab or arrow keys to move between fields, mouse or spacebar to check/uncheck boxes.

CITATION Marengo et al (2018)	Provide the full citation for this article in APA format: Marengo, D., Longobardi, C., Fabris, M.A., and Settanni, M (2018) *'Highly-visual social media and internalizing symptoms in adolescence: The mediating role of body image concerns'*. Computers in Human Behavior. Vol (82), pp 63-69.
STUDY PURPOSE Was the purpose stated clearly? [x] Yes [ ] No	Outline the purpose of the study. How does the study apply to your research question? The purpose of the study was stated clearly. – previous findings led to the study aiming to evaluate the association between social media use (high visual social media), with body image concerns and internalizing symptoms in a sample of adolescents attending grades 6-11 in the light of the social comparison theory. This study applies to my research question between it evaluates the use of high visual social media and how frequent use and exposure to high visual content contributes to body image concerns/dissatisfaction among the adolescent population.
LITERATURE Was relevant background literature reviewed? [x] Yes [ ] No	Describe the justification of the need for this study: The relevant background literature was reviewed and described the justification of the need for the study. It covered the importance to consider high visual social media and how it has contributed to body image concerns and poorer mental health in adolescence. Previous literature focused more on female adolescents, which provided justification for the current study to conduct the study on both male and female adolescents. The background literature indicated that heavy use of social media and they key aspects was associated with increased internalizing symptoms among adolescents. Moreover, the background literature reported information that was relevant to the justification of the current study, including social media frequency, content and features.

DESIGN ☐ Randomized ☐ (RCT) cohort ☐ single case design ☐ before and after ☐ case-control ☑ cross-sectional ☐ case study	Describe the study design. Was the design appropriate for the study question? (e.g., for knowledge level about this issue, outcomes, ethical issues, etc.): Specify any biases that may have been operating and the direction of their influence on the results: The study used a cross-sectional study design. The study design was appropriate to measure the mediating effect however the study reported that a longitudinal study design would have been more appropriate to enable a better understanding of the associations between use of social media, internalizing symptoms and body image concerns. The use of self-report to assess time spent on social media was reported to introduce potential biases due to social desirability effects and possible lack of awareness. It was reported that alternative data collection designs allowing for the assessment of adolescents' actual use of social media would have provided a more reliable estimation of the frequency of use.
SAMPLE N = Was the sample described in detail? ☐ Yes ☒ No Was sample size justified? ☐ Yes ☒ No ☐ N/A	Sampling (who; characteristics; how many; how was sampling done?) If more than one group, was there similarity between the groups?· Describe ethics procedures. Was informed consent obtained?· The initial sample was 598 adolescents. 54.2% female with the mean age of 14.82 attending grades 6-11 in two large secondary schools in Northern Italy. After the removal of participants with missing data on study measures (n=75), the final sample was 523 adolescents (53.5% female, 46.5% male). Participation required consent from both the parents and the students and ethical approval was obtained from the University of Turin IRB. There was very limited characteristics on the type of participants needed to be recruited for the study. The study focused on adolescents, hence why the recruitment was conducted via schools. The study did not provide justification for the sample size.

OUTCOMES Were the outcome measures reliable? ☐ Yes ☐ No ☒ Not addressed Were the outcome measures valid? ☐ Yes ☐ No ☒ Not addressed	Specify the frequency of outcome measurement (i.e., pre, post, follow-up): Frequency of outcome measurement was not reported.	
	Outcome areas: List measures used.: Social media use used a self-report Approach and measurement. Body image concerns was measured Using the Italian version of BSQ (Body Shape Questionnaire). – the study Reported that the reliability in the Sample was excellent. Additionally, the reliability and validity was	not addressed regarding the measures.

INTERVENTION Intervention was described in detail? ☐ Yes ☐ No ☐ Not addressed Contamination was avoided? ☐ Yes ☐ No ☐ Not addressed ☐ N/A Cointervention was avoided? ☐ Yes ☐ No ☐ Not addressed ☐ N/A	Provide a short description of the intervention (focus, who delivered it, how often, setting). Could the intervention be replicated in practice? Not applicable for the current study.
RESULTS Results were reported in terms of statistical significance? ☒ Yes ☐ ☐ No ☐ N/A Not addressed Were the analysis method(s) appropriate? ☒ Yes ☐ No Not addressed	What were the results? Were they statistically significant (i.e., $p < 0.05$)? If not statistically significant, was study big enough to show an important difference if it should occur? If there were multiple outcomes, was that taken into account for the statistical analysis? The results consisted of frequent use of HVSM positively predicted internalizing symptoms (B=0.69, SE=0.32, p = 0.03, 95% CI [0.06, 1.33]). Moderate use of HVSM did not emerge as a significant predictor (B = 0.13, SE = 0.28, p = 0.64, 95% CI [-0.42, 0.68]). Frequent use of HVSM positively predicted body image concerns (B = 0 0.33, SE = 0.13, p =0.01, 95% CI [0.07, 0.59]). Etc. Only gender showed significant effects indicating females had higher body image concerns. The study used multiple regression analyses and was appropriate for the current study to analyse the relationship between the single dependant variable (body image concerns) and several independent variables (time spent on HVSM and internalizing symptoms).
Clinical importance was reported? ☐ Yes ☐ No ☐ Not addressed	What was the clinical importance of the results? Were differences between groups clinically meaningful? (if applicable) Not applicable for the current study.
Drop-outs were reported? ☐ Yes ☒ No	Did any participants drop out from the study? Why? (Were reasons given and were drop-outs handled appropriately?) The study reported that 75 participants were removed with missing data on study measures. No dropouts reported.

CONCLUSIONS AND IMPLICATIONS Conclusions were appropriate given study methods and results [x] Yes [ ] No	What did the study conclude? What are the implications of these results for practice? What were the main limitations or biases in the study? The study concluded the mediating effect of body image concerns on the relationship between use of image and video based social media (HVSM) and internalizing symptoms among adolescents. the study filled the gap in literature on the impact use of highly visual social media is having on adolescents regarding body image and mental health. The study underlined that it is important for research to focus on the differences between the various kinds of social media. A limitation related to the use of self-report to assess time spent on social media was reported which suggesting potential biases due to social desirability effects and possible lack of awareness. The study reported that alternative data collection designs allowing for the assessment of adolescents' actual use of social media would have provided more reliable estimations. The study was performed on a sample of Italian adolescents, making the results not fully generalizable to other national contexts. The study reported practical implications for the development of interventions aimed at preventing or reducing the negative impact of social media on adolescent health.

No. 5

Critical Review Form – Quantitative Studies

Law, M., Stewart, D., Pollock, N., Letts, L. Bosch, J., & Westmorland, M. McMaster University

- Adapted Word Version Used with Permission –

The EB Group would like to thank Dr. Craig Scanlan, University of Medicine and Dentistry of NJ, for providing this Word version of the quantitative review form.

Instructions: Use tab or arrow keys to move between fields, mouse or spacebar to check/uncheck boxes.

CITATION Yurdagül et al (2021)	Provide the full citation for this article in APA format: Yurdagül, C., Kircaburun, K., Emirtekin, E., Wang, P., and Griffiths, M.D (2021) *'Psychopathological Consequences Related to Problematic Instagram Use Among Adolescents: The Mediating Role of Body Image Dissatisfaction and Moderating Role of Gender'*. International Journal of Mental Health and Addiction. Vol: (9), pp 1385-1397.
STUDY PURPOSE Was the purpose stated clearly? [x] Yes [ ] No	Outline the purpose of the study. How does the study apply to your research question? The purpose of the study was to examine the direct and indirect effects of problematic Instagram use (PIU) on different psychopathological outcomes including loneliness, depression, anxiety, and social anxiety via body image dissatisfaction (BID). This applies to my research question because it explores how frequent use of Instagram leads to body image dissatisfaction among both male and female adolescents.
LITERATURE Was relevant background literature reviewed? [x] Yes [ ] No	Describe the justification of the need for this study: The background literature reported that the frequency of Instagram use has been found to be associated with different problems among males and females including negative mood, body dissatisfaction, negative social comparisons and lower self-esteem. This describes the justification for the study reporting that it is important to explore the direct and indirect effects of PIU while examining the mediating role of BID and moderating role of gender on this relationship. The review of the literature described research and provided background to the study including, problematic Instagram use and psychopathological outcomes, the mediating role of body image dissatisfaction and the moderating role of gender.

DESIGN ☐ Randomized ☐ (RCT) cohort ☐ single case design ☐ before and after ☐ case-control ☐ cross-sectional ☒ case study	Describe the study design. Was the design appropriate for the study question? (e.g., for knowledge level about this issue, outcomes, ethical issues, etc.): Specify any biases that may have been operating and the direction of their influence on the results: The study used a cross-sectional study design. Questionnaires were used and the study was conducted in secondary schools, and with the multiple variables being measured and with the short amount of time available to conduct a study during school hours, a cross-sectional study design was most appropriate. The study design was appropriate to assess the prevalence of problematic Instagram use and its effect on body image dissatisfaction in the adolescent population. However, the study reported that the cross-sectional design prevents any casual conclusions on the results obtained.
SAMPLE N = Was the sample described in detail? ☒ Yes ☐ No Was sample size justified? ☒ Yes ☐ No ☐ N/A	Sampling (who; characteristics; how many; how was sampling done?) If more than one group, was there similarity between the groups?: Describe ethics procedures. Was informed consent obtained?: A total of 203 male and 288 female participants with the mean age being 15.92 years and the range being 14-19 years with a total of 491 students. The participants were recruited from a Turkish public Anatolian high school for the study. The chosen school was in an urban area in which the research team believed would increase the likelihood of recruiting students who were regular Instagram users which was the focus of the study. The study adopted a convenience sampling method in which available students who were Instagram users were able to participate in the study during data collection. The research team visited each classroom and informed the students about the aims of the study and handed out paper and pencil questionnaires. The participants were told that participation of the study was voluntary, and all data were confidential and anonymous. Ethical approval for the study was received from the provincial directorate of national education committee and complied with the Helsinki declaration.

OUTCOMES Were the outcome measures reliable? [x] Yes [ ] No [ ] Not addressed [ ] [ ] [ ]	Specify the frequency of outcome measurement (i.e., pre, post, follow-up): Frequency of outcome measurement was not reported.	
	Outcome areas: List measures used.: Bergen Facebook Addiction Scale (BFAS) Was used by replacing Facebook with Instagram and the study reported that BFAS has been widely used and adapted To assess problematic use of different Social media applications. The study Also reported that BFAS had good Structural validity for the present study was high in the present study.	and the internal consistency coefficient

2

Were the outcome measures valid? Yes [x] No [ ] Not addressed [ ]	Body image dissatisfaction scale (BIDS) – study reported that the Turkish adaption with the adolescent sample indicated good structural validity for the study and the internal consistency was high in the present study. Reliability and validity were reported in the present study.
INTERVENTION Intervention was described in detail? [ ] Yes [ ] No [ ] Not addressed Contamination was avoided? [ ] Yes [ ] No [ ] Not addressed [ ] N/A	Provide a short description of the intervention (focus, who delivered it, how often, setting). Could the intervention be replicated in practice? Not applicable for the current study.

RESULTS Results were reported in terms of statistical significance? [x] Yes [ ] No [ ] N/A [ ] Not addressed Were the analysis method(s) appropriate?	What were the results? Were they statistically significant (i.e., $p < 0.05$)? If not statistically significant, was study big enough to show an important difference if it should occur? If there were multiple outcomes, was that taken into account for the statistical analysis? Overall, there was a significant moderating effect of gender on the direct and indirect relationships between PIU and loneliness (B=.14; p = <.05; 95% CI [.07, .20]). Among male adolescents, BID was a partial mediator between PIU and psychopathological outcomes (B=.05, p = <.05; 95% CI [.00, .12]). The results were reported in terms of statistical significance. Statistical analyses were used and was appropriate for the current study to calculate mean scores and standard deviations of the study variables. Next, Pearson's correlation test was used to determine correlation coefficients between variables.

3

Yes [ ] No [ ] Not addressed [x]	Next path analyses were carried out. Whether the analyses method was appropriate for the current study was not addressed.
Clinical importance was reported? [ ] Yes [ ] No [ ] Not addressed	What was the clinical importance of the results? Were differences between groups clinically meaningful? (if applicable) Not applicable for the current study.
Drop-outs were reported? [ ] Yes [x] No	Did any participants drop out from the study? Why? (Were reasons given and were drop-outs handled appropriately?) No dropouts were reported in the current study.

CONCLUSIONS AND IMPLICATIONS Conclusions were appropriate given study methods and results [x] Yes [ ] No	What did the study conclude? What are the implications of these results for practice? What were the main limitations or biases in the study? The limitations reported in the study included, the cross-sectional study design prevents any casual conclusions on the results obtained and reported a longitudinal design would have been a better option in order to establish casualty between the variables examined. Secondly, the study group only comprised Turkish adolescent students which prevented generalization of the results of other nationalities. Additionally, data was all self-reported and are therefore subject to well-known biases (such as memory recall and social desirability). Overall, the study concluded that female adolescents had significantly higher scores on all study variables compared with males, and there was a significant mediating effect of BID and moderating effect of gender between PIU and adolescent psychopathology. The study provided evidence in order to prevent and/or reduce adolescent psychopathological symptoms for health professionals and clinicians.

No. 6

Critical Review Form – Quantitative Studies

Law, M., Stewart, D., Pollock, N., Letts, L. Bosch, J., & Westmorland, M. McMaster University

- Adapted Word Version Used with Permission –

The EB Group would like to thank Dr. Craig Scanlan, University of Medicine and Dentistry of NJ, for providing this Word version of the quantitative review form.

Instructions: Use tab or arrow keys to move between fields, mouse or spacebar to check/uncheck boxes.

CITATION Schreurs & Vadenbosch (2022)	Provide the full citation for this article in APA format: Schreurs, L and Vandenbosch, L (2022) *'Different interactions with appearance-focused social media content and adolescents' body dissatisfaction: A within-person perspective'*. Computers in Human Behavior.
STUDY PURPOSE Was the purpose stated clearly? [X] Yes [ ] No	Outline the purpose of the study. How does the study apply to your research question? The purpose of the study was to test the within-person relations between different interactions with appearance-focused social media content (exposure, liking, positively commenting and posting) and adolescents' body dissatisfaction. This applies to my study because it explores how the ways in which adolescents engage with social media and the content, they are exposed to can contribute to negative views on body image (body image dissatisfaction).
LITERATURE Was relevant background literature reviewed? [X] Yes [ ] No	Describe the justification of the need for this study: The background literature provided the justification needed for the current study, providing evidence on interactions with appearance-focused social media content and body dissatisfaction, exposure to idealized appearance content, likes and favourable comments and posting.
DESIGN [ ] Randomized [X] (RCT) cohort [ ] single case [ ] design before [ ] and after case- [ ] control cross- [ ] sectional case study	Describe the study design. Was the design appropriate for the study question? (e.g., for knowledge level about this issue, outcomes, ethical issues, etc.): Specify any biases that may have been operating and the direction of their influence on the results: The study used a cohort study design. The study was a three-wave panel study with a four-month time interval and was appropriate for the study question because the aim was to explore multiple interactions with appearance-focused social media content over time to strengthen the quality of the results. The cohort study design enabled the possibility of examining the multiple results from the given exposure.

SAMPLE N = Was the sample described in detail? [v] Yes [ ] No Was sample size justified? [X] Yes [ ] No [ ] N/A	Sampling (who; characteristics; how many; how was sampling done?) If more than one group, was there similarity between the groups?· Describe ethics procedures. Was informed consent obtained?· Parents were asked for passive parental consent for their child to participate and the adolescent respondents provided active assent. During Wave 1, 1895 adolescents responded to the questionnaire and in Wave 2, 1677 responded and in Wave 3, 966 responded. Respondents were included in the analytical sample when they participated in at least two or three waves. Each questionnaire included an ttention check, and adolescents who did not select this were excluded from the analyses. Overall, 1032 adolescents were included with a mean age of 14.55 years. The study received ethical approval from the SMEC review board of the KU Leuven. The authors stated how they arrived at the sample size, providing justification as to why that number was chosen.

OUTCOMES Were the outcome measures reliable? [ ] Yes [ ] No [X] Not addressed Were the outcome measures valid? [ ] Yes [ ] No [X] Not addressed	Specify the frequency of outcome measurement (i.e., pre, post, follow-up): 4 months frequency and outcomes were measures after wave 1, wave 2 and wave 3. Outcome areas: List measures used.: Interactions with appearance-focused Social media content was self-reported And measured. – the four appearances Factors of the short interactions with Positive social media content scales were Used, for which reliability and validity Had been established in an adolescent Sample. Body dissatisfaction was measured using the Stunkard Figure Rating Scale. The validity and reliability were not addressed.

INTERVENTION Intervention was described in detail? ☐ Yes ☐ No ☐ Not addressed Contamination was avoided? ☐ Yes ☐ No ☐ Not addressed ☐ N/A Cointervention was avoided? ☐ Yes ☐ No ☐ Not addressed ☐ N/A	Provide a short description of the intervention (focus, who delivered it, how often, setting). Could the intervention be replicated in practice? Not applicable for the current study.
RESULTS Results were reported in terms of statistical significance? ☐ Yes ☒ No ☐ N/A ☐ Not addressed Were the analysis method(s) appropriate? ☐ Yes ☐ No ☒ Not addressed	What were the results? Were they statistically significant (i.e., $p < 0.05$)? If not statistically significant, was study big enough to show an important difference if it should occur? If there were multiple outcomes, was that taken into account for the statistical analysis? The results reported in terms of statistical significance was not addressed. Zero-order correlations, means, and SD's were used to present the results. An analytical strategy was used. Descriptive statistics, zero-order correlations and intra-class correlations (ICCs) were calculated. The study did not report much information on the analysis method and whether it was appropriate.
Clinical importance was reported? ☐ Yes ☐ No ☐ Not addressed	What was the clinical importance of the results? Were differences between groups clinically meaningful? (if applicable) Not applicable for the current study.
Drop-outs were reported? ☒ Yes ☐ No	Did any participants drop out from the study? Why? (Were reasons given and were drop-outs handled appropriately?) No reasons were given for dropouts throughout the study. The sample size started with 1895 adolescents and concluded with 1032 due to adolescents not responding to the questionnaire in more than 2 waves. Those who participated in two of the three waves were included.

CONCLUSIONS AND IMPLICATIONS Conclusions were appropriate given study methods and results ☐ Yes ☒ No	What did the study conclude? What are the implications of these results for practice? What were the main limitations or biases in the study? Overall, the study concluded that increased posting of appearance-focused content predicted decreased body dissatisfaction four months later and liking and positively commenting did not predict adolescents' body dissatisfaction over time. Limitations to the study included using self-reports of adolescents' social media interactions reporting that one constraint is that the reported behaviours are not always a true reflection of actual behaviours. Additionally, gender was assessed dichotomously. No implications for practice were reported however the limitations can contribute to this.

No. 7

Critical Review Form – Quantitative Studies

Law, M., Stewart, D., Pollock, N., Letts, L. Bosch, J., & Westmorland, M. McMaster University

The EB Group would like to thank Dr. Craig Scanlan, University of Medicine and Dentistry of NJ, for providing this Word version of the quantitative review form.

Instructions: Use tab or arrow keys to move between fields, mouse or spacebar to check/uncheck boxes.

CITATION Steinsbekk et al (2021)	Provide the full citation for this article in APA format: Steinsbekk, S., Wichstrøm, L., Stenseng, F., Nesi, J., Hygen, B.W., and Skalická, V (2021) *'The impact of social media use on appearance self-esteem from childhood to adolescence – A 3 wave community study'*. Computers in Human Behavior.
STUDY PURPOSE Was the purpose stated clearly? [X] Yes [ ] No	Outline the purpose of the study. How does the study apply to your research question? The purpose of the study was stated clearly reporting that it will examine whether self-oriented social media use (posting updates and photos on one's own page) versus other-oriented social media activities (liking/commenting on other's posts) are prospectively associated with appearance self-esteem across four years with gender differences in these effects also being tested. This applies to my current study because it examines the engagement with certain behaviours on social media and how it is associated with self-esteem (negative and positive views on body image).
LITERATURE Was relevant background literature reviewed? [X] Yes [ ] No	Describe the justification of the need for this study: The background literature provided relevant information and evidence that described the justification of the need for the study including, self-oriented versus other-oriented social media use, gender specific effects and social media use and appearance self-esteem. The background literature reported that social media users are constantly exposed to photos displaying idealized self-presentations which poses a threat to youth's appearance self-esteem, but the negative impact may depend upon types of social media engagement (self-oriented and other-oriented) providing justification for the need of the current study.

DESIGN ☐ Randomized ☒ (RCT) cohort ☐ single case design ☐ before and after ☐ case-control ☐ cross-sectional ☐ case study	Describe the study design. Was the design appropriate for the study question? (e.g., for knowledge level about this issue, outcomes, ethical issues, etc.): Specify any biases that may have been operating and the direction of their influence on the results: The study used a cohort study design. The design was appropriate for the study question because it explored the impact of social media use on appearance self-esteem from childhood to adolescence. Because the research question wanted to explore from childhood to adolescence, a cohort study was appropriate because it was followed up over 4 years, with the same participants at ages 10, 12 and 14 years and were selected based on the exposure status of the individual.
SAMPLE N = Was the sample described in detail? ☒ Yes ☐ No ☐ Was sample size justified? Yes ☒ No ☐ N/A ☐	Sampling (who; characteristics; how many; how was sampling done?) If more than one group, was there similarity between the groups?: Describe ethics procedures. Was informed consent obtained?: All children born in 2003 and 2004 (n=3456) in the city of Trondheim, Norway and their parents were invited to participate in the Trondheim Early Secure Study (TESS). An invitation letter and screening assessment for children's emotional and behavioural problems were sent to children's homes. Parents brought the completed questionnaire to the community health check-up when children were 4 years old. There, they were received information about the study from the health care nurse, who obtained written participant consent. Out of 1250 families, 997 were interviewed and tested at age 4. Social media use was assessed from age 10 onwards.

OUTCOMES Were the outcome measures reliable? ☐ Yes ☐ No ☒ Not addressed Were the outcome measures valid? ☐ Yes ☐ No ☒ Not addressed	Specify the frequency of outcome measurement (i.e., pre, post, follow-up): Measured at ages 10, 12 and 14 over a period of 4 years.	
	Outcome areas: List measures used.: Social media use – self-reported and Measured through questionnaires. Physical appearance self-esteem – Measured by the physical appearance Subscale of the Self-Description Questionnaire (SDQ-I) Reliability and validity was not addressed in	the study.

INTERVENTION Intervention was described in detail? ☐ Yes ☐ No ☐ Not addressed Contamination was avoided? ☐ Yes ☐ No ☐ Not addressed ☐ N/A Cointervention was avoided? ☐ Yes ☐ No ☐ Not addressed ☐ N/A	Provide a short description of the intervention (focus, who delivered it, how often, setting). Could the intervention be replicated in practice? Not applicable for the current study.
RESULTS Results were reported in terms of statistical significance? ☒ Yes ☐ No ☐ N/A ☐ Not addressed Were the analysis method(s) appropriate? ☒ Yes ☐ No Not addressed	What were the results? Were they statistically significant (i.e., $p < 0.05$)? If not statistically significant, was study big enough to show an important difference if it should occur? If there were multiple outcomes, was that taken into account for the statistical analysis? Average levels of appearance self-esteem significantly decreased over time (age 10-12): $p < .001$; age 12-14; $p < .001$. Self-oriented social media use increased from age 10 to 12 ($p=.005$) and then remained stable from age 12 to 14 (p-.087). Other-oriented social media use increased at each time point (age 10-12; $p < .001$; 12-14; $p < .001$) – results were reported in terms of statistical significance. The study used statistical analyses which was appropriate for the current study because it examined the correlation between different variables of interest (other-oriented use and self-oriented use) on appearance self-esteem.
Clinical importance was reported? ☐ Yes ☐ No ☐ Not addressed	What was the clinical importance of the results? Were differences between groups clinically meaningful? (if applicable) Not applicable for the current study.

Drop-outs were reported? ☐ Yes ☒ No	Did any participants drop out from the study? Why? (Were reasons given and were drop-outs handled appropriately?)

3

	No dropouts were reported in the study., however the amount of participants who decided not to take part was reported.
CONCLUSIONS AND IMPLICATIONS Conclusions were appropriate given study methods and results ☒ Yes ☐ No	What did the study conclude? What are the implications of these results for practice? What were the main limitations or biases in the study? Overall the study concluded that increased other-oriented social media use reduced future appearance self-esteem in girls, whereas self-oriented use did not. Limitations included although the influence of time-varying factors was ruled out, uncontrolled time-varying factors may still be at play (e.g., bullying affecting both social media use and appearance self-esteem), and there is a range of factors other than social media that impact appearance self-esteem. – future study recommendations. Conclusions were appropriate given the study methods and results however no implications were present for practice.

Appendix. 5. Mixed Methods Appraisal Tool (MMAT).

MIXED METHODS APPRAISAL TOOL (MMAT) VERSION 2018

User guide

Prepared by
Quan Nha HONG[a], Pierre PLUYE[a], Sergi FÀBREGUES[b], Gillian BARTLETT[a], Felicity BOARDMAN[c], Margaret CARGO[d], Pierre DAGENAIS[e], Marie-Pierre GAGNON[f], Frances GRIFFITHS[c], Belinda NICOLAU[a], Alicia O'CATHAIN[g], Marie-Claude ROUSSEAU[h], & Isabelle VEDEL[a]

[a]McGill University, Montréal, Canada; [b]Universitat Oberta de Catalunya, Barcelona, Spain; [c]University of Warwick, Coventry, England; [d]University of Canberra, Canberra, Australia; [e]Université de Sherbrooke, Sherbrooke, Canada; [f]Université Laval, Québec, Canada; [g]University of Sheffield, Sheffield, England; [h]Institut Armand-Frappier Research Centre, Laval, Canada

McGill | Department of Family Medicine | Département de médecine de famille
Academic excellence and innovation in care, teaching and research
Innovation et excellence académique dans les soins, l'enseignement et la recherche

Last update: August 1st, 2018

What is the MMAT?

The MMAT is a critical appraisal tool that is designed for the appraisal stage of systematic mixed studies reviews, i.e., reviews that include qualitative, quantitative and mixed methods studies. It permits to appraise the methodological quality of five categories to studies: qualitative research, randomized controlled trials, non-randomized studies, quantitative descriptive studies, and mixed methods studies.

How was the MMAT developed?

The MMAT was developed in 2006 (Pluye et al., 2009a) and was revised in 2011 (Pace et al., 2012). The present version 2018 was developed on the basis of findings from a literature review of critical appraisal tools, interviews with MMAT users, and an eDelphi study with international experts (Hong, 2018). The MMAT developers are continuously seeking for improvement and testing of this tool. Users' feedback is always appreciated.

What the MMAT can be used for?

The MMAT can be used to appraise the quality of empirical studies, i.e., primary research based on experiment, observation or simulation (Abbott, 1998; Porta et al., 2014). It cannot be used for non-empirical papers such as review and theoretical papers. Also, the MMAT allows the appraisal of most common types of study methodologies and designs. However, some specific designs such as economic and diagnostic accuracy studies cannot be assessed with the MMAT. Other critical appraisal tools might be relevant for these designs.

What are the requirements?

Because critical appraisal is about judgment making, it is advised to have at least two reviewers independently involved in the appraisal process. Also, using the MMAT requires experience or training in these domains. For instance, MMAT users may be helped by a colleague with specific expertise when needed.

How to use the MMAT?

This document comprises two parts: checklist (Part I) and explanation of the criteria (Part II).

1. Respond to the two screening questions. Responding 'No' or 'Can't tell' to one or both questions might indicate that the paper is not an empirical study, and thus cannot be appraised using the MMAT. MMAT users might decide not to use these questions, especially if the selection criteria of their review are limited to empirical studies.
2. For each included study, choose the appropriate category of studies to appraise. Look at the description of the methods used in the included studies. If needed, use the algorithm at the end of this document.
3. Rate the criteria of the chosen category. For example, if the paper is a qualitative study, only rate the five criteria in the qualitative category. The 'Can't tell' response category means that the paper do not report appropriate information to answer 'Yes' or 'No', or that report unclear information related to the criterion. Rating 'Can't tell' could lead to look for companion papers, or contact authors to ask more information or clarification when needed. In Part II of this document, indicators are added for some criteria. The list is not exhaustive and not all indicators are necessary. You should agree among your team which ones are important to consider for your field and apply them uniformly across all included studies from the same category.

How to score?

It is discouraged to calculate an overall score from the ratings of each criterion. Instead, it is advised to provide a more detailed presentation of the ratings of each criterion to better inform the quality of the included studies. This may lead to perform a sensitivity analysis (i.e., to consider the quality of studies by contrasting their results). Excluding studies with low methodological quality is usually discouraged.

How to cite this document?

Hong QN, Pluye P, Fàbregues S, Bartlett G, Boardman F, Cargo M, Dagenais P, Gagnon M-P, Griffiths F, Nicolau B, O'Cathain A, Rousseau M-C, Vedel I. Mixed Methods Appraisal Tool (MMAT), version 2018. Registration of Copyright (#1148552), Canadian Intellectual Property Office, Industry Canada.

For dissemination, application, and feedback: Please contact mixed.methods.appraisal.tool@gmail.com

For more information: http://mixedmethodsappraisaltoolpublic.pbworks.com/

Part I: Mixed Methods Appraisal Tool (MMAT), version 2018

Category of study designs	Methodological quality criteria	Responses			
		Yes	No	Can't tell	Comments
Screening questions (for all types)	S1. Are there clear research questions?	X			Study reported four questions regarding body dissatisfaction, experiences using social media, frequency and content.
	S2. Do the collected data allow to address the research questions?	X			Data collected included: grouping variables, dependant variables and socioemotional health to address the research questions.
	Further appraisal may not be feasible or appropriate when the answer is 'No' or 'Can't tell' to one or both screening questions.				
1. Qualitative	1.1. Is the qualitative approach appropriate to answer the research question?	X			Example: if participants answered

					yes to feeling down when viewing social media content regarding their body image, participants were asked follow up questions to expand their answer.
	1.2. Are the qualitative data collection methods adequate to address the research question?	X			Online survey was conducted. E.g. for those who reported social media-related BD, answers were qualitatively broke down.
	1.3. Are the findings adequately derived from the data?	X			Questions that were answered were qualitatively broke down and presented.
	1.4. Is the interpretation of results sufficiently substantiated by data?			X	No quotes were reported, but the reasons given were categorised and presented in percentages. Descriptive results were reported.
	1.5. Is there coherence between qualitative data sources, collection, analysis and interpretation?			X	*Not much information was reported. 40 minute online survey was conducted and only gender differences*

					were reported qualitatively to address the different experiences in gender.
2. Quantitative randomized controlled trials	2.1. Is randomization appropriately performed?				*N/A*
	2.2. Are the groups comparable at baseline?				*N/A*
	2.3. Are there complete outcome data?				*N/A*
	2.4. Are outcome assessors blinded to the intervention provided?				*N/A*
	2.5 Did the participants adhere to the assigned intervention?				*N/A*
3. Quantitative nonrandomized	3.1. Are the participants representative of the target population?	X			700 participants (52% female, 48% male).
	3.2. Are measurements appropriate regarding both the outcome and intervention (or exposure)?	X			Appropriate scales were used to measure both the outcomes and exposure.
	3.3. Are there complete outcome data?	X			Numeral data is reported.
	3.4. Are the confounders accounted for in the design and analysis?	X			Cofounders had been associated with both the grouping and dependant variables.
	3.5. During the study period, is the intervention administered (or exposure occurred) as intended?	X			Exposure to appearance-related social media occurred as intended.
4. Quantitative descriptive	4.1. Is the sampling strategy relevant to address the research question?	X			700 middle school participants. School based survey. Appropriate to

					address research question.
	4.2. Is the sample representative of the target population?	X			700 participants aged 11-14.
	4.3. Are the measurements appropriate?	X			Self-measured using 7 point scales, depressive symptoms – depression scale for children, online social anxiety – fear of negative evaluation subscale etc.
	4.4. Is the risk of nonresponse bias low?	X			School-based survey, schools provided laptops and study personnel proctored the survey administration to ensure student data was confidential.
	4.5. Is the statistical analysis appropriate to answer the research question?	X			Statistical analyses was appropriate and was reported in the study.
5. Mixed methods	5.1. Is there an adequate rationale for using a mixed methods design to address the research question?	X			To address grouping variables (SM related body dissatisfaction) etc. and dependant variables (frequency of use) etc.
	5.2. Are the different components of the study effectively integrated to answer the research question?	X			Data was gathered from both research

					methods and was brought together to answer the research question effectively.
	5.3. Are the outputs of the integration of qualitative and quantitative components adequately interpreted?	X			Meta-inference occurred, resulting in an overall explanation and understanding obtained from both qualitative and quantitative findings. Showed added value to conducting a mixed methods study.
	5.4. Are divergences and inconsistencies between quantitative and qualitative results adequately addressed?			X	Not reported in the current study.
	5.5. Do the different components of the study adhere to the quality criteria of each tradition of the methods involved?			X	Can't tell throughout the study.