

THE UNIVERSITY OF HULL

Social networking sites, body image and well-being: The roles of social
comparison and compassion

being a Thesis submitted in partial fulfilment
of the requirements for the degree of Doctor of Clinical Psychology

in the University of Hull

by

Mary Walker BSc (Hons) Psychology, University of York

May 2018

Acknowledgements

Firstly, I'd like to thank all of the people who made this research happen. This includes those who tested out the survey and provided feedback in the development phase; those who distributed the survey and those who completed it. Importantly, I would also like to thank my research supervisors, Tim and Philip, for your guidance and support throughout the process. Thank you for taking the time to listen to my ideas, to give advice and clarity and to read through many drafts. Thank you also for letting me know that it's okay to take time out when needed. I would also like to thank Eric, for help with designing, running and understanding the statistical analysis.

I'd like to acknowledge my peers; my fellow trainees who have been allies over the last three years; providing support, ideas and laughter. In particular I would like to thank Cara, for getting me through this training with study sessions and thesis discussions, but most vitally with shared meltdowns, humour, takeaways and wine.

Finally, I would like to thank my family, for your unwavering encouragement and support which goes way beyond this thesis process. Thank you to my grandparents, for loving me and being proud of me. Thank you to "the Walkers" for accepting me into the family and for your generosity, humour and roast dinners which have made the past 3 years infinitely better. To Elisabeth, my beautiful and clever big sister, thank you for always being there and looking out for me. To my parents, Paul and Catherine, thank you for your generosity, wisdom and creativity and for encouraging me to pursue my dreams, whatever they might be. And last but not least, thank you to Rory. You have put up with me throughout the ups and downs of the last few years and you have been consistently wonderful. Thank you for being patient, cutting through the nonsense, and for letting me have Rupert, our lively and lovable dog.

Overview

This portfolio thesis comprises three parts: a systematic literature review, a quantitative empirical paper and supporting appendices.

Part One is a systematic review of the literature regarding the role that social comparison plays in the relationship of social networking site use and wellbeing. This review builds upon evidence suggesting that social network site use impacts positively and negatively upon well-being, aiming to understand possible underlying processes.

The psychological impacts of social comparison on social networking sites are also considered in the empirical investigation presented in the paper in Part Two. The empirical study focuses specifically upon appearance comparisons made when using social networking sites and considers the impacts upon body satisfaction. Furthermore, the empirical paper considers whether compassion is protective against the negative impacts on body image of appearance comparison when social networking. The empirical study used quantitative methodology and questionnaire data from social network site users to explore these relationships.

Part Three comprises of appendices, including reflective and epistemological statements.

Overall word count (excluding appendices): 23,282

Table of Contents

Section	Page
Acknowledgements	2
Overview	3
Table of contents	4
List of tables and figures	5
Part one: Systematic Literature Review	6
Highlights	8
Abstract	8
Introduction	8
Method	12
Results	18
Discussion	44
Conclusion	52
References	54
Part two: Empirical paper	64
Highlights	66
Abstract	66
Introduction	67
Materials and methods	72
Results	77
Discussion	86
Conclusions	94
References	96
Part three: Appendices	101
Appendix A. Epistemological statement	102
Appendix B. Reflective statement	105
Appendix C. Guidelines for authors for Computers in Human Behavior	112
Appendix D. Data extraction form	126
Appendix E. Quality assessment checklist	128
Appendix F. Quality assessment individual breakdown of scores	133
Appendix G. Guidelines for authors for Body Image	135
Appendix H. Confirmation of ethics approval	149
Appendix I. Consent form	150
Appendix J. Participant information form	151
Appendix K. Demographic questionnaire items	154
Appendix L. Comparison questionnaire items	155
Appendix M. Body satisfaction questionnaire items	156
Appendix N. Compassion questionnaire items:	158
Appendix O. Sources of support	165

List of tables and figures

List of tables

Table 1: Summary of included studies

Table 2: Descriptive statistics for overall scores of interval data variables

Table 3: Time spent by participants on social networking sites each day

Table 4: Pearson correlations

Table 5: Regression and F changes statistics for models 1 and 2

Table 6: Regression coefficients for predictor variables in model 1 and 2.

List of figures

Figure 1: PRISMA flow diagram of the article selection process

Figure 2: Scatterplot showing the relationship between Physical appearance comparison and Body satisfaction

Figure 3: Scatterplot showing the relationship between Self-compassion and Body satisfaction

Figure 4: Scatterplot showing the relationship between Compassion from others and Body satisfaction

Part one: Systematic Literature Review

This paper is written in the format ready for submission to the journal, Computers in Human Behavior. Please see Appendix C. for Guidelines for Authors.

Word count (excluding title page, highlights, abstract, references, figures and tables): 8,124*

*for information only, there is no reported word limit within Computers in Human Behavior author guidelines

“What role does social comparison on social networking sites play in well-being?": A systematic review

Mary Walker^{1*}, Tim Alexander¹, Philip Molyneux¹

¹ Doctorate in Clinical Psychology, School of Health and Social Work,
University of Hull, Aire Building, Cottingham Road, Hull, United
Kingdom, HU6 7RX

*Corresponding author.

Postal Address: School of Health and Social Work, University of Hull, Aire
Building, Cottingham Road, Hull, United Kingdom, HU6 7RX

Email address: m.walker@2015.hull.ac.uk

Telephone number: +44(0)1482 464106 Fax: +44(0)1482 464093

Key words: Social networking, Social networking site, Well-being, Social
comparison

Highlights

- Social comparison appears to play a role in negative impacts of social networking
- Higher levels of comparison when social networking relates to poorer well-being
- It is not clear whether social comparison plays a moderating or mediating role

Abstract

Evidence suggests that social network site use impacts upon psychological well-being, both positively and negatively. It is important to understand the processes underlying this impact in order to maximise or protect well-being. The present review aimed to systematically summarise and synthesise the relevant evidence in order to confirm what role social comparison on social networking sites plays in well-being. Evidence suggests that social comparison plays a role, with higher levels of comparison relating to lower well-being in areas of affective well-being, self-esteem, life satisfaction, general mental health and general well-being. However, there is little agreement regarding the nature of the role of social comparison, both within and across aspects of well-being with studies suggesting that social comparison both moderates and mediates the relationship of social networking and well-being. Nevertheless, interventions and initiatives that reduce comparison behaviour might protect or maximise well-being in the context of increasing social network site use.

1. Introduction

Social comparison theory (Festinger, 1954) suggests that individuals determine their worth and status in different areas of their lives based upon how they compare with

others. Positive and negative comparisons and self-evaluations can lead to individuals experiencing themselves either positively or negatively. Festinger was interested in the role and impact of social comparisons made with peers in social groups (Festinger, 1954; Buunk & Gibbons, 2007). Since then, over the past 20 years, studies have drawn from social comparison theory to understand the impact of exposure to different media platforms on psychological outcomes (Heinberg & Thompson, 1999). Studies have considered different media types as additional platforms for comparison, suggesting that TV exposure, advertising and magazines all allow opportunity for social comparison processes and related impacts (All Party Parliamentary Group, 2012; Heinberg & Thompson, 1999; Cattarin, Thompson, Thomas & Williams, 2000; Bessenhoff, 2006). Studies exploring the impact of these platforms have suggested that where there is negative social comparison with idealised content and images, individuals can experience negative impacts such as lower mood and self-esteem, increased anxiety and decreased body image satisfaction (Heinberg & Thompson, 1999; Cattarin et al., 2000; Tiggemann & McGill, 2004; Bessenhoff, 2006). Interventions have attempted to mitigate the impact of social comparison via different media platforms. For example, media literacy interventions introduced in schools have aimed to improve body image (All Party Parliamentary Group, 2012). These have encouraged individuals to critically evaluate images shown in the media to reduce the impacts of comparison (Alleva, Sheeran, Webb, Martijn & Miles, 2015).

Social media is a relatively new media form which is becoming increasingly embedded in our culture (Kemp, 2015). Social networking sites allow worldwide communication and cannot be easily regulated (Government Equalities Office, 2015); therefore they allow individuals to easily view content chosen and shared by peers, celebrities and strangers. Online social networking thus allows comparisons to be made across a wider network than when socialising offline (Fardouly & Vartanian, 2015). Additionally, as

individuals often selectively present ideal self-information when social networking, comparisons may be based upon biased information (Haferkamp & Kramer, 2011; Lee, 2014). Due to the idealised content, social comparison when social networking may result in more negative self-evaluation than comparisons made offline (Haferkamp & Kramer, 2011; Lee, 2014). As social network site use is increasingly widespread (Kemp, 2015) it is important to understand how social networking impacts upon psychological well-being, both positively and negatively. Empirical studies and reviews have provided evidence that social network site use impacts upon aspects of psychological well-being, including affect and mood, self-esteem, quality of life and life satisfaction (Pantic, 2014; Richards, Caldwell & Go, 2015; Cheatham, 2012; Verduyn, Ybarra, Resibois, Jonides & Kross, 2017). Studies have given disparate findings, showing both positive and negative impacts of social networking (Cheatham, 2012; Richards et al., 2015; Best, Manktelow & Taylor, 2014) and so it is important to understand the processes and factors underlying the relationship of social networking and well-being (Appel, Crusius & Gerlach., 2016; Baker & Algorta, 2016). This can then help to understand the circumstances in which social networking impacts positively or negatively and guide the development of initiatives which maximise and protect well-being in the context of increasing social network site use.

Systematic literature reviews have supported the idea that comparison on social networking sites is important in certain psychological outcomes such as body image and eating disorders (Fardouly & Vartanian, 2016; Holland & Tiggemann, 2016; Myers & Crowther, 2009). For example, if an individual makes more appearance comparisons when social networking, they are more likely to experience themselves as less attractive compared to others and have higher dissatisfaction with their body (Holland & Tiggemann, 2016). Similar processes are thought to be involved in determining the impact of social networking sites upon other aspects of well-being. If individuals make

more comparisons when social networking, they may rank themselves as worse than others in different aspects of their life and subsequently experience more negative affect, lower life satisfaction and poorer mental health (Verduyn et al., 2017). At present there is one existing review considering the role of social comparison when social networking in well-being. However, this review considers only negative impacts and is specific to depression and so it potentially overlooks useful insights (Appel et al., 2016). This review also lacks rigour and does not present clearly documented methods (Appel et al., 2016). It is therefore important to understand what the current evidence suggests about the role of social comparison in well-being in the broader sense when social networking. A systematic review of the evidence will allow a comprehensive and valid understanding of whether and how social comparison plays a role in the impact of social networking sites upon well-being and allow evaluation of the current literature base. By increasing understanding of the processes underlying the relationship of social networking and well-being, such a review can guide development of prevention and intervention initiatives that maximise and protect well-being within the present context of increasing social network site use (Kemp, 2015; Appel et al., 2016; Baker & Algorta, 2016).

1.1 The present study

The present review aims to systematically consider and summarise the relevant evidence in order to answer the question: “What role does social comparison on social networking sites play in well-being?” It aims to synthesise and evaluate empirical evidence that considers whether social comparison on social networking sites relates to aspects of well-being or evidence where social comparison is considered as a factor in the relationship between social network site use and well-being, for example as a moderator or mediator. The review aims to build on the evidence presented in existing reviews which suggests that social network site use impacts upon well-being

(Cheatham, 2012; Pantic, 2014; Richards et al, 2015; Verduyn et al., 2017), by exploring one of the possible underlying mechanisms. Social comparison on social networking sites has been linked in existing reviews to other specific psychological outcomes such as body image and eating disorders (Fardouly & Vartanian, 2016; Holland & Tiggemann, 2016; Myers & Crowther, 2009). The review aims to ascertain whether social comparison when social networking might also play a role in psychological well-being and the possible nature of this role.

2. Method

2.1 Concept definitions

Social network sites are web-based services that allow individuals to create a public profile within a limited system, connect with other chosen users and to view their connections and the content created by others in the system (Boyd & Ellison, 2007). In line with social comparison theory, social comparison was defined in this review as: making self and other evaluations across a variety of domains (for example, attractiveness, wealth, intelligence and success) (Festinger, 1954). To maintain consistency with previous studies evidencing a relationship between social network site use and well-being (Pantic, 2014; Richards et al., 2015; Best et al., 2014; Cheatham, 2012; Verduyn et al., 2017) and to explore the underlying processes, well-being was conceptualised in this review as subjective well-being (Verduyn et al., 2017; Diener, 1984, 2009; Myers & Diener, 1995), comprising: mental health, affect/feeling, self-esteem, quality of life and life satisfaction. These definitions provided a boundary for the scope of the review which allowed comparison between studies and conclusions to be drawn.

2.2 Search strategy

Searches were performed on article titles, abstracts and keywords. Search terms were compiled from key terms in relevant empirical and review papers and from search terms of reviews more broadly considering relationships between social networking site use and well-being. Additional terms were also generated by identifying synonyms. Search terms were refined, peer reviewed and trialled to ensure comprehensiveness and specificity. The following search terms were applied to databases Medline, Cinahl, PsycInfo, Academic Search Premier and Scopus in October of 2017: (("social network* site" OR "social networking" OR "online social network*" OR "social media" OR facebook OR twitter OR youtube OR instagram OR myspace OR snapchat OR linkedin OR tinder) W/4 (compar* OR evaluat* OR judg*)) AND (psycholog* OR psychiatric OR "well-being" OR wellbeing OR "well being" OR mental* OR health OR symptom* OR mood OR emotion* OR feel* OR affect* OR "self-esteem" OR "self esteem" OR satisf* OR "quality of life" OR qol OR anxi* OR depress*). Databases were chosen to include both broad and specific databases, covering psychology, science and health related content and the near operator was used to limit non-relevant articles. The reference lists of relevant articles were also reviewed to identify further articles. This search process was conducted following recommendations from the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines (Liberati et al., 2009). Accordingly, each study was assessed for risk of bias using the National Institute of Health and Clinical Excellence (NICE) (NICE, 2012) checklist for quantitative studies reporting correlations and associations.

2.3 Eligibility Criteria

The eligibility criteria included studies published in English language in a peer reviewed journal from 2006, as this is when Facebook, the most popular social network site (Showers, 2017), was first publicly available (Abram, 2006). To increase the likelihood of included studies being of high quality and to explore the impacts of social networking, articles were empirical designs and were primary sources of quantitative or mixed design studies, including participants who used social networking sites. To allow determination of the role of social comparison suggested by original research data, included studies needed to have used statistical analysis and measures of comparison and well-being. Studies needed to evaluate whether social comparison on social networking sites has an impact upon well-being or whether social comparison plays a role in the relationship of social network site use and well-being. Finally, at least one standardised outcome measure of well-being, consistent with the definition in section 2.1 above, was required to enable the relationships to be assessed in a way that enables valid and meaningful comparison across studies.

Exclusion criteria comprised unpublished dissertations, theses, or papers aimed only at developing a measure of psychological outcome and articles with only descriptive data and no empirical analysis. Case studies, discussion papers, literature reviews or other secondary sources were also excluded. This was to increase the likelihood of included studies being high quality and using sound empirical methods to explore the relationships in question. Studies considering outcomes of body image and eating disorders were excluded in order to avoid duplication given the existing reviews in these areas. Studies not considering the role of social comparison were also excluded to maintain relevance to the review question. Studies where the well-being measure was designed for a specific population (e.g. those with breast cancer) and studies solely

considering the impacts of comparison on outcomes not included in the above definition of well-being were also excluded. This was to maintain a consistent approach and allow comparison and conclusions across studies. Finally, abstracts submitted to academic journals without detailed description of the study were excluded as there was insufficient information regarding the methods and quality of the research.

2.4 Data Extraction and PRISMA Flowchart

Database searches were performed and article titles were initially screened and excluded based on the exclusion criteria and duplication. Abstracts of the remaining articles were then reviewed and those that clearly fit the exclusion criteria or did not comply with inclusion criteria were excluded. Finally, when further information was required to make a decision regarding relevance, full papers were reviewed and those that did not fit inclusion criteria or met exclusion criteria were excluded. The reference lists of relevant papers were searched for relevant articles. The number of articles retrieved, retained and excluded following each stage of the screening process is shown in the PRISMA flow diagram in Figure 1. Data was extracted following a data extraction form developed for the purpose of this review (see Appendix D.).

2.5 Methodological quality

In line with PRISMA guidelines (Liberati et al., 2009), the quality of each study was assessed to identify possible bias using the NICE (2012) checklist for quantitative studies reporting correlations and associations (see Appendix E.). This was chosen as all selected studies were quantitative, reporting on correlations and associations. The checklist assesses key aspects of study design relevant for the review question, such as the characteristics of study participants; outcomes assessed and methods of analyses.

Criteria that were only relevant for studies with experimental manipulation, such as those considering assignment to comparison conditions, were excluded given that the majority of studies used no experimental manipulation of conditions. The checklist gives an overall score of internal and external validity: these scores for each study are shown in Table 1. Four studies were additionally peer assessed using the quality checklist and ratings discussed, to check inter-rater reliability and ensure reliable assessment. Scores were largely consistent between raters.

2.6 Approach to analysis

Due to the heterogeneity of the included studies in outcome data and study design, a meta-analysis was not appropriate. A narrative approach was therefore taken to synthesising the results (Popay et al., 2006); as this allows evidence from a range of designs to be combined in order to answer a research question. The synthesis process involved moving iteratively between the four main elements of evidence synthesis, as set out in the framework by Popay et al. (2006). These include: developing a theoretical model of understanding, developing an initial synthesis describing patterns in findings, exploring relationships within the data and assessing the strength of the evidence and synthesis.

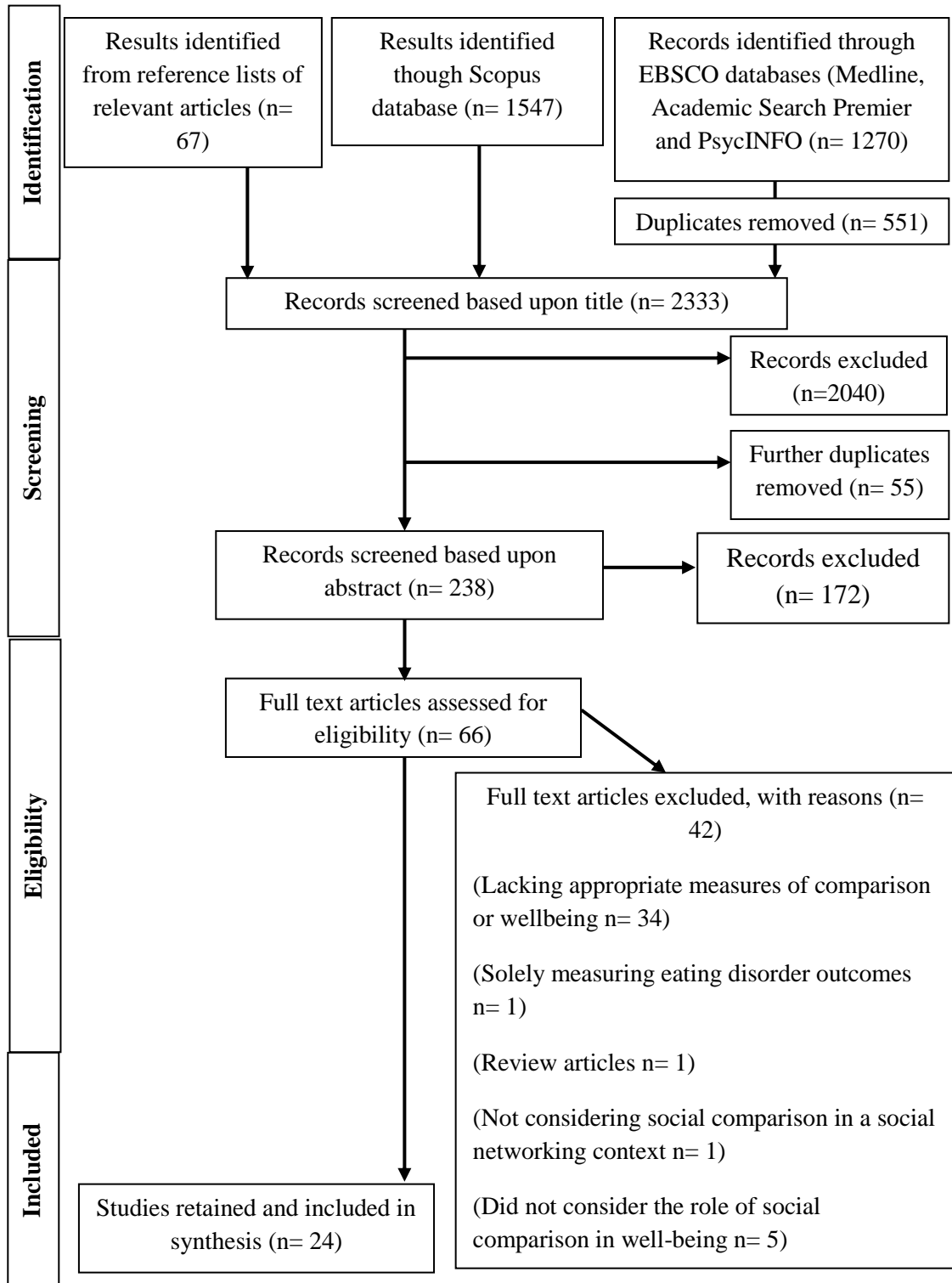


Figure 1. PRISMA flow diagram of the article selection process

3. Results

3.1 Overview of included studies

24 studies were included in the review and are summarised in Table 1. The majority of studies focused upon social networking sites Facebook and Instagram. Studies covered five aspects of well-being: mood/affect, self-esteem, life satisfaction, mental health and general well-being.

3.1.1 Study design and measurement of key variables

The majority of studies used cross-sectional correlational designs and survey methodology; however some used longitudinal designs or experimental manipulations, for example manipulating the context in which comparisons took place. Well-being measures were mostly those that are widely used and accepted, however their reliability and validity were rarely evidenced in the study reports and thus studies often scored poorly for the corresponding quality checklist criteria. Regarding the measurement of comparison, many studies measured tendency to make comparisons on social networking sites using accepted measures of social comparison, such as the Iowa-Netherlands Comparison Orientation Measure (INCOM) (Gibbons & Buunk, 1999), adapted to a social networking context. Other studies measured general tendency to make social comparisons and separately measured social networking site use. Some studies used scales specifically designed for measuring social comparison on social networking sites, such as the Facebook Social Comparison scale (Lee, 2014), and others used novel items or items taken from other scales to measure comparisons made when social networking. The majority of studies measured general social comparison but a small proportion focused specifically on appearance comparisons. Studies also varied in whether they measured the extent of comparison such as overall frequency, or the direction in which comparisons were made. To consider comparison direction, some

studies measured upwards comparisons where individuals compare and rank themselves as worse than others. A few studies also measured downwards comparisons, where individuals compare and rank themselves as better than others. All studies used self-report measures for all variables, meaning that results may be affected by self-report bias and thus all studies scored poorly for the corresponding quality checklist criteria.

Table 1.

Summary of included studies

Study (Authors) Country	Aim(s) of study	Study design	Participant description	Control/ comparison conditions	SNS of focus Measure of SNS use	Aspect of social comparison; Measure of social comparison	Aspect of well-being; Measure of well-being	Other factors measured	Key relevant findings	Quality scores: Internal/ External validity	
										In.	Ex.
Brown & Tiggemann (2016) Australia	Effect of celebrity and peer images on body image and mood in women	Experimental	138 female undergrads ages 18-30	Viewing Instagram photos of attractive celebrities or peers vs travel images	Instagram Having Instagram account, time per day, no. followers and importance of photo quality	Appearance, extent, on Instagram; State Appearance Comparison Scale (Tiggemann & McGill, 2004)	Affective well-being; VAS measuring state mood (Heinberg & Thompson, 1995)	Body satisfaction	Women viewing peers and celebrities had more negative mood after exposure ($F(1, 134) = 10.76, p < .001, \eta^2 = .08$), mediated by appearance comparison for celebrity and peer images ($B = 2.20, \beta = .10, SE = 0.11$; $B = 2.45, \beta = .11, SE = 0.81$).	+	+
Chow & Wan (2017) Not country specific	Relationship of FB use and depressive symptoms and roles of neuroticism, envy and FB social comparison	Cross-sectional, correlational	282 participants recruited through Amazon mTurk, 195 males and 87 females, ages 18-73	None	FB Average time on FB per day, no. friends	Social comparison, extent, on FB; FSCS (Lee, 2014)	Affective well-being; Depression, anxiety and stress scale (Lovibond & Lovibond, 1995)	Envy, personality (neuroticism)	Social comparison correlated with depression ($r = 0.32, p < .001$) and in the regression model FB comparison predicted depression ($B = .00, \beta = .12, p < .05$). Interactive effects of FB and social comparison were non-significant ($B = .00, \beta = .02, p > .05$). Depressive symptoms only related to FB use in those high in neuroticism ($B = .00, \beta = .14, p < .01$).	++	+

Study (Authors) Country	Aim(s) of study	Study design	Participant description	Control/ comparison conditions	SNS of focus Measure of SNS use	Aspect of social comparison; Measure of social comparison	Aspect of well-being; Measure of well-being	Other factors measured	Key relevant findings	Quality scores: Internal/ External validity	
Coyne et al. (2017) USA	Associations between social comparison on social networking sites and mothers' parenting, mental health and relationship outcomes.	Cross-sectional, correlational	721 mothers in 'imom' project, female, mean age = 30.33	None	Any SNS Frequency of SNS use	Social comparison, extent, on SNS; Single likert scale item	Affective well-being, life satisfaction; CES-D (Radloff, 1977), 5-item SWLS (Diener, Emmons, Larsen & Griffin, 1985)	Parenting role overload, parenting competence, perceived social support, relationship outcomes	Greater social comparison significantly predicted higher depressive symptoms ($\beta = 0.11$, $p < 0.01$) but there was no significant prediction for life satisfaction ($\beta = -0.01$, $p > 0.05$).	+	++
Cramer et al. (2016) USA	Relationship between comparison motivations, self-esteem and affective outcomes of comparison	Cross-sectional, correlational	267 undergrads, 67% females, ages 18-51	None	FB Time on FB per day, no. times per day, posting vs reading content	Social comparison tendency, extent, on FB; INCOM (Gibbons & Buunk, 1999) adapted to FB	Affective well-being, self-esteem; SES (Rosenberg, 1989), list of affective responses	Perception of social comparison, comparison motivations (e.g. to self-improve, to self-enhance)	Poorer self-esteem was associated with more perceived social comparison ($r = 0.13$; $p = 0.023$) but not actual comparison ($r(249) = 0.05$, <i>ns</i>). Comparison motivations but not actual comparison related to affect: self-improvement related to more positive affect ($\beta = 0.23$; $p = 0.007$), moderated by self-esteem ($\beta = 0.94$; $p = 0.049$).	+	-

Study (Authors) Country	Aim(s) of study	Study design	Participant description	Control/ comparison conditions	SNS of focus Measure of SNS use	Aspect of social comparison; Measure of social comparison	Aspect of well-being; Measure of well-being	Other factors measured	Key relevant findings	Quality scores: Internal/ External validity
De Vries et al. (2017) Netherlands	Effects of viewing strangers' positive posts on Instagram on emotions, examining social comparison and the emotional contagion perspectives	Experimental	130 participants recruited from University of Amsterdam, majority students, 19% male, ages 18-30	Viewing positive vs negative pictures on Instagram vs condition with no posts	Instagram Minutes per day on social media, minutes per day on Instagram	Social comparison tendency, extent, in life; Shortened version of INCOM (Gibbons & Buunk, 1999)	Affective well-being (affect); Dutch PANAS (Engelen, De Peuter, Victoir, Van Diest & van den Bergh, 2006)	None	Those high in comparison reported lower positive affect after viewing positive posts vs neutral or no posts (condition x comparison interaction term was significant: $B = -.370$, $SE = .166$, $p = .028$). There was no effect of posts on negative affect at any level of comparison ($B = .159$, $SE = .180$, $p = .379$).	++ -
De Vries & Kuhne (2015) Not country specific	Relationship of FB use and self-perceptions through negative social comparison, and role of happiness	Cross-sectional, correlational	231 emerging adults recruited from students' online social networks, 69% female, ages 18-25	None	FB use/ intensity: Frequency, duration, emotional attachment, role it plays in daily lives	Social comparison, extent of negative, on FB; Adapted FSCS (Lee, 2014) to measure negative comparison	Life satisfaction; 5 item SWLS (Diener et al., 1985)	Self-perception: perceived social competence and physical appearance	Poorer life satisfaction associated with negative social comparison ($r = -.366$, $p < .001$). FB use was less strongly related to negative comparison in those higher in life satisfaction (FB x life satisfaction interaction was significant: $B = -.016$, $SE = .006$, $p = .004$), so life satisfaction may moderate.	++ ++

Study (Authors) Country	Aim(s) of study	Study design	Participant description	Control/ comparison conditions	SNS of focus Measure of SNS use	Aspect of social comparison; Measure of social comparison	Aspect of well-being; Measure of well-being	Other factors measured	Key relevant findings	Quality scores: Internal/ External validity
Fardouly et al. (2015) UK	Impact of FB use on mood and body image, whether differ from an online fashion magazine and role of appearance comparison	Experimental	112 female students and staff from a UK university	Exposure to FB vs magazine website vs home craft website (control without comparison opportunity)	FB None	Appearance comparison, extent of positive and negative combined to give overall comparison, tendency in life; UPACS/DPACS (O'Brien et al., 2009)	Affective well-being; VAS measuring state negative mood (Heinberg & Thompson, 1995)	Body dissatisfaction, state appearance discrepancy	Higher FB exposure predicted more negative mood ($\beta = .34$, $t(67) = 2.51$, $p = .013$) but comparison interaction terms accounted for <1% of further variance in negative mood ($\Delta F(2, 62) = 0.02$, $p = .976$), so not moderated by appearance comparison.	++ +
Feinstein et al. (2013) USA	Relationship between negative comparison whilst using FB and depressive symptoms, and role of rumination	Correlational, longitudinal (3 weeks)	268 young adult students from Stony Brook University, 62% female, mean age= 19.66 years	None	FB None	Social comparison, extent, tendency in life and on FB; SCRS (FB specific) (Allan & Gilbert, 1995), INCOM (Gibbons & Buunk, 1999)	Affective well-being; CES-D (Radloff, 1977)	Rumination	Higher FB comparison and comparison orientation correlated with higher depression at T1 ($r = .38$, $p < .001$; $r = .19$, $p < .01$) and T2 ($r = .35$, $p < .001$; $r = .16$, $p < .01$). More FB comparison predicted increased depression through rumination ($\beta = .05$, bias-corrected 90% CI = [.02-.09], SE = .02). FB comparison only directly predicted depression when rumination was excluded.	++ ++

Study (Authors) Country	Aim(s) of study	Study design	Participant description	Control/ comparison conditions	SNS of focus Measure of SNS use	Aspect of social comparison; Measure of social comparison	Aspect of well-being; Measure of well-being	Other factors measured	Key relevant findings	Quality scores: Internal/ External validity	
Frison & Eggermont (2016) Belgium	Reciprocal relationships between comparison on FB and well-being (life satisfaction)	Correlational, longitudinal (6 months)	1235 Flemish adolescents from randomly selected high schools, 52% male, ages 12-19	None	FB How often visit SNS, average daily time, passive use	Social comparison, negative comparison on FB; Frequency of having a negative feeling from comparison scale (Lee, 2014)	Life satisfaction; 5 item SWLS (Diener et al., 1985)	None	Having a negative feeling from comparison predicted lower life satisfaction later ($\beta=-0.08$, $B=-0.12$, $p < 0.01$.) and lower life satisfaction predicted later negative social comparison ($\beta=-0.12$, $B=-0.08$, $p < 0.001$).	+	+
Gerson et al. (2016) Not country specific	Association between social comparison on FB and subjective well-being and whether personality traits moderate	Cross-sectional, correlational	337 participants recruited by Amazon mTurk, 136 males & 201 females, ages 18-70	None	FB FB use/intensity: mins per day, no. friends, how feel about FB	Social comparison, direction, on FB; 11-item SCRS (Allan & Gilbert, 1995), adapted for FB (Feinstein et al., 2013), measuring superior or inferior	Life satisfaction; 5 item satisfaction with life scale (Diener et al., 1985)	Eudiamonic well-being, personality traits	Higher FB intensity associated with higher life satisfaction ($\beta = 1.37$, $p < 0.01$), but high comparison related to lower life satisfaction ($\beta = 0.22$, $p < 0.001$). Some personality traits also related to life satisfaction: behavioural inhibition system ($\beta = -0.15$, $p < 0.001$) and goal-drive persistence ($\beta = 0.21$, $p < 0.05$), but were not moderators (interaction terms <i>ns</i>).	++	+

Study (Authors) Country	Aim(s) of study	Study design	Participant description	Control/ comparison conditions	SNS of focus Measure of SNS use	Aspect of social comparison; Measure of social comparison	Aspect of well-being; Measure of well-being	Other factors measured	Key relevant findings	Quality scores: Internal/ External validity	
Hanna et al. (2017) USA	Whether social comparison and self-objectification mediate relationship between FB use and well-being	Cross-sectional, correlational	1104 undergrads, 690 females and 414 males, ages 17-24	None	FB FB use: time on FB, active use, passive use	Social comparison, extent, on FB; INCOM (Gibbons & Buunk, 1999) adapted to FB context	Self-esteem, mental health; 20 item SSES, BSI (Derogatis & Melisaratos, 1983)	Self-objectification	Higher FB use related to more FB comparison (women: $\beta=.266$, $p<.05$; men: $\beta=.382$, $p<.05$) and this related to lower self-esteem (women: $\beta=-.530$, $p<.05$; men: $\beta=-.401$, $p<.05$) and poorer mental health (women: $\beta=-.277$, $p<.05$; men: $\beta=-.204$, $p<.05$). Social comparison appeared to mediate.	+	+
Jang et al. (2016) South Korea	Relationships between FB use, social comparison orientation on FB and psychological outcomes and roles of self-esteem and impression management	Cross-sectional, correlational	313 college students, 219 females and 94 males, average age = 21.17	None	FB FB use: how often post, look at others posts, use FB	Social comparison, extent, on FB; INCOM adapted to FB context (Gibbons & Buunk, 1999)	Mental health, self-esteem; SES (Rosenberg, 1989), 5 items from RAND mental health inventory (Stewart, Ware, Sherbourne, & Wells, 1992)	Impression managing, perceived social support	More orientation towards social comparison on FB associated with lower self-esteem ($\beta=-0.13$, $p < 0.05$). More FB use positively associated with more FB social comparison ($\beta= 0.15$, $p < 0.01$) and higher FB comparison associated with poorer mental health ($\beta= -0.12$, $p < 0.05$).	++	-

Study (Authors) Country	Aim(s) of study	Study design	Participant description	Control/ comparison conditions	SNS of focus Measure of SNS use	Aspect of social comparison; Measure of social comparison	Aspect of well-being; Measure of well-being	Other factors measured	Key relevant findings	Quality scores: Internal/ External validity	
Lee (2014) USA	Social comparison behaviour on social network sites, particularly FB	Cross-sectional, correlational	199 college students at Michigan State University, 62% males and 38% females, ages 18-23	None	FB use intensity, including use, part of routine, no. friends	<i>Social comparison, extent, tendency in life and frequency on FB, also frequency of having a negative feeling from comparison;</i> INCOM (Gibbons & Buunk, 1999), likert items for frequency of comparison on FB and frequency of having a negative feeling from comparison	<i>Self-esteem, affective well-being;</i> SES (Rosenberg, 1989), CES-D (Radloff, 1977)	Self-uncertainty, being privately and publicly self-conscious	More orientation towards social comparison and higher anxiety and depression correlated with higher comparison frequency on FB ($r=0.47, p < 0.01$; $r=0.32, p < 0.01$; $r=0.31, p < 0.01$). Higher comparison on FB correlated with lower self-esteem ($r=0.29, p < 0.01$). Higher FB comparison correlated with higher FB use ($r=0.39, p < 0.01$) and with more negative feeling from comparison ($r=0.41, p < 0.01$). Regression suggested self-esteem didn't predict comparison frequency ($\beta=-.16, ns$).	+	+

Study (Authors) Country	Aim(s) of study	Study design	Participant description	Control/ comparison conditions	SNS of focus Measure of SNS use	Aspect of social comparison; Measure of social comparison	Aspect of well-being; Measure of well-being	Other factors measured	Key relevant findings	Quality scores: Internal/ External validity	
Liu et al. (2017) China	Relationship of upward social comparison on SNSs and depressive symptoms, role of self-esteem and optimism	Cross-sectional, correlational	1205 undergrads from 3 universities, 51.45% females, ages 17-24	None	Any SNS None	<i>Social comparison, extent of upward, on SNS</i> ; Chinese version of upward social comparison scale (Bai, Lui & Lui, 2013) adapted to SNS (adapted from INCOM) (Gibbons & Buunk, 1999)	<i>Affective well-being, self-esteem</i> ; Chinese version of CES-D (Wang, Wang & Ma, 1999), Chinese version of SES (Wang et al., 1999)	Optimism	More upward social comparison predicted higher depression ($\beta = 0.12, p < 0.001$) and self-esteem mediated ($\beta = -0.26, p < 0.001$). Higher upward comparison predicted lower self-esteem ($\beta = -0.17, p < 0.001$). The prediction of depression and self-esteem by comparison existed when optimism was low but not when optimism was high ($\beta = -0.09, p < 0.01$; $\beta = 0.12, p < 0.001$).	++	+

Study (Authors) Country	Aim(s) of study	Study design	Participant description	Control/ comparison conditions	SNS of focus Measure of SNS use	Aspect of social comparison; Measure of social comparison	Aspect of well-being; Measure of well-being	Other factors measured	Key relevant findings	Quality scores: Internal/ External validity
Lup et al. (2015) Not country specific	Test whether Instagram use impacts depressive symptoms through social comparison and whether this is moderated by strangers followed	Cross-sectional, correlational	117 Instagram users recruited through social media, 84% female, ages 18-29	None	Instagram Time per day on Instagram, no. strangers followed	Social comparison, extent of positive comparison, on Instagram; 4 items from SCRS, adapted to Instagram (Allan & Gilbert, 1995)	Affective well-being; CES-D (Radloff, 1977)	None	Higher Instagram use correlated with higher depression but those higher in positive comparison had lower depression ($r=.18$, $p<.05$; $r= -.22$, $p<.05$). Instagram use positively related to depression through social comparison but not for the entire sample. Strangers followed moderated relationship of Instagram use and comparison (estimate of interaction = -4.03 , $p = 0.035$), but marginally moderated relationship of comparison and depression (estimate of interaction = 0.30 , $p = 0.078$).	++ ++

Study (Authors) Country	Aim(s) of study	Study design	Participant description	Control/ comparison conditions	SNS of focus Measure of SNS use	Aspect of social comparison; Measure of social comparison	Aspect of well-being; Measure of well-being	Other factors measured	Key relevant findings	Quality scores: Internal/ External validity	
Panger (2014) USA	Relationship between social comparison when using social media and well-being and differences between FB and Twitter	Cross-sectional, correlational	240 participants recruited from Amazon mTurk, 52% female, median age = 29	None	FB, Twitter FB: no. friends, times per day, Twitter: following, followers, times per week. Both: how often use, how feel after, talk about selves vs other, peers or others, friends and followers	<i>Social comparison, extent, general tendency to compare in life and comparison on social media;</i> INCOM (Gibbons & Buunk, 1999), specific items about comparison on social media	<i>Life satisfaction, affective well-being;</i> SWLS (Diener et al., 1985), CES-D (Radloff, 1977)	None	Lower life satisfaction related to depression ($r = -.64, p < .0001$) and lower life satisfaction and higher depression related to higher comparison orientation ($r = -.22, p < .001$; $r = .23, p < .001$). Those higher in depression and lower in life satisfaction felt worse after using FB and Twitter (depression: $p < .001$ and $.01$; life satisfaction: $p < .001$ and $.05$). Comparison orientation did not predict mood.	+	++
Puccio et al. (2016) USA & Australia	Reproduce the Dual Pathway Model of symptoms of bulimia nervosa and explore whether FB comparisons and sociotropy influence	Correlational, longitudinal (4 weeks)	245 females, recruited online through Clickworker (US) and from Melbourne University	None	FB None	<i>Appearance comparison, extent, on FB;</i> 7 items from Fardouly & Vartanian (2015) assessing FB appearance comparisons	<i>Affective well-being;</i> 10 item short form of CES-D (Radloff, 1977)	Thin ideal being internalised, pressures to be thin, body satisfaction, dietary restraint, bulimic symptoms, sociotropy	Correlations showed that more FB appearance comparison was significantly related to higher depression at both T1 ($r = 0.35, p < .001$) and T2 ($r = 0.35, p < .001$).	+	+

Study (Authors) Country	Aim(s) of study	Study design	Participant description	Control/ comparison conditions	SNS of focus Measure of SNS use	Aspect of social comparison; Measure of social comparison	Aspect of well-being; Measure of well-being	Other factors measured	Key relevant findings	Quality scores: Internal/ External validity
Stapleton et al. (2017) Not country specific but majority Australian	Effects of exposure to comparison information on social media upon self-esteem.	Cross-sectional, correlational	237 participants recruited through social media, through chain sampling	None	Instagram Instagram: whether had account, time per day, use, social capital, resources gained, frequency, duration, emotional connection, activities	Social comparison, extent, on Instagram; 11 item INCOM (Gibbons & Buunk, 1999), adapted to Instagram	Self-esteem; 10 item SES (Rosenberg, 1989)	Self-worth: approval from others domain	Instagram use did not predict self-esteem ($F(1,235)=0.34$, $p=.56$) so comparison could not be tested as a mediator, although higher comparison related to lower self-esteem ($F(2,234)= 19.54$, $p<.001$). Higher self-worth contingent upon others predicted self-esteem ($F(1,235)= 85.03$, $p<.001$) and comparison mediated ($z=-2.98$, $p=.002$). Self-worth moderated relationship of Instagram use and comparison ($b=.94$, $t(233)=2.28$, $p=.023$).	++ ++

Study (Authors) Country	Aim(s) of study	Study design	Participant description	Control/ comparison conditions	SNS of focus Measure of SNS use	Aspect of social comparison; Measure of social comparison	Aspect of well-being; Measure of well-being	Other factors measured	Key relevant findings	Quality scores: Internal/ External validity
Steers et al. (2014) USA	Impacts of social comparison with peers on FB upon psychological health of users	Cross-sectional, correlational (study 2 used 14 day diary measure)	University students from South West University. Study 1: n=180, ages 19-57, 141 females; study 2: n=152, ages 18-42, 95 females	None	FB Study 1: Time on FB; Study 2: diary of time on FB and no. logins	Social comparison, extent on FB and direction: upwards, downwards and nondirectional; INCOM, INCOM adapted to FB, adapted INCOM to look at direction (Gibbons & Buunk, 1999)	Affective well-being; CES-D (Radloff, 1977)	None	Study 1: Higher FB use predicted depression for males and females ($\beta = .36$, $p < .01$; $\beta = .32$, $p < .01$) but FB comparison significantly mediated only in males ($\beta = .219$, $p < .05$; $\beta = .00$, =.986). Study 2: Upward, non-directional and downward comparison all mediated relationships of more FB use ($Z = 2.72$, $p < .01$; $Z = 2.44$, $p < .01$; $Z = 2.62$, $p < .01$) and FB logins with higher depression ($Z = 2.71$, $p < .01$; $Z = 2.28$, $p < .05$; $Z = 2.81$, $p < .01$).	++ +
Vogel et al. (2014) (Study 1) USA	Effects of social media-based social comparison information on self-esteem	Cross-sectional, correlational	145 undergrads from MidWestern University, 10 female and 39 male, mean age= 19.64	None	FB Frequency of FB use: composite of how often used, hours per week, frequency of activities	Social comparison, extent of upwards or downwards, on FB; Item asking about whether focus on people who are better or worse off than self when making comparisons on FB	Self-esteem; SES (Rosenberg, 1965)	None	Higher FB use correlated with lower self-esteem ($r = -.20$, $p = .02$) and correlated with upward ($r = .26$, $p < .01$) and downward ($r = .20$, $p = .02$) comparison. Higher FB use predicted lower self-esteem ($b = -.24$, $t = -2.45$, $p < .02$), mediated by both upward and downward FB social comparison (direct path reduced when mediator included: ($b = -.14$, $t = -1.43$, $p = .15$).	++ +

Study (Authors) Country	Aim(s) of study	Study design	Participant description	Control/ comparison conditions	SNS of focus Measure of SNS use	Aspect of social comparison; Measure of social comparison	Aspect of well-being; Measure of well-being	Other factors measured	Key relevant findings	Quality scores: Internal/ External validity	
Vogel et al. (2015) (Study 2) USA	Relationships between social comparison orientation, FB use and negative psychological outcomes	Experimental	120 undergrads from Midwest University, 92 females and 28 males, mean age = 18.93	Browsing FB profile of an acquaintance (Social comparison condition) vs browsing own profile (FB control) vs browsing product reviews (internet control)	FB None	Social comparison, tendency to compare and directions of comparison, in life; INCOM (Gibbons & Buunk, 1999), specific items for direction	Affective well-being, state self-esteem; PANAS (Watson, Clark, & Tellegen, 1988), SSES (Heatherston & Polivy, 1991)	Trait self-perceptions	Those higher in social comparison had lower affect and self-esteem after exposure to FB experimental condition ($\beta = -.43$, $t = -2.70$, $p = .008$; $\beta = -.57$, $t = -3.55$, $p < .01$.) but not in FB control ($\beta = .18$, $t = 1.15$, $p = .25$; $\beta = .01$, $t = .07$, $p = .95$). There was an interaction between comparison orientation and conditions but those higher in comparison tendency also had lower self-esteem and affect after internet control ($\beta = -.29$, $t = -2.20$, $p = .03$; $\beta = .27$, $t = 2.07$, $p = .04$).	+	+
Walker et al. (2015) USA	Relationships between FB intensity, online appearance comparison, online "fat talk" and disordered eating behaviour.	Cross-sectional, correlational	128 college aged females from University, ages 18-23	None	FB FB intensity: Time on FB, no. friends, integration of FB into daily life	Physical appearance comparison, extent/frequency of, on FB; Adapted PACS (Shaefer & Thompson, 2014) to FB context	Affective well-being; BDI-II (Beck, Steer & Brown, 1996), STAI (Spielberger, Gorsuch & Luchene, 1970)	Disordered eating, BMI, perfectionism, impulsivity, self-efficacy, fat talk	Higher depression and anxiety significantly correlated with more physical appearance comparison on FB ($r = .50$, $p < .001$; $r = .51$, $p < .001$).	+	+

Study (Authors) Country	Aim(s) of study	Study design	Participant description	Control/ comparison conditions	SNS of focus Measure of SNS use	Aspect of social comparison; Measure of social comparison	Aspect of well-being; Measure of well-being	Other factors measured	Key relevant findings	Quality scores: Internal/ External validity
Wang et al. (2017) China but not country specific	Relationships between social networking and well-being and roles of upward comparison, self-esteem and social comparison orientation	Cross-sectional, correlational	696 participants, WeChat and Qzone users, recruited online, 76.76% female, ages 17-24	None	Qzone, Wechat Qzone and Wechat: passive use: how frequently view others' photos, updates and comments on friends' wall	Social comparison, extent, general in life, and extent of upward on SNS; INCOM (Gibbons & Buunk, 1999); Upward social comparison – negative affect scale (Buunk, Collins, Taylor, Van Yperen & Dakof, 1990)	Self-esteem, well-being (summed life satisfaction & positive affect); Chinese SES (Rosenberg, 1965), SWLS (Diener et al., 1985), Chinese PANAS (Watson et al., 1988)	None	Comparison orientation did not correlate with self-esteem ($r=-0.06$, $p=ns$) and well-being ($r=-0.07$, $p=ns$) but upwards comparison significantly correlated with lower self-esteem ($r=-0.15$, $p<.01$) and lower well-being ($r=-0.14$, $p<.01$). Passive use predicted more upwards comparison ($\beta=0.09$, $p<0.05$) which predicted lower self-esteem ($\beta=-0.14$, $p<.001$), which associated with well-being ($\beta=.54$, $p<0.001$). Passive use related to more upwards comparison in those with higher comparison orientation but not for those with lower orientation (interaction term: $\beta=0.12$, $p<0.01$).	++ +

Study (Authors) Country	Aim(s) of study	Study design	Participant description	Control/ comparison conditions	SNS of focus Measure of SNS use	Aspect of social comparison; Measure of social comparison	Aspect of well-being; Measure of well-being	Other factors measured	Key relevant findings	Quality scores: Internal/ External validity
Weinstein (2017)	Relationship between Instagram browsing and affect after browsing and role of negative comparisons	Experimental	507 students from a public high school in Northeast United States, teens (9 th , 10 th & 11 th grades)	Instagram browsing: highlight reel condition vs condition with reminder that biased self-presentation	Instagram Personal SNS use: age of first account, no. accounts used daily	Social comparison, negative, whilst browsing Instagram; 2 items measuring negative social comparison	Affective well-being; PANAS (Watson et al., 1988)	None	Those higher in negative comparisons had more negative affect ($\beta = 0.05$, $t(500) = 2.07$, $p = 0.039$) and less positive affect ($b = 0.07$, $t(500) = 3.22$, $p = 0.001$) after browsing. There were no main effects of condition ($F(2, 493) = 1.71$, $p = 0.19$) but significant interactions of condition x negative social comparison ($b = -0.48$, $t(500) = -2.63$, $p = 0.009$, $b = -0.48$, $t(500) = -2.44$, $P = 0.015$).	++ ++

Key
Social networking terms: SNS= Social networking site; FB= Facebook
Measures: VAS= Visual Analogue Scales; FSCS= Facebook Social Comparison Scale; CES-D= The Center for Epidemiological Studies-Depression Scale; SWLS= Satisfaction With Life Scale; INCOM= Iowa-Netherlands Comparison Orientation Measure; SES= Self-Esteem Scale; PANAS= Positive and negative affect schedule; UPACS/DPACS= Upward and downward appearance comparison scale; SCRS= Social Comparison Rating Scale; SSES= State Self-Esteem Scale; BSI= Brief Symptom Inventory; PACS= Physical Appearance Comparison Scale; BDI-II= Beck Depression Inventory; STAI= State Trait Anxiety Inventory
Quality ratings: ++ = All or most of the checklist criteria have been fulfilled, where they have not been fulfilled the conclusions are very unlikely to alter; + = Some of the checklist criteria have been fulfilled, where they have not been fulfilled, or not adequately described, the conclusions are unlikely to alter; - = Few or no checklist criteria have been fulfilled and the conclusions are likely or very likely to alter.

3.2 Affective well-being

Sixteen studies considered the role of comparison in the relationship of social networking and affective well-being. These studies had mixed designs and measured different aspects of comparison, but the majority measured affect or depressive symptoms. Five cross-sectional correlational studies measured the extent of social comparison, such as tendency to compare, and focused upon the relationship of Facebook with affective aspects of well-being (Chow & Wan, 2017; Coyne, McDaniel & Stockdale, 2017; Panger, 2014; Feinstein et al., 2013; Cramer, Song & Drent, 2016). Four of these studies with good validity suggested that social comparison on Facebook is related to affect, with higher levels of comparison associated with higher depression or lower positive affect; suggesting a possible role for social comparison (Chow & Wan, 2017; Coyne et al., 2017; Panger, 2014; Feinstein et al., 2013). The role that social comparison plays, however, was unclear: Chow and Wan (2017) suggested that social comparison does not have a moderating role in the impacts of social networking but other models were not tested. Studies suggested that factors including rumination, neuroticism and the underlying motivation for comparison may also be important in determining the impact of Facebook upon affective well-being (Chow & Wan, 2017; Feinstein et al., 2013; Cramer et al., 2016). Rumination and neuroticism were linked to higher levels of negative affect and were suggested to mediate and moderate relationships, whereas self-improvement motivations for comparison may be linked to more positive affect (Cramer et al., 2016). Finally, the results of Panger (2014) suggest that the relationship of social comparison when social networking and affective well-being is reciprocal, i.e. whilst studies suggest that higher comparison more negatively impacts mood, negative mood may also lead to more comparison behaviour. Two experimental studies also measured the extent of social comparison when social networking (De Vries, Möller, Wieringa, Eigenraam & Hamelink, 2017; Vogel, Rose,

Okdie, Eckles & Franz, 2015) and these found that higher social comparison when social networking is linked to lower positive affect after exposure to comparison information on sites. However, contrary to cross-sectional studies, experimental evidence suggests that both general tendency to compare and the extent of social comparison when social networking moderate the relationship of social networking and affective well-being (De Vries et al., 2017).

Five studies measured the specific direction of social comparison, considering the importance of comparison direction in the relationship of social networking and affective well-being. Four of these used cross-sectional designs (Steers, Wickham and Acitelli, 2014; Lee, 2014; Lui et al., 2017; Lup, Trub & Rosenthal, 2015) and studies varied in focusing upon Facebook use, Instagram use and overall social networking site use. Results support the findings of the studies that measured solely the extent of comparison by suggesting that social networking relates to affective well-being and that higher social comparison relates to negative impacts (Lup et al., 2015; Lui et al., 2017; Steers et al., 2014); however studies extend upon these results to consider whether the direction of comparison is important in this relationship. The results of Steers et al. (2014) suggested that upwards, downwards and non-directional social comparisons all play a role by mediating the relationship of social networking and affective well-being. Thus, the presence and extent of social comparison may be important rather than the direction in determining affective well-being. The other studies suggested that more negative or upwards comparisons link to more negative affective well-being and more positive comparisons relate to lower depression (Lui et al., 2017; Lee, 2014; Lup et al., 2015), but these studies did not directly compare between comparison directions and so cannot confirm the importance of a particular comparison direction. Studies measuring comparison direction also suggested that other factors may play a role in the relationship of social networking and affective well-being, for example optimism and

the number of strangers followed may moderate this relationship (Lui et al., 2017; Lup et al., 2015). One experimental study with good internal and external validity considered the importance of comparison direction in the impact of Instagram upon affective well-being (Weinstein, 2017). This suggested that more negative comparison links to more negative affect and less positive affect after browsing Instagram and that negative comparison plays a moderating role in the relationship of Instagram use and affective well-being. The moderation role suggested contrasts to the mediation role proposed by Steers et al. (2014) but is consistent with the moderating role suggested by De Vries et al. (2017). Weinstein (2017) did not compare the role of different comparison directions, so the relative importance of comparison direction could not be confirmed.

Four studies have also considered the specific role of appearance comparisons in affective well-being when social networking, rather than general social comparison (Walker et al., 2015; Puccio, Kalathas, Fuller-Tyszkiewicz & Krug, 2016; Brown & Tiggemann, 2016; Fardouly, Diedrichs, Vartanian & Halliwell, 2015). Three of these studies focused upon Facebook and one focused upon Instagram. All studies measured the overall extent of comparison rather than considering the direction of comparison. Study methodology and designs varied to include a cross-sectional correlational study (Walker et al., 2015), a longitudinal study (Puccio et al., 2016) and two experimental studies (Fardouly et al., 2015; Brown & Tiggemann, 2016). Results suggested that appearance comparison when social networking relates to affective well-being: higher levels of appearance comparison were positively related to depression and anxiety. The experimental study by Brown and Tiggemann (2016) further suggested that the role of appearance comparison is in mediating the impacts of social networking upon affective well-being and the good quality study by Fardouly et al. (2015) suggested that appearance comparison does not have a moderating role in this relationship. The

proposed mediation role is consistent with the mediation role suggested by Steers et al., (2014) but contrasts with the moderation role for overall social comparison suggested by Weinstein (2017) and De Vries et al. (2017).

3.2.1 Synthesis of studies addressing affective well-being

Studies suggest that social networking use and higher levels of social comparison are related to more negative affective well-being and thus social comparison may play a role in the impact of social networking upon affective well-being. This has been shown for Facebook, Instagram and overall social networking and studies suggest that the extent of comparison or overall tendency to compare may be more important in determining affective well-being than the actual direction of comparison (Steers et al., 2014). Although studies are consistent overall in suggesting that higher levels of comparison link to more negative affective well-being, studies vary in the role they propose for comparison. Experimental research suggests that negative social comparison plays a moderating role in the relationship of social networking and affective well-being (De Vries et al., 2017; Weinstein, 2017); however cross-sectional research suggested that all directions of social comparison play a mediating role (Steers et al., 2014). Experimental research has also suggested that appearance comparison has a mediation role (Brown & Tiggemann, 2016) and it may be that overall social comparison moderates the relationship of social networking and affective well-being whilst specific types of comparison such as appearance comparison mediate this. Finally, although social networking is primarily associated with negative impacts upon affective well-being, underlying motivations for comparison may be instrumental in determining positive or negative impacts (Cramer et al., 2016).

3.3 Self-esteem

Nine studies considered the role of social comparison in the relationship between social networking and self-esteem. Six of these studies measured only the extent of social comparison: five cross-sectional correlational studies and one experimental study (Stapleton, Luiz & Chatwin, 2017; Jang, Park & Song, 2016; Hanna et al., 2017; Cramer et al., 2016; Lee, 2014; Vogel et al., 2015). Five of these studies focused upon Facebook and one considered Instagram use. All but one of the studies suggested that greater social comparison when social networking significantly relates to lower self-esteem, suggesting that social comparison may play a role in negatively impacting self-esteem when social networking. However, there was no agreement in the proposed role that social comparison plays, i.e. one cross-sectional study suggested that social comparison mediated the relationship of Facebook use and self-esteem (Hanna et al., 2017) but the experimental study suggested that social comparison plays a role by moderating the impact of social networking context or content upon self-esteem (Vogel et al., 2015). Stapleton et al. (2017) also aimed to test a mediation model, however social networking use did not predict self-esteem and so this could not be tested. Cramer et al. (2016) additionally suggested that perceived comparison may be important in determining self-esteem and that self-esteem may interact with comparison motivations, such as self-improvement, to impact other aspects of well-being. Lee (2014) suggested that the relationship of self-esteem and social comparison is not reciprocal.

Three cross-sectional correlational studies also considered the direction of social comparison and whether this is important in the relationship of social networking and self-esteem (Vogel, Rose, Roberts & Eckles, 2014; Wang, Wang, Gaskin & Hawk, 2017; Lui et al., 2017). These studies focused upon a range of social networking sites, including Facebook, Qzone, WeChat and overall social networking site use. Higher levels of comparison were related to lower levels of self-esteem. Two studies found that

more upwards social comparison was related to lower self-esteem, but these did not measure comparison in other directions and so the relative importance of upwards comparison compared to downwards or nondirectional was not clear. Vogel et al. (2014) found that Facebook use negatively correlated with self-esteem and both upward and downward comparison mediated the relationship of social networking and self-esteem. This suggests that the role of social comparison in the impact of social networking upon self-esteem is in mediating this relationship and that the extent of comparison may be more important in determining self-esteem than the direction. The mediating role suggested by Vogel et al. (2014) is consistent with the mediating role suggested by Hanna et al. (2017) but contrasts with the moderation role proposed by Vogel et al. (2015). Wang et al. (2017) suggested that general tendency to make social comparisons moderates the relationship between social networking and upwards social comparison, so it may be that the extent of overall social comparison determines the impact of a particular type of comparison, such as upwards comparison.

3.3.1 Synthesis of studies addressing self-esteem

Studies suggested that higher levels of comparison are related to lower levels of self-esteem and thus, social comparison may play a role in the negative impact of social networking upon self-esteem. The majority of studies focused upon Facebook but these results were shown across a range of social networking sites, suggesting that comparison may be important in determining the impact of a range of sites. There is not, however, agreement in the suggested role that social comparison plays. Two studies suggested that social comparison plays a mediating role in the relationship of social networking and self-esteem, indicating that social networking negatively impacts self-esteem through comparison processes. However, experimental evidence suggests that social comparison plays a moderating role, proposing that social networking impacts

self-esteem through other processes but that social comparison may help to determine the impact. Research suggested that the overall extent of comparison may be more important in determining well-being than a specific comparison direction. However, different types of comparison may interact but play different roles, with overall comparison moderating the effects of specific comparison types or directions.

3.4 Life satisfaction

Five studies considered the relationship or role of social comparison in the relationship between social network site use and life satisfaction. The majority of these focused upon Facebook with only one study considering the impact of general social network site use. Two studies were correlational cross-sectional studies measuring the extent of social comparison when social networking and these had contrasting results. Coyne et al. (2017) conducted a study using only one item to measure social comparison and found life satisfaction to be unrelated to social comparison on social networking sites. Panger (2014) found social comparison to be negatively related to life satisfaction with lower life satisfaction reciprocally predicting higher social comparison. Two cross-sectional correlational studies with good internal reliability also considered the role of social comparison direction when social networking in life satisfaction (Gerson, Plagnol and Corr, 2016; De Vries & Kuhne, 2015). Both suggested that more negative comparison is related to lower life satisfaction, consistent with the results of Panger (2014), but these studies did not measure comparison in different directions. Therefore the relative importance of different comparison directions could not be established. Additionally, results of De Vries and Kuhne (2015) were consistent with those of Panger (2014) in suggesting that the relationship of social comparison and life satisfaction is reciprocal, with life satisfaction impacting upon social comparison

behaviour when social networking. Frison and Eggermont (2016) also conducted a longitudinal study exploring reciprocal relationships between the frequency of having a negative feeling from comparison on Facebook and life satisfaction. Results suggested that having a negative feeling from social comparison is related to lower life satisfaction but also that life satisfaction reciprocally leads to greater negative comparison, consistent with the above results.

3.4.1 Synthesis of studies addressing life satisfaction

Overall, studies found that higher levels of social comparison are related to lower life satisfaction, suggesting that social comparison may play a role in determining the negative impacts of social networking upon life satisfaction. Specifically, more negative comparison is related to lower life satisfaction, though studies have not compared the roles of other comparison directions so the relative importance of comparison direction is not clear. As well as suggesting that higher comparison predicts lower life satisfaction, studies have also suggested that this relationship is reciprocal, with lower life satisfaction leading to more social comparison behaviour. Finally, although studies suggest that social comparison is important, studies have not provided evidence regarding the nature of the role that social comparison plays, for example moderation or mediation.

3.5 Mental health

Two studies looked at the relationship of social comparison to general mental health outcomes when social networking. Both were cross-sectional, correlational studies focused upon Facebook use (Jang et al., 2016; Hanna et al., 2017). Results suggested that higher social comparison on Facebook relates to poorer mental health and Hanna et

al. (2017) suggested that the role of social comparison may be mediating the impacts of Facebook upon mental health.

3.5.1 Synthesis of studies addressing mental health

Studies considering the role of social comparison when social networking in general mental health suggest that higher social comparison relates to poorer mental health. The role of social comparison may be in mediating the impact of Facebook upon mental health.

3.6 General well-being

One study considered the relationships of social networking, social comparison and general well-being (Wang et al., 2017). This was a cross-sectional study measuring upwards comparison and focusing upon Qzone and WeChat, social networking sites that are popular in China. Results suggested that upwards social comparison significantly negatively relates to well-being and that upwards social comparison plays a mediating role in the relationship of social networking and well-being. However, different comparison directions were not measured so the importance of this comparison direction is not clear. Results also suggested that a general tendency to make comparisons determines the extent of upwards comparisons when social networking. Therefore, different types of comparison may interact but play different roles. Additionally, results suggested that self-esteem plays a role in determining impacts upon general well-being, so different aspects of well-being may interrelate and interact in determining well-being outcomes when social networking.

4. Discussion

4.1 Overall summary and implications

This review aimed to systematically consider and summarise the relevant evidence in order to answer the question: “What role does social comparison on social networking sites play in well-being?” Overall, research suggests that social comparison when social networking is related to and may play a role in multiple aspects of well-being, including affective well-being, self-esteem, life satisfaction, general mental health and in general well-being. Results suggest that comparison has a role in the negative impact of social networking upon well-being, with higher levels of comparison being related to lower well-being in all of the areas considered. This is consistent with and builds upon evidence that social network sites can impact well-being (Cheatham, 2012; Pantic, 2014; Richards et al, 2015; Verduyn et al., 2017) and provides insight into possible factors underlying or contributing to negative impacts. This review aimed to consider both positive and negative impacts of social networking, as previous evidence has supported both positive and negative well-being outcomes (Best et al., 2014). Some evidence suggested that certain motivations for comparison, such as self-improvement, may be linked to positive well-being outcomes. However, the evidence primarily suggests that higher levels of social comparison when social networking relates to negative impacts upon well-being.

Although studies suggest that more social comparison relates to poorer well-being when social networking, there is little agreement in the proposed role that social comparison plays both within and across different aspects of well-being. For example, within research addressing affective well-being, experimental studies suggest that social comparison plays a moderation role whereas cross-sectional evidence suggests

mediation (Chow & Wan, 2017; De Vries et al., 2017). Furthermore, across aspects of well-being, experimental evidence suggests that social comparison moderates the impact of social networking upon affective well-being and self-esteem (De Vries et al., 2017; Vogel et al., 2015) whereas other studies suggest that social comparison mediates the impact of social networking upon general mental health and general well-being (Hanna et al., 2017; Wang et al., 2017). If social comparison does play a moderating role in the relationship of social networking and aspects of well-being, social networking may impact upon well-being through other processes but social comparison may help to determine the impact. For example, if levels of social comparison are low, well-being may be protected even in the presence of social networking site use. This is similar to previous results found for the impact of social networking upon body image outcomes (Holland & Tiggemann, 2016). These suggested that appearance comparison processes determine whether social networking has negative impacts rather than the extent of social networking alone (Holland & Tiggemann, 2016). However, if social comparison mediates the relationship of social networking with general mental health and well-being, social networking sites may impact these aspects of well-being through social comparison processes. If social comparison does not occur, social networking may not negatively impact upon well-being. The lack of clarity regarding the role of social comparison highlights that further research is needed to test different models and confirm which best explains the role of social comparison in different aspects of well-being.

Regardless of whether social comparison plays a moderating or mediating role in the relationship of social networking and aspects of well-being, the implications remain similar, i.e. the way in which individuals interact with social networking sites determines their impact and reducing comparison could reduce or protect against negative well-being outcomes. Thus, social comparison processes and the way in which

individuals interact with social network sites should be considered clinically in assessment with clients presenting with poor well-being and who use social networking sites. Clinical work and wider societal interventions could focus on reducing social comparison in order to improve and maintain well-being despite the increasing popularity of social networking sites (Kemp, 2015). Additionally, studies have suggested that reciprocal relationships exist between social comparison and aspects of well-being, such as life satisfaction and affective well-being (De Vries & Kuhne, 2015; Panger, 2014): Those who are experiencing poor well-being may be more likely to interact with social networking sites in a way that means they are more likely to experience further negative outcomes. In contrast, those with greater well-being may not experience the same negative impact of social networking. Possible reciprocal relationships and interactions should also be considered in assessment and interventions in order to break negative cycles. Further studies are also needed to test whether reciprocal relationships exist for other aspects of well-being beyond life satisfaction and affective well-being.

Research comparing the roles of different directions of comparison has suggested that upwards, downwards and nondirectional comparison behaviour all play a similar role in aspects of well-being (Vogel et al., 2014). Therefore, the overall extent of comparison behaviour rather than the direction of comparisons may be important and should perhaps be given more consideration in assessment and interventions when considering the role of comparison processes. Evidence suggesting that social comparison plays a role in the relationship of social networking and well-being is consistent with Social Comparison Theory (Festinger, 1954), which suggests that individuals compare themselves in order to make self-evaluations and as a result they might experience themselves negatively and experience negative well-being. However, it is surprising that both upwards and downwards comparison were linked to negative well-being outcomes,

given that Social Comparison Theory (Festinger, 1954) suggests that comparisons that result in favourable self-evaluations would likely be linked to positive affect and positive well-being outcomes. Social mentality theory (Gilbert, 2015; Gilbert, 2005) may help to explain the relationship of comparison with negative well-being outcomes, regardless of the direction of comparisons made. A social mentality is a specific pattern of brain activation, affect, cognition, and behaviour that orients an individual to a social role (Gilbert, 2015; Gilbert, 2005) and those with a more competitive social mentality are oriented and driven to compete for roles and acceptance (Gilbert, 2015; Gilbert, 2005; Gilbert, 2002) At those times when individuals adopt a competitive social mentality, they may thus be more primed to make comparisons and evaluations to determine their status but may also be more sensitive to the possible social threat of rejection based upon rank or status. Those adopting more competitive social mentalities may thus be more likely to make comparisons when social networking and more likely to experience social threat and related negative impacts upon well-being. Research should explore this, considering possible relationships of social comparison behaviour to particular social mentalities and well-being outcomes when social networking.

There is lack of clarity in the evidence regarding the role of social comparison when social networking in well-being; however, contrasting roles shown may also reflect that different types of comparison play different roles. For example, general tendency to make comparisons might determine the extent or role of specific types of comparison (Wang et al., 2017), such as upwards comparison or appearance comparisons, which then negatively impact well-being. If so, those who do not generally tend to make comparisons in day-to-day life may not experience the same negative impacts of social networking. The different roles of general comparison tendency and specific comparison types such as upwards comparison may explain the discrepancy between results for general well-being and affective well-being. Results suggested moderation

and mediation for comparison respectively, which is surprising given that general well-being was measured as comprising combined measures of affective well-being and life satisfaction. In both aspects of well-being, some types of comparison may moderate and others may mediate (Wang et al., 2017; De Vries et al., 2017). Strong correlations between different types of comparison may confound results and make it difficult to disentangle their separate roles. Research should further explore possible different roles and interactions of different comparison types both across and within aspects of well-being, keeping in mind that strong correlations between different types of comparison may make it difficult to tease apart their causal roles. Finally, studies have also suggested that other factors play a role in the relationship of social networking and well-being, such as rumination, strangers followed, perceived levels of comparison and underlying comparison motivations (Lui et al., 2017; Lup et al., 2015; Cramer et al., 2016). If they are not controlled, these additional factors may confound results in studies attempting to establish the role of comparison and thus these factors should be considered in future research. Given that they contribute to well-being outcomes, these factors should also be considered clinically in assessment, formulation and interventions with those who use social networking sites in order to maximise well-being and mitigate negative impacts.

4.2 Overall conclusions regarding the literature base and implications for future research

Overall, there are similar methodological limitations across the studies included in the review. The internal validity of studies for all aspects of well-being is limited by the use of self-report measures and many studies did not present evidence for the reliability and validity of measures, thus results may have limited validity or reliability. For

example, Jang et al. (2016) used 5 items from the RAND Mental Health Inventory to measure mental health. The 5 items from the RAND that comprise the Mental Health Index III are designed and used to indicate overall mental health (RAND Health, 2017), but it may be that 5 items are insufficient to capture the broad concept of mental health. Very few studies reported calculations regarding the adequate sample size required to detect effects with sufficient power, for example for self-esteem, only Stapleton et al. (2017) presented evidence that the sample size was sufficient to detect effects. Therefore for the majority of studies it was unclear whether sample sizes were sufficient and bias may exist. These limitations are reflected in the lower scores for studies for the relevant quality criteria. More rigorous studies are therefore needed with valid and reliable measures and adequate samples in order to confirm the role of social comparison in the relationship between social networking and well-being. Furthermore, many studies used non-experimental designs. Experimental studies were only conducted for affective well-being and self-esteem aspects of well-being. The extent to which conclusions can be drawn regarding the causal nature of relationships and the role of social comparison is thus limited. For all aspects of well-being, few studies also tested possible models to establish the role of social comparison. For example, only three studies tested possible models for the role of social comparison in affective wellbeing, only one did so for mental health, and for life satisfaction no studies explored the nature of the role of comparison beyond correlations and predictions. Additionally studies tested different models without comparing between models and studies found contrasting results, making it difficult to unify results and draw conclusions regarding the possible role of social comparison. Further experimental studies are thus needed to test different possible models for the role of social comparison in aspects of well-being, in order to clarify the role and confirm causation. Studies looking specifically at the role

of appearance comparison in affective well-being used different methodologies and tested different models which are strengths.

Only two longitudinal studies attempted to assess change over time and these were also limited to two aspects of well-being: affective well-being and life satisfaction. Therefore further longitudinal studies are also needed for all aspects of well-being to consider whether impacts are sustained over time. The longitudinal study considering life satisfaction may be affected by attrition bias but it is a strength that this was considered in the report (Frison & Eggermont, 2016). Finally, studies considered the importance of comparison direction but few directly compared between comparison types and directions, such as upwards and downwards comparison, overall comparison tendency or comparisons focused upon a particular characteristic such as appearance. This makes it difficult to draw conclusions regarding the relative importance, different roles or interactions of particular comparison types. Further studies measuring the impacts of different comparison types and directions are therefore needed to disentangle their roles.

The external validity of studies was also affected by similar limitations across all aspects of well-being, and these limitations are reflected in studies' low scores for the quality criteria relevant to external validity. Samples were often limited to young student samples and biased towards females. For example, three out of five studies exploring life satisfaction had limited samples or samples biased towards those young in age, females or a particular country. Therefore, further studies with wider samples are therefore needed to confirm that social comparison when social networking plays a similar role across different ages, gender and occupations. Some studies were also set in non-UK countries or focused upon social networking sites that are not common in the UK. For example, two studies considering self-esteem used a Chinese population or focused upon social networking sites common in China and the only study considering

general well-being focused upon social networking sites used in China. Results may therefore be limited in the extent to which they can be applied to a UK setting. Furthermore, the majority of studies focused upon Facebook, particularly for self-esteem, life satisfaction and general mental health aspects of well-being. Studies therefore need to confirm whether the proposed relationships and role of social comparison in these aspects of well-being are similar across different social networking sites, such as Instagram.

Much of the literature focused upon self-esteem and affective well-being, with fewer studies considering the role of comparison in the other well-being aspects. Further research exploring the role of social comparison in other aspects of well-being, such as life satisfaction, is therefore needed to clarify the role. However, overall the literature base is disorganised and does not clearly clarify the role of social comparison in any aspect of well-being, as studies have tested different models and have found contrasting results. Systematic, experimental research is therefore needed for all aspects of well-being, which considers the evidence already available regarding the role of social comparison and builds upon this in order to clarify it further.

4.3 Critique of the review

This review has its own limitations. Firstly, the reviewer undertook the review process as an independent researcher working without a team, and therefore only a sample of studies were peer-rated for quality and compared for reliability. The review is also limited by the specificity of the definitions and thus the inclusion criteria. This was necessary in order to set the scope of the review and allow comparison between studies, but it may have impacted the results shown. For example, studies highlighted negative impacts of social networking but showed little evidence of positive impacts. The positive impact may have been better detected if other mechanisms beyond social

comparison had been considered or if other aspects relating to well-being had been included, such as social support (Best et al., 2014). Additionally, further impacts might have been demonstrated if the review extended to include specific symptoms of mental health difficulties, rather than general mental health. Finally, technological advances and trends in social networking are fast evolving (Kemp, 2015) and thus it may be that the evidence and conclusions presented in this review are relevant for only a relatively short period of time. Research will thus have to respond quickly to develop and maintain our understanding of individuals' interactions with, and the impacts of, social networking in the future.

5. Conclusion

This review aimed to summarise and synthesise the current literature in order to answer the question: "What role does social comparison on social networking sites play in well-being?" Research has considered the role of social comparison when social networking in multiple aspects of well-being, including affective well-being, self-esteem, life satisfaction, general mental health and in general well-being. Results suggest that comparison likely has a role in the negative impact of social networking upon well-being, with higher levels of comparison being related to lower well-being in all of the areas considered. This builds upon previous evidence that social networking can negatively impact upon well-being (Cheatham, 2012; Pantic, 2014; Richards et al, 2015; Verduyn et al., 2017) by suggesting that comparison might underlie or influence these impacts. There is, however, little agreement in the literature regarding the nature of the role of social comparison, both within and across aspects of well-being. Studies have suggested that social comparison might play both a mediation or a moderation role and studies have suggested that this role might differ for different aspects of well-being or

types of comparison. Studies suggest that the overall extent of comparison rather than the direction of comparison is important; however different comparison types may be related, confounding the roles shown. Additionally, underlying motivations for comparison may also be important in determining impacts, with self-improvement motivations being linked to positive affect. Further research is needed to clarify the role of social comparison in different aspects of well-being, testing and comparing models to see which best explain the role. Studies also need to consider and measure different types of comparison in order to disentangle possible different roles. Regardless of whether social comparison plays a moderating or mediating role, evidence suggests that the way in which individuals interact with social networking sites is important in determining whether they impact negatively. Therefore comparison behaviour should be considered clinically in assessments relating to well-being where social network site use is prevalent and interventions or initiatives that focus upon reducing comparison could reduce or protect against negative well-being outcomes in the context of increasing social network site use (Kemp, 2015).

Acknowledgements None

Funding None

Competing interests None

References

- Abram, C. (2006). "Welcome to Facebook, everyone". The Facebook Blog.
Retrieved January 12, 2018 from
<https://www.facebook.com/notes/facebook/welcome-to-facebook-everyone/2210227130/>.
- Allan, S., & Gilbert, P. (1995). A social comparison scale: Psychometric properties and relationship to psychopathology. *Personality and Individual Differences, 19*, 293–299.
- Alleva, J., Sheeran, P., Webb, T., Martijn, C. & Miles, E. (2015). A Meta-Analytic Review of Stand-Alone Interventions to Improve Body Image. *PLOS ONE, 10*(9), 1-32.
- Appel, H., Crusius, J. & Gerlach, A. (2016). The interplay between Facebook use, social comparison, envy, and depression. *Current Opinion in Psychology, 9*, 44–49.
- All Party Parliamentary Group. (2012). Reflections on Body Image. Retrieved February 19, 2016 from http://www.ncb.org.uk/media/861233/appg_body_image_final.pdf.
- Bai, X., Liu, X., & Liu, H. J. (2013). The mediating effects of social comparison on the relationship between achievement goal and academic self-efficacy: Evidence from the junior high school student. *Journal of Psychological Science, 36*(6), 1413–1420.
- Baker, D. & Algorta, G. (2016). The Relationship Between Online Social Networking and Depression: A Systematic Review of Quantitative Studies. *Cyberpsychology, behavior and social networking, 19*(11), 638-648.

- Beck, A., Steer, R. & Brown, G. (1996). *Manual for Beck Depression Inventory II (BDI-II)*. San Antonio, TX: Psychology Corporation.
- Bessenhoff, G. (2006). Can the media affect us? Social comparison, self-discrepancy, and the thin ideal. *Psychology of women quarterly*, 30(3), 239-251.
- Best, P., Manktelow, R. & Taylor, B. (2014). Online communication, social media and adolescent wellbeing: A systematic narrative review. *Children and Youth Services Review*, 41, 27-36.
- Boyd, D. & Ellison, N. (2007). Social Network Sites: Definition, History, and Scholarship. *Journal of computer-mediated communication*, 13(1), 210-230.
- Brown, Z. & Tiggemann, M. (2016). Attractive celebrity and peer images on Instagram: Effect on women's mood and body image. *Body Image*, 19, 37-43.*
- Buunk, A. & Gibbons, F. (2007). Social comparison: The end of a theory and the emergence of a Field. *Organizational Behavior and Human Decision Processes*, 102, 3-21.
- Buunk, B., Collins, R., Taylor, S., Van Yperen, N. & Dakof, G. (1990). The affective consequences of social comparison: either direction has its ups and downs. *J. Pers. Soc. Psychol.* 59, 1238-1249.
- Cattarin, J., Thompson, K., Thomas, C. & Williams, R. (2000). Body Image, Mood, and Televised Images of Attractiveness: The Role of Social Comparison. *Journal of Social and Clinical Psychology*, 19(2), 220-239.
- Cheatham, L. (2012). Effects of Internet use on well-being among adults with physical disabilities: a review. *Disabil Rehabil Assist Technol*, 7 (3), 181-8.

- Chow, T & Wan, H. (2017). Is there any 'Facebook Depression'? Exploring the moderating roles of neuroticism, Facebook social comparison and envy. *Personality and Individual Differences, 119*, 277–282.*
- Coyne, S., McDaniel, B. & Stockdale, L. (2017). "Do you dare to compare?" Associations between maternal social comparisons on social networking sites and parenting, mental health, and romantic relationship outcomes. *Computers in Human Behavior, 70*, 335-340.*
- Cramer, E., Song, H. & Drent, A. (2016). Social comparison on Facebook: Motivation, affective consequences, self-esteem, and Facebook fatigue. *Computers in Human Behavior, 64*, 739-746.*
- De Vries, D. & Kühne, R. (2015). Facebook and self-perception: Individual susceptibility to negative social comparison on Facebook. *Personality and Individual Differences, 86*, 217–221.*
- De Vries, D., Möller, A., Wieringa, M., Eigenraam, A. & Hamelink, K. (2017). Social Comparison as the Thief of Joy: Emotional Consequences of Viewing Strangers' Instagram Posts. *Media Psychology*.*
- Derogatis, L. & Melisaratos, N. (1983). The brief symptom inventory: An introductory report. *Psychology Medicine, 13*, 595-605.
- Diener, E. (1984). Subjective well-being. *Psychological Bulletin, 95*(3), 542–575.
- Diener, E. (2009). Happiness. In M. Leary & R. Hoyle (Eds.), *Handbook of individual differences in social behavior* (pp. 147–160). New York, NY: Guilford.
- Diener, E., Emmons, R., Larsen, J. & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment, 49*(1), 71-75.

Engelen, U., de Peuter, S., Victoir, A., van Diest, I. & van den Bergh, O. (2006).

Verdere validering van de Positive and Negative Affect Schedule (PANAS) en vergelijking van twee Nederlandstalige versies. *Gedrag en Gezondheid*, 34, 61–70.

Fardouly, J. & Vartanian, L. (2016). Social Media and Body Image Concerns: Current Research and Future Directions. *Current Opinion in Psychology*, 9, 1–5.

Fardouly, J. & Vartanian, L. R. (2015). Negative comparisons about one's appearance mediate the relationship between Facebook usage and body image concerns. *Body Image*, 12(1), 82-88.

Fardouly, J., Diedrichs, P., Vartanian, L. & Halliwell, E. (2015). Social comparisons on social media: The impact of Facebook on young women's body image concerns and mood. *Body Image*, 13, 38-45.*

Feinstein, B., Hershenberg, R., Bhatia, V., Latack, J., Meuwly, N. & Davila, J. (2013). Negative Social Comparison on Facebook and Depressive Symptoms: Rumination as a Mechanism. *Psychology of Popular Media Culture*, 2(3), 161-170.*

Festinger, L. (1954). A Theory of Social Comparison Processes. *Human Relations*, 7(2), 117-140.

Frison, E. & Eggermont, S. (2016). “Harder, Better, Faster, Stronger”: Negative Comparison on Facebook and Adolescents’ Life Satisfaction Are Reciprocally Related. *Cyberpsychology, behavior and social networking*, 19(3), 158-164.*

Gerson, J., Plagnol, A. & Corr, P. (2016). Subjective well-being and social media use: Do personality traits moderate the impact of social comparison on Facebook? *Computers in Human Behavior*, 63, 813-822.*

- Gibbons, F. X. & Buunk, B. P. (1999). Individual differences in social comparison: Development of a scale of social comparison orientation. *Journal of Personality and Social Psychology*, 76, 129–142.
- Gilbert, P. (2002). Body shame in childhood & adolescence. In P. Gilbert & J. Miles (Eds.), *Body Shame* (pp.55–74). Hove: Brunner-Routledge.
- Gilbert, P. (2005). *Compassion: Conceptualisations, Research and Use in Psychotherapy*. Routledge.
- Gilbert, P. (2015). Spirituality, Humanity and The Nature of Compassion Peter Gilbert Memorial Lecture. Retrieved October 9, 2016 from <http://slideplayer.com/slide/6529635/>.
- Government Equalities Office. (2015). Body Confidence Campaign: Progress report. Retrieved February 19, 2016 from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/417186/Body_confidence_progress_report_2015.pdf.
- Haferkamp, N. & Kramer, N. C. (2011). Social comparison 2.0: Examining the effects of online profiles on social-networking sites. *Cyberpsychology, Behavior and Social Networking*, 14, 309–314.
- Hanna, E., Ward, M., Seabrook, R., Jerald, M., Reed, L., Giaccardi, S. & Lippman, J. (2017). Contributions of social comparison and self-objectification in mediating associations between Facebook use and emergent adults' psychological well-being. *Cyberpsychology, behavior and social networking*, 20(3), 172-179.*
- Heatherton, T. F. & Polivy, J. (1991). Development and validation of a scale for measuring self-esteem. *Journal of Personality and Social Psychology*, 60, 895–910.

- Heinberg, L. J. & Thompson, J. K. (1995). Body image and televised images of thinness and attractiveness: A controlled laboratory investigation. *Journal of Social and Clinical Psychology, 14*, 325–338.
- Heinberg, L. J., & Thompson, J. K. (1999). The Media's Influence on Body Image Disturbance and Eating Disorders: We've Reviled Them, Now Can We Rehabilitate Them? *Journal of Social Issues, Vol. 55, No. 2, 1999, pp. 339-353*.
- Holland, G. & Tiggemann, M. (2016). A systematic review of the impact of the use of Social Networking Sites on body image and disordered eating outcomes. *Body Image, 17*, 100–110.
- Jang, K., Park, N. & Song, H. (2016). Social comparison on Facebook: Its antecedents and psychological outcomes. *Computers in Human Behavior, 62*, 147-154.*
- Kemp, S. (2015). Digital, Social & Mobile in 2015. Retrieved February 19, 2016 from <http://wearesocial.sg/blog/2015/01/digital-social-mobile-2015/>.
- Lee, S. (2014). How do people compare themselves with others on social network sites?: The case of Facebook. *Computers in Human Behavior, 32*, 253–260.*
- Liberati, A., Altman, D., Tetzlaff, J., Mulrow, C., Gøtzsche, P., Loannidis, J., Clarke, M., Devereaux, J., Kleijnen, J. & Moher, D. (2009). The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: explanation and elaboration. *British Medical Journal, 6*, 1–28.
- Lovibond, S. & Lovibond, P. (1995). *Manual for the depression anxiety stress scales* (2nd ed.). Sydney: Psychology Foundation.
- Lui, Q., Zhou, Z., Yang, X., Niu, G., Tian, Y. & Fan, C. (2017). Upward social comparison on social network sites and depressive symptoms: A moderated

mediation model of self-esteem and optimism. *Personality and Individual Differences, 113*, 223–228.*

Lup, K. Trub, L. & Rosenthal, L. (2015). Instagram #Instasad?: Exploring Associations Among Instagram Use, Depressive Symptoms, Negative Social Comparison, and Strangers Followed. *Cyberpsychology, behavior and social networking, 18(5)*, 247-252.*

Myers, D. & Diener, E. (1995). Who is happy? *Psychological Science, 6(1)*, 10–17.

Myers, T. & Crowther, J. (2009). Social comparison as a predictor of body dissatisfaction: A meta-analytic review. *J Abnorm Psychol., 118(4)*, 683-98.

National Institute of Health and Clinical Excellence. (2012). Appendix G Quality appraisal checklist – quantitative studies reporting correlations and associations. Retrieved 18 November, 2017 from <https://www.nice.org.uk/process/pmg4/chapter/appendix-g-quality-appraisal-checklist-quantitative-studies-reporting-correlations-and#checklist>.

O'Brien, K. S., Caputi, P., Minto, R., Peoples, G., Hooper, C., Kell, S. & Sawley, E. (2009). Upward and downward physical appearance comparisons: Development of scales and examination of predictive qualities. *Body Image, 6*, 201-206.

Panger, G. (2014). Social Comparison in Social Media: A Look at Facebook and Twitter. *CHI, 2095-2100*.*

Pantic, I. (2014). Online Social Networking and Mental Health. *Cyberpsychology, behavior and social networking, 17(10)*, 652–657.

- Popay, J., Roberts, H., Sowden, A., Petticrew, M., Arai, L., Rodgers, M., Britten, N., Roen, K. & Duffy, S. (2006). Guidance on the conduct of narrative synthesis in systematic reviews. *ESRC methods programme*, 15(1): 47-71.
- Puccio, F., Kalathas, F., Fuller-Tyszkiewicz, M. & Krug, I. (2016). A revised examination of the dual pathway model for bulimic symptoms: The importance of social comparisons made on Facebook and sociotropy. *Computers in Human Behavior*, 65, 142-150.*
- Radloff, L. (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*, 1, 385-401.
- RAND Health. (2018). Scoring Instructions for MOS Mental Health Inventory Survey Instrument. Retrieved July 20, 2018 from <https://www.tracx.com/resources/blog/social-media-demographics-2017-marketers/>.
- Richards, D., Caldwell, P. & Go, H. (2015). Impact of social media on the health of children and young people. *Journal of paediatrics and child health*, 51(12), 1152–1157.
- Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton, NJ: Princeton University Press.
- Rosenberg, M. (1989). *Society and the adolescent self-image* (Rev ed.). Middleton, CT: Wesleyan University Press.
- Schaefer, L. & Thompson, J. (2014). The development and validation of the Physical Appearance Comparison Scale-Revised (PACS-R). *Eating behaviors*, 15(2), 209–217.

- Showers, R. (2017). 2017 Social Media Demographics: What You Need to Know [Infographic]. Retrieved January 12, 2018 from <https://www.tracx.com/resources/blog/social-media-demographics-2017-marketers/>.
- Spielberger, C. Gorsuch, R. & Luchene, R. (1970). *The State-Trait Anxiety Inventory: Test manual for Form X*. Palo Alto, CA: Consulting Psychologists Press.
- Stapleton, P., Luiz, G. & Chatwin, H. (2017). Generation validation: The role of social comparison in use of Instagram among emerging adults. *Cyberpsychology, behaviour and social networking*, 20(3), 142-149.*
- Steers, M., Wickham, R. & Acitelli, L. (2014). Seeing everyone else's highlight reels: How Facebook usage is linked to depressive symptoms. *Journal of Social and Clinical Psychology*, 33(8), 701-731.*
- Stewart, A., Ware, J., Sherbourne, C. & Wells, K. (1992). Psychological distress/well-being and cognitive functioning measures. In A. L. Stewart, & J. J. E. Ware (Eds.), *Measuring functioning and well-being: The medical outcomes study approach* (pp. 102e142). Durham, NC: Duke University Press.
- Tiggemann, M. & McGill, B. (2004). The Role of Social Comparison in the Effect of Magazine Advertisements on Women's Mood and Body Dissatisfaction. *Journal of Social and Clinical Psychology*, 23(1), 23-44.
- Verduyn, P., Ybarra, O., Resibois, M., Jonides, J. & Kross, E. (2017). Do Social Network Sites Enhance or Undermine Subjective Well-Being? A Critical Review. *Social Issues and Policy Review*, 11(1), 274-302.

- Vogel, E., Rose, J., Okdie, B., Eckles, K. & Franz, B. (2015). Who compares and despairs? The effect of social comparison orientation on social media use and its outcomes. *Personality and Individual Differences, 86*, 249–256.*
- Vogel, E., Rose, J., Roberts, L. & Eckles, K. (2014). Social Comparison, Social Media, and Self-Esteem. *Psychology of Popular Media Culture, 3*(4), 206–222.*
- Walker, M., Thornton, L., De Choudhury, M., Teevan, J., Bulik, C., Levinson, C. & Zerwas, S. (2015). Facebook Use and Disordered Eating in College-Aged Women. *J Adolesc Health, 57*(2), 157–163.
- Wang, J., Wang, H., Gaskin, J. & Hawk, S. (2017). The mediating roles of upward social comparison and self-esteem and the moderating role of social comparison orientation in the association between social network site usage and subjective well-being. *Frontiers in Psychology, 8*(771), 1-9.*
- Wang, X., Wang, X. & Ma, H. (1999). *Handbook of mental health assessment*. Beijing: Chinese Mental Health Journal Press.
- Watson, D., Clark, L. & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scale. *Journal of Personality and Social Psychology, 54*, 1063–1070.
- Weinstein, E. (2017). Adolescents' differential responses to social media browsing: Exploring causes and consequences for intervention. *Computers in Human Behavior, 76*, 396-405.*

*References marked with an asterisk are those which were selected for inclusion in the analysis of the review

Part two: Empirical paper

This paper is written in the format ready for submission to the journal,
Body Image. Please see Appendix G. for Guidelines for Authors.

Word count (excluding title page, highlights, abstract, references,
figures and tables): 6,783*

*for information only, there is no reported word limit within Body Image author
guidelines

Exploring relationships of appearance comparison on social networking sites, body image and compassion

Mary Walker^{1*}, Tim Alexander¹, Philip Molyneux¹

¹ Doctorate in Clinical Psychology, School of Health and Social Work, University of Hull, Aire Building, Cottingham Road, Hull, United Kingdom, HU6 7RX

*Corresponding author.

Postal Address: School of Health and Social Work, University of Hull, Aire Building, Cottingham Road, Hull, United Kingdom, HU6 7RX

Email address: m.walker@2015.hull.ac.uk

Telephone number: +44(0)1482 464106 Fax: +44(0)1482 464093

Key words: Social networking, Social networking site, Body image, Comparison, Compassion

Highlights

- Appearance comparison when social networking negatively predicted body satisfaction
- Compassion did not moderate the relationship of comparison and body satisfaction
- Self-compassion and compassion from others independently predict body satisfaction

Abstract

Social network site use is suggested to negatively impact body satisfaction in women through appearance comparison. This cross-sectional questionnaire study aimed to confirm whether appearance comparison when social networking negatively predicts body satisfaction in both males and females. The study also aimed to explore whether self-compassion, compassion to others and compassion from others protect body satisfaction in the presence of appearance comparisons when social networking, based upon compassionate mind and social mentality theories. Participants were social network site users (n=360), recruited through social network sites. Results showed that physical appearance comparison when social networking negatively predicted body satisfaction, but moderation effects were not shown for compassion variables. Self-compassion and compassion from others were, however, shown to independently predict body satisfaction in the model, suggesting that they might independently promote body satisfaction.

1. Introduction

Body image satisfaction is important for individual and societal well-being, for example body dissatisfaction undermines self-confidence and prevents participation in social and learning activities (Government Equalities Office, 2015; All Party Parliamentary Group, 2012). Up to 60% of adults are ashamed of how they look and effective, evidenced-based interventions that lead to long term improvements in body satisfaction are lacking (Rumsey & Harcourt, 2012; Campbell & Hausenblas, 2009; Alleva, Sheeran, Webb, Martijn & Miles, 2015). It is thus important to understand factors influencing body image satisfaction, in order to develop effective and evidence based interventions that promote and improve body satisfaction. Males are also currently less likely to access body image interventions and thus interventions developed need to be helpful and accessible to both males and females (Niide, Davis, Tse & Harrigan, 2013).

1.1 The rise and role of social networking sites

It has been suggested that social networking sites (SNS) increase body dissatisfaction by providing platforms for unregulated transmission of images against which individuals can make appearance comparisons and negative self-evaluations (Government Equalities Office, 2015; Anson, Veale & Miles, 2015). Social comparison theory (Festinger, 1954) suggests that individuals determine their worth and status in different areas of their lives based upon how they compare with others. Body satisfaction is therefore determined by how individuals perceive themselves compared with others regarding physical attractiveness. A review of recent studies has supported the idea that social network site use relates to body image concerns and dissatisfaction and that this relationship is determined by making appearance comparisons rather than overall time spent on social networking sites (Holland & Tiggemann, 2016). The role of appearance comparisons when social networking is supported by studies which have

found Facebook to more negatively impact upon body image satisfaction in females who made more appearance comparisons whilst using the site (Fardouly & Vartanian, 2015; Fardouly, Diedrichs, Vartanian & Halliwell, 2015). Social networking is increasingly widespread (Kemp, 2015), especially sites where image sharing is central (eMarketer, 2015) and so it is important to establish its role in body image in order to develop interventions that mitigate negative impacts. Initial research into the role of social networking sites in body image dissatisfaction has primarily focused on female, student populations (Fardouly & Vartanian, 2015; Fardouly et al., 2015); therefore studies with more varied populations are needed to understand whether social networking is also impacting upon older people and males.

1.2 Conceptualising body image using social mentality theory and compassion

Compassionate mind theory (Gilbert, 2010) and social mentality theory (Gilbert, 2005) have been used to understand body image dissatisfaction (Pinto-Gouveia, Ferreira & Duarte, 2014; Gilbert, 2002) and could be relevant to body image dissatisfaction in a social networking context. Compassionate mind theory proposes a heuristic three system model of affect regulation. This incorporates the defensive threat-focused system, designed to detect and protect from threat; the soothing affiliative-focused system motivated towards managing distress and promoting bonding; and the resource-focused drive system motivated towards obtaining needed resources (Gilbert, 2009). Individuals are able to regulate their emotions by achieving a balance between these three systems. The activity of these affect systems also alters situationally, allowing individuals to function adaptively. For example, when the threat system is activated individuals are primed to quickly respond to potential danger by feeling anxiety or anger, whereas when the soothing system is activated individuals might feel safe and

cared-for. Compassion is defined as a sensitivity to the suffering of the self and others and commitment to relieve it (Gilbert, 2009) and engaging with and experiencing compassion is thought to be key to achieving balance between the three systems (Gilbert, 2009).

Social mentality theory draws from evolutionary psychology and is understood to influence the way in which the above affect regulation systems operate. A social mentality is a specific pattern of brain activation, cognition, affect and behaviour that orients individuals to a particular social role (Gilbert, 2015a; Gilbert, 2005). Individuals engage different social mentalities in different contexts to appropriately manage their demands (Gilbert, 2005) and different social mentalities can thus result in different interactions between the three affect systems. For example, as social roles and relationships are evolutionarily necessary for survival, in social situations individuals might adopt a competitive social mentality to compete for roles and acceptance (Gilbert, 2002). When a competitive social mentality is activated, behaviour and attention will be directed towards monitoring and maintaining a competitive status. If the individual concludes they rank poorly they might fear social rejection and experience activation of the threat-affect system.

As humans choose attractive mates and allies to aid survival, appearance can determine an individual's rank and acceptance in social situations (Gilbert, 2002). Therefore, when individuals adopt a competitive mentality when using social networking sites, appearance comparisons may be more associated with appearance evaluation to determine rank (Festinger, 1954). If individuals then conclude that they rank poorly they might fear social rejection, experience activation of the threat-affect system and experience more body dissatisfaction (Gilbert, 2002). Evidence supports this, suggesting that having a competitive mentality predicts body dissatisfaction and

individuals who perceived themselves to be of inferior social rank showed more body image concern (Pinto-Gouveia et al., 2014).

Converse to a competitive social mentality, engaging a compassionate, caring mentality is associated with activation of the soothing-affect system and allows an individual to feel safe and accepted (Gilbert, 2005). Engaging this mentality can attenuate a competitive mentality (Gilbert, 2005; Gilbert, 2002) and thus those who are more able to engage a compassionate and caring mentality should experience less rejection-related threat. Engaging with and experiencing self-compassion, compassion for others and compassion from others enables a compassionate caring mentality (Gilbert, 2005); therefore those higher in compassion may experience less rejection-related threat and thus less body image dissatisfaction when making appearance comparisons. Self-compassion, compassion to others and compassion from others may thus protect body satisfaction in the presence of appearance based social comparisons when using social networking sites. If so, interventions facilitating engagement with and experiences of compassion may foster a compassionate, caring mentality and promote and improve body satisfaction in individuals who make appearance comparisons when social networking. Evidence has already suggested that self-compassion protects body image satisfaction: Braun, Park and Gorin (2016) reviewed literature on body image and self-compassion and concluded that self-compassion protected body image during appearance comparison and Homan and Tylka (2015) found body appreciation (having positive body image) to relate to comparison except in those with high self-compassion. However, studies have not yet explored the possible protective role of self-compassion in body image when social networking, therefore this study aimed to consider the possible protective role of self-compassion in this context. Previous studies have also not yet explored the roles of compassion for others and compassion from others in body satisfaction. All three components of compassion are thought to facilitate adoption of a

compassionate care mentality (Gilbert, 2005) and all three aspects of compassion are considered to interrelate; with the flow of compassion in one direction influencing compassion in the other directions (Gilbert, 2009). Therefore, as with self-compassion, engaging with compassion from others and with compassion for others should also protect body image satisfaction when social networking, by directly enabling a compassionate care mentality and also indirectly through increased self-compassion. Thus, extending upon the previous evidence suggesting a protective role of self-compassion in body image, the current research aimed to consider the role of all three compassion variables in body image when social networking.

1.3 Aims and hypotheses of the present study

Using quantitative methodology, this study aimed to build upon the results of previous studies by investigating whether making physical appearance comparisons on SNS relates to lower body image satisfaction in a sample of social network site users varied in age and gender, as previous studies have considered the relationships of these variables in samples largely limited to young, student females (Fardouly & Vartanian, 2015; Fardouly et al., 2015). It was hypothesized that higher physical appearance comparison on social networking sites would negatively predict body image satisfaction.

Based upon a compassionate mind and social mentality theory conceptualisation of body image dissatisfaction, and extending upon studies supporting a protective role for self-compassion in body image (Braun et al., 2016; Homan and Tylka, 2015), this study also aimed to explore whether self-compassion, compassion to others and compassion from others moderates the impact of physical appearance comparisons upon body satisfaction. It was hypothesized that engaging with compassion for the self, for others

and from others would be protective and moderate the relationship between physical appearance comparison on SNS and body image satisfaction.

2. Materials and methods

2.1 Participants

365 social network site users were recruited online through SNS. Paid advertising was used and the study was also shared through the researchers' own social media networks to obtain a snowball sample. To participate in the study, individuals needed to have their own SNS account which they had accessed within the last 2 weeks, be aged 16 years or above and be proficient in English language.

2.2 Procedure

Ethics permission was sought and granted from the Faculty of Health and Social Care Research Ethics Committee at the University of Hull (see appendix H.). Initial contact with participants was through adverts shared on social networking sites. Adverts contained a link to a brief, written description of the study explaining that the study was exploring social networking site use, body image and compassion (see appendix J.). Participants were then taken to a consent page (see appendix I.) and the online study questionnaire. Participants completed the questionnaire, which took approximately 10 minutes to complete. Participants who were not eligible to participate were screened out of the questionnaire based upon their answers to demographic questions. Following completion, participants viewed a short debrief and were given information detailing

relevant sources of support that may be useful if they experienced any distress or had concerns following participation (see appendix O.). All responses were anonymous.

2.3 Measures

2.3.1 Demographic items

Demographic questionnaire items asked participants to indicate their age and gender. Participants also confirmed whether they had a social network account that they had used within the last two weeks.

2.3.2 Social network site use

Participants indicated the average time they spent using social networking sites each day, on a 6 point Likert scale ranging from “less than 10 min” to “more than 3 hours.” A similar scale was previously used by Manago, Ward, Lemm, Reed and Seabrook (2015) to measure time spent on Facebook per day.

2.3.3 Physical appearance comparison when social networking

Participants’ tendency to make physical appearance comparisons when using social networking sites was measured using 5 items from the Revised Physical Appearance Comparison Scale (PACS-R, see appendix L.) (Schaefer & Thompson, 2014), adapted to measure the frequency of comparisons solely in a social networking context. The PACS-R is a 5-point Likert scale measure, ranging from “never” to “always,” with good reliability (Cronbach’s alpha = .97). The PACS-R contains 11 items assessing comparisons regarding different aspects of appearance in different social contexts. Example items include “When I’m at work or school, I compare my body shape to the body shape of others”, “When I’m out in public, I compare my physical appearance to the appearance of others” and “When I’m at the gym, I compare my physical

appearance to the appearance of others.” For the present study the social context for each item was replaced with “using social networking sites (eg Facebook, Instagram).” This resulted in some duplicate items as some aspects of appearance had been considered in multiple contexts in the original PACS-R. Duplicates were removed, leaving 5 items measuring appearance comparisons when social networking. Studies have similarly adapted the original Physical Appearance Comparison Scale (PACS) (Thompson, Heinberg & Tantleff, 1991) to a social networking context. For example, Fardouly & Vartanian (2015) adapted items from the PACS in the same way but focusing specifically on Facebook with items such as “When using Facebook, I compare my physical appearance to the physical appearance of others.” The revised scale was chosen for adaptation and use in the present study as it has improved psychometric properties and considers aspects of appearance relevant for both males and females (Schaefer & Thompson, 2014). The mean of all measure items can be used as an overall score of physical appearance comparison. Overall scores range from 0 to 4, with higher scores indicating higher levels of comparison.

2.3.4 Body image satisfaction

Body image satisfaction was measured with the Body Areas Satisfaction Scale (BASS, see appendix M.), a subscale of the Multidimensional Body-Self Relations Questionnaire-Appearance Scales (MBSRQ) (Cash, 2008). This is a 5 point Likert scale measure asking participants to rate their satisfaction with different areas of their body and from this an overall score of body satisfaction is calculated using the mean (Cash, 2000). Overall scores range from 1 to 5 and higher scores indicate higher levels of satisfaction and lower scores indicate more body dissatisfaction. The scale has acceptable reliability (Cronbach’s alpha = .79 and test-retest = .81) (Croghan et al.,

2006), is normed for both genders and is not specific to a particular body ideal (Heiken, 2012).

2.3.5 Compassion

To measure self-compassion, compassion to others and compassion from others, the Compassionate Engagement and Action Scales (CEAS, see appendix N.) (Gilbert et al., 2016) were used. These are 10-point Likert scales measuring ability to experience and engage with compassion for others, compassion from others and compassion for the self and should comprehensively measure compassion consistent with Gilbert's conceptualisation (Gilbert, 2005; Gilbert, 2009; Gilbert, 2010). Measure scores are summed to give a total for each subsection and then subsection scores for each aspect of compassion are summed to give overall scores for self-compassion, compassion to others and compassion from others (Kleissen, 2016). Each aspect of compassion comprises 13 items, 10 of which are included in scoring (Gilbert et al., 2016). Overall scores for each aspect of compassion range from 10 to 100 and higher scores indicate higher levels of compassion. An initial validation study suggested that these scales have good internal reliability (Cronbach's $\alpha = .84-.95$) and have weak to moderate correlations with related constructs such as psychological complaints and well-being (Gilbert et al., 2015b).

2.4 Data analysis

Statistical analyses were performed using SPSS Statistics for Windows Version 24. Coded response data was imported into SPSS and overall scores for key variables were then calculated per guidelines and previous research: for the PACS-R and the BASS mean scores were used and for the CEAS the overall score was the summed total for

each compassion component (Schaefer & Thompson, 2014; Cash, 2000; Kleissen, 2016).

To establish whether any strong correlations exist between variables, scatter graphs were explored and Pearson correlations for overall scores were calculated. Prior to regression analysis, the three compassion variables and the physical appearance comparison variable were mean centred to increase the numerical stability and facilitate interpretation of parameter estimates. Multiple regression models were then used to test both hypothesis 1 and 2. To test hypothesis 1, that higher physical appearance comparison on social networking sites would negatively predict body image satisfaction, a multiple regression model was fitted where the independent variables of time spent on SNS, appearance comparison on SNS, compassion for others, compassion from others, compassion for self, age and gender were predictors of dependent variable body image dissatisfaction. To test hypothesis 2, that engaging with compassion for the self, for others and from others would be protective and moderate the relationship between physical appearance comparison on SNS and body image satisfaction, a second regression model was fitted including the predictor variables in model 1 but also testing whether compassion for the self, compassion to others and compassion from others moderated the relationship of appearance comparison and body satisfaction.

A sample size calculation completed using G*Power 3.1 (Faul, Erdfelder, Buchner, & Lang, 2009) suggested that a minimum sample of 212 participants was needed to detect the expected effects with power of 80% using a significance level of 5%. The power calculation was based upon R^2 statistics obtained by Homan and Tylka (2015), who tested a similar moderated regression model where age, body mass index, body comparison and self-compassion predicted body appreciation and self-compassion moderated the relationship between body comparison and body appreciation.

3. Results

3.1 Descriptive analyses

Of the 365 participants who accessed the survey, four were excluded from the analyses due to missing data and one was excluded as they were the only participant to identify their gender as “other.”¹ The final sample consisted of 360 participants aged 16-79 (mean = 33.77, SD= 12.72): 79 were male and 281 were female (21.9% and 78.1%, respectively). The sample was skewed towards younger people.

Descriptive statistics for the overall scores of key interval level variables are presented in Table 2. Mean scores for “Self-compassion” and “Compassion from others” were slightly lower than those previously published by Kleissen (2016), where the means for self-compassion and compassion from others were 65.5 and 65.0 respectively. The mean for “Compassion to others” in the present study was conversely 6 scale points higher than the mean of 71.7 presented by Kleissen (2016). Scores for “Compassion to others” showed some ceiling effects, with 3.06% participants scoring the maximum score. The means obtained in the present study for compassion variables were, however, similar to those obtained by Lindsey (2017), who explored the psychometric properties of the CEAS in an internet-based study. Lindsey (2017) obtained mean scores of 63.82, 77.27 and 58.81 for self-compassion, compassion to others and compassion from others, respectively. The mean for “Physical Appearance comparison” in the present study was .52 scale points lower than the mean PACS-R score published for a female sample by Schaefer and Thompson (mean= 2.24) (2014). This difference may be due to the present study including both males and females or due to measuring comparison specifically in a social networking context. Cash (2000) published norms for males and females for the

¹ One data point would be insufficient to statistically determine the pattern and relationship of a category with other variables

BASS, which comprise means of 3.50 and 3.23 respectively. The mean for “Body satisfaction” given in the present study is not dissimilar and the lower score may represent the high proportion of female participants. Table 3 shows the frequency of participants in each category of time spent on social networking sites per day. The modal category was 31-60min per day with 28.9% participants spending this time on social networking sites each day.

Table 2.

Descriptive statistics for overall scores of interval data variables

Variable	Mean	Std. Deviation	Range
Self-compassion	62.99	15.52	21-100
Compassion to others	77.70	13.66	26-100
Compassion from others	59.33	16.47	10-100
Physical Appearance comparison	1.72	1.11	0.00-4.00
Body satisfaction	3.11	.674	1.33-5.00

Table 3.

Time spent by participants on social networking sites each day

Time spent on SNS per day	Frequency of participants	Percentage of participants
less than 10 min	7	1.9
10-30 min	59	16.4
31-60 min	104	28.9
1-2 hours	95	26.4
2-3 hours	54	15.0
more than 3 hours	41	11.4

3.2 Correlational analyses

To establish whether any strong correlations exist between variables, scatter graphs were explored and Pearson correlations for overall scores were calculated. Table 4 shows the Pearson correlations. Figures 2 to 4 show the scatterplots of the relationships of physical appearance comparison, self-compassion and compassion from others with

body satisfaction. Scatterplots suggested possible weak correlations with body satisfaction for physical appearance comparison, self-compassion and compassion from others.

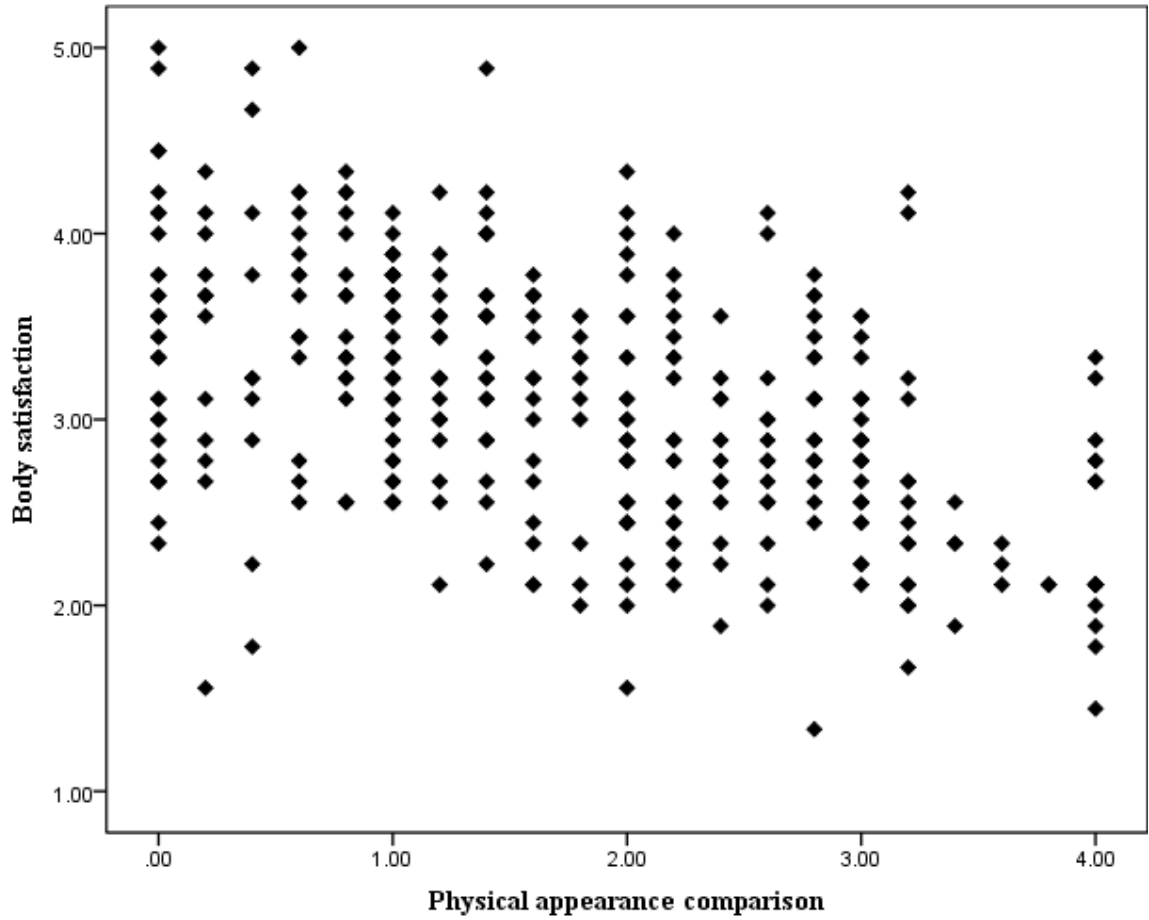


Figure 2. Scatterplot showing the relationship between Physical appearance comparison and Body satisfaction

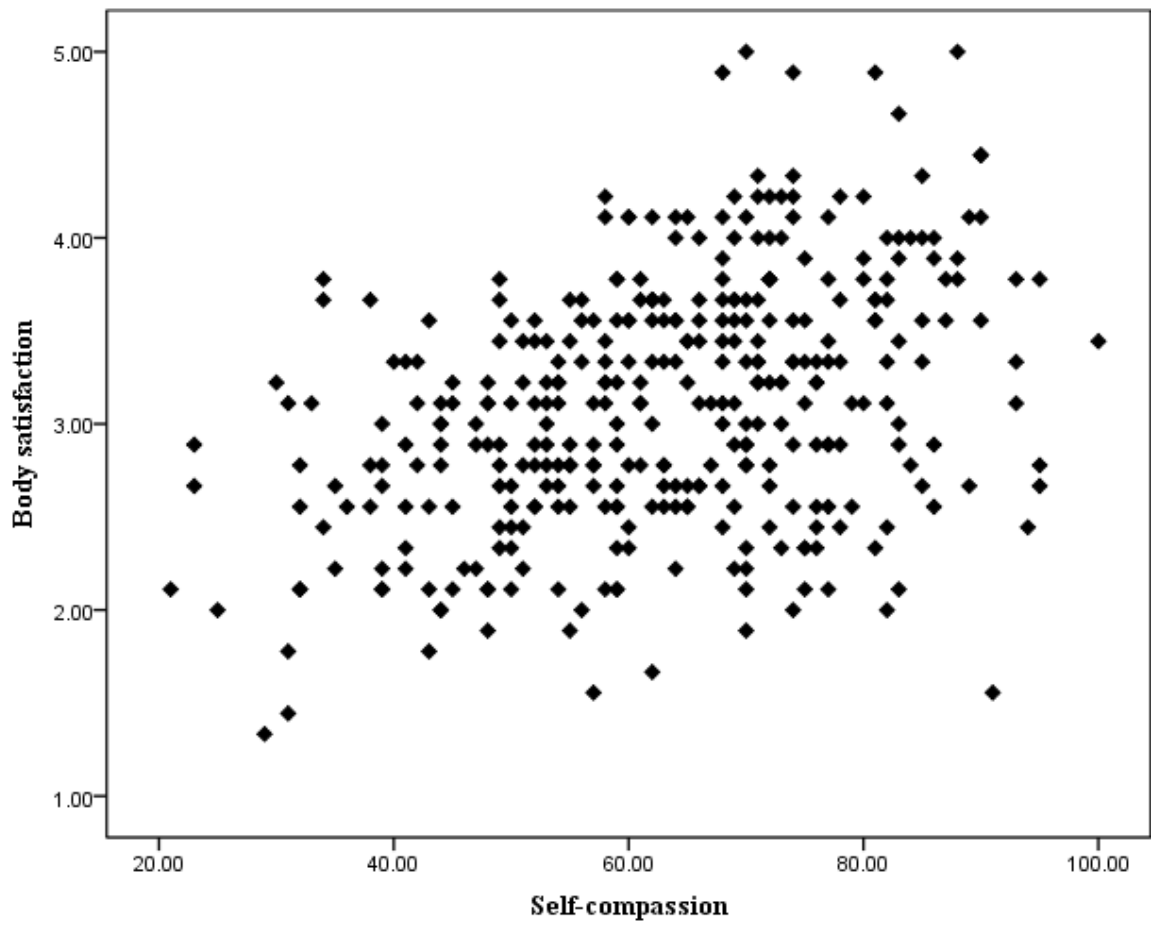


Figure 3. Scatterplot showing the relationship between Self-compassion and Body satisfaction

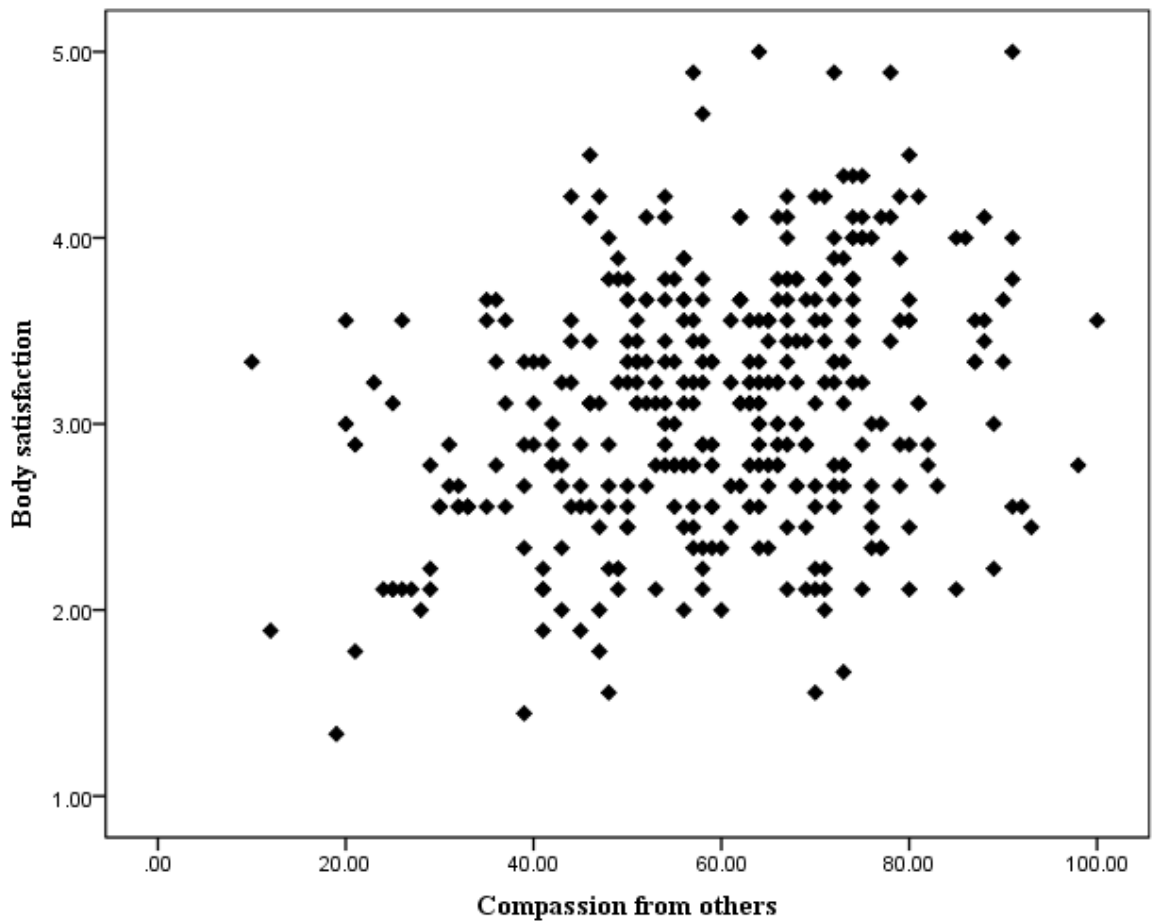


Figure 4. Scatterplot showing the relationship between Compassion from others and Body satisfaction

Age negatively but weakly correlated with time spent on SNS ($r = -.17, p = .001$) and correlated with physical appearance comparison ($r = -.34, p < .001$), suggesting that younger people spent more time on SNS and made more appearance comparisons. Age also positively correlated with self-compassion ($r = .15, p = .004$) and with compassion to others ($r = .11, p = .038$), suggesting that older participants had higher self-compassion and compassion to others, though these correlations were weak. Time spent on SNS negatively correlated with body satisfaction ($r = -.23, p < .001$) and positively correlated with physical appearance comparison ($r = .21, p < .001$), suggesting that those who spent more time on SNS made more appearance comparisons and had lower body satisfaction. Physical appearance comparison negatively correlated with body satisfaction ($r = -.49,$

$p < .001$); this was the strongest correlation found and suggests that those who made more appearance comparisons had lower body satisfaction.

All aspects of compassion significantly positively correlated with each other, though not strongly. Self-compassion negatively correlated with appearance comparison ($r = -.29$, $p < .001$) whereas compassion to others was positively correlated ($r = .19$, $p < .001$), suggesting that those who made more appearance comparisons had lower self-compassion but higher compassion to others. Self-compassion and compassion from others both positively correlated with body satisfaction ($r = .39$, $p < .001$; $r = .29$, $p < .001$ respectively), suggesting that those higher in self-compassion and compassion from others had higher body satisfaction.

Table 4.
Pearson correlations

Variable	1	2	3	4	5	6	7
Physical appearance comparison							
Body satisfaction	-.49**						
Self-compassion	-.29**	.39**					
Compassion to others	.19**	-.05	.29**				
Compassion from others	-.07	.29**	.32**	.19**			
Age	-.34**	-.04	.15**	.11*	-.02		
Time spent on SNS per day	.21**	-.23**	-.19**	-.03	-.19**	-.17**	

** . Correlation is significant at the .01 level (2-tailed)

* . Correlation is significant at the .05 level (2-tailed)

3.3 Regression analysis

3.3.1 Assumptions

Modelling checks were done to ensure modelling assumptions were met prior to the regression analysis. Standardised residuals were normally distributed, therefore the assumption of homogeneity of residuals was met (Field, 2009). Correlation analyses and

collinearity diagnostics suggested that no variables were strongly correlated and variance inflation factors were low, therefore there was no multicollinearity. Possible influential observations were explored by calculating Cook's distances: these were all between 0 and 0.45 suggesting that there were no individual data points clearly influencing the model. As modelling assumptions were met, bootstrapping was not necessary.

3.3.2 Regression model 1

To test hypothesis 1, a multiple regression model was initially fitted where the independent variables of time spent on SNS, appearance comparison on SNS, compassion for others, compassion from others, compassion for self, age, gender and the interaction between age and gender were predictors of dependent variable body image dissatisfaction. As the age by gender interaction was not a significant predictor in the model, the model was re-run excluding this variable to simplify the final model (model 1). Regression statistics and coefficients for models 1 and 2 are shown in Tables 5 and 6.

With all predictor variables in the model, the R-squared statistic was statistically significant ($R^2=.40$, sig F change < .000). Age was a significant negative predictor of body satisfaction in model 1, suggesting that older people had lower body satisfaction when other variables were accounted for. Gender was not a significant predictor in the model ($B= .01(.07)$, $t=.06$, $p= .948$), suggesting that it does not contribute to body satisfaction when other variables are accounted for. Self-compassion and compassion from others were significant positive predictors of body satisfaction ($B= .01(.002)$, $t=4.59$, $p<.001$; $B= .01(.002)$, $t=3.83$, $p<.001$, respectively), suggesting that those higher in self-compassion and compassion from others had higher body satisfaction, but

compassion to others was not a significant predictor. In support of hypothesis 1, physical appearance comparison was a significant negative predictor in the model ($B = -.28(.03)$, $t = -8.19$, $p < .001$), suggesting that those with higher physical appearance comparison had lower body satisfaction.

Table 5.

Regression and F changes statistics for models 1 and 2

Model	R Square	Std. Error	R Square Change	Change Statistics			
				F	df1	df2	p-value
1	.40	.53	.40	21.14	11	348	.000
2	.41	.53	.01	1.10	3	345	.347

3.3.3 Regression model 2

To test hypothesis 2 and explore whether compassion variables protected body satisfaction during appearance comparison processes, a second regression model (model 2) was fitted testing whether compassion variables moderated the relationship of appearance comparison and body satisfaction. This included the predictor variables included in model 1 but additionally included interactions between: appearance comparison on SNS and compassion for others; appearance comparison on SNS and compassion from others; and appearance comparison on SNS and compassion for the self. The addition of the interaction variables did not improve the fit of the model (R^2 change = .01(.53), F change (3, 345) = 1.10, $p = .347$) with compassion and physical appearance comparison interactions not being significant predictors, suggesting that compassion variables did not moderate the impacts of physical appearance comparison upon body satisfaction. Results therefore suggest that whilst self-compassion and compassion from others predict body satisfaction, their role is not moderating the

relationship of appearance comparison and body satisfaction. Results thus did not support hypothesis 2.

Table 6.
Regression coefficients for predictor variables in model 1 and 2.

Model		Unstandardized		Standardized		<i>p</i> -value
		B	Std. Error	Beta	t	
1	Age	-.01	.002	-.24	-5.11	.000
	Gender	.01	.07	.003	.06	.948
	less than 10 min on SNS/day	.43	.22	.09	1.92	.056
	10-30 min on SNS/day	.14	.11	.08	1.27	.205
	31-60 min on SNS/day	.11	.10	.07	1.08	.281
	1-2 hours on SNS/day	.01	.10	.01	.09	.927
	2-3 hours on SNS/day	-.05	.11	-.03	-.45	.650
	Physical appearance comparison	-.28	.03	-.45	-8.91	.000
	Self-compassion	.01	.002	.22	4.59	.000
	Compassion to others	-.002	.002	-.03	-.72	.471
	Compassion from others	.01	.002	.17	3.83	.000
	2	Age	-.01	.002	-.24	-5.07
Gender		-.01	.074	-.01	-.14	.887
less than 10 min on SNS/day		.44	.222	.09	1.97	.050
10-30 min on SNS/day		.15	.111	.08	1.37	.171
31-60 min on SNS/day		.12	.101	.08	1.14	.255
1-2 hours on SNS/day		.02	.101	.02	.23	.816
2-3 hours on SNS/day		-.05	.112	-.02	-.40	.689
Physical appearance comparison		-.27	.031	-.45	-8.72	.000
Self-compassion		.001	.002	.22	4.44	.000
Compassion to others		-.002	.002	-.04	-.83	.409
Compassion from others		.01	.002	.18	3.89	.000
SCxPACS		.001	.002	.01	.31	.758
CTOxPACS	-.002	.002	-.06	-1.37	.173	
CFOxPACS	-.002	.002	-.05	-.10	.321	

4. Discussion

The present study aimed to confirm whether appearance comparison when social networking negatively predicts body satisfaction in both males and females. As hypothesized, regression analysis supported that appearance comparison when social networking negatively predicts body satisfaction: those with higher levels of physical appearance comparison had lower body satisfaction. These results are consistent with those of previous studies which suggest that body image concerns when social networking are determined by the level of appearance comparisons made (Holland & Tiggemann, 2016), with more negative impacts occurring in those who make more appearance comparisons (Fardouly et al., 2015; Fardouly & Vartanian, 2015). Interventions that reduce appearance comparison or that protect body image in the presence of such comparisons may thus be beneficial for improving and promoting body satisfaction. It may be useful to run initiatives that increase societal awareness of the role that appearance comparisons play in body image when using social networking sites. This may encourage individuals to mindfully acknowledge and consider their own comparison behaviour, enabling them to make decisions and act in a way that is helpful for their body image. If specific social networking activities are particularly associated with appearance comparisons, it may also be helpful for regulatory checks to be built into the social networking sites. For example, Manago et al. (2015) found that users who passively browsed content had higher levels of body dissatisfaction. Such behaviour could be linked to higher levels of comparison. If so, social networking sites could be programmed to detect sustained periods of such behaviour and then present pop-ups encouraging the user to reflect on their own comparison behaviour and body image. Research could explore whether particular social networking activities are linked to higher levels of comparison and the results should be fed back to those running and

developing social networking sites, to encourage them to help in minimising negative impacts.

Previous studies suggesting a role for appearance comparison have largely been limited to female samples (Fardouly et al., 2015; Fardouly & Vartanian, 2015) therefore the present study which used a mixed gender sample extends the evidence base by suggesting that appearance comparison plays a role in body image when social networking for both males and females. Furthermore, gender was not a significant predictor in the regression model when compassion and comparison variables were included, suggesting that body image satisfaction does not differ based upon gender alone. Variances in appearance comparison may thus account for gender differences found in previous studies, for example where females have shown higher body shame this may be due to higher levels of appearance comparison in females (Manago et al., 2015). The present study also used a wider age range than previous studies, which have often been limited to student populations (Fardouly & Vartanian, 2015; Fardouly et al., 2015). Results suggest that social comparison when social networking might negatively impact individuals' body image satisfaction across the age range; however results also suggested that age was independently a negative predictor of body satisfaction. This suggests that when other variables were accounted for, older people had lower body satisfaction. Studies have found that people perceive images of younger faces and models as more attractive than older faces and models (Korthase & Trenholme, 1982; Lennon, 1988) and perceptions of attractiveness decreasing with age may impact individuals' self-evaluations of appearance. People may associate attractiveness with younger age due to evolutionary advantages, for example younger mates may increase chances of reproduction and survival (Gilbert, 2002), but societal discourses may also play a role. The results of the present study contrast, however, with the results of

Stronge et al. (2015), which suggest that when other variables were accounted for body satisfaction was higher in older women. Individuals might become less satisfied with some aspects of their bodies with age but also have more satisfaction with other aspects (Ålgars et al., 2009). This might account for differences shown across studies where different measures of body image have been used.

The current study also aimed to explore whether self-compassion, compassion to others and compassion from others protect body satisfaction in the presence of appearance comparisons when social networking, based upon compassionate mind and social mentality theories (Gilbert, 2005; Gilbert, 2002) and previous evidence suggesting a protective role for self-compassion in body image (Braun et al., 2016; Homan and Tylka, 2015). Contrary to hypothesis 2, compassion variables did not moderate the impact of appearance comparison when social networking upon body satisfaction. This suggests that self-compassion, compassion to others and compassion from others do not reduce body image dissatisfaction when making appearance comparisons on social networking sites by enabling a compassionate caring mentality. It may be that self-compassion, compassion for others and compassion from others do not sufficiently enable a compassionate caring mentality when in competitive social situations where rejection-related threat could be high and a competitive social mentality may be more adaptive (Gilbert, 2005). It is a limitation of this study that individuals' actual social mentalities were not measured and thus it could not be determined whether compassion variables were related to a more compassionate caring mentality and a less competitive social mentality. Pinto-Gouveia et al. (2014) found that having a competitive social mentality related to body image concerns and future studies could similarly measure the extent to which individuals have a competitive social mentality when exploring the relationships between social networking, appearance comparison and body image and

the role of compassion variables. It may also be that those who make more appearance comparisons do so because they tend to adopt a more competitive social mentality which orients their behaviour towards comparison and self-evaluation to determine rank (Gilbert, 2005). If comparison is oriented towards self-evaluation of status, compassion may not reduce the impact of comparison and it may be more likely that compassion variables moderate the relationship between social networking site use and appearance comparison rather than the relationships tested in the present study. If compassion variables increase adoption of a compassionate caring mentality and reduce the competitive mentality, behaviour and cognition may be less oriented towards self-evaluation and comparison and consequentially individuals might feel more accepted and satisfied with their body image. Future studies should explore this possible alternative model based upon compassion and social mentality theories (Gilbert, 2005; Gilbert, 2002), confirming whether compassion might moderate the relationship of social networking use and appearance comparison. If this is found to be the case then interventions on an individual, systemic and wider societal level that increase compassion may prove effective in reducing appearance comparisons and protecting body image in the context of increasing social networking site use (Kemp, 2015).

Although the results of this study suggested that compassion variables did not moderate the relationship of appearance comparison when social networking with body satisfaction, both models 1 and 2 did show self-compassion and compassion from others to be significant positive predictors of body satisfaction. This is consistent with previous research which suggests that self-compassion is related to body satisfaction (Braun et al., 2016). This suggests that these compassion variables could increase or protect body satisfaction but not by influencing the impacts of appearance comparison when social networking. If self-compassion and compassion from others promote or protect body

satisfaction, interventions that increase engagement with self-compassion and compassion from others may be effective in improving body satisfaction and may have longer term results than current, poorly evidenced interventions (Campbell & Hausenblas, 2009; Alleva et al., 2015). Compassion-focused interventions such as meditation, skills training and practice can be made easily accessible, for example through remote online delivery (Albertson, Neff & Dill-Shackleford, 2015). Therefore results could also support the development of accessible interventions that reach typically harder-to-reach groups such as males (Niide et al., 2013; Alleva et al., 2015). Such accessible, online compassion interventions could be designed and piloted with samples of social network site users, in order to establish whether they are feasible and whether they effectively increase compassion and improve body satisfaction. Given that compassion from others predicts body satisfaction, systemic therapeutic interventions that promote compassion in the systems around individuals who experience high levels of body dissatisfaction may also be helpful. For example, it may be useful to involve family members, schools, workplaces and peers in interventions for individuals accessing clinical services with body image difficulties, educating them regarding the role of compassion and encouraging them to practise and give compassion to those individuals. Wider interventions or public health initiatives that encourage members of society to act compassionately towards one another may also be preventative against body dissatisfaction by enabling people to experience more compassion from others. These might involve running compassionate-focused psychoeducation and skills training preventatively in schools, workplaces and online. If such protective initiatives are offered to everybody as the status quo, it may be more likely that harder to reach groups, such as males (Niide et al., 2013), have access to and utilise them. Further studies are therefore needed to confirm whether experimentally increasing these compassion variables using compassion-focused interventions improves body

satisfaction. It is important that possible interventions and prevention initiatives are trialled before being rolled out on a wider scale, to ensure that new interventions do not just contribute to the body of ineffective, poorly evidenced interventions that already exist (Alleva et al., 2015).

Given that self-compassion and compassion from others were both significant predictors of body satisfaction and given that all three aspects of compassion are considered to be reciprocally related (Gilbert, 2009), it is surprising that compassion to others was not a significant positive predictor in the model. Compassionate mind theory suggests that engaging with and experiencing compassion to the self, to others and from others can activate the affiliative soothing system to regulate threat and drive system activation (Gilbert, 2009). From this, it could be expected that higher compassion for others should be related to less rejection related threat in social situations and thus less body dissatisfaction. Compassion to others positively correlated with appearance comparison, suggesting that those higher in compassion to others make more physical appearance comparisons and this may help explain why compassion to others did not negatively predict body satisfaction. Attending to others, even with compassion, may increase individuals' opportunity for appearance comparisons. Given that this result is unexpected, further studies should explore the relationships between different aspects of compassion and body satisfaction in order to confirm whether this might be the case. It is also interesting that of the compassion variable means, compassion to others was the highest and compassion from others was the lowest in both the results of the present study and those of Lindsey (2017). It is possible that individuals may overestimate their compassion towards others or underestimate the compassion they receive. This could affect the relationships shown and further studies could explore different ways to measure compassion that account for biased self-perceptions.

4.1 Limitations and suggestions for future research

The present study was not without limitations. Firstly, because a measure of physical appearance comparison specific to a social networking site context does not currently exist, a widely used measure of physical appearance comparison (Schaefer & Thompson, 2014) was adapted in order to measure appearance comparisons made in a social networking context. It is possible that this adapted measure lacks validity or reliability and, given the increasing use of social networking sites in society (Kemp, 2015), it may be useful if future research develops a valid and reliable measure of appearance comparison in a social networking context. Another possible limitation to the study's internal validity is that all measures were self-report and may have been affected by self-report bias. It is, however, a strength that a measure of body satisfaction was used that was applicable to both males and females and that was not specific to a particular body ideal.

It was a strength of this study that participants were recruited online via social networking sites in order to gain a sample representative of social network site users. However, this recruitment strategy did result in a sample biased towards a younger age range and biased towards females. This may limit the generalisability of results; however this may also in part represent the demographics of social network site users as younger adults are more likely to use both the internet and social networking sites (Greenwood, Perrin & Duggan, 2016; Perrin & Duggan, 2015). There may also be some self-selection bias in those who opted to participate in the study after viewing the study advert. Individuals who were more interested in the study topic may have been more likely to participate and thus results may have been different if participants had been randomly selected. Future studies could randomly select individuals from online social networks in order to minimise this bias. Although 75% of male internet users use

Facebook compared to 83% in females (Greenwood et al., 2016), it is also important to note that the current study reached far fewer males than females and this parallels the difficulty in making body image interventions available to men (Niide et al., 2013). The biased sample obtained in the present study suggests that to reach men it will be insufficient to simply share online interventions via social networking sites. Qualitative research with men exploring how best to engage men in research and interventions relating to body image may be useful to improve their relevance and accessibility for males. Males and older populations have been overlooked in research and interventions relating to body image satisfaction (Holland & Tiggemann, 2016; Niide et al., 2013). However, given that the negative impacts of social networking and comparison upon body image appear to apply to both males and females, and older people may be more likely to experience body dissatisfaction in the absence of other protective factors, future studies focusing upon body image and the development of interventions should aim to be inclusive. Studies should explore age differences in the impacts of social networking upon body image and interactions with comparison and compassion. It is also a limitation that there was only one participant who identified as gender “other” in the current study who thus had to be excluded from the analysis. This study aimed to be varied in gender and therefore it is surprising that there were no other participants who identified as gender “other.” Future studies should aim to explore the roles of social networking, appearance comparison and compassion in body image for those who do not identify as either “male” or “female,” because there may be differences in the relationships shown. These studies will have to be innovative in their recruitment methods to obtain an inclusive sample, for example by targeting specific social media communities likely to contain varied populations.

Finally, the cross-sectional correlational nature of the present study means that the causality of the relationships identified cannot be confirmed. Although regression

allows the predictive nature and direction of relationships to be explored, experimental studies are needed to confirm causality, determining whether reducing comparison when social networking and increasing self-compassion and compassion from others improves body satisfaction in both the short and long term, in order to guide development of effective body image interventions.

5. Conclusions

The findings of the present study indicate that appearance comparison when social networking negatively impacts body satisfaction in both males and females of varying ages, building upon previous research suggesting a role for appearance comparison in young females (Fardouly et al., 2015; Fardouly & Vartanian, 2015). The findings also suggest that although self-compassion and compassion from others predicted body satisfaction, compassion variables do not moderate the relationship between social comparison when social networking and body satisfaction. This supports and builds upon previous research that suggests that self-compassion is related to body satisfaction (Braun et al., 2016), but does not fit with a social mentality conceptualisation where compassion might facilitate a compassionate caring mentality which reduces the threat of appearance-related rejection and thus body satisfaction when making comparisons in a social networking context. It is possible that self-compassion, compassion for others and compassion from others do not sufficiently enable a compassionate caring mentality in potentially competitive social situations where a competitive social mentality may be more adaptive (Gilbert, 2005); and it is a limitation that social mentalities were not measured in the study. It may also be that those who make more appearance comparisons do so because they adopt a more competitive social mentality which orients their behaviour towards comparison for evaluation. If comparisons are more

oriented towards self-evaluation of status, compassion may not reduce the impact of comparison. Future studies could explore whether compassion instead moderates the relationship of social networking and social comparison by reducing self-evaluation behaviour, and experimental studies manipulating comparison and compassion should confirm their roles and causality. Given that appearance comparison predicted lower body satisfaction and self-compassion and compassion from others predicted higher body satisfaction, interventions that decrease comparisons and increase compassion may be useful and effective in protecting and promoting body image satisfaction. Future research should investigate this and explore whether benefits are sustained in the long term.

Acknowledgements None

Funding Research expenses were provided by the University of Hull

Competing interests None

References

- Albertson, E., Neff, K. & Dill-Shackleford, K. (2015). Self-Compassion and Body Dissatisfaction in Women: A Randomized Controlled Trial of a Brief Meditation Intervention. *Mindfulness*, 6, 444–454.
- Ålgars, M., Santtila, P., Varjonen, M, Witting, K., Johansson, A., Jern, P. & Sandnabba, N. (2009). The Adult Body: How Age, Gender, and Body Mass Index Are Related to Body Image. *Journal of Ageing and Health*, 21(8), 1112-1132.
- Alleva, J., Sheeran, P., Webb, T., Martijn, C. & Miles, E. (2015). A Meta-Analytic Review of Stand-Alone Interventions to Improve Body Image. *PLOS ONE*, 10(9), 1-32.
- Anson, M., Veale, D. & Miles, S. (2015). Appearance comparison in individuals with body dysmorphic disorder and controls. *Body Image*, 15, 132–140.
- All Party Parliamentary Group. (2012). Reflections on Body Image. Retrieved February 19, 2016 from http://www.ncb.org.uk/media/861233/appg_body_image_final.pdf.
- Braun, T., Park, C. & Gorin, A. (2016). Self-compassion, body image, and disordered eating: A review of the literature. *Body Image* 17, 117–131.
- Campbell, A. & Hausenblas H. (2009). Effects of exercise interventions on body image: A meta-analysis. *J Health Psychol*, 14(6), 780–793.
- Cash, T. (2000). Multidimensional Body-Self Relations Questionnaire users' manual. Retrieved November 19, 2016 from <http://www.body-images.com/assessments/mbsrq.html>.

- Cash, T. (2008). Body image assessments: Manuals and questionnaires. Retrieved November 19, 2016 from <http://www.body-images.com/assessments/mbsrq.html>.
- Croghan, I., Bronars, C., Patten, C., Schroeder, D., Nirelli, L., Thomas, J., Clark, M., Vickers K., Foraker, R., Lane, K., Houlihan, D., Offord, K. & Hurt, R. (2006). Is smoking related to body image satisfaction, stress, and self-esteem in young adults?. *American Journal of Health Behavior*, 30(3), 322-333.
- eMarketer. (2015). Are UK Teens Over Facebook? Retrieved February 19, 2016 from <http://www.emarketer.com/Article/UK-Teens-Over-Facebook/1011811>.
- Fardouly, J. & Vartanian, L. (2015). Negative comparisons about one's appearance mediate the relationship between Facebook usage and body image concerns. *Body image*, 12, 82-88.
- Fardouly, J., Diedrichs, P., Vartanian, L. & Halliwell, E. (2015). Social comparisons on social media: The impact of Facebook on young women's body image concerns and mood. *Body Image*, 13, 38-45.
- Faul, F., Erdfelder, E., Buchner, A. & Lang, A.-G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behaviour Research Methods*, 41, 1149-1160.
- Festinger, L. (1954). A Theory of Social Comparison Processes. *Human Relations*, 7(2), 117-140.
- Field, A. (2009). *Discovering statistics using SPSS*. Sage publications.
- Gilbert, P. (2002). Body shame in childhood & adolescence. In P. Gilbert & J. Miles (Eds.), *Body Shame* (pp.55-74). Hove: Brunner-Routledge.

- Gilbert, P. (2005). *Compassion: Conceptualisations, Research and Use in Psychotherapy*. Routledge.
- Gilbert, P. (2009). Training Our Minds in, with and for Compassion: An Introduction to Concepts and Compassion-Focused Exercises. Retrieved February 19, 2016 from http://www.compassionatemind.co.uk/downloads/training_materials/3.%20Clinical_patient_handout.pdf.
- Gilbert, P. (2010). *Compassion Focused Therapy: Distinctive Features (CBT Distinctive Features)* (pp.22-27, 33-38). Taylor & Francis.
- Gilbert, P. (2015a). Spirituality, Humanity and The Nature of Compassion Peter Gilbert Memorial Lecture. Retrieved October 9, 2016 from <http://slideplayer.com/slide/6529635/>.
- Gilbert, P., Catarino, F., Matos, M., Duarte, C., Kolts, R., Duarte, J. & Pinto-Gouveia, J. (2015b). Measuring compassion: The New Compassion Scales. Presentation at the 4th International Compassion Focused Therapy Conference, Manchester.
- Gilbert, P., Catarino, F., Duarte, C., Matos, M., Kolts, R., Stubbs, J. & Pinto-Gouveia, J. (2016). Three orientations of compassion, the development of self-report measures and their link to depression. *Manuscript submitted for publication*.
- Government Equalities Office. (2015). Body Confidence Campaign: Progress report. Retrieved February 19, 2016 from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/417186/Body_confidence_progress_report_2015.pdf.

- Greenwood, S., Perrin, A. & Duggan, M. (2016). Social media update. Retrieved February 23, 2017 from <http://www.pewinternet.org/2016/11/11/social-media-update-2016/>.
- Heiken, (2012). The Relationship between Self-Esteem, Online Peer Influence, Social Networking Site Usage and Body Satisfaction for Teen Girls in the United States. Retrieved June 24, 2016 from <http://gradworks.umi.com/35/43/3543154.html>.
- Holland, G. & Tiggemann, M. (2016). A systematic review of the impact of the use of Social Networking Sites on body image and disordered eating outcomes. *Body Image, 17*, 100–110.
- Homan, K. & Tylka, T. (2015). Self-compassion moderates body comparison and appearance self-worth's inverse relationships with body appreciation. *Body Image, 15*, 1-7.
- Kemp, S. (2015). Digital, Social & Mobile in 2015. Retrieved February 19, 2016 from <http://wearesocial.sg/blog/2015/01/digital-social-mobile-2015/>
- Kleissen, Y. (2016). Further validation of The Compassionate Engagement and Action Scales. (Unpublished master's thesis). University of Twente, The Netherlands.
- Korthase, K. & Trenholme, I. (1982). Perceived Age and Perceived Physical Attractiveness. *Perceptual and Motor Skills, 54*(3), 1251-1258.
- Lennon, S. (1988). Physical Attractiveness, Age, and Body Type. *Family and Consumer Sciences, 16*(3), 195-203.
- Lindsey, S. (2017). Examining the Psychometric Properties of the Compassionate Engagement and Action Scales in the General Population. (Unpublished doctoral thesis). University of Essex, United Kingdom.

- Manago, A., Ward, M., Lemm, K., Reed, L. & Seabrook, R. (2015). Facebook Involvement, Objectified Body Consciousness, Body Shame, and Sexual Assertiveness in College Women and Men. *Sex Roles, 72, 1-14*.
- Niide, T., Davis, J., Tse, A. & Harrigan, R. (2013). Evaluating the Impact of a School-based Prevention Program on Self-esteem, Body Image, and Risky Dieting Attitudes and Behaviors Among Kaua‘i Youth. *Hawai‘I Journal of Medicine & Public Health, 72(8), 273-278*.
- Perrin, A. & Duggan, M. (2015). Americans’ Internet Access: 2000-2015. Retrieved February 23, 2017 from <http://www.pewinternet.org/2015/06/26/americans-internet-access-2000-2015/>.
- Pinto-Gouveia, J., Ferreira, C. & Duarte, C. (2014). Thinness in the pursuit of social safeness: An integrative model of social rank mentality to ‘explain eating psychopathology. *Clinical psychology and psychotherapy, 21, 154-165*.
- Rumsey, N. & Harcourt, D. (2012). *Oxford Handbook of the Psychology of Appearance*. Oxford University Press.
- Schaefer, L. & Thompson, K. (2014). The development and validation of the Physical Appearance Comparison Scale-Revised (PACS-R). *Eating Behaviors, 15, 209–217*.
- Stronge, S., Greaves, L., Milojev, P., West-Newman, T., Barlow, F. & Sibley, C. (2015). Facebook is Linked to Body Dissatisfaction: Comparing Users and Non-Users. *Sex Roles, 73, 200–213*.
- Thompson, J., Heinberg, L. & Tantleff-Dunn, S. (1991). The Physical Appearance Comparison Scale (PACS). *The Behavior Therapist, 14, 174*.

Part three: Appendices

Appendix A. Epistemological statement

Epistemological statement

It is important to consider the ontological and epistemological perspectives taken by the researcher, to understand the assumptions underpinning the research in this thesis portfolio. This statement aims to clarify what is meant by epistemology and ontology and to confirm the stance adopted by the researcher. Ontology is the nature of reality and epistemology is the theory and nature of knowledge (Ponterotto, 2005; Snape & Spencer, 2003). A researcher cannot engage in the creation of knowledge without assumptions about what it is and how it is constructed (Carter & Little, 2007). The epistemological stance of the researcher guides their methodological choices and the methodology determines the methods used (Carter & Little, 2007). There are fundamental differences in the ontological and epistemological perspectives underpinning qualitative and quantitative methodologies (Slevitch, 2011). The epistemological stance underpinning quantitative methodology is usually positivism. Positivism assumes that there is an objective reality from which the researcher can be separated (Onwuegbuzie, 2000). Research should thus aim to limit the influence of the researcher to obtain a clear view of this reality, for example by limiting biases and emotional involvement in the research. In contrast, interpretivist or constructive stances suggest that the knower and the known cannot be separated and thus reality cannot be known as a separate entity to the researchers' own perspective (Onwuegbuzie, 2000).

Both the systematic review and empirical paper in this portfolio are underpinned by positivist principles (Onwuegbuzie, 2000). It was assumed that body image, compassion, comparison and well-being are true and measurable concepts. The research questions and hypotheses were guided by patterns already "known" and the realities of additional relationships were sought based upon deductive reasoning. For both the SLR

and empirical study, it was considered that quantitative methodology would allow confirmation of existing relationships and allow clarification of the roles of compassion and comparison in body image and wellbeing. Quantitative methodology allows statistical testing of probability (Watson, 2015), and it was thus considered that it could inform whether patterns are relevant for most of the population. It was therefore decided that research using this epistemology and methodology could guide development of interventions that are likely to be useful for much of the population. The positivist epistemological stance taken and quantitative methodology used should determine the way in which the quality of the research is evaluated (Carter & Little, 2007). In critical evaluation of the present study, it should be discussed whether the methods and measures used allow a clear view of the relationships that exist. In quantitative research it is important for measures to be valid, truly measuring the chosen concepts, and that variables that may mask the relationships are taken into account (Watson, 2015).

References

- Carter, S. & Little, M. (2007). Justifying knowledge, justifying method, taking action: Epistemologies, methodologies, and methods in qualitative research. *Qualitative Health Research, 17*(10), 1316-1328.
- Onwuegbuzie, A. (2000). Positivists, Post-Positivists, Post-Structuralists, and Post-Modernists: Why Can't We All Get Along? Towards a Framework for Unifying Research Paradigms. Paper presented at the annual meeting of the Association for the Advancement of Educational Research (AAER), Ponte Vedra, Florida.
- Ponterotto, J. (2005). Qualitative research in counseling psychology: A primer on research paradigms and philosophy of science. *Journal of Counseling Psychology, 52*(2), 126-136.
- Slevitch, L. (2011). Qualitative and Quantitative Methodologies Compared: Ontological and Epistemological Perspectives. *Journal of Quality Assurance in Hospitality & Tourism, 12*:1, 73-81.
- Snape, D. & Spencer, L. (2003). The foundations of qualitative research. In J. Ritchie and J. Lewis (Eds.), *Qualitative Research Practice: A guide for social science students and researchers*, p1-23. London: Sage publications Ltd.
- Watson, R. (2015). Quantitative research. *Nursing Standard, 29*(31), 44-48.

Appendix B. Reflective statement

Reflective statement

The empirical paper

Designing the research

I was initially excited by the prospect of conducting my own research. Ever since I can remember, I have considered research to be interesting and important. As a child, I attended family days at my dad's workplace and I was fascinated by the "experiments" and what they taught us. My sister shared the same interest and at home we practised our own experiments and played with Bunsen burners in the garage. I later did my school work experience in the R&D department at my dad's workplace and there I learned that research wasn't just "messing around" but it requires careful planning, precision, and lots of meetings. Nonetheless, it was interesting to see how decisions were made and to hear about how trials were developing.

When the opportunity presented itself for me to design my own research study, I felt ready. I wanted my research to be exciting and meaningful, and I considered that research relating to social network sites could be relevant. I have experienced life both with and without social networking sites and I felt compelled to explore the impacts of this relatively new and increasing dimension of our social lives. I felt drawn towards exploring social networking in relation to my clinical interests which had developed on placement, but at this point I felt torn between ideas and slightly overwhelmed by the task of picking just one "thing" to study. I examined the literature base, met with members of staff, and went with something pragmatic. There were clear gaps in the research relating to impacts upon body image and effective interventions, and this could be studied without recruiting from a clinical population. I hoped that this would help the

processes of gaining ethical approval and recruitment to go more smoothly, allowing me to conduct a good piece of research in a relatively short time frame. On reflection, I am glad that I chose the study that I did. I remain interested in the research, even after many hours of working on it, and the process has gone relatively smoothly. In the future when researching under time constraints, I would likely again consider the processes of getting ethical approval and recruitment early on. However, I also hope I would not rule out important areas of research where it may be more difficult to obtain ethical approval or recruit, especially where timescales are more flexible and it is possible to plan for this difficulty.

I also felt excited but slightly daunted at selecting a specific research question. I initially considered running an intervention study. However, after further research and discussion with supervisors, it was decided that it would be logical and practical to first confirm whether compassion plays a role in body image when social networking before trying to increase compassion in an intervention. This realisation simplified and gave focus to the research process. Following this decision, it felt as though the study design and methods fell into place. Quantitative methods fit with the research question and it was considered both practical and relevant to conduct an online study. In the future, I think it will be important for me to consider what the useful next step in research would be in any area given the evidence available, to keep from trying to do everything at once with limited evidence, time and resource.

Data collection

Data collection involved sharing the survey link into the world of social media and then waiting for the count of survey responses to slowly rise. This felt like a fairly passive process. I could do little but wait after distributing the link and I wondered whether other data collection methods felt similar or whether they might give the researcher

more of a sense of control over the process. Checking the online survey platform for new responses became quite addictive and I wondered whether this parallels how people feel when they are waiting for others to respond to their social network site content. This remote data collection method also felt impersonal. I felt disconnected from my participants and they were depersonalised; more important as survey responses than as individuals. I considered again whether this might parallel social networking processes. Does connecting over the internet make us somehow less connected? Despite the lack of control and connection, the data collection process was efficient and effective and I considered that there is perhaps no ideal recruitment method. Different methods will be relevant and pragmatic depending on the particular study, and all likely have limitations. I hope to keep this in mind when designing research in the future. It was a potential limitation of the recruitment method used that participants were biased towards younger people and females. However, I reflected that this might usefully provide insight and have implications for how we disseminate interventions: online interventions shared in a similar way could also reach a limited population.

Data analysis

Once I had all of my data I was keen to get going with the data analysis to see what I had “found,” but I also worried about “not finding anything.” When I voiced these concerns, my dad helpfully reminded me that “any result is useful information.” Reflecting on this, I considered that if interventions don’t work or if relationships do not exist, it is important to know. Such results can stop us from investing in ideas and interventions that are futile and can direct us towards better ideas or explanations. I plan to remind myself of this in the future and hope that it will prevent me from holding too tightly to my hypotheses. Prior to the analysis, I had to spend time re-familiarising myself with SPSS, regression and regression assumptions. At the time this felt

frustrating because I was going over “old things” and not seeing any new progress in the research process. Later on, however, it was apparent that this was a valuable use of time as it made the analysis feel clear. In future projects I will remind myself that putting in the ground work is important, even if it does not feel as though you’re moving forward at the time. It was also extremely useful to have the support of the department’s statistician throughout the process: their knowledge and enthusiasm made the process more rewarding and run more smoothly.

Report writing

Once I understood the results of the study, I enjoyed thinking about the meaning and clinical implications of the results. I think this was the most rewarding part of the research: it was positive to feel as though the research adds something to what we know about body image and social networking. I did however feel daunted by the write up stage. I had lots of ideas but I was unsure of what to focus on, of how much people needed to know and whether I’d be able to write anything coherent at all. To manage this I tried to break it down, bringing it back to the rationale and hypotheses of the study and thinking about what flows from there. I feel as though this helped to guide and provide clarity to the write up. As I chose not to share elements of the exploratory analysis, I caught myself thinking that this had been a waste of time and I had to remind myself again that it was a useful and necessary part of the process. In clinical work, much of your preparation, note writing and supervision is unseen, but it is still valuable and necessary. The same applies to many parts of the research process and I need to remember this is in the future. To manage anxiety about the writing process, particularly about sitting down to concentrate and about “getting it right,” I split the report into sections and focused on a small piece at a time. I also told myself that writing “something is better than nothing.” This is how I have often coped with written

assignments and I found that it again helped to take the pressure off in the thesis write up. I'm sure I will continue to do this when I have pieces of work to complete in the future that evoke anxiety.

The Systematic Literature Review (SLR)

On the whole, I found the SLR to be the less enjoyable component of the thesis. This was a part that I "had" to do and not something that I "wanted" to do. I focused the review on an area that I was interested in with the hope that this would generate some curiosity and enthusiasm, and this helped to some extent. However, I struggled with the circularity of the process: each stage of the review seemed to be an unending loop. I found myself working for hours, whether it was to define a search question, to define inclusion and exclusion criteria, to refine the data extraction form or to synthesise the research; and despite the hours spent it often felt like I was making no progress. We were told at many stages of the review that it would be an "iterative process." There is no truer description. Whilst I came to terms with the fact that empirical research requires a lot of work "behind the scenes," I still feel hostile towards the abstract and vastly repetitive processes needed to create a systematic literature review. I wonder if I would have felt differently if this piece of research had been something I had been excited and motivated for at the start of the process: perhaps a strong desire to explore the research in a particular area is sufficient to get a researcher through this process amicably. It is entirely possible that in clinical work or research in the future, a question will arise that inspires me to seek out answers from the evidence base in an SLR. However, I cannot see myself volunteering to put myself through another SLR in the near future.

Choice of journals

For the empirical paper, it was considered that “Body Image” would be an appropriate target journal. This journal is where many of the previous studies in this area have been published and thus it would provide continuity for the reader to publish a further article here that builds on this evidence. Additionally, “Body Image” is a leading journal in its area and is where people and professionals might look to learn more about factors influencing and protecting body image. The impact factor of the journal is relatively high (2.926), allowing good dissemination of the research, but it is not so high that publication would be impossible. For the SLR, “Computers in Human Behaviour” was considered to be an appropriate target journal. Most relevant papers exploring social network site use and psychological wellbeing have previously been published in the journals “Computers in human behaviour” or in “Cyberpsychology, behavior and social networking.” Both consider the psychological factors relating to how we use computers and role of computers in psychological wellbeing. Thus, publishing in either journal would provide continuity for those interested in social networking and wellbeing and would allow the paper to be easily found by those newly interested in the area. “Cyberpsychology, behavior and social networking” has a low word count and therefore it was considered that “Computers in Human Behaviour” would be the most suitable target journal. This would allow for a detailed and comprehensive systematic review article. The impact factor of “Computers in Human Behaviour” (3.435) is sufficiently high to allow wide dissemination of results. Both “Body Image” and “Computers in Human Behaviour” are peer reviewed journals and therefore it is likely that they publish good quality research and have credibility.

Summary

In summary, I have found the research process interesting, stressful and rewarding. There have been highs and lows, but no major hiccups. At the start of the research process we were told by the research team that it is likely that “something will go wrong” at some point. I don’t feel that that has happened yet, and so I feel that I am perhaps still due some kind of research related disaster. The lack of mishaps thus far can largely be attributed to good fortune, however I think it has also helped that I began the process early, I left plenty of time for each part of the process and I considered what would be practical and pragmatic from the beginning. In some ways it feels like I took the “easy route” by doing a simple questionnaire study and recruiting online; but these methods were appropriate and relevant and also not without their own uncertainties. Throughout the process there have been things that have been ambiguous and uncertain and I feel that this has been a developmental experience that will help me to sit with ambiguity in the future without trying to take control or move forward. I also think that my supervisors’ calm and patient attitudes to the research has complemented my tendency to rush ahead and “get things done.” This has kept me more careful and grounded and will encourage me to consider the importance of thinking about a “good fit” when choosing to conduct research with others in the future. Throughout the whole process, I have also learnt more of the value of boundaries and prioritising what matters: although research is important, it is not everything. With life’s ups and downs ongoing, I discovered that it was okay to put research and work aside to focus on other things. When I did this I came back to it feeling realigned and interested again and I hope that I maintain this perspective and balance with work in the future.

Appendix C. Guidelines for authors for Computers in Human Behavior

GUIDE FOR AUTHORS

Your Paper Your Way

We now differentiate between the requirements for new and revised submissions. You may choose to submit your manuscript as a single Word or PDF file to be used in the refereeing process. Only when your paper is at the revision stage, will you be requested to put your paper in to a 'correct format' for acceptance and provide the items required for the publication of your article.

To find out more, please visit the Preparation section below.

INTRODUCTION

Computers in Human Behavior is a scholarly journal dedicated to examining the use of computers from a psychological perspective. Original theoretical works, research reports, literature reviews, software reviews, book reviews and announcements are published. The journal addresses both the use of computers in psychology, psychiatry and related disciplines as well as the psychological impact of computer use on individuals, groups and society. The former category includes articles exploring the use of computers for professional practice, training, research and theory development. The latter category includes articles dealing with the psychological effects of computers on phenomena such as human development, learning, cognition, personality, and social interactions. The journal addresses human interactions with computers, not computers per se. The computer is discussed only as a medium through which human behaviors are shaped and expressed. The primary message of most articles involves information about human behavior. Therefore, professionals with an interest in the psychological aspects of computer use, but with limited knowledge of computers, will find this journal of interest.

Types of contributions

Original theoretical works, research reports, literature reviews, software reviews, book reviews and announcements.

Submission checklist

You can use this list to carry out a final check of your submission before you send it to the journal for review. Please check the relevant section in this Guide for Authors for more details.

Ensure that the following items are present:

One author has been designated as the corresponding author with contact details:

- E-mail address
- Full postal address

All necessary files have been uploaded:

Manuscript:

- Include keywords
- All figures (include relevant captions)
- All tables (including titles, description, footnotes)
- Ensure all figure and table citations in the text match the files provided
- Indicate clearly if color should be used for any figures in print

Graphical Abstracts / Highlights files (where applicable)

Supplemental files (where applicable)

Further considerations

- Manuscript has been 'spell checked' and 'grammar checked'
 - All references mentioned in the Reference List are cited in the text, and vice versa
 - Permission has been obtained for use of copyrighted material from other sources (including the Internet)
 - A competing interests statement is provided, even if the authors have no competing interests to declare
 - Journal policies detailed in this guide have been reviewed
 - Referee suggestions and contact details provided, based on journal requirements
- For further information, visit our Support Center.

BEFORE YOU BEGIN

AUTHOR INFORMATION PACK 11 Feb 2018

www.elsevier.com/locate/comphumbeh_5

Ethics in publishing

Please see our information pages on Ethics in publishing and Ethical guidelines for journal publication.

Human and animal rights

If the work involves the use of human subjects, the author should ensure that the work described has been carried out in accordance with The Code of Ethics of the World Medical Association (Declaration of Helsinki) for experiments involving humans; Uniform Requirements for manuscripts submitted to Biomedical journals. Authors should include a statement in the manuscript that informed consent was obtained for experimentation with human subjects. The privacy rights of human subjects must always be observed.

All animal experiments should comply with the ARRIVE guidelines and should be carried out in accordance with the U.K. Animals (Scientific Procedures) Act, 1986 and associated guidelines, EU Directive 2010/63/EU for animal experiments, or the National Institutes of Health guide for the care and use of Laboratory animals (NIH Publications No. 8023, revised 1978) and the authors should clearly indicate in the manuscript that such guidelines have been followed.

Declaration of interest

All authors must disclose any financial and personal relationships with other people or organizations that could inappropriately influence (bias) their work. Examples of potential conflicts of interest include employment, consultancies, stock ownership, honoraria, paid expert testimony, patent applications/registrations, and grants or other funding. Authors must disclose any interests in two places: 1. A summary declaration of interest statement in the title page file (if double-blind) or the manuscript file (if single-blind). If there are no interests to declare then please state this: 'Declarations of interest: none'. This summary statement will be ultimately published if the article is accepted. 2. Detailed disclosures as part of a separate Declaration of Interest form, which forms part of the journal's official records. It is important for potential interests to be declared in both places and that the information matches. More information.

Submission declaration and verification

Submission of an article implies that the work described has not been published previously (except in the form of an abstract or as part of a published lecture or academic thesis or as an electronic preprint, see 'Multiple, redundant or concurrent publication' section of our ethics policy for more information), that it is not under consideration for publication elsewhere, that its publication is approved by all authors and tacitly or explicitly by the responsible authorities where the work was carried out, and that, if accepted, it will not be published elsewhere in the same form, in English or in any other language, including electronically without the written consent of the copyright-holder. To verify originality, your article may be checked by the originality detection service Crossref Similarity Check.

Changes to authorship

Authors are expected to consider carefully the list and order of authors **before** submitting their manuscript and provide the definitive list of authors at the time of the original submission. Any addition, deletion or rearrangement of author names in the authorship list should be made only **before** the manuscript has been accepted and only if approved by the journal Editor. To request such a change, the Editor must receive the following from the **corresponding author**: (a) the reason for the change in author list and (b) written confirmation (e-mail, letter) from all authors that they agree with the addition, removal or rearrangement. In the case of addition or removal of authors, this includes confirmation from the author being added or removed. Only in exceptional circumstances will the Editor consider the addition, deletion or rearrangement of authors **after** the manuscript has been accepted. While the Editor considers the request, publication of the manuscript will be suspended. If the manuscript has already been published in an online issue, any requests approved by the Editor will result in a corrigendum.

Copyright

Upon acceptance of an article, authors will be asked to complete a 'Journal Publishing Agreement' (see more information on this). An e-mail will be sent to the corresponding author confirming receipt of the manuscript together with a 'Journal Publishing Agreement' form or a link to the online version of this agreement. Subscribers may reproduce tables of contents or prepare lists of articles including abstracts for internal circulation within their institutions. Permission of the Publisher is required for resale or distribution outside the institution and for all other derivative works, including compilations and translations. If excerpts from other copyrighted works are included, the author(s) must obtain written permission from the copyright owners and credit the source(s) in the article. Elsevier has preprinted forms for use by authors in these cases. For open access articles: Upon acceptance of an article, authors will be asked to complete an 'Exclusive License Agreement' (more information). Permitted third party reuse of open access articles is determined by the author's choice of user license.

Author rights

As an author you (or your employer or institution) have certain rights to reuse your work. More information.

Elsevier supports responsible sharing

Find out how you can share your research published in Elsevier journals.

Role of the funding source

You are requested to identify who provided financial support for the conduct of the research and/or preparation of the article and to briefly describe the role of the sponsor(s), if any, in study design; in the collection, analysis and interpretation of data; in the writing of the report; and in the decision to submit the article for publication. If the funding source(s) had no such involvement then this should be stated.

Funding body agreements and policies

Elsevier has established a number of agreements with funding bodies which allow authors to comply with their funder's open access policies. Some funding bodies will reimburse the author for the Open Access Publication Fee. Details of existing agreements are available online.

Open access

This journal offers authors a choice in publishing their research:

Subscription

- Articles are made available to subscribers as well as developing countries and patient groups through our universal access programs.
- No open access publication fee payable by authors.

Open access

- Articles are freely available to both subscribers and the wider public with permitted reuse.
- An open access publication fee is payable by authors or on their behalf, e.g. by their research funder or institution. Regardless of how you choose to publish your article, the journal will apply the same peer review criteria and acceptance standards. For open access articles, permitted third party (re)use is defined by the following Creative Commons user licenses: *Creative Commons Attribution (CC BY)*

Lets others distribute and copy the article, create extracts, abstracts, and other revised versions, adaptations or derivative works of or from an article (such as a translation), include in a collective work (such as an anthology), text or data mine the article, even for commercial purposes, as long as they credit the author(s), do not represent the author as endorsing their adaptation of the article, and do not modify the article in such a way as to damage the author's honor or reputation. *Creative Commons Attribution-NonCommercial-NoDerivs (CC BY-NC-ND)* For non-commercial purposes, lets others distribute and copy the article, and to include in a collective work (such as an anthology), as long as they credit the author(s) and provided they do not alter or modify the article. The open access publication fee for this journal is **USD 1950**, excluding taxes. Learn more about Elsevier's pricing policy: <https://www.elsevier.com/openaccesspricing>.

Green open access

Authors can share their research in a variety of different ways and Elsevier has a number of green open access options available. We recommend authors see our green open access page for further information. Authors can also self-archive their manuscripts immediately and enable public access from their institution's repository after an embargo period. This is the version that has been accepted for publication and which typically includes author-incorporated changes suggested during submission, peer review and in editor-author communications. Embargo period: For subscription articles, an appropriate amount of time is needed for journals to deliver value to subscribing customers before an article becomes freely available to the public. This is

the embargo period and it begins from the date the article is formally published online in its final and fully citable form. Find out more.

This journal has an embargo period of 24 months.

Elsevier Researcher Academy

Researcher Academy is a free e-learning platform designed to support early and mid-career researchers throughout their research journey. The "Learn" environment at Researcher Academy offers several interactive modules, webinars, downloadable guides and resources to guide you through the process of writing for research and going through peer review. Feel free to use these free resources to improve your submission and navigate the publication process with ease.

Language (usage and editing services)

Please write your text in good English (American or British usage is accepted, but not a mixture of these). Authors who feel their English language manuscript may require editing to eliminate possible grammatical or spelling errors and to conform to correct scientific English may wish to use the English Language Editing service available from Elsevier's WebShop.

Submission

Our online submission system guides you stepwise through the process of entering your article details and uploading your files. The system converts your article files to a single PDF file used in the peer-review process. Editable files (e.g., Word, LaTeX) are required to typeset your article for final publication. All correspondence, including notification of the Editor's decision and requests for revision, is sent by e-mail.

Submit your article

Please submit your article via <http://ees.elsevier.com/chb/>

PREPARATION

NEW SUBMISSIONS

Submission to this journal proceeds totally online and you will be guided stepwise through the creation and uploading of your files. The system automatically converts your files to a single PDF file, which is used in the peer-review process. As part of the Your Paper Your Way service, you may choose to submit your manuscript as a single file to be used in the refereeing process. This can be a PDF file or a Word document, in any format or layout that can be used by referees to evaluate your manuscript. It should contain high enough quality figures for refereeing. If you prefer to do so, you may still provide all or some of the source files at the initial submission. Please note that individual figure files larger than 10 MB must be uploaded separately.

References

There are no strict requirements on reference formatting at submission. References can be in any style or format as long as the style is consistent. Where applicable, author(s) name(s), journal title/book title, chapter title/article title, year of publication, volume number/book chapter and the pagination must be present. Use of DOI is highly encouraged. The reference style used by the journal will be applied to the accepted article by Elsevier at the proof stage. Note that missing data will be highlighted at proof stage for the author to correct.

Formatting requirements

There are no strict formatting requirements but all manuscripts must contain the essential elements needed to convey your manuscript, for example Abstract, Keywords, Introduction, Materials and Methods, Results, Conclusions, Artwork and Tables with Captions. If your article includes any Videos and/or other Supplementary material, this should be included in your initial submission for peer review purposes. Divide the article into clearly defined sections.

Figures and tables embedded in text

Please ensure the figures and the tables included in the single file are placed next to the relevant text in the manuscript, rather than at the bottom or the top of the file. The corresponding caption should be placed directly below the figure or table.

Peer review

This journal operates a double blind review process. All contributions will be initially assessed by the editor for suitability for the journal. Papers deemed suitable are then typically sent to a minimum of two independent expert reviewers to assess the scientific quality of the paper. The Editor is responsible for the final decision regarding acceptance or rejection of articles. The Editor's decision is final. More information on types of peer review.

REVISED SUBMISSIONS

Use of word processing software

Regardless of the file format of the original submission, at revision you must provide us with an editable file of the entire article. Keep the layout of the text as simple as possible. Most formatting codes will be removed and replaced on processing the article. The electronic text should be prepared in a way very similar to that of conventional manuscripts (see also the Guide to Publishing with Elsevier). See also the section on Electronic artwork. To avoid unnecessary errors you are strongly advised to use the 'spell-check' and 'grammar-check' functions of your word processor.

Article structure

Subdivision - numbered sections

Divide your article into clearly defined and numbered sections. Subsections should be numbered 1.1 (then 1.1.1, 1.1.2, ...), 1.2, etc. (the abstract is not included in section numbering). Use this numbering also for internal cross-referencing: do not just refer to 'the text'. Any subsection may be given a brief heading. Each heading should appear on its own separate line.

Introduction

State the objectives of the work and provide an adequate background, avoiding a detailed literature survey or a summary of the results.

Material and methods

Provide sufficient details to allow the work to be reproduced by an independent researcher. Methods that are already published should be summarized, and indicated by a reference. If quoting directly from a previously published method, use quotation marks and also cite the source. Any modifications to existing methods should also be described.

Theory/calculation

A Theory section should extend, not repeat, the background to the article already dealt with in the Introduction and lay the foundation for further work. In contrast, a Calculation section represents a practical development from a theoretical basis.

Results

Results should be clear and concise.

Discussion

This should explore the significance of the results of the work, not repeat them. A combined Results and Discussion section is often appropriate. Avoid extensive citations and discussion of published literature.

Conclusions

The main conclusions of the study may be presented in a short Conclusions section, which may stand alone or form a subsection of a Discussion or Results and Discussion section.

Appendices

If there is more than one appendix, they should be identified as A, B, etc. Formulae and equations in appendices should be given separate numbering: Eq. (A.1), Eq. (A.2), etc.; in a subsequent appendix, Eq. (B.1) and so on. Similarly for tables and figures: Table A.1; Fig. A.1, etc.

Essential title page information

- **Title.** Concise and informative. Titles are often used in information-retrieval systems. Avoid abbreviations and formulae where possible.
- **Author names and affiliations.** Please clearly indicate the given name(s) and family name(s) of each author and check that all names are accurately spelled. You can add your name between parentheses in your own script behind the English transliteration. Present the authors' affiliation addresses (where the actual work was done) below the names. Indicate all affiliations with a lower case superscript letter immediately after the author's name and in front of the appropriate address. Provide the full postal address of each affiliation, including the country name and, if available, the e-mail address of each author.
- **Corresponding author.** Clearly indicate who will handle correspondence at all stages of refereeing and publication, also post-publication. This responsibility includes answering any future queries about Methodology and Materials. **Ensure that the e-mail address is given and that contact details are kept up to date by the corresponding author.**
- **Present/permanent address.** If an author has moved since the work described in the article was done, or was visiting at the time, a 'Present address' (or 'Permanent address') may be indicated as a footnote to that author's name. The address at which the author actually did the work must be retained as the main, affiliation address. Superscript Arabic numerals are used for such footnotes.

Abstract

A concise and factual abstract is required and should not be longer than 200 words. The abstract should state briefly the purpose of the research, the principal results and major conclusions. An abstract is often presented separately from the article, so it must be able to stand alone. For this reason, References should be avoided, but if essential, then cite

the author(s) and year(s). Also, nonstandard or uncommon abbreviations should be avoided, but if essential they must be defined at their first mention in the abstract itself.

Graphical abstract

Although a graphical abstract is optional, its use is encouraged as it draws more attention to the online article. The graphical abstract should summarize the contents of the article in a concise, pictorial form designed to capture the attention of a wide readership. Graphical abstracts should be submitted as a separate file in the online submission system. Image size: Please provide an image with a minimum of 531 × 1328 pixels (h × w) or proportionally more. The image should be readable at a size of 5 × 13 cm using a regular screen resolution of 96 dpi. Preferred file types: TIFF, EPS, PDF or MS Office files. You can view Example Graphical Abstracts on our information site. Authors can make use of Elsevier's Illustration Services to ensure the best presentation of their images and in accordance with all technical requirements.

Highlights

Highlights are mandatory for this journal. They consist of a short collection of bullet points that convey the core findings of the article and should be submitted in a separate file in the online submission system. Please use 'Highlights' in the file name and include 3 to 5 bullet points (maximum 85 characters, including spaces, per bullet point). See <http://www.elsevier.com/highlights> for examples.

Keywords

Immediately after the abstract, provide a maximum of 6 keywords, using American spelling and avoiding general and plural terms and multiple concepts (avoid, for example, 'and', 'of'). Be sparing with abbreviations: only abbreviations firmly established in the field may be eligible. These keywords will be used for indexing purposes.

Abbreviations

Define abbreviations that are not standard in this field in a footnote to be placed on the first page of the article. Such abbreviations that are unavoidable in the abstract must be defined at their first mention there, as well as in the footnote. Ensure consistency of abbreviations throughout the article.

Acknowledgements

Do not include acknowledgements on the title page, as a footnote to the title or otherwise. In a separate file to the manuscript, list those individuals who provided help during the research (e.g., providing language help, writing assistance or proof reading the article, etc.)

Formatting of funding sources

List funding sources in this standard way to facilitate compliance to funder's requirements:

Funding: This work was supported by the National Institutes of Health [grant numbers xxxx, yyyy]; the Bill & Melinda Gates Foundation, Seattle, WA [grant number zzzz]; and the United States Institutes of Peace [grant number aaaa]. It is not necessary to include detailed descriptions on the program or type of grants and awards. When funding is from a block grant or other resources available to a university, college, or other research institution, submit the name of the institute or organization that provided the funding.

If no funding has been provided for the research, please include the following sentence:

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Math formulae

Please submit math equations as editable text and not as images. Present simple formulae in line with normal text where possible and use the solidus (/) instead of a horizontal line for small fractional terms, e.g., X/Y. In principle, variables are to be presented in italics. Powers of e are often more conveniently denoted by exp. Number consecutively any equations that have to be displayed separately from the text (if referred to explicitly in the text).

Footnotes

Footnotes should be used sparingly. Number them consecutively throughout the article. Many word processors build footnotes into the text, and this feature may be used. Should this not be the case, indicate the position of footnotes in the text and present the footnotes themselves separately at the end of the article.

Artwork

Electronic artwork

General points

- Make sure you use uniform lettering and sizing of your original artwork.
- Preferred fonts: Arial (or Helvetica), Times New Roman (or Times), Symbol, Courier.
- Number the illustrations according to their sequence in the text.
- Use a logical naming convention for your artwork files.
- Indicate per figure if it is a single, 1.5 or 2-column fitting image.
- For Word submissions only, you may still provide figures and their captions, and tables within a single file at the revision stage.
- Please note that individual figure files larger than 10 MB must be provided in separate source files. A detailed guide on electronic artwork is available. **You are urged to visit this site; some excerpts from the detailed information are given here.**

Formats

Regardless of the application used, when your electronic artwork is finalized, please 'save as' or convert the images to one of the following formats (note the resolution requirements for line drawings, halftones, and line/halftone combinations given below): EPS (or PDF): Vector drawings. Embed the font or save the text as 'graphics'. TIFF (or JPG): Color or grayscale photographs (halftones): always use a minimum of 300 dpi. TIFF (or JPG): Bitmapped line drawings: use a minimum of 1000 dpi. TIFF (or JPG): Combinations bitmapped line/half-tone (color or grayscale): a minimum of 500 dpi is required.

Please do not:

- Supply files that are optimized for screen use (e.g., GIF, BMP, PICT, WPG); the resolution is too low.
- Supply files that are too low in resolution.
- Submit graphics that are disproportionately large for the content.

Color artwork

Please make sure that artwork files are in an acceptable format (TIFF (or JPEG), EPS (or PDF), or MS Office files) and with the correct resolution. If, together with your accepted article, you submit usable color figures then Elsevier will ensure, at no additional charge, that these figures will appear in color online (e.g., ScienceDirect and

other sites) regardless of whether or not these illustrations are reproduced in color in the printed version. **For color reproduction in print, you will receive information regarding the costs from Elsevier after receipt of your accepted article.** Please indicate your preference for color: in print or online only. Further information on the preparation of electronic artwork.

Figure captions

Ensure that each illustration has a caption. A caption should comprise a brief title (**not** on the figure itself) and a description of the illustration. Keep text in the illustrations themselves to a minimum but explain all symbols and abbreviations used.

Tables

Please submit tables as editable text and not as images. Tables can be placed either next to the relevant text in the article, or on separate page(s) at the end. Number tables consecutively in accordance with their appearance in the text and place any table notes below the table body. Be sparing in the use of tables and ensure that the data presented in them do not duplicate results described elsewhere in the article. Please avoid using vertical rules and shading in table cells.

References

Citation in text

Please ensure that every reference cited in the text is also present in the reference list (and vice versa). Any references cited in the abstract must be given in full. Unpublished results and personal communications are not recommended in the reference list, but may be mentioned in the text. If these references are included in the reference list they should follow the standard reference style of the journal and should include a substitution of the publication date with either 'Unpublished results' or 'Personal communication'. Citation of a reference as 'in press' implies that the item has been accepted for publication.

Web references

As a minimum, the full URL should be given and the date when the reference was last accessed. Any further information, if known (DOI, author names, dates, reference to a source publication, etc.), should also be given. Web references can be listed separately (e.g., after the reference list) under a different heading if desired, or can be included in the reference list.

Data references

This journal encourages you to cite underlying or relevant datasets in your manuscript by citing them in your text and including a data reference in your Reference List. Data references should include the following elements: author name(s), dataset title, data repository, version (where available), year, and global persistent identifier. Add [dataset] immediately before the reference so we can properly identify it as a data reference. The [dataset] identifier will not appear in your published article.

References in a special issue

Please ensure that the words 'this issue' are added to any references in the list (and any citations in the text) to other articles in the same Special Issue.

Reference management software

Most Elsevier journals have their reference template available in many of the most popular reference management software products. These include all products that

support Citation Style Language styles, such as Mendeley and Zotero, as well as EndNote. Using the word processor plug-ins from these products, authors only need to select the appropriate journal template when preparing their article, after which citations and bibliographies will be automatically formatted in the journal's style. If no template is yet available for this journal, please follow the format of the sample references and citations as shown in this Guide. Users of Mendeley Desktop can easily install the reference style for this journal by clicking the following link:

<http://open.mendeley.com/use-citation-style/computers-in-human-behavior>

When preparing your manuscript, you will then be able to select this style using the Mendeley plugins for Microsoft Word or LibreOffice.

Reference formatting

There are no strict requirements on reference formatting at submission. References can be in any style or format as long as the style is consistent. Where applicable, author(s) name(s), journal title/book title, chapter title/article title, year of publication, volume number/book chapter and the pagination must be present. Use of DOI is highly encouraged. The reference style used by the journal will be applied to the accepted article by Elsevier at the proof stage. Note that missing data will be highlighted at proof stage for the author to correct. If you do wish to format the references yourself they should be arranged according to the following examples:

Reference style

Text: Citations in the text should follow the referencing style used by the American Psychological Association. You are referred to the Publication Manual of the American Psychological Association, Sixth Edition, ISBN 978-1-4338-0561-5, copies of which may be ordered online or APA Order Dept., P.O.B. 2710, Hyattsville, MD 20784, USA or APA, 3 Henrietta Street, London, WC3E 8LU, UK.

List: references should be arranged first alphabetically and then further sorted chronologically if necessary. More than one reference from the same author(s) in the same year must be identified by the letters 'a', 'b', 'c', etc., placed after the year of publication.

Examples:

Reference to a journal publication:

Van der Geer, J., Hanraads, J. A. J., & Lupton, R. A. (2010). The art of writing a scientific article. *Journal of Scientific Communications*, 163, 51–59.

Reference to a book:

Strunk, W., Jr., & White, E. B. (2000). *The elements of style*. (4th ed.). New York: Longman, (Chapter 4).

Reference to a chapter in an edited book:

Mettam, G. R., & Adams, L. B. (2009). How to prepare an electronic version of your article. In B. S. Jones, & R. Z. Smith (Eds.), *Introduction to the electronic age* (pp. 281–304). New York: E-Publishing Inc.

Reference to a website:

Cancer Research UK. Cancer statistics reports for the UK. (2003).

<http://www.cancerresearchuk.org/aboutcancer/statistics/cancerstatsreport/> Accessed 13 March 2003.

Reference to a dataset:

[dataset] Oguro, M., Imahiro, S., Saito, S., Nakashizuka, T. (2015). *Mortality data for Japanese oak wilt disease and surrounding forest compositions*. Mendeley Data, v1. <https://doi.org/10.17632/xwj98nb39r.1>.

Reference to a conference paper or poster presentation:

Engle, E.K., Cash, T.F., & Jarry, J.L. (2009, November). The Body Image Behaviours Inventory-3: Development and validation of the Body Image Compulsive Actions and Body Image Avoidance Scales. Poster session presentation at the meeting of the Association for Behavioural and Cognitive Therapies, New York, NY.

Video

Elsevier accepts video material and animation sequences to support and enhance your scientific research. Authors who have video or animation files that they wish to submit with their article are strongly encouraged to include links to these within the body of the article. This can be done in the same way as a figure or table by referring to the video or animation content and noting in the body text where it should be placed. All submitted files should be properly labeled so that they directly relate to the video file's content. . In order to ensure that your video or animation material is directly usable, please provide the file in one of our recommended file formats with a preferred maximum size of 150 MB per file, 1 GB in total. Video and animation files supplied will be published online in

the electronic version of your article in Elsevier Web products, including ScienceDirect. Please supply 'stills' with your files: you can choose any frame from the video or animation or make a separate image. These will be used instead of standard icons and will personalize the link to your video data. For more detailed instructions please visit our video instruction pages. Note: since video and animation cannot be embedded in the print version of the journal, please provide text for both the electronic and the print version for the portions of the article that refer to this content.

AudioSlides

The journal encourages authors to create an AudioSlides presentation with their published article. AudioSlides are brief, webinar-style presentations that are shown next to the online article on ScienceDirect. This gives authors the opportunity to summarize their research in their own words and to help readers understand what the paper is about. More information and examples are available. Authors of this journal will automatically receive an invitation e-mail to create an AudioSlides presentation after acceptance of their paper.

Data visualization

Include interactive data visualizations in your publication and let your readers interact and engage more closely with your research. Follow the instructions here to find out about available data visualization options and how to include them with your article.

Supplementary material

Supplementary material such as applications, images and sound clips, can be published with your article to enhance it. Submitted supplementary items are published exactly as they are received (Excel or PowerPoint files will appear as such online). Please submit your material together with the article and supply a concise, descriptive caption for each supplementary file. If you wish to make changes to supplementary material during any stage of the process, please make sure to provide an updated file. Do not annotate any

corrections on a previous version. Please switch off the 'Track Changes' option in Microsoft Office files as these will appear in the published version.

Research data

This journal encourages and enables you to share data that supports your research publication where appropriate, and enables you to interlink the data with your published articles. Research data refers to the results of observations or experimentation that validate research findings. To facilitate reproducibility and data reuse, this journal also encourages you to share your software, code, models, algorithms, protocols, methods and other useful materials related to the project. Below are a number of ways in which you can associate data with your article or make a statement about the availability of your data when submitting your manuscript. If you are sharing data in one of these ways, you are encouraged to cite the data in your manuscript and reference list. Please refer to the "References" section for more information about data citation. For more information on depositing, sharing and using research data and other relevant research materials, visit the research data page.

Data linking

If you have made your research data available in a data repository, you can link your article directly to the dataset. Elsevier collaborates with a number of repositories to link articles on ScienceDirect with relevant repositories, giving readers access to underlying data that gives them a better understanding of the research described. There are different ways to link your datasets to your article. When available, you can directly link your dataset to your article by providing the relevant information in the submission system. For more information, visit the database linking page. For supported data repositories a repository banner will automatically appear next to your published article on ScienceDirect. In addition, you can link to relevant data or entities through identifiers within the text of your manuscript, using the following format: Database: xxxx (e.g., TAIR: AT1G01020; CCDC: 734053; PDB: 1XFN).

Mendeley Data

This journal supports Mendeley Data, enabling you to deposit any research data (including raw and processed data, video, code, software, algorithms, protocols, and methods) associated with your manuscript in a free-to-use, open access repository. Before submitting your article, you can deposit the relevant datasets to *Mendeley Data*. Please include the DOI of the deposited dataset(s) in your main manuscript file. The datasets will be listed and directly accessible to readers next to your published article online. For more information, visit the Mendeley Data for journals page.

Data in Brief

You have the option of converting any or all parts of your supplementary or additional raw data into one or multiple data articles, a new kind of article that houses and describes your data. Data articles ensure that your data is actively reviewed, curated, formatted, indexed, given a DOI and publicly available to all upon publication. You are encouraged to submit your article for *Data in Brief* as an additional item directly alongside the revised version of your manuscript. If your research article is accepted, your data article will automatically be transferred over to *Data in Brief* where it will be editorially reviewed and published in the open access data journal, *Data in Brief*. Please note an open access fee of 500 USD is payable for publication in *Data in Brief*. Full details can be found on the Data in Brief website. Please use this template to write your Data in Brief.

Data statement

To foster transparency, we encourage you to state the availability of your data in your submission. This may be a requirement of your funding body or institution. If your data is unavailable to access or unsuitable to post, you will have the opportunity to indicate why during the submission process, for example by stating that the research data is confidential. The statement will appear with your published article on ScienceDirect. For more information, visit the Data Statement page.

AFTER ACCEPTANCE

Online proof correction

Corresponding authors will receive an e-mail with a link to our online proofing system, allowing annotation and correction of proofs online. The environment is similar to MS Word: in addition to editing text, you can also comment on figures/tables and answer questions from the Copy Editor. Web-based proofing provides a faster and less error-prone process by allowing you to directly type your corrections, eliminating the potential introduction of errors. If preferred, you can still choose to annotate and upload your edits on the PDF version. All instructions for proofing will be given in the e-mail we send to authors, including alternative methods to the online version and PDF. We will do everything possible to get your article published quickly and accurately. Please use this

proof only for checking the typesetting, editing, completeness and correctness of the text, tables and figures. Significant changes to the article as accepted for publication will only be considered at this stage with permission from the Editor. It is important to ensure that all corrections are sent back to us in one communication. Please check carefully before replying, as inclusion of any subsequent corrections cannot be guaranteed. Proofreading is solely your responsibility.

Offprints

The corresponding author will, at no cost, receive a customized Share Link providing 50 days free access to the final published version of the article on ScienceDirect. The Share Link can be used for sharing the article via any communication channel, including email and social media. For an extra charge, paper offprints can be ordered via the offprint order form which is sent once the article is accepted for publication. Both corresponding and co-authors may order offprints at any time via Elsevier's Webshop. Corresponding authors who have published their article open access do not receive a Share Link as their final published version of the article is available open access on ScienceDirect and can be shared through the article DOI link.

AUTHOR INQUIRIES

Visit the Elsevier Support Center to find the answers you need. Here you will find everything from Frequently Asked Questions to ways to get in touch. You can also check the status of your submitted article or find out when your accepted article will be published.

Appendix D. Data extraction form

Study Title:

Author(s) & Year:

Paragraph Summarising Paper

--

General	
Research aims	
Research design	
Research methods	
Participants	
Description	
Age	
Gender	
Country	
Sample size	
Social media activity	
Measurement of social media activity	
Manipulation of social media activity	
Measurement of social comparison	
Measure of social comparison	
Specificity of measure (general vs specific)	
Type of measure (extent vs direction)	
Manipulation of comparison/comparison context	
If manipulation, control conditions	

If manipulation, when measured	
Outcomes	
Aspect of well-being	
Measurement of well-being	
Other outcome measures	
If manipulation of conditions, when measured	
Statistical analysis	
Main findings	
Factors that predict variance between ratings/moderators/mediators	
Conclusions	
Of authors regarding main results	
Of authors regarding explanation of results	
Quality score	
Strengths/limitations	

Appendix E. Quality assessment checklist

Study Title:

Author(s) & Year:

Adapted NICE (2012) checklist for quantitative studies reporting correlations and associations

Criteria for determining external validity		
Overall rating for external validity:		
Section 1: Population		
<p>1.1 Is the source population or source area well described?</p> <ul style="list-style-type: none"> • Was the country (e.g. developed or non-developed, type of health care system), setting (primary schools, community centres etc), location (urban, rural), population demographics etc adequately described? 	Rating:	Comments:
<p>1.2 Is the eligible population or area representative of the source population or area?</p> <ul style="list-style-type: none"> • Was the recruitment of individuals, clusters or areas well defined (e.g. advertisement, birth register)? • Was the eligible population representative of the source? Were important groups underrepresented? 	Rating:	Comments:
<p>1.3 Do the selected participants or areas represent the eligible population or area?</p> <ul style="list-style-type: none"> • Was the method of selection of participants from the eligible population well described? • What % of selected individuals or clusters agreed 	Rating:	Comments:

<p>to participate? Were there any sources of bias?</p> <ul style="list-style-type: none"> • Were the inclusion or exclusion criteria explicit and appropriate? 		
<p>Criteria for determining internal validity</p> <p>Overall rating for internal validity:</p>		
<p>Section 2: Measurement and Outcomes</p>		
<p>2.1 Were the outcome measures and procedures reliable?</p> <ul style="list-style-type: none"> • Were outcome measures subjective or objective (e.g. biochemically validated nicotine levels ++ vs self-reported smoking -)? • How reliable were outcome measures (e.g. inter- or intra-rater reliability scores)? • Was there any indication that measures had been validated (e.g. validated against a gold standard measure or assessed for content validity)? 	<p>Rating:</p>	<p>Comments:</p>
<p>2.2 Were the outcome measurements complete?</p> <ul style="list-style-type: none"> • Were all or most of the study participants who met the defined study outcome definitions likely to have been identified? 		
<p>2.3 Were all the important outcomes assessed?</p> <ul style="list-style-type: none"> • Were all the important benefits and harms assessed? • Was it possible to determine the overall balance of benefits and harms of the intervention versus comparison? 		
<p>Section 3: Analyses</p>		

<p>3.1 Was the study sufficiently powered to detect an intervention effect (if one exists)?</p> <ul style="list-style-type: none"> • A power of 0.8 (i.e. it is likely to see an effect of a given size if one exists, 80% of the time) is the conventionally accepted standard. • Is a power calculation presented? If not, what is the expected effect size? Is the sample size adequate? 	Rating:	Comments:
<p>3.2 Were multiple explanatory variables considered in the analyses?</p> <ul style="list-style-type: none"> • Were there sufficient explanatory variables considered in the analysis? 	Rating:	Comments:
<p>3.3 Were the analytical methods appropriate?</p> <ul style="list-style-type: none"> • Were important differences in follow-up time and likely confounders adjusted for? 	Rating:	Comments:
<p>3.6 Was the precision of association given or calculable? Is association meaningful?</p> <ul style="list-style-type: none"> • Were confidence intervals or p values for effect estimates given or possible to calculate? • Were CIs wide or were they sufficiently precise to aid decision-making? If precision is lacking, is this because the study is under-powered? 	Rating:	Comments:
Overall scores for internal and external validity		
Section 4: Summary		
<p>4.1 Are the study results internally valid (i.e. unbiased)?</p> <ul style="list-style-type: none"> • How well did the study minimise sources of bias (i.e. adjusting for potential confounders)? 	Rating:	Comments:

<ul style="list-style-type: none"> • Were there significant flaws in the study design? 		
<p>4.2 Are the findings generalisable to the source population (i.e. externally valid)?</p> <ul style="list-style-type: none"> • Are there sufficient details given about the study to determine if the findings are generalisable to the source population? • Consider: participants, interventions and comparisons, outcomes, resource and policy implications. 	Rating:	Comments:

++	Indicates that for that particular aspect of study design, the study has been designed or conducted in such a way as to minimise the risk of bias.
+	Indicates that either the answer to the checklist question is not clear from the way the study is reported, or that the study may not have addressed all potential sources of bias for that particular aspect of study design.
–	Should be reserved for those aspects of the study design in which significant sources of bias may persist.
Not reported (NR)	Should be reserved for those aspects in which the study under review fails to report how they have (or might have) been considered.
Not applicable (NA)	Should be reserved for those study design aspects that are not applicable given the study design under review (for example, allocation concealment would not be applicable for case–control studies).

Each study is then awarded an overall study quality grading for internal validity (IV) and a separate one for external validity (EV):

- ++ All or most of the checklist criteria have been fulfilled, where they have not been fulfilled the conclusions are very unlikely to alter.
- + Some of the checklist criteria have been fulfilled, where they have not been fulfilled, or not adequately described, the conclusions are unlikely to alter.
- – Few or no checklist criteria have been fulfilled and the conclusions are likely or very likely to alter.

Appendix F. Quality assessment individual breakdown of scores

Study	Section 1: Population (EV)			Section 2: Measurement and Outcomes (IV)			Section 3: Analyses (IV)				Section 4: Summary	
	Description of source population	Eligible population representative	Selected population representative	Reliable measures and procedures	Complete outcome measures	Important outcomes assessed	Sufficiently powered	Explanatory variables	Appropriate analytical methods	Association meaningful	Internally valid	Externally valid
Brown & Tiggemann (2016)*	++	-	+	-	++	++	+	++	++	+	+	+
Chow & Wan (2017)	++	+	+	-	++	++	+	++	++	++	++	+
Coyne et al. (2017)*	++	++	++	-	++	++	+	++	++	++	+	++
Cramer, Song & Drent (2016)	++	-	-	-	++	++	+	++	+	+	+	-
de Vries et al. (2017)	++	-	-	-	++	+	++	++	++	++	++	-
de Vries & Kuhne (2015)	++	++	++	-	++	++	+	++	++	++	++	++
Fardouly et al. (2015)	++	-	+	-	++	++	+	++	++	++	++	+
Feinstein et al. (2013)	+	-	+	-	++	++	+	++	++	++	++	++
Frison & Eggermont (2016)	++	+	+	-	-	++	+	++	++	++	+	+
Gerson et al. (2016)	++	+	+	-	++	++	+	++	++	++	++	+
Hanna et al. (2017)	++	-	+	-	++	++	+	++	++	+	+	+
Jang et al. (2016)*	++	-	-	-	++	++	+	++	++	++	++	-
Lee et al. (2014)	++	-	+	-	++	++	+	++	+	++	+	+
Liu et al. (2017)	++	-	+	-	++	++	+	++	++	++	++	+
Lup et al. (2015)	++	++	++	-	++	++	+	++	++	++	++	++
Panger (2014)	++	+	+	-	++	++	+	++	++	+	+	++
Puccio et al. (2016)	++	-	+	-	++	++	+	++	+	++	+	+
Stapleton et al. (2017)	++	++	++	-	+	++	++	++	++	++	++	++
Steers et al. (2014)	++	-	+	-	++	++	+	++	++	++	++	+
Vogel et al. (2014)	++	-	+	-	++	++	+	++	++	++	++	+
Vogel et al. (2015)	++	-	+	-	++	++	+	++	++	+	+	+
Walker et al. (2015)	++	-	+	-	+	++	+	++	++	++	+	+
Wang et al. (2017)	+	++	+	-	++	++	+	++	++	++	++	+

Study	Section 1: Population (EV)			Section 2: Measurement and Outcomes (IV)			Section 3: Analyses (IV)				Section 4: Summary	
	Description of source population	Eligible population representative	Selected population representative	Reliable measures and procedures	Complete outcome measures	Important outcomes assessed	Sufficiently powered	Explanatory variables	Appropriate analytical methods	Association meaningful	Internally valid	Externally valid
Weinstein et al. (2017)*	++	+	++	-	++	++	+	++	++	++	++	++

* Studies peer assessed using the quality checklist to check inter-rater reliability

Appendix G. Guidelines for authors for Body Image

GUIDE FOR AUTHORS

Types of Papers

The journal publishes original research articles, brief research reports, theoretical and review papers, and science-based practitioner reports of interest. The journal also gives an annual award for the best doctoral dissertation in this field.

Brief Research Reports. These should not exceed 2,500 words (excluding abstract, references, tables, figures and appendices). Up to a total of two one-page tables, figures, and/or appendices are permitted. The number of references cannot exceed 25. While regular-length papers have no explicit limits in terms of numbers of words, tables/figures, and references, authors are encouraged to keep their length below 35 total pages. A paper's length must be justified by its empirical strength and the significance of its contribution to the literature.

The Seymour Fisher Outstanding Body Image Dissertation Annual Award

The journal gives an annual award for the best doctoral dissertation in this field. Click [here](#) for more information.

Submission checklist

You can use this list to carry out a final check of your submission before you send it to the journal for review. Please check the relevant section in this Guide for Authors for more details.

Ensure that the following items are present:

One author has been designated as the corresponding author with contact details:

- E-mail address
- Full postal address

All necessary files have been uploaded:

Manuscript:

- Include keywords
- All figures (include relevant captions)
- All tables (including titles, description, footnotes)
- Ensure all figure and table citations in the text match the files provided
- Indicate clearly if color should be used for any figures in print

Graphical Abstracts / Highlights files (where applicable)

Supplemental files (where applicable)

Further considerations

- Manuscript has been 'spell checked' and 'grammar checked'
- All references mentioned in the Reference List are cited in the text, and vice versa
- Permission has been obtained for use of copyrighted material from other sources (including the Internet)
- A competing interests statement is provided, even if the authors have no competing interests to declare

- Journal policies detailed in this guide have been reviewed
 - Referee suggestions and contact details provided, based on journal requirements
- For further information, visit our Support Center.

BEFORE YOU BEGIN

Ethics in publishing

Please see our information pages on Ethics in publishing and Ethical guidelines for journal publication.

Human and animal rights

If the work involves the use of human subjects, the author should ensure that the work described has been carried out in accordance with The Code of Ethics of the World Medical Association (Declaration of Helsinki) for experiments involving humans; Uniform Requirements for manuscripts submitted to Biomedical journals. Authors should include a statement in the manuscript that informed consent was obtained for experimentation with human subjects. The privacy rights of human subjects must always be observed.

All animal experiments should comply with the ARRIVE guidelines and should be carried out in accordance with the U.K. Animals (Scientific Procedures) Act, 1986 and associated guidelines, EU Directive 2010/63/EU for animal experiments, or the National Institutes of Health guide for the care and use of Laboratory animals (NIH Publications No. 8023, revised 1978) and the authors should clearly indicate in the manuscript that such guidelines have been followed.

Declaration of interest

All authors must disclose any financial and personal relationships with other people or organizations that could inappropriately influence (bias) their work. Examples of potential conflicts of interest include employment, consultancies, stock ownership, honoraria, paid expert testimony, patent applications/ registrations, and grants or other funding. Authors must disclose any interests in two places: 1. A summary declaration of interest statement in the title page file (if double-blind) or the manuscript file (if single-blind). If there are no interests to declare then please state this: 'Declarations of interest: none'. This summary statement will be ultimately published if the article is accepted. 2. Detailed disclosures as part of a separate Declaration of Interest form, which forms part of the journal's official records. It is important for potential interests to be declared in both places and that the information matches. More information.

Submission declaration and verification

Submission of an article implies that the work described has not been published previously (except in the form of an abstract or as part of a published lecture or academic thesis or as an electronic preprint, see 'Multiple, redundant or concurrent publication' section of our ethics policy for more information), that it is not under consideration for publication elsewhere, that its publication is approved by all authors and tacitly or explicitly by the responsible authorities where the work was carried out, and that, if accepted, it will not be published elsewhere in the same form, in English or in any other language, including electronically without the written consent of the copyright-holder. To verify originality, your article may be checked by the originality detection service Crossref Similarity Check.

Changes to authorship

Authors are expected to consider carefully the list and order of authors **before** submitting their manuscript and provide the definitive list of authors at the time of the

original submission. Any addition, deletion or rearrangement of author names in the authorship list should be made only **before** the manuscript has been accepted and only if approved by the journal Editor. To request such a change, the Editor must receive the following from the **corresponding author**: (a) the reason for the change in author list and (b) written confirmation (e-mail, letter) from all authors that they agree with the addition, removal or rearrangement. In the case of addition or removal of authors, this includes confirmation from the author being added or removed. Only in exceptional circumstances will the Editor consider the addition, deletion or rearrangement of authors **after** the manuscript has been accepted. While the Editor considers the request, publication of the manuscript will be suspended. If the manuscript has already been published in an online issue, any requests approved by the Editor will result in a corrigendum.

Article transfer service

This journal is part of our Article Transfer Service. This means that if the Editor feels your article is more suitable in one of our other participating journals, then you may be asked to consider transferring the article to one of those. If you agree, your article will be transferred automatically on your behalf with no need to reformat. Please note that your article will be reviewed again by the new journal. More information.

Copyright

Upon acceptance of an article, authors will be asked to complete a 'Journal Publishing Agreement' (see more information on this). An e-mail will be sent to the corresponding author confirming receipt of the manuscript together with a 'Journal Publishing Agreement' form or a link to the online version of this agreement. Subscribers may reproduce tables of contents or prepare lists of articles including abstracts for internal circulation within their institutions. Permission of the Publisher is required for resale or distribution outside the institution and for all other derivative works, including compilations and translations. If excerpts from other copyrighted works are included, the author(s) must obtain written permission from the copyright owners and credit the source(s) in the article. Elsevier has preprinted forms for use by authors in these cases.

For open access articles: Upon acceptance of an article, authors will be asked to complete an 'Exclusive License Agreement' (more information). Permitted third party reuse of open access articles is determined by the author's choice of user license.

Author rights

As an author you (or your employer or institution) have certain rights to reuse your work. More information.

Elsevier supports responsible sharing

Find out how you can share your research published in Elsevier journals.

Role of the funding source

You are requested to identify who provided financial support for the conduct of the research and/or preparation of the article and to briefly describe the role of the sponsor(s), if any, in study design; in the collection, analysis and interpretation of data; in the writing of the report; and in the decision to submit the article for publication. If the funding source(s) had no such involvement then this should be stated.

Funding body agreements and policies

Elsevier has established a number of agreements with funding bodies which allow authors to comply with their funder's open access policies. Some funding bodies will reimburse the author for the Open Access Publication Fee. Details of existing agreements are available online.

Open access

This journal offers authors a choice in publishing their research:

Subscription

- Articles are made available to subscribers as well as developing countries and patient groups through our universal access programs.
- No open access publication fee payable by authors.

Open access

- Articles are freely available to both subscribers and the wider public with permitted reuse.
- An open access publication fee is payable by authors or on their behalf, e.g. by their research funder or institution. Regardless of how you choose to publish your article, the journal will apply the same peer review criteria and acceptance standards. For open access articles, permitted third party (re)use is defined by the following Creative Commons user licenses:

Creative Commons Attribution (CC BY)

Lets others distribute and copy the article, create extracts, abstracts, and other revised versions, adaptations or derivative works of or from an article (such as a translation), include in a collective work (such as an anthology), text or data mine the article, even for commercial purposes, as long as they credit the author(s), do not represent the author as endorsing their adaptation of the article, and do not modify the article in such a way as to damage the author's honor or reputation.

Creative Commons Attribution-NonCommercial-NoDerivs (CC BY-NC-ND)

For non-commercial purposes, lets others distribute and copy the article, and to include in a collective work (such as an anthology), as long as they credit the author(s) and provided they do not alter or modify the article. The open access publication fee for this journal is **USD 1800**, excluding taxes. Learn more about Elsevier's pricing policy: <http://www.elsevier.com/openaccesspricing>.

Green open access

Authors can share their research in a variety of different ways and Elsevier has a number of green open access options available. We recommend authors see our green open access page for further information. Authors can also self-archive their manuscripts immediately and enable public access from their institution's repository after an embargo period. This is the version that has been accepted for publication and which typically includes author-incorporated changes suggested during submission, peer review and in editor-author communications. Embargo period: For subscription articles, an appropriate amount of time is needed for journals to deliver value to subscribing customers before an article becomes freely available to the public. This is the embargo period and it begins from the date the article is formally published online in its final and fully citable form. Find out more.

This journal has an embargo period of 24 months.

Elsevier Researcher Academy

Researcher Academy is a free e-learning platform designed to support early and mid-career researchers throughout their research journey. The "Learn" environment at Researcher Academy offers several interactive modules, webinars, downloadable guides and resources to guide you through the process of writing for research and going through peer review. Feel free to use these free resources to improve your submission and navigate the publication process with ease.

Language (usage and editing services)

Please write your text in good English (American or British usage is accepted, but not a mixture of these). Authors who feel their English language manuscript may require editing to eliminate possible grammatical or spelling errors and to conform to correct scientific English may wish to use the English Language Editing service available from Elsevier's WebShop.

Submission

Our online submission system guides you stepwise through the process of entering your article details and uploading your files. The system converts your article files to a single PDF file used in the peer-review process. Editable files (e.g., Word, LaTeX) are required to typeset your article for final publication. All correspondence, including notification of the Editor's decision and requests for revision, is sent by e-mail.

Peer review

This journal operates a double blind review process. All contributions will be initially assessed by the editor for suitability for the journal. Papers deemed suitable are then typically sent to a minimum of two independent expert reviewers to assess the scientific quality of the paper. The Editor is responsible for the final decision regarding acceptance or rejection of articles. The Editor's decision is final. More information on types of peer review.

Double-blind review

This journal uses double-blind review, which means the identities of the authors are concealed from the reviewers, and vice versa. More information is available on our website. To facilitate this, please include the following separately:

Title page (with author details): This should include the title, authors' names, affiliations, acknowledgements and any Declaration of Interest statement, and a complete address for the corresponding author including an e-mail address.

Blinded manuscript (no author details): The main body of the paper (including the references, figures, tables and any acknowledgements) should not include any identifying information, such as the authors' names or affiliations.

Use of word processing software

It is important that the file be saved in the native format of the word processor used. The text should be in single-column format. Keep the layout of the text as simple as possible. Most formatting codes will be removed and replaced on processing the article. In particular, do not use the word processor's options to justify text or to hyphenate words. However, do use bold face, italics, subscripts, superscripts etc.

When preparing tables, if you are using a table grid, use only one grid for each individual table and not a grid for each row. If no grid is used, use tabs, not spaces, to align columns.

The electronic text should be prepared in a way very similar to that of conventional manuscripts (see also the Guide to Publishing with Elsevier). Note that source files of figures, tables and text graphics will be required whether or not you embed your figures in the text. See also the section on Electronic artwork. To avoid unnecessary errors you are strongly advised to use the 'spell-check' and 'grammar-check' functions of your word processor.

Article structure

Introduction

State the objectives of the work and provide an adequate background, avoiding a detailed literature survey or a summary of the results.

Material and methods

Provide sufficient details to allow the work to be reproduced by an independent researcher. Methods that are already published should be summarized, and indicated by a reference. If quoting directly from a previously published method, use quotation marks and also cite the source. Any modifications to existing methods should also be described.

Results

Results should be clear and concise, describing the findings and their associated statistical basis. Consider the use of tables and figures for statistical details.

Discussion

This section should present the theoretical, empirical, and applied implications of the results, not simply repeat the findings. The study's limitations should be explicitly recognized. A combined Results and Discussion section may be appropriate.

Conclusions

The main conclusions of the study may be presented in a short Conclusions section, which may stand alone or form a subsection of a Discussion or Results and Discussion section.

Appendices

If there is more than one appendix, they should be identified as A, B, etc. Formulae and equations in appendices should be given separate numbering: Eq. (A.1), Eq. (A.2), etc.; in a subsequent appendix, Eq. (B.1) and so on. Similarly for tables and figures: Table A.1; Fig. A.1, etc.

Essential title page information

- **Title.** Concise and informative. Titles are often used in information-retrieval systems. Avoid abbreviations and formulae where possible.
- **Author names and affiliations.** Please clearly indicate the given name(s) and family name(s) of each author and check that all names are accurately spelled. You can add your name between parentheses in your own script behind the English transliteration. Present the authors' affiliation addresses (where the actual work was done) below the names. Indicate all affiliations with a lowercase superscript letter immediately after the author's name and in front of the appropriate address. Provide the full postal address of

each affiliation, including the country name and, if available, the e-mail address of each author.

- ***Corresponding author.*** Clearly indicate who will handle correspondence at all stages of refereeing and publication, also post-publication. This responsibility includes answering any future queries about Methodology and Materials. **Ensure that the e-mail address is given and that contact details are kept up to date by the corresponding author.**

- ***Present/permanent address.*** If an author has moved since the work described in the article was done, or was visiting at the time, a 'Present address' (or 'Permanent address') may be indicated as a footnote to that author's name. The address at which the author actually did the work must be retained as the main, affiliation address. Superscript Arabic numerals are used for such footnotes.

Abstract

A concise and factual abstract is required. The abstract should state briefly the purpose of the research, the principal results and major conclusions. An abstract is often presented separately from the article, so it must be able to stand alone. For this reason, References should be avoided, but if essential, then cite the author(s) and year(s). Also, non-standard or uncommon abbreviations should be avoided, but if essential they must be defined at their first mention in the abstract itself. The abstract should be a maximum of 150 words.

Graphical abstract

Although a graphical abstract is optional, its use is encouraged as it draws more attention to the online article. The graphical abstract should summarize the contents of the article in a concise, pictorial form designed to capture the attention of a wide readership. Graphical abstracts should be submitted as a separate file in the online submission system. Image size: Please provide an image with a minimum of 531 × 1328 pixels (h × w) or proportionally more. The image should be readable at a size of 5 ×

13 cm using a regular screen resolution of 96 dpi. Preferred file types: TIFF, EPS, PDF or MS Office files. You can view Example Graphical Abstracts on our information site.

Authors can make use of Elsevier's Illustration Services to ensure the best presentation of their images and in accordance with all technical requirements.

Highlights

Highlights are mandatory for this journal. They consist of a short collection of bullet points that convey the core findings of the article and should be submitted in a separate editable file in the online submission system. Please use 'Highlights' in the file name and include 3 to 5 bullet points (maximum 85 characters, including spaces, per bullet point). You can view example Highlights on our information site.

Keywords

Immediately after the abstract, provide a maximum of 6 keywords, using American spelling and avoiding general and plural terms and multiple concepts (avoid, for example, 'and', 'of'). Be sparing with abbreviations: only abbreviations firmly established in the field may be eligible. These keywords will be used for indexing purposes.

Abbreviations

For economy, consider using abbreviations or acronyms for key terms that appear often in the paper. Introduce the abbreviation parenthetically after the term's first mention in the paper. Ensure consistency of abbreviations throughout the paper. Such abbreviations that are unavoidable in the abstract must be defined at their first mention there, as well as in the footnote. Ensure consistency of abbreviations throughout the article.

Acknowledgements

Collate acknowledgements in a separate section at the end of the article before the references and do not, therefore, include them on the title page, as a footnote to the title or otherwise. List here those individuals who provided help during the research (e.g., providing language help, writing assistance or proof reading the article, etc.).

Formatting of funding sources

List funding sources in this standard way to facilitate compliance to funder's requirements: Funding: This work was supported by the National Institutes of Health [grant numbers xxxx, yyyy]; the Bill & Melinda Gates Foundation, Seattle, WA [grant number zzzz]; and the United States Institutes of Peace [grant number aaaa]. It is not necessary to include detailed descriptions on the program or type of grants and awards. When funding is from a block grant or other resources available to a university, college, or other research institution, submit the name of the institute or organization that provided the funding. If no funding has been provided for the research, please include the following sentence: This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Math formulae

Please submit math equations as editable text and not as images. Present simple formulae in line with normal text where possible and use the solidus (/) instead of a horizontal line for small fractional terms, e.g., X/Y. In principle, variables are to be presented in italics. Powers of e are often more conveniently denoted by exp. Number consecutively any equations that have to be displayed separately from the text (if referred to explicitly in the text).

Footnotes

Footnotes should be used sparingly. Number them consecutively throughout the article. Many word processors can build footnotes into the text, and this feature may be used. Otherwise, please indicate the position of footnotes in the text and list the footnotes themselves separately at the end of the article. Do not include footnotes in the Reference list.

Artwork

Electronic artwork

General points

- Make sure you use uniform lettering and sizing of your original artwork.
- Embed the used fonts if the application provides that option.
- Aim to use the following fonts in your illustrations: Arial, Courier, Times New Roman, Symbol, or use fonts that look similar.
- Number the illustrations according to their sequence in the text.
- Use a logical naming convention for your artwork files.
- Provide captions to illustrations separately.

- Size the illustrations close to the desired dimensions of the published version.
- Submit each illustration as a separate file.

A detailed guide on electronic artwork is available. **You are urged to visit this site; some excerpts from the detailed information are given here.**

Formats

If your electronic artwork is created in a Microsoft Office application (Word, PowerPoint, Excel) then please supply 'as is' in the native document format. Regardless of the application used other than Microsoft Office, when your electronic artwork is finalized, please 'Save as' or convert the images to one of the following formats (note the resolution requirements for line drawings, halftones, and line/halftone combinations given below): EPS (or PDF): Vector drawings, embed all used fonts. TIFF (or JPEG): Color or grayscale photographs (halftones), keep to a minimum of 300 dpi. TIFF (or JPEG): Bitmapped (pure black & white pixels) line drawings, keep to a minimum of 1000 dpi. TIFF (or JPEG): Combinations bitmapped line/half-tone (color or grayscale), keep to a minimum of 500 dpi.

Please do not:

- Supply files that are optimized for screen use (e.g., GIF, BMP, PICT, WPG); these typically have a low number of pixels and limited set of colors;
- Supply files that are too low in resolution;
- Submit graphics that are disproportionately large for the content.

Formats

Regardless of the application used, when your electronic artwork is finalised, please "save as" or convert the images to one of the following formats (Note the resolution requirements for line drawings, halftones, and line/halftone combinations given below.):

EPS: Vector drawings. Embed the font or save the text as "graphics". TIFF: Colour or greyscale photographs (halftones): always use a minimum of 300 dpi. For colour images always use RGB. TIFF: Bitmapped line drawings: use a minimum of 1000 dpi. TIFF: Combinations bitmapped line/half-tone (colour or greyscale): a minimum of 500 dpi is required. DOC, XLS or PPT: If your electronic artwork is created in any of these Microsoft Office applications please supply "as is".

Please do not:

- Supply embedded graphics in your wordprocessor (spreadsheet, presentation) document;
- Supply files that are optimised for screen use (like GIF, BMP, PICT, WPG); the resolution is too low;
- Supply files that are too low in resolution;
- Submit graphics that are disproportionately large for the content.

Color artwork

Please make sure that artwork files are in an acceptable format (TIFF (or JPEG), EPS (or PDF), or MS Office files) and with the correct resolution. If, together with your accepted article, you submit usable color figures then Elsevier will ensure, at no additional charge, that these figures will appear in color online (e.g., ScienceDirect and other sites) regardless of whether or not these illustrations are reproduced in color in the printed version. **For color reproduction in print, you will receive information regarding the costs from Elsevier after receipt of your accepted article.** Please

indicate your preference for color: in print or online only. Further information on the preparation of electronic artwork.

Figure captions

Ensure that each illustration has a caption. Supply captions separately, not attached to the figure. A caption should comprise a brief title (**not** on the figure itself) and a description of the illustration. Keep text in the illustrations themselves to a minimum but explain all symbols and abbreviations used.

Tables

Please submit tables as editable text and not as images. Tables can be placed either next to the relevant text in the article, or on separate page(s) at the end. Number tables consecutively in accordance with their appearance in the text and place any table notes below the table body. Be sparing in the use of tables and ensure that the data presented in them do not duplicate results described elsewhere in the article. Please avoid using vertical rules and shading in table cells.

References

Citation in text

Please ensure that every reference cited in the text is also present in the reference list (and vice versa). Personal communications may be cited (with exact date) in the text but are not included in the reference list. Unpublished studies or papers may be cited but must include a date (year) and follow APA style. Citing reference as "in press" indicates that the work has been accepted for publication."

Data references

This journal encourages you to cite underlying or relevant datasets in your manuscript by citing them in your text and including a data reference in your Reference List. Data references should include the following elements: author name(s), dataset title, data repository, version (where available), year, and global persistent identifier. Add [dataset] immediately before the reference so we can properly identify it as a data reference. The [dataset] identifier will not appear in your published article.

References in a special issue

Please ensure that the words 'this issue' are added to any references in the list (and any citations in the text) to other articles in the same Special Issue.

Reference management software

Most Elsevier journals have their reference template available in many of the most popular reference management software products. These include all products that support Citation Style Language styles, such as Mendeley and Zotero, as well as EndNote. Using the word processor plug-ins from these products, authors only need to select the appropriate journal template when preparing their article, after which citations and bibliographies will be automatically formatted in the journal's style. If no template is yet available for this journal, please follow the format of the sample references and

citations as shown in this Guide. Users of Mendeley Desktop can easily install the reference style for this journal by clicking the following link:

<http://open.mendeley.com/use-citation-style/body-image>

When preparing your manuscript, you will then be able to select this style using the Mendeley plugins for Microsoft Word or LibreOffice.

Reference style

Text: Citations in the text should follow the referencing style used by the American Psychological Association. You are referred to the Publication Manual of the American Psychological Association, Sixth Edition, ISBN 978-1-4338-0561-5, copies of which may be ordered online or APA Order Dept., P.O.B. 2710, Hyattsville, MD 20784, USA or APA, 3 Henrietta Street, London, WC3E 8LU, UK.

List: references should be arranged first alphabetically and then further sorted chronologically if necessary. More than one reference from the same author(s) in the same year must be identified by the letters 'a', 'b', 'c', etc., placed after the year of publication.

Examples:

Reference to a journal publication:

Van der Geer, J., Hanraads, J. A. J., & Lupton, R. A. (2010). The art of writing a scientific article. *Journal of Scientific Communications*, 163, 51–59.

Reference to a book:

Strunk, W., Jr., & White, E. B. (2000). *The elements of style*. (4th ed.). New York: Longman, (Chapter 4).

Reference to a chapter in an edited book:

Mettam, G. R., & Adams, L. B. (2009). How to prepare an electronic version of your article. In B. S. Jones, & R. Z. Smith (Eds.), *Introduction to the electronic age* (pp. 281–304). New York: E-Publishing Inc.

Reference to a website:

Cancer Research UK. Cancer statistics reports for the UK. (2003). <http://www.cancerresearchuk.org/aboutcancer/statistics/cancerstatsreport/> Accessed 13 March 2003.

Reference to a dataset:

[dataset] Oguro, M., Imahiro, S., Saito, S., Nakashizuka, T. (2015). *Mortality data for Japanese oak wilt disease and surrounding forest compositions*. Mendeley Data, v1. <https://doi.org/10.17632/xwj98nb39r.1>.

Reference to a conference paper or poster presentation:

Engle, E.K., Cash, T.F., & Jarry, J.L. (2009, November). The Body Image Behaviours Inventory-3: Development and validation of the Body Image Compulsive Actions and Body Image Avoidance Scales. Poster session presentation at the meeting of the Association for Behavioural and Cognitive Therapies, New York, NY.

Video

Elsevier accepts video material and animation sequences to support and enhance your scientific research. Authors who have video or animation files that they wish to submit with their article are strongly encouraged to include links to these within the body of the article. This can be done in the same way as a figure or table by referring to the video or animation content and noting in the body text where it should be placed. All submitted files should be properly labeled so that they directly relate to the video file's content. . In order to ensure that your video or animation material is directly usable, please provide the file in one of our recommended file formats with a preferred

maximum size of 150 MB per file, 1 GB in total. Video and animation files supplied will be published online in the electronic version of your article in Elsevier Web products, including ScienceDirect. Please supply 'stills' with your files: you can choose any frame from the video or animation or make a separate image. These will be used instead of standard icons and will personalize the link to your video data. For more detailed instructions please visit our video instruction pages. Note: since video and animation cannot be embedded in the print version of the journal, please provide text for both the electronic and the print version for the portions of the article that refer to this content.

AudioSlides

The journal encourages authors to create an AudioSlides presentation with their published article. AudioSlides are brief, webinar-style presentations that are shown next to the online article on ScienceDirect. This gives authors the opportunity to summarize their research in their own words and to help readers understand what the paper is about. More information and examples are available. Authors of this journal will automatically receive an invitation e-mail to create an AudioSlides presentation after acceptance of their paper.

Data visualization

Include interactive data visualizations in your publication and let your readers interact and engage more closely with your research. Follow the instructions here to find out about available data visualization options and how to include them with your article.

Supplementary material

Supplementary material such as applications, images and sound clips, can be published with your article to enhance it. Submitted supplementary items are published exactly as they are received (Excel or PowerPoint files will appear as such online). Please submit your material together with the article and supply a concise, descriptive caption for each supplementary file. If you wish to make changes to supplementary material during any stage of the process, please make sure to provide an updated file. Do not annotate any corrections on a previous version. Please switch off the 'Track Changes' option in Microsoft Office files as these will appear in the published version.

Research data

This journal encourages and enables you to share data that supports your research publication where appropriate, and enables you to interlink the data with your published articles. Research data refers to the results of observations or experimentation that validate research findings. To facilitate reproducibility and data reuse, this journal also encourages you to share your software, code, models, algorithms, protocols, methods and other useful materials related to the project. Below are a number of ways in which you can associate data with your article or make a statement about the availability of your data when submitting your manuscript. If you are sharing data in one of these ways, you are encouraged to cite the data in your manuscript and reference list. Please refer to the "References" section for more information about data citation. For more information on depositing, sharing and using research data and other relevant research materials, visit the research data page.

Data linking

If you have made your research data available in a data repository, you can link your article directly to the dataset. Elsevier collaborates with a number of repositories to

link articles on ScienceDirect with relevant repositories, giving readers access to underlying data that gives them a better understanding of the research described. There are different ways to link your datasets to your article. When available, you can directly link

your dataset to your article by providing the relevant information in the submission system. For more information, visit the database linking page. For supported data repositories a repository banner will automatically appear next to your published article on ScienceDirect. In addition, you can link to relevant data or entities through identifiers within the text of your manuscript, using the following format: Database: xxxx (e.g., TAIR: AT1G01020; CCDC: 734053; PDB: 1XFN).

Mendeley Data

This journal supports Mendeley Data, enabling you to deposit any research data (including raw and processed data, video, code, software, algorithms, protocols, and methods) associated with your manuscript in a free-to-use, open access repository. During the submission process, after uploading your manuscript, you will have the opportunity to upload your relevant datasets directly to *Mendeley Data*. The datasets will be listed and directly accessible to readers next to your published article online. For more information, visit the Mendeley Data for journals page.

Data statement

To foster transparency, we encourage you to state the availability of your data in your submission. This may be a requirement of your funding body or institution. If your data is unavailable to access or unsuitable to post, you will have the opportunity to indicate why during the submission process, for example by stating that the research data is confidential. The statement will appear with your published article on ScienceDirect. For more information, visit the Data Statement page.

AFTER ACCEPTANCE

Online proof correction

Corresponding authors will receive an e-mail with a link to our online proofing system, allowing annotation and correction of proofs online. The environment is similar to MS Word: in addition to editing text, you can also comment on figures/tables and answer questions from the Copy Editor. Web-based proofing provides a faster and less error-prone process by allowing you to directly type your corrections, eliminating the potential introduction of errors. If preferred, you can still choose to annotate and upload your edits on the PDF version. All instructions for proofing will be given in the e-mail we send to authors, including alternative methods to the online version and PDF.

We will do everything possible to get your article published quickly and accurately. Please use this proof only for checking the typesetting, editing, completeness and correctness of the text, tables and figures. Significant changes to the article as accepted for publication will only be considered at this stage with permission from the Editor. It is important to ensure that all corrections are sent back to us in one communication. Please check carefully before replying, as inclusion of any subsequent corrections cannot be guaranteed. Proofreading is solely your responsibility.

Offprints

The corresponding author will, at no cost, receive a customized Share Link providing 50 days free access to the final published version of the article on ScienceDirect. The Share Link can be used for sharing the article via any communication channel, including email and social media. For an extra charge, paper offprints can be ordered

via the offprint order form which is sent once the article is accepted for publication. Both corresponding and co-authors may order offprints at any time via Elsevier's Webshop. Corresponding authors who have published their article open access do not receive a Share Link as their final published version of the article is available open access on ScienceDirect and can be shared through the article DOI link.

AUTHOR INQUIRIES

Visit the Elsevier Support Center to find the answers you need. Here you will find everything from Frequently Asked Questions to ways to get in touch. You can also check the status of your submitted article or find out when your accepted article will be published.

[Page removed for hard binding]

CONSENT FORM

Title of Project: **Social Networking, Body Image and Compassion**

Name of Researcher: **Mary Walker**

Please tick all
boxes

1. I confirm that I have read and understand the information sheet presented on the previous page regarding the above study, dated (4.3.2017). I have had the opportunity to consider the information. If I had any questions, they have been answered satisfactorily.

2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason until I have completed the questionnaire and confirmed that my answers given can be included as part of the study.

3. I agree to take part in the above study.

Please click to confirm and progress to the study

Participant Information Sheet

Title of the study: Social Networking, Body Image and Compassion

We would like to invite you to take part in a research study which is looking at social networking, body image and compassion. Before you decide whether you want to participate we would like you to understand why this research is being done. We would also like you to understand what it will involve for you if you decide to take part.

What is the purpose of the study?

This study aims to explore how social networking activity, body image and experiencing compassion relate. This study aims to contribute to current knowledge surrounding social networking use and body image. It may support development of initiatives to protect and improve body image.

Why have I been invited?

We are asking social network site users over the age of 16 years to participate in order to explore the role of social networking.

Do I have to take part?

You do not have to take part in the study. If you do not wish to participate you may close this window. If you later decide that you do want to participate you can return to this page at any time using the above URL.

What will happen if I decide to take part?

If you decide to take part in the study you will be presented with an online questionnaire to complete. This takes approximately 10-15 minutes. It includes multiple-choice questions about social networking, experiences of compassion and how you see your body. There are also questions about your age and gender.

If you decide to take part you will be asked to tick a box to confirm your consent to participate. Once you have completed the questionnaire you will be asked to tick another box to confirm that you consent to your answers being submitted as part of the study.

What will happen if I decide I no longer wish to take part?

Once you have completed and submitted the questionnaire you will not be able to withdraw from the study. Before this stage you can withdraw at any time by closing the browser window. Your answers would then not be included in the study.

What are the possible disadvantages and risks of taking part?

Completing the questionnaire may take up 15 minutes of your time. Some people may find answering questions about their body image difficult if it brings to mind difficult issues relating to this. After the study you will be directed to a website containing information about sources of support that may be helpful if this happens for you.

What are the possible benefits of taking part?

Although there will be no direct payment for you for participating, it is hoped that the information you share will help us understand how social networking, body image and compassion relate. This may help to develop interventions that protect and improve people's body image the future.

What if there is a problem?

If you have any concerns about the study it might be helpful to discuss these with the researcher who will do their best to answer your questions. You may also contact either of the researcher's supervisors at the University of Hull.

Will my taking part in this study be kept confidential?

Your participation in this study will be kept confidential. The questionnaire will not ask you to provide any identifying information about who you are and the information you provide will remain anonymous. Data will be transferred and stored securely using encrypted connections and storage systems.

What will happen to the results of the study?

After the study has been completed the results will be written-up as part of the researcher's thesis. Results may also be submitted for publication in an academic journal or presented at conferences. If you are interested in knowing about the outcomes of this study you will be able to view a summary on the following website designed for this purpose once the study is completed:

www.blogblogmyresearchblog.blogface.co.uk

Who is organising and funding the research?

The researcher is a doctoral student in Clinical Psychology at the University who is also employed by Humber NHS Foundation Trust. This study is part of their doctoral research project. Research expenses are being provided by the University of Hull.

Who has reviewed the study?

Independent Research Ethics Committees protect the interests of people who participate in research. This study has been reviewed by the Faculty of Health and Social Care Research Ethics Committee at the University of Hull and has received a favourable opinion.

Further information and contact details

If you would like any further information about the study you can contact the researcher or either of the researcher's supervisors at the University of Hull using the contact details below.

Contact Details

Researcher: **Mary Walker**

Department of Psychological Health and Wellbeing

Clinical Psychology Programme

Aire Building

University of Hull
Cottingham Road
Hull
HU6 7RX

Email: **m.walker@2015.hull.ac.uk**

Research supervisors

Dr Tim Alexander

Dr Philip Molyneux

Email: t.alexander@hull.ac.uk

Email: p.molyneux@hull.ac.uk

01482 464030

01482 464170

Department of Psychological Health and Wellbeing

Clinical Psychology Programme
Aire Building

University of Hull
Cottingham Road
Hull
HU6 7RX

Thank you for your interest

Appendix K. Demographic questionnaire items

Demographic questions

1. Do you have an account for a Social Networking Site (e.g. Facebook, Instagram, LinkedIn, Snapchat)?

Yes No

2. Have you used your social network account within the last 2 weeks?

Yes No

3. How old are you?

4. What gender do you identify as?

Male Female Other

5. On average, approximately how many minutes or hours per day do you spend on social networking sites (e.g. Facebook, Instagram)?

Less than 10 min per day	10-30 min per day	31-60 min per day	1-2 hours per day	2-3 hours per day	More than 3 hours per day
-----------------------------	----------------------	----------------------	----------------------	----------------------	------------------------------

Appendix L. Comparison questionnaire items: Modified items of Physical Appearance Comparison Scale-Revised (PACS-R)

Modified items of Physical Appearance Comparison Scale-Revised (PACS-R)

People sometimes compare their physical appearance to the physical appearance of others. This can be a comparison of their weight, body size, body shape, body fat or overall appearance. Thinking about how you generally compare yourself to others, please use the following scale to rate how often you make these kinds of comparisons.

	Never	Seldom	Sometimes	Often	Always
	0	1	2	3	4
			Never		Always
1. When I'm using social networking sites (eg Facebook, Instagram), I compare my physical appearance to the appearance of others.	0	1	2	3	4
2. When I see a new person (same sex) on social networking sites (eg Facebook, Instagram), I compare my body size to his/her body size.	0	1	2	3	4
3. When I'm using social networking sites (eg Facebook, Instagram), I compare my body shape to the body shape of others.	0	1	2	3	4
4. When I'm using social networking sites (eg Facebook, Instagram), I compare my body fat to the body fat of others.	0	1	2	3	4
5. When I'm using social networking sites (eg Facebook, Instagram), I compare my weight to the weight of others.	0	1	2	3	4

Adapted from

Schaefer, L. & Thompson, K. (2014). The development and validation of the Physical Appearance Comparison Scale-Revised (PACS-R). *Eating Behaviors, 15*, 209–217.

[Page removed for hard binding]

[Page removed for hard binding]

Appendix N. Compassion questionnaire items: The Compassionate Engagement and Action Scales

THE COMPASSIONATE ENGAGEMENT AND ACTION SCALES

Self-compassion

When things go wrong for us and we become distressed by setbacks, failures, disappointments or losses, we may cope with these in different ways. We are interested in the degree to which people can **be compassionate with themselves**. We define compassion as “a sensitivity to suffering in self and others with a commitment to try to alleviate and prevent it.” This means there are two aspects to compassion. The *first* is the ability to be motivated to engage with things/feelings that are difficult as opposed to trying to avoid or suppress them. The *second* aspect of compassion is the ability to focus on what is helpful to us. Just like a doctor with his/her patient. The first is to be motivated and able to pay attention to the pain and (learn how to) make sense of it. The second is to be able to take the action that will be helpful. Below is a series of questions that ask you about these two aspects of compassion. Therefore read each statement carefully and think about how it applies to you if you become distressed. Please rate the items using the following rating scale:

Never

Always

1 2 3 4 5 6 7 8 9 10

Section 1 – These are questions that ask you about how motivated you are, and able to engage with distress when you experience it. So:

When I’m distressed or upset by things...

1. I am *motivated* to engage and work with my distress when it arises.

Never

Always

1 2 3 4 5 6 7 8 9 10

2. I *notice*, and am *sensitive* to my distressed feelings when they arise in me.

Never

Always

1 2 3 4 5 6 7 8 9 10

3. I avoid thinking about my distress and try to distract myself and put it out of my mind.

Never

Always

1 2 3 4 5 6 7 8 9 10

4. I am *emotionally moved* by my distressed feelings or situations.

Never 1 2 3 4 5 6 7 8 9 **Always**
10

5. I *tolerate* the various feelings that are part of my distress.

Never 1 2 3 4 5 6 7 8 9 **Always**
10

6. I *reflect on* and *make sense* of my feelings of distress

Never 1 2 3 4 5 6 7 8 9 **Always**
10

7. I do not tolerate being distressed.

Never 1 2 3 4 5 6 7 8 9 **Always**
10

8. I am *accepting, non-critical and non-judgemental* of my feelings of distress.

Never 1 2 3 4 5 6 7 8 9 **Always**
10

Section 2 – These questions relate to how you actively cope in compassionate ways with emotions, thoughts and situations that distress you. So:

When I'm distressed or upset by things...

1. I direct my *attention* to what is likely to be helpful to me.

Never 1 2 3 4 5 6 7 8 9 **Always**
10

2. I *think* about and come up with helpful ways to cope with my distress.

Never 1 2 3 4 5 6 7 8 9 **Always**
10

3. I don't know how to help myself.

Never 1 2 3 4 5 6 7 8 9 **Always**
10

4. I take the *actions* and do the things that will be helpful to me.

Never Always
1 2 3 4 5 6 7 8 9 10

5. I create inner feelings of *support, helpfulness and encouragement*.

Never Always
1 2 3 4 5 6 7 8 9 10

Compassion to others

When things go wrong for other people and they become distressed by setbacks, failures, disappointments or losses, we may cope with their distress in different ways. We are interested in the degree to which people can be **compassionate to others**. We define compassion as “a sensitivity to suffering in self and others with a commitment to try to alleviate and prevent it.” This means there are two aspects to compassion. The *first* is the ability to be motivated to engage with things/feelings that are difficult as opposed to trying to avoid or suppress them. The *second* aspect of compassion is the ability to focus on what is helpful. Just like a doctor with his/her patient. The first is to be motivated and able to pay attention to the pain and (learn how to) make sense of it. The second is to be able to take the action that will be helpful. Below is a series of questions that ask you about these two aspects of compassion. Therefore read each statement carefully and think about how it applies to you when **people in your life** become distressed. Please rate the items using the following rating scale:

Never Always
1 2 3 4 5 6 7 8 9 10

Section 1 – These are questions that ask you about how motivated you are, and able to engage with other people’s distress when they are experiencing it. So:

When others are distressed or upset by things...

1. I am *motivated* to engage and work with other peoples’ distress when it arises.

Never Always
1 2 3 4 5 6 7 8 9 10

2. I *notice* and *am sensitive* to distress in others when it arises.

Never Always
1 2 3 4 5 6 7 8 9 10

3. I avoid thinking about other peoples' distress, try to distract myself and put it out of my mind.

Never **Always**
1 2 3 4 5 6 7 8 9 10

4. I am *emotionally moved* by expressions of distress in others.

Never **Always**
1 2 3 4 5 6 7 8 9 10

5. I *tolerate* the various feelings that are part of other people's distress.

Never **Always**
1 2 3 4 5 6 7 8 9 10

6. I *reflect on and make sense of* other people's distress.

Never **Always**
1 2 3 4 5 6 7 8 9 10

7. I do not tolerate other peoples' distress.

Never **Always**
1 2 3 4 5 6 7 8 9 10

8. I am *accepting, non-critical and non-judgemental* of others people's distress.

Never **Always**
1 2 3 4 5 6 7 8 9 10

Section 2 – These questions relate to how you actively respond in compassionate ways when other people are distressed. So:

When others are distressed or upset by things...

1. I direct *attention* to what is likely to be helpful to others.

Never **Always**
1 2 3 4 5 6 7 8 9 10

2. I think about and come up with helpful ways for them to cope with their distress.

Never Always
1 2 3 4 5 6 7 8 9 10

3. I don't know how to help other people when they are distressed.

Never Always
1 2 3 4 5 6 7 8 9 10

4. I take the actions and do the things that will be helpful to others.

Never Always
1 2 3 4 5 6 7 8 9 10

5. I express feelings of support, helpfulness and encouragement to others.

Never Always
1 2 3 4 5 6 7 8 9 10

Compassion from others

When things go wrong for us and we become distressed by setbacks, failures, disappointments or losses, others may cope with our distress in different ways. We are interested in the degree to which you feel that **important people in your life can be compassionate to your distress**. We define compassion as “a sensitivity to suffering in self and others with a commitment to try to alleviate and prevent it.” This means there are two aspects to compassion. The *first* is the ability to be motivated to engage with things/feelings that are difficult as opposed to trying to avoid or suppress them. The *second* aspect of compassion is the ability to focus on what is helpful to us or others. Just like a doctor with his/her patient. The first is to be motivated and able to pay attention to the pain and (learn how to) make sense of it. The second is to be able to take the action that will be helpful. Below is a series of questions that ask you about these two aspects of compassion. Therefore read each statement carefully and think about how it applies to the **important people in your life** when you become distressed. Please rate the items using the following rating scale:

Never Always
1 2 3 4 5 6 7 8 9 10

Section 1 – These are questions that ask you about how motivated you think others are, and how much they engage with your distress when you experience it. So:

When I'm distressed or upset by things...

1. Other people are actively *motivated* to engage and work with my distress when it arises.

Never **Always**
1 2 3 4 5 6 7 8 9 10

2. Others *notice* and *are sensitive* to my distressed feelings when they arise in me.

Never **Always**
1 2 3 4 5 6 7 8 9 10

3. Others avoid thinking about my distress, try to distract themselves and put it out of their mind.

Never **Always**
1 2 3 4 5 6 7 8 9 10

4. Others are *emotionally moved* by my distressed feelings.

Never **Always**
1 2 3 4 5 6 7 8 9 10

5. Others *tolerate* my various feelings that are part of my distress.

Never **Always**
1 2 3 4 5 6 7 8 9 10

6. Others *reflect on* and *make sense* of my feelings of distress.

Never **Always**
1 2 3 4 5 6 7 8 9 10

7. Others do not tolerate my distress.

Never **Always**
1 2 3 4 5 6 7 8 9 10

8. Others are *accepting, non-critical and non-judgemental* of my feelings of distress.

Never **Always**
1 2 3 4 5 6 7 8 9 10

Section 2 – These questions relate to how others actively cope in compassionate ways with emotions and situations that distress you. So:

When I'm distressed or upset by things...

1. Others direct their *attention* to what is likely to be helpful to me.

Never **Always**
1 2 3 4 5 6 7 8 9 10

2. Others *think about* and come up with helpful ways for me to cope with my distress.

Never **Always**
1 2 3 4 5 6 7 8 9 10

3. Others don't know how to help me when I am distressed

Never **Always**
1 2 3 4 5 6 7 8 9 10

4. Others take the *actions* and do the things that will be helpful to me.

Never **Always**
1 2 3 4 5 6 7 8 9 10

5. Others treat me with feelings of *support, helpfulness and encouragement*.

Never **Always**
1 2 3 4 5 6 7 8 9 10

Taken from

Gilbert, P., Catarino, F., Duarte, C., Matos, M., Kolts, R., Stubbs, J., Ceresatto, L., Duarte, J., Pinto-Gouveia, J. & Basran, J. (2016). Three orientations of compassion, the development of self-report measures and their link to depression. *Manuscript submitted for publication*.

Appendix O. Sources of support

Information regarding sources of support presented on study website

Relevant Information and Support

The following websites may be useful for information and support around body image:

<http://www.bbc.co.uk/programmes/articles/5Srg3zwxc8cbsCK2JKjn1pV/body-image>

<http://www.berealcampaign.co.uk/>

<http://selfesteem.dove.co.uk/>

<http://www.nationaleatingdisorders.org/developing-and-maintaining-positive-body-image>

<http://eating-disorders.org.uk/information/body-image/>

<http://bddfoundation.org/helping-you/getting-help-in-the-uk/>

If you feel particularly distressed thinking about the topics addressed in the study it is also recommended that you see your GP in order to access professional advice and support. You may also be able to access local talking therapies for support. If you live outside of the UK you should refer to your local healthcare provider regarding access to these services. In the UK talking therapies are accessible via self-referral through the NHS. The below website may be helpful for information about accessing talking therapies in the UK:

<http://www.mind.org.uk/information-support/drugs-and-treatments/talking-treatments/finding-a-therapist/#.WKVTzTuLTIU>

The following links may be helpful if you want to find out more about compassion:

<http://compassionatemind.co.uk/individuals>

<https://www.youtube.com/watch?v=bKrCq3trml8&list=PLs5Bwch7lQ6lzyNmLyQg7M27MhfoRpleY>