

**Investigating the Relationships Between Social Media Use and Body Satisfaction and Well-Being  
Among Adolescent Boys and Girls: Cross-Sectional and Prospective Examination**

Submitted by

Hannah Katie Jarman, MSc

A thesis submitted for total fulfilment of the requirements for the degree of

Doctor of Philosophy

School of Psychology and Public Health

College of Science, Health, and Engineering

La Trobe University, Victoria, Australia

Submitted August 2021

## Table of Contents

<b>List of Tables .....</b>	<b>vii</b>
<b>List of Figures.....</b>	<b>ix</b>
<b>List of Appendices.....</b>	<b>x</b>
<b>Abstract .....</b>	<b>xi</b>
<b>Statement of Authorship .....</b>	<b>xii</b>
<b>Publication and Dissemination of Research Findings .....</b>	<b>xiii</b>
<b>Acknowledgements .....</b>	<b>xv</b>
<b>Chapter One: Thesis Overview .....</b>	<b>1</b>
<b>Chapter Two: Body Image, Well-Being, and the Media .....</b>	<b>4</b>
Body Image .....	4
Subjective Well-Being .....	5
Sociocultural Theory of Body Image .....	7
Influences of Traditional Media on Body Satisfaction and Well-Being.....	9
<b>Chapter Three: Social Media, Motivations for Use, and Relationships with Body Satisfaction and Well-Being .....</b>	<b>11</b>
What is Social Media? .....	11
How Social Media Might Influence Body Satisfaction and Well-Being.....	13
Motivations for Social Media Use Among Adolescents .....	16
The Relationship Between Social Media Use and Body Satisfaction and Well-Being .....	20
Mechanisms Underpinning the Relationships Between Social Media Use and Body Satisfaction and Well-Being.....	36
Bidirectional Relationships Between Social Media Use and Body Satisfaction .....	43

Rationale and Aims of the Present Thesis .....	45
References .....	49
<b>Chapter Four: Motivations for Social Media Use: Associations With Social Media Engagement and Body Satisfaction and Well-Being Among Adolescents .....</b>	<b>50</b>
Abstract.....	51
Introduction .....	52
Social Media and Body Satisfaction and Well-Being.....	52
Motivations for Social Media Use .....	54
Motivations, Types of Social Media Engagement, and Body Satisfaction and Well-Being.....	55
The Proposed Model.....	57
Current Study .....	58
Methods.....	59
Participants .....	59
Measures.....	59
Procedure.....	63
Data Analysis .....	63
Results.....	65
Preliminary Analyses .....	65
Model Fit .....	65
Multi-Group Analyses by Gender .....	67
Discussion .....	67
Conclusion.....	72

References .....	74
<b>Chapter Five: Social Media, Body Satisfaction, and Well-Being Among Adolescents: A Mediation</b>	
<b>Model of Appearance-Ideal Internalization and Comparison .....</b>	<b>86</b>
Highlights .....	87
Abstract.....	88
1. Introduction .....	89
1.1. Social Media and Body Satisfaction .....	89
1.2. Social Media and Well-Being .....	90
1.3. Types of Social Media Use .....	91
1.4. Adolescence .....	92
1.5. Tripartite Influence Model of Body Image.....	92
1.6. The Tripartite Influence Model Applied to Social Media Use .....	93
1.7. Research Aim and Hypotheses.....	95
2. Materials and Methods.....	95
2.1. Participants .....	95
2.2. Measures.....	96
2.3. Procedure.....	100
2.4. Data Analytical Plan .....	101
3. Results .....	102
3.1. Descriptive Statistics and Correlations .....	102
3.2. Model Testing .....	103
4. Discussion .....	104

4.1. Conclusions .....	109
References .....	110
<b>Chapter Six: Direct and Indirect Relationships Between Social Media Use and Body Satisfaction: A Prospective Study Among Adolescent Boys and Girls .....</b>	<b>125</b>
Abstract.....	126
Introduction .....	127
Sociocultural Theories of the Development and Maintenance of Body Image .....	127
Social Media Use Impacts Body Satisfaction .....	128
Temporal Direction of the Relationship Between Social Media Use and Body Satisfaction .....	128
Operationalisation of Social Media Use.....	129
The Role of Gender .....	131
The Present Study .....	132
Method .....	132
Participants .....	132
Measures.....	133
Procedure.....	135
Statistical Analyses.....	136
Results.....	137
Attrition Analyses.....	137
Descriptive Statistics .....	137
Cross-Lagged Paths Between Social Media Use and Body Satisfaction Over Time .....	137
Operationalisation of Social Media Use.....	139

Multigroup Analysis .....	139
Discussion .....	140
Conclusion .....	146
References .....	147
<b>Chapter Seven: The Impact of Completing Body Image Assessments on Adolescents' Body Image and Engagement in Body Change Strategies: Harmful or Harmless? .....</b>	<b>167</b>
Preamble to Chapter Seven .....	167
Abstract.....	171
Introduction .....	172
Method .....	174
Design.....	174
Sampling Procedures and Participants .....	175
Participant Grouping.....	175
Measures.....	176
Analysis Strategy .....	178
Results.....	181
Discussion .....	183
Conclusions .....	188
References .....	189
<b>Chapter Eight: Integrated Discussion .....</b>	<b>197</b>
Chapter Overview .....	197
Brief Review of the Findings .....	197

Theoretical Implications.....	212
Practical Implications .....	215
Limitations.....	219
Directions for Future Research .....	221
Conclusion.....	224
<b>General References.....</b>	<b>226</b>
<b>Appendices .....</b>	<b>259</b>

## List of Tables

### Chapter Four

Table 1. Means, Standard Deviations, and Zero-Order Spearman's Correlations of the Full Sample .....	81
Table 2. Standardized Path Coefficients for the Hypothesized Model .....	82

### Chapter Five

Table 1. Mean, Standard Deviations, Theoretical Score Range, and Zero-Order Spearman's Correlations.....	120
Table 2. Significant Indirect Effects After Bootstrapping From Social Media Intensity/Appearance-Focused Social Media Use to Body Satisfaction/Well-Being .....	121
Supplementary Table S1. All Indirect Effects After Bootstrapping From Social Media Intensity/Appearance-Focused Social Media Use to Body Satisfaction/Well-Being .....	124

### Chapter Six

Table 1. Summary of Means, Standard Deviations, and Correlations Between Social Media Use, Thin- and Muscular-Ideal Internalisation, Social Comparisons, and Body Satisfaction Over Three Timepoints .....	154
Supplementary Table S1. Direct and Indirect Path Coefficients for Stationary Cross Lagged Panel Models of Social Media Use and Body Satisfaction .....	159
Supplementary Table S2. Path Coefficients for Stationary Cross Lagged Panel Models of Social Media Use and Body Satisfaction .....	160
Supplementary Table S3. Multigroup Analyses to Examine Gender Differences in the Direct Effects of the Appearance-Focused Social Media Use Model .....	161
Supplementary Table S4. Multigroup Analyses to Examine Gender Differences in the Indirect Effects of the Appearance-Focused Social Media Use Model .....	163



Supplementary Table S5. Multigroup Analyses to Examine Gender Differences in the Direct Effects of the Photo-Based Social Media Activities Model.....	164
---	-----

Supplementary Table S6. Multigroup Analyses to Examine Gender Differences in the Indirect Effects of the Photo-Based Social Media Activities Model.....	166
---	-----

## **Chapter Seven**

Table 1. Demographic Characteristics and Equivalence of the Sample by Groups (Once- vs Twice-Completers and Positive vs Mixed Valence).....	193
---	-----

Table 2. Summary Statistics and Regression Results for Group (Once- and Twice-Completers) Predicting Body Image and Body Change Strategies .....	194
--	-----

Table 3. Summary Statistics and Regression Results for Group (Positive and Mixed Valence) Predicting Body Dissatisfaction and Body Appreciation .....	195
---	-----

## List of Figures

### Chapter Four

Figure 1. Proposed Model of the Relationships Between Motivations for Social Media Use, Social Media Engagement and Body Satisfaction and Well-Being.....	84
Figure 2. Structural Equation Model Assessing the Mechanisms of Motivations for Social Media Use, Social Media Engagement, and Body Satisfaction and Well-Being .....	85

### Chapter Five

Figure 1. Proposed Model of the Relationships Between Social Media Use, Appearance-Ideal Internalization, Comparisons, Body Satisfaction, and Well-Being.....	122
Figure 2. Structural Equation Model Assessing the Mechanisms of Social Media Use on Body Satisfaction and Well-Being .....	123

### Chapter Six

Figure 1. Stationary Cross-Lagged Panel Model of the Associations Between Appearance-Focused Social Media Use, Thin- and Muscular-Ideal Internalisation, Social Comparisons, and Body Satisfaction.....	155
Figure 2. Stationary Cross-Lagged Panel Model of the Associations Between Photo-Based Social Media Activities, Thin- and Muscular-Ideal Internalisation, Social Comparisons and Body Satisfaction.....	157

### Chapter Seven

Figure 1. Proportion of Change Score for Each Measure Over 6-months .....	196
---	-----

## List of Appendices

Appendix A: La Trobe University Human Ethics Approval .....	259
Appendix B: Catholic Education Melbourne Ethics Approval .....	261
Appendix C: Department of Education and Training Ethics Approval .....	262
Appendix D: School Principal Information Statement .....	264
Appendix E: School Principal Consent Form .....	267
Appendix F: Parent Information Statement .....	268
Appendix G: Parent Consent Form .....	272
Appendix H: Participant Information Statement .....	273
Appendix I: Participant Consent Form .....	276
Appendix J: Researcher Protocol for Data Collection .....	277
Appendix K: Participant Survey.....	279
Appendix L: Sources of Support.....	296
Appendix M: Report of Research Findings for Schools.....	297

## Abstract

Social media is a pervasive and salient environment in the lives of adolescents. Associations between time spent on social media and poor body satisfaction and well-being are evident. However, nuances such as operationalisation of social media use, mediating effects, and directionality of relationships have largely not been addressed, particularly among boys. This thesis applied a sociocultural framework to examine relationships between social media use and body satisfaction and well-being. Cross-sectional and three-wave prospective surveys were administered among adolescent boys and girls ( $N = 1,911$ ) over 1-year. Structural equation modelling and cross-lagged panel modelling were used to test cross-sectional and prospective models, respectively. Study One (published) examined cross-sectional associations between motivations for social media use, social media engagement, and body satisfaction and well-being. Study Two (published) tested the tripartite influence model, modified for a social media context, using cross-sectional data. Study Three (revise and resubmit) examined the prospective direct and indirect relationships between social media use and body satisfaction. Study Four (published) explored the impact of completing body image assessments on body image-related outcomes in adolescents over 6-months. Overall, evidence for direct relationships between social media use and body satisfaction and well-being was limited in both cross-sectional and prospective models. Indirect effects were found through social comparisons and, to a lesser extent, thin-ideal internalisation. Bidirectional mediation over time indicated that higher social media use predicted lower body satisfaction through comparisons, and in the reverse direction. Relationships were consistent across gender, suggesting that aetiological approaches to prevention among adolescent boys and girls would be fruitful. These novel findings extend original assumptions of linearity within sociocultural theory and contribute to theoretical knowledge regarding the temporal direction of relationships. Findings also provide a more nuanced understanding of the role of operationalisation of social media use within research.

### **Statement of Authorship**

This thesis includes work by the author that has been published or accepted for publication as described in the text. Except where reference is made in the text of the thesis, this thesis contains no material published elsewhere or extracted in whole or in part from a thesis accepted for the award of any other degree or diploma. No other person's work has been used without due acknowledgment in the main text of the thesis. This thesis has not been submitted for the award of any degree or diploma in any other tertiary institution.

The contribution of co-authors is described at the beginning of each relevant chapter.

The research undertaken and reported in the thesis were approved by the La Trobe University Human Ethics Committee (ref: HEC18424), Catholic Education Melbourne (ref: 0839), and the Department of Education and Training (ref: 2018\_003882).

This work was supported by a La Trobe University Postgraduate Research Scholarship and a La Trobe University Full Fee Research Scholarship.

Hannah K. Jarman

25 August 2021

## Publication and Dissemination of Research Findings

The research presented in Chapters Four, Five, Six, and Seven of this thesis has either been published or is under revision for publication in peer-reviewed scientific journals. I have also presented a number of the papers at national or international conferences, as outlined below.

### Peer-Reviewed Journal Articles

#### *Chapter Four:*

Jarman, H. K., Marques, M. D., McLean, S. A., Slater, A., & Paxton, S. J. (2021). Motivations for social media use: Associations with social media engagement and body satisfaction and well-being among adolescents. *Journal of Youth and Adolescence*, 1-15. <https://doi.org/10.1007/s10964-020-01390-z>

#### *Chapter Five:*

Jarman, H. K., Marques, M. D., McLean, S. A., Slater, A., & Paxton, S. J. (2021). Social media, body satisfaction and well-being among adolescents: A mediation model of appearance-ideal internalization and comparison. *Body Image*, 36, 139-148. <https://doi.org/10.1016/j.bodyim.2020.11.005>

#### *Chapter Six:*

Jarman, H. K., McLean, S. A., Slater, A., Marques, M. D., & Paxton, S. J. (in press). Direct and indirect relationships between social media use and body satisfaction: A prospective study among adolescent boys and girls. *New Media & Society*.

#### *Chapter Seven:*

Jarman, H. K., Slater, A., Marques, M. D., & Paxton, S. J. (2021). The impact of completing body image assessments on adolescents' body image and engagement in body change strategies: Harmful or harmless? *Body Image*, 39, 131-138. <https://doi.org/10.1016/j.bodyim.2021.07.003>

## Conference Presentations

**Jarman, H.K.**, Marques, M.D., McLean, S.A., Slater, A., & Paxton, S.J. Prospective and indirect relationships between social media use and body satisfaction among adolescents. Paper presented at the *Australia & New Zealand Academy for Eating Disorders Conference*, Online, August 2021.

**Jarman, H.K.**, Paxton, S.J., McLean, S.A., Marques, M.D., & Slater, A., The prospective and indirect relationships between social media use and body satisfaction among adolescents. Paper presented at the *Appearance Matters 9 Conference*, Online, July 2021.

**Jarman, H.K.**, Marques, M.D., McLean, S.A., Slater, A., & Paxton, S.J. Does appearance-ideal internalization and comparison mediate the relationship between social media engagement and appearance and life satisfaction? A mediation model among adolescent boys and girls. Paper presented at the *International Conference of Eating Disorders*, Online, June 2020.

**Jarman, H.K.**, Marques, M.D., McLean, S.A., Slater, A., & Paxton, S.J. Social media engagement and body satisfaction and well-being: A mediation model of appearance-ideal internalization and comparison in adolescent boys and girls. Paper presented at *La Trobe Research Festival*, Melbourne, December 2019.

**Jarman, H.K.**, Marques, M.D., McLean, S.A., Slater, A., & Paxton, S.J. Investigating the impact of social media on adolescents' body image and well-being. Paper presented at *La Trobe Research Festival*, Melbourne, December 2018.

## Awards

I was awarded the prize for 'Best presentation' at the La Trobe Research Festival 2019.

I received the 'Best data blitz presentation' award at the La Trobe Research Festival 2018.

## Acknowledgements

First, I would like to thank my tremendous supervisors, Prof. Susan Paxton, Dr Siân McLean, Dr Mathew Marques, and Assoc/Prof. Amy Slater. Each and every one of you have continuously shown unwavering support and enthusiasm for my work. You have been exceptionally generous with your wisdom and time and helped me believe in my capabilities as a researcher. From the moment I arrived in Melbourne, you all welcomed me with open arms and made me feel right at home which, looking back, was exactly what I needed. I am also thankful for all of the wonderful opportunities that you have provided for me to continue progressing in my career. I cannot wait to see what the future holds! A special thanks needs to go to Amy, Dr Emma Halliwell, and others at the Centre for Appearance Research, who encouraged a bewildered 25 year old me to move to the other side of the world to embark on a new chapter in my life. Amy, without your support and guidance I would never have had this opportunity so for that I am forever thankful. And Emma, your passion for body image research was what sparked my own. You were such a beautiful soul and I will truly miss your warmth and infectious smile, but I feel so fortunate to have known you and am certain that you will be an inspiration to me, now and forever.

Second, thank you to all the schools and students who participated in my research. I am thankful for your time, effort, and contribution. I should also give thanks to La Trobe University for funding my PhD, which would not have been possible otherwise.

And last but by no means least, my magnificent family and friends – with a particular shout out to Mum, Dad, Nanny, Bampy, Auntie Chris, the girls (aka T-Unit), Seren... and the list goes on. You have all shown me unconditional love and support in all aspects of my life for which I am eternally grateful. Without you, I would not be where I am today. I love and miss you every single day but feel so truly blessed to have you all in my life. And Ben, thank you for always believing in me, making me laugh, and being a shoulder to cry on if things get too much (or I see a video of a puppy, or I'm tired, or hungry).



## Chapter One: Thesis Overview

Body image and well-being are important aspects of development, particularly among adolescents. Poor body satisfaction and well-being have been found to prospectively predict an array of adverse outcomes among adolescents, including the onset of eating disorders, suicidal ideation, and reduced academic performance and engagement in life (Halliwell et al., 2014; Morales-Vives & Duenas, 2018; Stice et al., 2011). Consequently, scholars continue to explore potential influences which may contribute to these psychological outcomes. One of the most pervasive and salient environments in the lives of adolescents in the early decades of the 21<sup>st</sup> Century is social media. The expansion of such technologies has fundamentally changed how humans socialise, work, and play. This change is especially pronounced for adolescents. On average, adolescents spend over two hours per day on social media (Anderson & Jiang, 2018). In recent years the proportion of adolescents who report using social media numerous times a day has doubled from 34% in 2012 to 70% in 2016 (Rideout & Robb, 2018).

With the use of social media being ubiquitous among adolescents, concerns have arisen over the impact that social media engagement may have on individuals' psychological state. Specifically, scholars have questioned whether social media use plays a role in rates of poor body satisfaction and well-being among adolescents. Over the past decade, a plethora of research has attempted to answer this question. Although young people are substantial consumers of social media, a comprehensive understanding of the relationships between social media use and body satisfaction and well-being among adolescents is yet to be established. While some evidence suggests a direct association between high social media use and poor body satisfaction and well-being, inconsistent results have sparked debate about the precise nature of these relationships.

Heterogenous findings may be attributed to a number of factors. First, research has traditionally relied on simplistic, one-dimensional measures of social media engagement, such as time spent on Facebook (Erfani & Abedin, 2018). However, scholars are now calling for nuanced

approaches which more accurately capture the complexities of the social media experience. Specifically, preliminary evidence indicates that considering engagement with appearance-focused social media sites and activities may elicit a more coherent understanding of the impact on adolescents' body satisfaction and well-being than general use (e.g., Holland & Tiggemann, 2016). However, there is less evidence for this effect among adolescent boys, which requires exploration. Second, only a limited number of studies have considered potential mechanisms that may account for the relationships between social media use and body satisfaction and well-being. In order to get a better understanding of the relationships between social media use and body satisfaction and well-being, it is imperative that scholars explore the mechanisms which may play a role. Finally, and importantly, studies have primarily used cross-sectional designs to explore these relationships (Schønning et al., 2020). Although these data inform associations, a significant limitation of this approach is that they only provide a snapshot and do not allow scholars to draw conclusions about the temporal sequence of relationships between these constructs. Instead, future research needs to complement cross-sectional research with prospective evaluations of the direct and indirect relationships between social media use and body satisfaction over time.

Research presented in this thesis will address these methodological and theoretical issues so as to extend knowledge of the relationships between social media use and body satisfaction and well-being among adolescents. In Chapters Two and Three, a review of the literature will be provided. Chapter Two will define key constructs, namely body satisfaction and well-being, as well as provide an introduction to relevant theoretical models. Chapter Three will define social media use, introduce relevant theoretical perspectives, and present the empirical research which has explored the relationships between social media use and body satisfaction and well-being. Chapters Two and Three will, therefore, provide a research rationale for this thesis. Study One, presented in Chapter Four, will present a cross-sectional study to examine the associations between motivations for social media use, social media engagement, and body satisfaction and well-being. Study Two, presented in Chapter Five, will cross-sectionally examine the tripartite influence model within a social media

context. Study Three, presented in Chapter Six, will present a prospective examination of the direct and indirect relationships between social media use and body satisfaction. Study Four, presented in Chapter Seven, will use a quasi-experimental design to investigate the impact of body image assessments on body image-related outcomes, including engagement in body change strategies. Finally, Chapter Eight will present an integrated discussion of the findings, highlighting the theoretical and practical implications, and provide recommendations for future research.

## Chapter Two: Body Image, Well-Being, and the Media

### Body Image

Body image is defined as the subjective thoughts and feelings experienced in relation to one's perception of their body and appearance (Grogan, 2016). One aspect of body image is the body satisfaction – body dissatisfaction continuum in which body satisfaction refers to the experience of positive, and body dissatisfaction refers to the experience of negative, evaluations of one's own appearance (Stice & Shaw, 2002). Appearance ideals can contribute to body dissatisfaction, whereby exposure to such ideals may result in a perceived discrepancy between the ideal and one's own appearance resulting in lower body satisfaction. Such appearance ideals have some similarities and some differences across gender. Appearance ideals for females and males often centre around slim bodies with little body fat (Latif & Khan, 2020). However, the focus among females is traditionally a very thin body, whereas males strive for a larger, more muscular body (Grogan, 2016; McCabe & Ricciardelli, 2004).

Although body dissatisfaction has been observed in children as young as six years old (Dohnt & Tiggemann, 2006; Lowes & Tiggemann, 2003), the experience is heightened during adolescence. For example, a 10-year longitudinal study found that male and female adolescents' body dissatisfaction increased between middle and high school (Bucchianeri et al., 2013). Furthermore, an international sample of over 160,000 adolescents from Europe, Canada, and the United Kingdom found that almost half of adolescent girls and over a quarter of adolescent boys reported body dissatisfaction (Al Sabbah et al., 2009). Body image concerns are also prevalent in Australia. Body image has been identified as one of the top four concerns for adolescent boys and girls in Australia for eight consecutive years (Carlisle et al., 2019; Mission Australia, 2012). Specifically, three in ten (31%) respondents reported that they are either extremely or very concerned about body image (Carlisle et al., 2019). Traditionally, research had taken the perspective that body dissatisfaction was an issue primarily affecting girls and women (Grogan, 2016). However, body dissatisfaction is increasingly recognised as occurring frequently in boys and men (Skemp et al., 2019). Rates of

moderate and clinically significant body dissatisfaction have been reported in 37.9% and 6.8% of boys and 20.7% and 19.6% in girls, respectively (McLean et al., 2021). Despite emerging research, a gender imbalance exists within the field, particularly among adolescent boys, whereby considerably less research has been conducted among males than females.

Body dissatisfaction during adolescence is especially concerning as it has been identified as a prospective risk factor for an array of negative psychological and health outcomes, including lower self-esteem and higher depressive symptoms (Bornioli et al., 2020; Paxton et al., 2006), suicidal ideation (Perkins & Brausch, 2019), overweight and obesity (Loth et al., 2015), and unsafe sex practices (Schooler, 2012). A large-scale longitudinal study in the United Kingdom found that body dissatisfaction also predicted risky health behaviours, including smoking, cannabis use, drug use, self-harm, and high-risk drinking among adolescent girls and smoking among adolescent boys (Bornioli et al., 2019). Evidence also suggests that poor body image is prospectively associated with negative social outcomes, specifically a reduction in academic performance and engagement in life activities (Halliwell et al., 2014). Finally and importantly, body dissatisfaction has been identified as the most consistent and strongest risk factor for the onset of eating disorders and disordered eating in adolescents (Stice et al., 2011). This is particularly concerning given that eating disorders have the highest mortality rates of any psychological disorder (Smink et al., 2012). The prevalence and profound implications of body dissatisfaction have led to a number of countries, including Australia and the United Kingdom, identifying body image as a significant public health concern (All Party Parliamentary Group on Body Image, 2012; Bucchianeri & Neumark-Sztainer, 2014; Office for Youth, 2011). Accordingly, it is vital to conduct research that identifies risk factors for the development of poor body image and mechanisms involved in its development and maintenance.

### **Subjective Well-Being**

Well-being refers to one's optimum psychological functioning and experience (Ryan & Deci, 2001) and is acknowledged as a multidimensional phenomenon grounded in two perspectives:

eudaimonic (function) and hedonic (feeling). Eudaimonic perspectives refer to psychological and social well-being, including individual functioning (Ryff & Keyes, 1995; Ryff & Singer, 2000). Hedonic perspectives relate to subjective well-being, including cognitive and affective evaluations of one's life (Myers & Diener, 1995; Ryan & Deci, 2001). Research which focuses on subjective well-being can be advantageous given that it captures something beyond objective or medically derived notions of mental health by providing a perspective which is personalised and frames the individual as an active participant in their experience of well-being (Rees & Main, 2016). In addition, given that well-being and mental health are not synonymous, subjective well-being may be a substantial predictor of poor mental health (Twigg et al., 2020). For the purpose of this thesis, the focus will be on subjective well-being, measured as life satisfaction.

Although poor well-being is somewhat prevalent among adolescents, some variations exist including cohort/time differences, developmental changes, and gender differences. In Australia, a quarter of adolescents report being dissatisfied with their life (Department of Education and Training, 2016). Adolescents currently report poorer well-being outcomes than previous cohorts. Specifically, in 2018, Twenge et al. (2018) conducted a cross-sectional study to examine birth cohort/time period differences in psychological well-being, specifically self-esteem, life satisfaction, and happiness among over 1 million American adolescents. Their findings suggested that although well-being had stayed relatively stable between 1991 and 2011, scores dropped significantly between 2012 and 2016. Longitudinal evidence from recent adolescent cohorts indicates that declines in subjective well-being emerge among adolescents aged 11-12 and continue throughout adolescence (González-Carrasco et al., 2017; Liu et al., 2015). Further, some research suggests that declines are sharper among girls than boys (González-Carrasco et al., 2017; Twigg et al., 2020). However, gender differences in well-being are not always observed among adolescents (Kaye-Tzadok et al., 2017; Ronen et al., 2014). Despite initial declines in well-being during early adolescence, from the age of 17 years, well-being appears to remain relatively stable into adulthood, with the majority of participants starting and remaining in the low subjective well-being profile

(Chen & Page, 2016). This study also found that males were more likely than females to experience well-being profiles that were unstable and more varied.

Subjective well-being has been found to enhance health and longevity (Diener & Chan, 2011), as well as predict later life outcomes including fewer relationship problems and higher health adjustment and self-worth (Kansky et al., 2016). However, adolescence is characterised as a period of dynamic physical, cognitive, emotional, and social development which also brings increased vulnerability for poor socio-emotional health and well-being (Patton et al., 2016). This is particularly concerning given that lower subjective well-being is associated with declines in self-esteem (Orth et al., 2015) and the onset of depression and anxiety (McLaughlin & King, 2015). Subjective well-being has also been found to predict suicidal ideation among adolescent boys and girls (Morales-Vives & Duenas, 2018), which is concerning given that suicide is the biggest killer of young Australians (Australian Bureau of Statistics, 2019). Further, mental health issues affect 10-20% of children and adolescents globally (Kieling et al., 2011). Consequently, it is imperative that researchers understand factors which may enhance or diminish adolescent well-being, as such information can guide interventions which help maximise fulfilment of potential during and beyond adolescence (Diener et al., 2018).

### **Sociocultural Theory of Body Image**

Given adolescents' vulnerability for poor body satisfaction and well-being and its contribution to serious negative psychological and physical health outcomes, it is imperative that empirical research explores potential factors which may play a role in their development or contribute to their change. In light of the need to understand influences on the development of body satisfaction and well-being, theoretical risk factor models have been proposed. Sociocultural theoretical perspectives focus on the complex role that society and culture play within individual development, whereby individuals are socialised according to the cultural norms within their society (Vygotsky, 1978). One of the most established sociocultural theories for the development of body

image, the focus of the present section, is the tripartite influence model (Keery et al., 2004; Thompson et al., 1999). This model postulates that appearance ideals are presented and reinforced via three sociocultural channels: appearance-focused media, familial, and peer environments. These environments can influence the development and maintenance of body dissatisfaction and psychological functioning through two mediating mechanisms: internalisation of appearance ideals and appearance comparisons (Thompson et al., 1999). Internalisation of appearance ideals refers to the extent to which an individual incorporates socially defined appearance ideals as their own personal standard and seeks to achieve those standards. Appearance comparisons refers to the tendency to compare one's physical self with that of others. Theoretically, greater exposure to appearance-focused sociocultural influences will encourage individuals to adopt appearance ideals and engage in appearance comparisons. Given the unrealistic and unattainable nature of these ideals, the individual's own appearance will likely not match up, resulting in negative self-evaluation of appearance and body dissatisfaction (Fardouly et al., 2017). These mediating pathways will be discussed further in the '*Mediators of the Relationship between Social Media and Body Satisfaction and Well-Being*' section below.

Sociocultural theory, specifically the tripartite influence model, has received empirical support among populations with a range of ages, genders, ethnicities, and cultures, including Hungarian adolescents (Papp et al., 2013), young women (Rodgers et al., 2011), older women (Carrard et al., 2020), sexual minority women (Hazzard et al., 2019), and men (Girard et al., 2018; Lee & Lee, 2020). Consequently, the tripartite influence model is a useful framework for understanding body image. Although the influence of parents/family and peers is also acknowledged as shaping adolescents' body image (e.g., Papp et al., 2013), the present thesis will focus on the role of media, more specifically the relatively recent phenomenon that is social media.



### **Influences of Traditional Media on Body Satisfaction and Well-Being**

Adolescents spend more time engaging with the media than any other activity, except for sleep, spending an average of over seven hours per day on media activities (Rideout et al., 2010). This means adolescents spend significantly more time engaging with the media than they spend in school with peers or with parents/family (Rideout et al., 2010). Consequently, traditional media (e.g., television, magazines, advertisements, music, films) has largely been considered one of the most persistent and persuasive sociocultural influences (Dobson & Beltman, 2019). Mass media present, promote, and reinforce narrowly defined sociocultural standards for beauty and appearance. Beauty and thinness messages have not only been found present in adult media (e.g., Brown & Knight, 2015; Frith et al., 2005; Jankowski et al., 2014), but are also frequent in children's media (Harriger et al., 2018; Herbozo et al., 2004). Given the appearance potency and idealised presentations in the media, it is likely that repeated exposure will result in detrimental impacts to body image, as individual's adopt these standards as their own but cannot achieve them due to their unrealistic nature (Benowitz-Fredericks et al., 2012).

The influence of traditional media is well documented within the body image literature. Meta-analyses provide substantial evidence that exposure to thin-ideal media images are related to poor body satisfaction, with small to moderate effects (Grabe et al., 2008), and that experimental research demonstrates stronger effects among girls younger than 19 compared with older cohorts (Groesz et al., 2002). For example, women who are exposed to magazines advertisements which present the thin-ideal report significantly lower body satisfaction than those exposed to neutral images (Halliwell & Dittmar, 2004). Although research among males is less established, a review of 15 experimental studies also found that exposure to images of idealised male bodies has a small but negative impact on body dissatisfaction among men (Blond, 2008). More recently, media exposure has been considered a risk factor for the development of negative body image and disordered eating in adolescent boys and girls (Levine & Murnen, 2009; López-Guimerà et al., 2010; Slater & Tiggemann, 2014).

Media exposure also appears to have a negative impact on adolescents' well-being.

Increased media exposure has been linked to lower well-being, specifically life satisfaction and happiness (Robinson & Martin, 2008). Such effects have also been found in children, whereby media exposure (e.g., video, music) is associated with greater psychological difficulties among boys and girls (Page et al., 2010) and poorer social well-being among girls (Pea et al., 2012). It is possible that time spent engaging with media can displace other important activities which may enhance well-being. For example, if a child has a television in their bedroom, they may have shortened sleep (Hale & Guan, 2015) and participate in less physical activity (Barr-Anderson et al., 2008), the latter of which has been found to increase psychological distress (Hamer et al., 2009). Further, it is also possible that exposure to idealised lives and individuals in the media may result in negative self-evaluations between the idealised life and oneself. In line with this, research among participants aged 8 to 18 years found that spending more time with media was associated with less contentment with a range of aspects of life, including happiness and relationships with friends and parents (Rideout et al., 2010). Accumulating evidence suggests that media exposure may also contribute to poor well-being through a range of unhealthy behaviours, including aggression, disordered eating, poor nutrition, early sexual intercourse, and substance abuse (Brown & Bobkowski, 2011; Strasburger et al., 2010). Although the relationships between traditional media and body satisfaction and well-being appear relatively well-established, more recently, the nature of media has changed as the world has turned to newer forms of media, specifically social media.

### **Chapter Three: Social Media, Motivations for Use, and Relationships with Body Satisfaction and Well-Being**

This chapter provides an introduction to social media and its use among adolescents and examines the potential role of social media, and motivations for its use, in the development and maintenance of body satisfaction and well-being.

#### **What is Social Media?**

Social media refers to online platforms which allow the user to view, create, and share information with others through virtual networks (Carr & Hayes, 2015). Smartphones are now common means through which social media is accessed - almost anywhere, at any time. Such technologies remove physical, geographical, and even time barriers to interaction and connection which once existed. Representative samples of over one million US adolescents have found that use of digital media (e.g., smartphones, Internet, gaming) has now surpassed that of traditional media (Twenge et al., 2019), demonstrating accessibility and reach of these media.

#### ***Social Media Use***

Social media use is now widespread, with engagement being particularly high among adolescents. In 2020, research found that by 14 years old, 85% of American adolescents had a social media account (Odgers & Robb, 2020). In Europe, an international survey among 10,930 adolescents found that almost half reported spending over 2 hours per day on social media (Tsitsika et al., 2014). More recently, a population study found that almost half of British adolescent girls (43.1%) and almost a quarter of adolescent boys (21.9%) used social media for over three hours per day (Kelly et al., 2018). In line with this, social media has been described as a “pervasive and salient developmental context in the daily lives of early adolescents” (Vannucci & Ohannessian, 2019, p. 1483).

In Australia, the largest users of social media are aged 12-24 years (94%), followed by 25-54 years (91%), and 55 years and older (61%; Statista, 2018). Consistent with American and European

literature, a study among Australian adolescents aged 12 to 17 years found that the average amount of time spent on social media per day was 214.6 minutes, or approximately three and a half hours (Mingoia, Hutchinson, Gleaves, et al., 2017). Similarly, a report by the Australian Psychological Society found that adolescents spent on average 3.3 hours per day on social media, reportedly logging on as much as 50 times per day (Australian Psychological Society, 2017). Given that almost half of adolescents would describe their internet use as near-constant (45%; Anderson & Jiang, 2018), it appears that social media constitutes a large proportion of adolescents' daily lives.

### ***Social Media Platforms***

Social media consists of a wide range of social media platforms, including variations in type of content, temporality, anonymity, and synchronicity (Bell, 2019). Facebook was one of the first social networking sites, launching in 2004. Facebook is a platform that allows users to create an online profile where they can post status updates, photos, videos, and links, as well as view and interact with other users' content. In 2019, Facebook surpassed one billion monthly active users (Statista, 2019). Traditionally, the social media landscape has been dominated by Facebook, reflected by its focus and measurement in the majority of studies within social media research (e.g., Bij de Vaate et al., 2020; Erfani & Abedin, 2018; Huang, 2017; Shiau et al., 2018; Verduyn et al., 2017). However, despite Facebook's popularity, the social media environment is continuously evolving. In recent years Facebook use has declined among younger populations, reportedly due to the large proportion of adults that use Facebook (Anderson & Jiang, 2018). This finding is consistent with focus groups among adolescent girls who reported that Facebook was for older people (Burnette et al., 2017). From 2012 to 2020, Facebook use among adolescents dropped from 42% to 2% (Statista, 2021b), indicating it is no longer one of the most pertinent platforms for young people.

More recent trends have seen the evolution of a variety of social media platforms among young people. Given that different sites offer a wide variety of features, adolescents report using multiple platforms simultaneously. Barry et al. (2017) found that adolescents typically used three

different social media platforms, with some individuals using up to eight separate platforms per day. The three most popular social media platforms among adolescents are currently YouTube, Instagram, and Snapchat, respectively (Anderson & Jiang, 2018). These sites principally focus on visual content, including photos and videos.

Instagram is a photo-sharing platform which was introduced in 2010. Users can 'follow' other individuals and 'like' or comment on content, as well as post their own pictures or videos. Snapchat is a photo-sharing app in which users send images and short videos to their friend list. Users select the time range that their friends can view the photo or video before it is no longer available. Instagram and Snapchat have been found to be the primary means of online peer communication for adolescents through posting and sharing photos and videos and commenting on others' posts (Lenhart et al., 2015). YouTube is a video-based platform which allows users to watch and interact with videos posted by others, as well as upload their own videos. Although YouTube is an extremely popular platform, some argue that it is more closely aligned with microblogging sites or content communities (e.g., Twitter and Flickr) than typical social media platforms which facilitate connection with friends and peers (Erfani & Abedin, 2018). Specifically, YouTube is primarily a content-orientated site, whereas Instagram and Snapchat are more associated with user-orientated communities. Adolescents mostly use YouTube to watch television series, movies, and music videos, as well as to search for other interests (Throuvala et al., 2019). Since YouTube is more content-driven and typically presents microblogging or traditional media content (e.g., videos), it will not be discussed further in this thesis. Instagram and Snapchat will be the central focus of the research reported herein.

### **How Social Media Might Influence Body Satisfaction and Well-Being**

Sharp declines in well-being among adolescents from 2012 led scholars to attribute this to the simultaneous introduction of handheld online technology (Twenge et al., 2018). Given the centrality of social media in the lives of most adolescents, it is possible that such extensive and

prolonged exposure will contribute to self-evaluations, including body satisfaction and well-being (e.g., Kross et al., 2013). As social media is a novel medium which is distinct from traditional forms of media, exploration is required to determine its role in adolescent outcomes. A number of unique affordances contribute to making social media one of the most pervasive and pertinent of all sociocultural influences on body satisfaction and well-being: including the ability to present and curate oneself online and the interactive nature of such platforms, which are discussed below.

Social media allows the creation and distribution of user-generated content (Kaplan & Haenlein, 2010), including the opportunity for self-presentation. For example, social media platforms typically encourage the user to select an image as their profile picture which can be viewed by others. Social media is asynchronous whereby it provides ample time to curate and edit content before posting it, facilitating control of self-presentation and providing opportunities to strategically construct the self (Vogel et al., 2014). Human beings often experience social pressure to present themselves in a way which intentionally regulates others' impressions of them, also known as impression management (Leary, 1995).

Strategies such as presenting idealised lives or appearances are often used by individuals to frame themselves positively and achieve social objectives (Fox & Vendemia, 2016). Self-presentation has been found to play an important role in adolescents' social media use, with many reporting pressure to appear 'perfect' on social media and using impression management strategies, such as conforming to beauty standards and peer convention, to gain acceptance from peers (Mascheroni et al., 2015). In line with this, adolescents report using this information to guide their self-presentation online (Bell, 2019; Chua & Chang, 2016) and focus groups conducted with adolescent boys and girls revealed the desire to portray oneself as popular, attractive, and interesting (Yau & Reich, 2018). Therefore, the social media environment provides an important, unique avenue for transmitting a range of ideals, including physical appearance and character and lifestyle ideals. Although representations often contain a carefully constructed mix of an idealised self, alongside authentic

elements of offline identity (Manago et al., 2008; Zhao et al., 2008), empirical research suggests that adolescents tend to depict a less accurate self-image on social media in favour of a more idealised self-presentation (Gil-Or et al., 2015; Throuvala et al., 2019; Wright et al., 2018; Zhao et al., 2008).

Exposure to this type of content may be problematic for adolescents' body satisfaction and well-being as it presents and reinforces idealised lives and appearances, which are out of reach for most. Adolescents may engage in comparisons and, given the idealised nature of social media content, this will likely result in negative self-evaluations as the targets with whom adolescents compare with on social media often represent idealised presentations. In line with this, research has found that exposure to idealised content can induce poor appearance satisfaction among adolescents (Kleemans et al., 2018; Wang, Fardouly, et al., 2019) and poor psychological well-being among women (Sherlock & Wagstaff, 2018).

Alongside the affordance for self-presentation, social media is also primarily an interactive environment, which is in contrast to traditional forms of media where the user is largely passive. Social media offers opportunities for interaction whereby the user can provide and receive feedback from others including via 'likes' or comments (Perloff, 2014), which is especially relevant during adolescence when young people seek social acceptance and approval from their peers. Adolescent girls report using social media as a way to obtain feedback from others (Yau & Reich, 2018). Although such motivations were not reported among adolescent boys, it is possible that they may not feel comfortable disclosing such information as it does not align with masculine ideals. Given the saliency of peer acceptance during adolescence, feedback on social media will likely impact body satisfaction and well-being, though the impact of such feedback is likely to vary depending on its nature and interpretation. When interviewed, adolescent girls report that they used feedback, specifically the number of 'likes' they received on their social media posts, as direct and objective feedback regarding their appearance and self-worth (Chua & Chang, 2016). Research suggests that positive feedback in the form of 'likes' can have a positive impact on facial satisfaction (Coulthard & Ogden,

2018), whereas seeking feedback but receiving negative feedback is associated with disordered eating (Hummel & Smith, 2015). Similarly, within the well-being literature, a cross-sectional study among adolescents found that the tone of feedback on one's profile influenced social self-esteem and well-being, whereby positive feedback enhanced outcomes and negative feedback diminished outcomes (Valkenburg et al., 2006). Online interaction appears to serve as a function for adolescents to seek feedback and validation, which then impacts well-being depending on the valence of the feedback (Li et al., 2018; Perloff, 2014). Given the importance of social media affordances, it is imperative that scholars explore adolescents' motivations for use and specific types of engagement and their relationships with body satisfaction and well-being. Consequently, this is one aim of the present thesis.

## **Motivations for Social Media Use Among Adolescents**

### ***Uses and Gratification Theory***

The range of social media platforms available and the variety of features and affordances within these provide the social media user with opportunities for vastly diverse experiences. In order to begin to unpick the complexities of social media use, one must first consider and understand the motivations behind its use. One of the most established theories for understanding media use is the uses and gratifications theory (Katz et al., 1973; Whiting & Williams, 2013). Within the present thesis, this theory will be extended to the context of social media and used to guide research into motivations for use of social media. Uses and gratifications theory postulates that individuals are purposive in their media consumption whereby they seek out specific media in order to fulfil their psychological needs. Given the interactive nature of the social media environment, this emphasis on the active and gratifying essence of media use may be particularly relevant and useful. Given that the social media user plays an active role in the content they are exposed to and actively engage with online, it is likely that motivations will drive and influence behaviour. Users are afforded the opportunity to carefully select and customise their social media experience depending on their preferences, providing them with control over the content they are exposed to. Within the context



of social media, an individual may be motivated to satisfy a number of gratifications, including seeking reassurance and validation (Perloff, 2014).

According to uses and gratification theory, adolescents play an active role in their social media consumption. Therefore understanding their motivations for social media use is important, including consideration of the developmental context of this population (Moreno & Uhls, 2019). A number of developmental shifts occur during adolescence, including increasing peer influence, identity exploration, self-disclosure, and information seeking (Erikson, 1968; Neinstein & Anderson, 2002). All of these components are present in adolescents' interaction on and engagement with social media (Yau & Reich, 2018). Specifically, it has been proposed that adolescents and emerging adults use social media to gratify developmental needs around autonomy, identity, and intimacy (Coyne et al., 2013), as well as to develop a sense of belonging and a means of self-presentation (Moreno & Uhls, 2019; Nadkarni & Hofmann, 2012).

### ***The Role of Peers in Motivations for Social Media Use***

As adolescents move away from their family as the primary source of support, the role of peers and peer acceptance becomes central (Gerwin et al., 2018). Social media platforms which maintain, strengthen, and expand friendships will, therefore, likely appeal to adolescents. A recent review found that adolescents use social media to support core qualities of friendship (e.g., self-disclosure, validation) which are consistent with offline interactions (Yau & Reich, 2017). Yet, the interactive nature of social media is distinct to interactions traditionally made through face-to-face encounters (Nesi et al., 2018). Social media allows for public feedback from peers which may amplify offline risks or create new ones. For example, depending on whether the feedback is positive or negative, this may work to increase or decrease self-concept, respectively. Further, the constant accessibility of smartphones, and thereby social media, means that adolescents find it difficult to disconnect from social media. From a uses and gratification theory perspective, social media plays a

unique and dynamic role in the lives of adolescents, providing a significant socialisation tool which enables psychosocial development (Michikyan & Suarez-Orozco, 2016; Shapiro & Margolin, 2014).

Focus groups conducted with adolescents have identified motivational factors such as the need to control relationships, content, presentation, and impressions (Throuvala et al., 2019). Recent trends have seen adolescents gravitate towards sites such as Instagram and Snapchat. According to the uses and gratification theory, these sites may fulfil adolescents' need for self-expression, social connection, or independence and privacy from adults (Gerwin et al., 2018; Vannucci & Ohannessian, 2019). In addition, social media provides new opportunities for regular, instant, and relevant displays of friendship, support, and feedback seeking. Theoretically, high social, personal, and emotional affordances, alongside greater opportunities for privacy and autonomy as provided by Instagram and Snapchat, will likely facilitate social connections and identity exploration and expression (Shapiro & Margolin, 2014). Some scholars have suggested that these platforms focus more explicitly on self-presentation and building social capital than the development and maintenance of meaningful relationships (Sheldon & Bryant, 2016). Further, such affordances may also intensify concerns around peer acceptance and increase tendencies to engage comparisons with others, resulting in negative self-evaluations.

Given motivations for social media use will likely drive engagement (Smock et al., 2011), with the potential to also impact body satisfaction and well-being, it is important that these are considered. With the above developmental considerations in mind, qualitative interviews have identified a number of motivations for using social media among adolescents, which will now be briefly discussed (see Throuvala et al., 2019). First, social media use is likely motivated by the need for peer attachment and connection. The instant and constant access to peer interaction is a key driver of social media use in adolescents, although some adolescents also described the continuous availability as frustrating and distracting. Second, adolescents may also use social media as a way to share information. Sharing and self-disclosure practices are prevalent in communication, which also

serves to identify mutual interests and hobbies. Third, given the prevalence of social media use, some adolescents describe this behaviour as habitual. It can be a compulsive and automatic response to relieve boredom, pass time, and to keep up to date with peers. This is also facilitated by the accessibility of social media which makes it difficult for some to break the addictive, vicious cycle. Fourth, social media provides some individuals with an escape from everyday stressors. Among adolescents, this may include as a distraction from social or academic pressure, or to relieve distress or negative emotions. Fifth, social media allows the user to exert control over their self-presentation (e.g., using filters, carefully curating social media profiles). Adolescents may then use this curation as a way to enhance social capital. Finally, social media can provide adolescents with peer feedback. Given the developmental goals of identity formation and need for popularity, adolescents tend to use functions of social media, including 'likes' and comments, to indicate how acceptable and liked they are among their peers. Therefore, seeking feedback and validation is used to inform current and future social media use engagement and practices to align with peer norms. Understanding adolescents' motivations for social media use may inform how they engage and the impact this may have on their body satisfaction and well-being.

### ***Predictors of Social Media Use***

Motivations for social media use may play an integral role in the way individuals engage with social media. One of the key principles of uses and gratification theory is that motivations for media use will predict media engagement in relation to the type of use and time spent using it (Dhir & Tsai, 2017). In line with this, research suggests that motivations for using social media predict social media use and engagement among adults (Smock et al., 2011). Specifically, social media motivations have been found to predict self-presentation behaviours such as selfie (self-photo) posting behaviours (Kim & Chock, 2017) and interactive activities such as 'liking' and commenting (Alhabash & McAlister, 2015). Of the limited research among adolescents, findings suggest that motivations for social media use are associated with social media engagement, which may in turn relate to body satisfaction and well-being (Frison & Eggermont, 2016b; Lai et al., 2018). Despite these preliminary

findings, further research is necessary to understand the interplay between underlying motivations for social media use, social media engagement, and body satisfaction and well-being among adolescents. A more detailed literature review and examination of the cross-sectional relationships between motivations for social media use, social media engagement, and body satisfaction and well-being is discussed in Chapter Four: *'Motivations for social media use: Associations with social media engagement and body satisfaction and well-being among adolescents'*.

### **The Relationship Between Social Media Use and Body Satisfaction and Well-Being**

Today's adolescents are unique in that they are the only generation to have grown up in a fully digital age with social media, with its introduction in the early 21<sup>st</sup> century (Boyd & Ellison, 2007). The ubiquitous prevalence of social media use means that it is now considered a crucial part of the lives and development of young people in Australia and globally (Anderson & Jiang, 2018; Australian Psychological Society, 2017; Tsitsika et al., 2014). Social media will likely play an integral role in framing the way adolescents see themselves. Simultaneously, adolescence is a critical period where young people may be more vulnerable to the influence of external sources (Blakemore & Mills, 2014), including social media (Rodgers & Melioli, 2016). At no other stage of development are individuals more susceptible to the influence of peers than in early adolescence (Steinberg & Silverberg, 1986). Consequently, it seems inevitable that social media use will impact adolescents' psychological state, which has sparked academic interest in the past 15 years. These factors contribute to the increased urgency to understand the detrimental aspects of social media use among adolescents. However, it is also important to note that some features of social media use have been found to be beneficial. These will be discussed in subsequent sections. Despite social media usage at an all-time high (Statista, 2021a), the impact of engagement on adolescent well-being is not fully understood, so further research in this area is relevant and necessary.

### ***Social Media Use Within the Context of Theoretical Models***

A small number of theories which account for the impact of social media use on body satisfaction and well-being, respectively, will now be introduced and discussed, namely the tripartite influence model, the displacement hypothesis, and the stimulation hypothesis. The empirical support for these frameworks will then be presented in the following section.

As previously described, the tripartite influence model has been identified as a valuable theoretical framework within which to explore the development and maintenance of body image (Keery et al., 2004; Thompson et al., 1999). Although originally developed to explain body image from the perspective of sociocultural influences, namely family, peers, and the media, this framework can also be applied for the role of social media use. The tripartite influence model stipulates that frequent exposure to (social) media will likely influence societal norms and standards that are of relevance for adolescents. Given that social media has been described as primarily presenting appearance-focused and idealised images (Holland & Tiggemann, 2016), it appears inevitable that this type of content will validate and further reinforce sociocultural appearance ideals among adolescents. Further, greater exposure to social media will likely result in increased tendencies to compare oneself with others online. According to social comparison theory (Festinger, 2016), humans are biologically driven to compare themselves to others as a way to get a sense of their social standing. Comparisons on social media are typically upward, meaning the individual compares against others they consider having better attributes than themselves, such as more attractive, happy, or successful (O'Brien et al., 2009). Given that social media provides the user with the ability to carefully construct their self-presentation, often resulting in curated and idealised self-presentations, it is perhaps unsurprising that engaging in upward social and appearance comparisons on social media result in negative self-evaluations both in terms of one's own appearance and life circumstances (Fardouly et al., 2017). A more detailed discussion of the mediating mechanisms within the tripartite influence model, including empirical support, will be presented in '*Mechanisms Underpinning Relationships Between Social Media Use and Body*

*Satisfaction and Well-Being'* below. The present research tests the tripartite influence model within a social media context both cross-sectionally and prospectively in a sample of adolescent boys and girls.

Another theory which is of relevance to explain the impact of social media on well-being is displacement hypothesis (Kraut et al., 1998). This postulates that spending large amounts of time on social media may displace other important activities which promote well-being, including sleep (Scott & Woods, 2018), physical activity (Viner et al., 2019), or face-to-face interaction (Verduyn et al., 2021). For example, interacting online is arguably a more shallow encounter than physically spending time with another person, reducing the quality of that interaction (Bayer et al., 2016). In line with this, social media is especially likely to have negative impacts on well-being when the user is engaging in activities which are not focused on socialising or direct interaction (Teppers et al., 2014).

Although the tripartite influence model and displacement hypothesis both suggest that increased social media use will have a detrimental impact on body image and well-being, other theories suggest that social media use may have a positive impact. Stimulation hypothesis suggests that social media can enhance the quality of relationships through the accessibility, availability, and possibility of interactions, allowing for relationship maintenance with existing connections (Valkenburg & Peter, 2007). Further, users often report that self-disclosure is easier online, which can facilitate relationship closeness (Luo & Hancock, 2019). With these unique opportunities for building social capital and connection may come improvements in well-being.

Given the theoretical perspectives presented above, it is possible that different types of social media engagement may have differential impacts on body satisfaction and well-being (e.g., Frison & Eggermont, 2016a; Rousseau et al., 2017). For example, in line with the tripartite influence model, it is likely that passive social media use (i.e., viewing others' content) may result in poor outcomes following comparisons to idealised self-presentations of others. Alternatively, in line with

stimulation hypothesis, active use (i.e., interacting with others) may facilitate social support, resulting in positive outcomes. Consequently, it is important that future research examine and test a range of social media uses to start to understand these nuanced relationships. The present research was informed by these considerations, ensuring that a range of specific types of engagement were examined, including active and passive social media use. These nuances will be explored in more detail in the subsequent sections.

### ***Does Social Media Impact Body Satisfaction and Well-Being?***

Having introduced the theoretical framework and perspectives of the relationships between social media use and body satisfaction and well-being, the empirical research related to these theories within the context of social media will be presented. Given that type of social media use appears to have differential impacts on body satisfaction and well-being, the below sections have been separated by: time spent on social media, types of social media, and specific activities and content.

**Time Spent on Social Media as a Predictor of Body Satisfaction.** Over the past decade, empirical research has begun to explore the relationship between time spent on social media and body satisfaction. Cross-sectional research supports a negative association between time spent on social media and body satisfaction among Australian, Italian, and Singaporean adolescent girls (Ho et al., 2016; Tiggemann & Slater, 2013) and boys (Marengo et al., 2018). In line with this, a systematic review examining the impact of social media on body image and disordered eating identified 20 articles which concluded that social media use is associated with lower body satisfaction and greater disordered eating among women and girls (Holland & Tiggemann, 2016). More recently, Saiphoo and Vahedi (2019) conducted a meta-analysis and found a small, negative, and significant cross-sectional relationship between social media use and body image among cross-sectional studies, such that higher social media use was associated with poorer body satisfaction. Further, age, country, type of social media use, and body image dimension moderated the effect. Specifically, a stronger effect size

was found in younger samples, Australian studies, with appearance-focused social media use, and cognitive dimensions of body image. Contrary to the authors' hypothesis, gender did not moderate the findings, suggesting that the relationship between social media use and body satisfaction is not different across males and females. Although these correlational studies support the relationship between social media use and body image, they do not provide evidence of temporal sequence.

Only a handful of studies have examined the impact of social media on body satisfaction over time. Ferguson et al. (2014) conducted a prospective study among American adolescent girls aged 10-17 years. Their findings revealed no direct relationship between time spent on social media and body dissatisfaction over 6-months, although an indirect relationship was found through the peer environment, namely peer competition. Specifically, higher social media use was associated with higher peer competition which, in turn, was associated with higher body dissatisfaction over time. However, it is important to note that the authors used a measure of social media use that included activities such as blogging and online gaming. Given that these uses are more focused on social interaction and entertainment, rather than appearance, this might explain the lack of direct effect found on body dissatisfaction. In another study, two-wave panel data of 604 adolescent boys and girls found that time spent on a Dutch social media platform, Hyves.nl, was significantly related to body dissatisfaction up to 18 months later, such that higher use predicted lower body satisfaction (de Vries et al., 2016). Importantly, Tiggemann and Slater (2017) found that higher number of Facebook friends, but not time spent on Facebook, predicted higher body image concerns, specifically drive for thinness and internalisation, in Australian adolescent girls two years later. However, the relationship appeared bidirectional whereby internalisation of appearance ideals and body surveillance also predicted an increase in Facebook friends. These studies highlight two things: first, the importance of operationalisation of social media and second, the necessity of prospective research to ascertain temporal sequence and causality of the relationship. The present thesis will address these research gaps.



**Time Spent on Social Media as a Predictor of Well-Being.** Although the relationship between time spent on social media use and body satisfaction appears relatively straightforward, the association between social media and well-being is more complex whereby support for associations in the direction of both the displacement and stimulation hypothesis have been found. In line with the stimulation hypothesis, a small amount of cross-sectional research supports a positive association between social media use and well-being. Among college students, a positive association emerged between Facebook intensity and life satisfaction, social trust, civic engagement, and political participation (Valenzuela et al., 2009). A more recent study among Thai adolescents found that social media use was positively associated with subjective well-being (Lai et al., 2018).

In contrast, some evidence also supports the reverse direction, in line with displacement hypothesis, whereby time spent on social media is associated with poorer well-being among university students and community-based samples (Chou & Edge, 2012; Kalpidou et al., 2011; Stieger, 2019). Heavy users of social media (5+ hours a day) have been found to be 83% more likely to report poor well-being, compared to light users (<1 hour per day; Twenge & Campbell, 2019). One study which examined the association between a broad range of digital technologies (including social media use) and well-being among adolescents across three large datasets ( $N = 355,358$ ) concluded that, although the associations are negative, the size of the effect (0.4%) is so small it can be considered inconsequential (Orben & Przybylski, 2019). Cross-sectional, but not prospective, relationships have been found in some social media research whereby a small, inverse association is demonstrated between social media use and well-being among adolescents (Ferguson et al., 2014). Finally, Facebook use, but not Instagram use, was found to be inversely associated with mental well-being among adolescents (de Lenne et al., 2018).

Considering these inconsistencies, scholars have called for higher quality designs, including longitudinal and experimental, to ascertain the relationship. Research has found that more time spent on social media predicted small decreases in well-being over two to seven years (Keresteš &

Štulhofer, 2020; Orben et al., 2019). Both studies identified the associations to be gender-specific, but the nature of the gender-specific findings differed between studies. Keresteš and Štulhofer (2020) found that time spent on social media predicted increases in well-being in girls but decreases in boys. Whereas Orben et al. (2019) found that for girls, time spent on social media predicted slight decreases in life satisfaction across all domains (e.g., family, friends, school), except satisfaction with appearance, while for boys, social media predicted weak reductions only in satisfaction with life and overall satisfaction. Finally, a 9-year longitudinal study found that frequency of social media use did not predict within- and between-person changes in well-being (Schemer et al., 2021).

Experience sampling methods, otherwise known as ecological momentary assessments, have also been used to assess the effect of social media use on well-being and other outcomes. These methodologies increase ecological validity and have the potential to reduce recall bias of retrospective reporting of social media use (Trull & Ebner-Priemer, 2009). Experience sampling has been used among adult populations to examine the temporal relations between social media use and well-being, whereby participants were asked to complete an online survey five to six times per day over a fortnight (Faelens et al., 2021; Kross et al., 2013). Results indicated that Facebook and Instagram use predicted poor well-being, specifically negative affect and life satisfaction, respectively. These findings were consistent across different methods of social media use data collection, including self-reported data (Kross et al., 2013) and logged data (Faelens et al., 2021). Further, this research also demonstrated what appears to be a cumulative effect, whereby higher Facebook use over the two-week study predicted larger declines in life satisfaction at study completion (Kross et al., 2013).

A number of experimental studies have been used to explore causality in the relationship between social media use and well-being. Initial research indicated that brief experimental exposure (10-20 minutes) to Facebook had detrimental effects on mood among adults, compared to controls exposed to the internet (without using social media; Fardouly et al., 2015; Sagioglou & Greitemeyer,

2014). More recently, Instagram, but not Facebook, use was found to decrease mood among undergraduate women (Engeln et al., 2020). Some experimental research has also examined whether taking a break from social media can result in improved well-being among adults. Although one day of social media abstinence did not appear to improve well-being (social relatedness, mood, and day satisfaction; Przybylski et al., 2021), refraining from using Facebook over a period of one week did increase life satisfaction (Tromholt, 2016), relative to controls in both studies who used Facebook as usual. While it is possible that these differential effects may be a result of the different indicators of well-being used, it is also possible that the period of time is important. Specifically, it may be that social media abstinence must be maintained for a longer than one day to exhibit improvements on well-being.

In line with the mixed findings reviewed above, recent systematic reviews have concluded that social media use can both enhance and undermine well-being (Best et al., 2014; Erfani & Abedin, 2018; Webster et al., 2020), consistent with both displacement and stimulation hypothesis. Beneficial aspects include increased self-esteem, social capital, and perceived social support, while harmful aspects include increased social isolation, cyberbullying, and depression. A meta-analysis of the relationship between time spent on social media and psychological well-being identified 67 independent samples involving 19,652 participants which indicated that the association between time spent on social media and well-being was weak ( $r = -.07$ ), with direction of effects dependent on the indicator of well-being (Huang, 2017). Specifically, associations were very weakly and weakly related to positive (life satisfaction  $r = -.03$ ; self-esteem  $r = -.04$ ) and negative (loneliness  $r = -.08$ ; depression  $r = -.11$ ) indicators of well-being, respectively. Age and gender did not moderate the findings.

Despite a reasonably large body of research having been conducted to date, the relationship between social media and well-being remains inconsistent and complex. Specifically, the relationship between time spent on social media and well-being appears to vary by type of data (e.g., cross-

sectional vs prospective), indicator of well-being examined, and, in a small number of studies, by gender. Therefore, the cross-sectional and prospective relationships between social media and body satisfaction and well-being will be examined throughout this thesis to attempt to add clarity to the nature of these relationships.

**Issues with Measurement of Social Media Use.** Some scholars have attributed the inconsistencies within the literature to the operationalisation and measurement of social media. Relying only on traditional assessments of social media use are problematic for two reasons. First, the literature has primarily focused on time spent or duration of social media use (Saiphoo & Vahedi, 2019; Schønning et al., 2020). This approach is limited as it does not provide any indication as to types of social media engagement. Considering the wide array of features available across social media platforms, it is likely that an individuals' social media use varies considerably even when they use social media for similar durations. This likely variability, coupled with inconsistent findings, have led scholars to propose that the impact of social media use may depend on the type of use (Best et al., 2014; Keles et al., 2019; Verduyn et al., 2017). Therefore, future research would benefit from extending measures beyond time to report the type of social media use, including specific types of activities conducted or content accessed, a focus of the present research. Second, research has traditionally focused on the role of Facebook (e.g., Verduyn et al., 2017). However, the rapid evolution of the social media environment has resulted in these measures becoming outdated, especially among adolescent populations who favour more visually focused platforms, such as Instagram and Snapchat. Scholars have recommended that more nuanced approaches to social media use measurement be examined (Orben, 2020). Future research should ensure that social media measures capture the current and evolving social media use trends, particularly among adolescents, a further focus of the present research.

**Type of Social Media Use and Body Satisfaction and Well-Being.** To clarify research findings, scholars have begun to categorise and examine specific types of social media use, including active

and passive use (Frison & Eggermont, 2015; Verduyn et al., 2015). Active social media use can be defined as interactive activities where the individual is communicating with others in some capacity. Active use has further been divided into private active use (e.g., direct communication such as private messaging) and public active use (e.g., indirect communication such as posting status updates or uploading pictures). Alternatively, passive social media use, also referred to as lurking, refers to observing content without interacting in any way (e.g., viewing other users' pictures, posts, and profiles). Scholars propose that using social media actively (i.e., to build relationships) contributes to increased social capital and connectedness, which in turn enhances well-being, whereas using social media passively (i.e., to simply observe others) increases opportunities for comparison and envy, resulting in diminished well-being (Best et al., 2014; Gerson et al., 2016; Verduyn et al., 2017).

Although limited, a small number of studies have begun to consider the impact that different types of social media use may have on body image and well-being. In relation to body image, passive social media use (i.e., viewing photos/selfies) has been found to be associated with lower body esteem and higher facial, but not body, dissatisfaction among adolescents (Chang et al., 2019; Wang, Xie, et al., 2019). The relationships with active use (i.e., posting photos/selfies) are less consistent, either demonstrating association with higher body esteem (Chang et al., 2019), or not related to facial or body dissatisfaction (Wang, Xie, et al., 2019). The well-being literature is largely consistent with findings in the body image field. A narrative review found that passively viewing selfies had a negative impact on body confidence and well-being among adolescents (McLean et al., 2019). To examine the impact of social media on adolescents' well-being, Wenninger et al. (2014) used a diary approach to reduce recall bias of Facebook use among German adolescents. Their results showed that active Facebook use was positively related to life satisfaction, whereas passive use was negatively related to life satisfaction. Overall, these findings indicate that passive use may be detrimental to, while active use may enhance, body satisfaction and well-being among adolescents.

In support of these empirical findings, systematic reviews and a meta-analysis have also demonstrated that the relationship between social media use and well-being is contingent upon the type of social media use. Specifically, greater amounts of passive use diminished subjective well-being, whereas greater levels of active use enhanced well-being (Bij de Vaate et al., 2020; Verduyn et al., 2017). Notably, the relationship between social media use and poor well-being appears to be stronger for passive use than active use (Liu et al., 2019; Verduyn et al., 2017). These findings are particularly concerning given that research suggests that passive use accounts for substantially more engagement with Facebook than active use (Verduyn et al., 2015). A recent narrative review of the prospective relationship between social media use and well-being among adolescents found that passive, disordered, or heavy social media use, but not active use, was related to poorer well-being (Course-Choi & Hammond, 2021).

Another aspect of social media use which has received some attention in the literature is social media intensity, the degree to which a user feels emotionally connected to social media and how integrated it is within their daily life (Ellison et al., 2007). This construct is distinct from time spent on social media or type of use, instead capturing investment in social media use, which may be of substantial importance. For example, investment in social media may result in a less critical stance on the accuracy of social media content. Instead, social media content may appear more salient and relevant which can increase one's tendency to engage in upward social comparisons, often resulting in negative self-evaluations (Fardouly et al., 2017). In line with this, higher social media intensity has been found to be related to lower well-being among college students (Roberts & David, 2019). A recent meta-analysis has identified social media intensity as a potentially fruitful area for future research (Saiphoo & Vahedi, 2019). As a consequence, the present research will include an exploration of this construct to investigate the role it may play in body satisfaction and well-being among adolescents.

The research presented above indicates that operationalisations of social media which distinguish type of use (e.g., active and passive) provide different dimensions of social media engagement so may be more informative than mere time spent on social media. However, of this limited research that distinguishes between types of social media use, which primarily focuses on selfie behaviours, very few studies have examined these associations among adolescent boys. Further, only a small number of studies have examined the associations between types of social media use and body satisfaction. Given that research of this kind may provide understanding of the types of social media uses which may be beneficial or detrimental, as well as whom they may impact (e.g., boys and/or girls), the present thesis will explore different types of social media use in adolescent boys and girls.

**Specific Social Media Activities and Content and Body Satisfaction and Well-Being.** The conceptualisation of social media as active or passive use is a useful distinction for understanding complexities of the effects of social media use. However, these operationalisations do have some limitations which require further exploration. Specifically, the passive/active distinction does not consider the specific activities or content in which users engage. For example, passively viewing content such as appearance-focused images may diminish body satisfaction and well-being, whereas passively viewing content such as text or images of nature may be less likely to have an impact, or even have a positive impact. Empirical evidence indicates that examining specific activities may extend current understanding of the impact of social media on well-being (Wright et al., 2018). When considering specific types of social media use, it is important to understand the current social media environment and trends.

***Appearance-focused platforms.*** A recent transformation in social media use has highlighted a move to more visual, appearance-focused social media platforms. The three most popular sites among adolescents (Instagram, Snapchat, and YouTube; Anderson & Jiang, 2018) are primarily used for posting and sharing images or videos. Compared to older sites (e.g., Facebook), visually-based

platforms (e.g., Snapchat and Instagram) have a more explicit focus on appearance (Saunders & Eaton, 2018). A number of studies have demonstrated that social media images are appearance-potent and objectifying, frequently presenting ideals around thinness and muscularity (e.g., Bell et al., 2018; Deighton-Smith & Bell, 2018). In line with this, these platforms have been found to increase users tendency to think about their appearance, with more time spent viewing images or videos containing people on Instagram compared to Facebook (Engeln et al., 2020). Exposure to this type of content will likely work to affirm and reinforce ideals. Supporting this contention, de Lenne et al. (2018) found that Instagram and Facebook use were associated with internalisation of social and romantic ideals among adolescents. Additionally, users may compare themselves to this idealised content, resulting in dissatisfaction and feelings of inadequacy. This burden to achieve and maintain narrowly defined ideals contributes to pressures on adolescents to always appear 'perfect' on social media (Mascheroni et al., 2015).

Correlational and experimental research has found that exposure to highly visual social media (e.g., Instagram and Snapchat) is associated with significantly poorer body satisfaction and well-being than Facebook use (Engeln et al., 2020; Marengo et al., 2018). More recently, a scoping review examining the impact of highly visual social media use on mental health among adolescents found that the majority of studies demonstrated a negative relationship between time spent online and mental health (McCrory et al., 2020).

***Photo-based activities.*** With this shift to more visually-based social media platforms comes a rise in the creation and sharing of images. From 2017 to 2019, the average number of photos posted to Instagram per minute rose from 46,740 to 55,140 (Domo, 2017, 2019). Photo-based activities refers not only to posting of photos, but also includes other types of engagement with photos, such as viewing and interacting with photos. Photo-based activities have been found to be the most frequent activity on social media (Vigil & Wu, 2015). Although photos on social media can and do contain a wide variety of images, including activities, food, and animals, analysis of Instagram



photo content has indicated that the most frequent type of photo content is people, including selfies (24.2%) and friends (22.4%; Hu et al., 2014). Engagement in photo-based activities may reflect a level of appearance investment, such as editing images to align with appearance ideals. Further, engagement with photos may increase the salience of the image and reinforce social norms about the importance of attending to appearance, relating to higher internalisation and comparisons and lower body satisfaction.

In support of the direct effects between social media use and body satisfaction and well-being, a number of cross-sectional studies among adolescents have found that photo-based activities are more closely related to body dissatisfaction than overall use (e.g., McLean et al., 2015; Meier & Gray, 2014). This was also supported in a systematic review of the literature (Holland & Tiggemann, 2016). In addition, photo-based activities have also been found to be more strongly associated with poor life satisfaction than other social media activities, such as status posting and messaging (Vigil & Wu, 2015).

Appearance-focused social media environments and photo-based activities are somewhat distinct, with the former referring to exposure to specific content and the latter identifying engagement in a type of activity. In support of this, some research found that both appearance-focused use (i.e., following appearance-focused social media accounts) and photo-based activities were more strongly associated with aspects of poor body image (thin-ideal internalisation and body surveillance) than overall use (i.e., following appearance-neutral accounts) and time spent on social media, respectively (Cohen et al., 2017). However, it is important to note that some research has also examined a combination of the constructs, or used them interchangeably. For example, appearance-related photo-based social media activities have been found to be associated with lower body satisfaction (Lee & Lee, 2021). Further, a meta-analysis included studies examining photo-based activities within their definition of appearance-focused social media use (Saiphoo & Vahedi,

2019). Their findings identified stronger effect sizes on body dissatisfaction for appearance-focused social media use than measures of general social media use e.g., time spent.

The evidence presented above for appearance-focused use and photo-based activities is cross-sectional, limiting the demonstration of sequence or causality of relationships. Although experimental research exploring the effect of exposure to appearance-focused or idealised social media images has established a negative impact for adult men and women on body satisfaction and mood (e.g., Brown & Tiggemann, 2016; Casale et al., 2019; Sherlock & Wagstaff, 2018; Tamplin et al., 2018), experimental research has been conducted to a lesser extent among adolescent samples. Some research has indicated that exposure to manipulated (i.e., reshaped and retouched) Instagram images has a negative impact on body image for adolescent girls, relative to exposure to the original image, with stronger effects among individuals with higher social comparison tendencies (Kleemans et al., 2018). In a similar vein, some research has also started to examine exposure to idealised content on social media. In a study among adolescents, participants were randomly allocated to an Instagram feed of an attractive stranger which presented content that was (a) positive-only (e.g., good days); (b) positive-only followed by a primer to remind them of the idealised nature of social media self-presentations; or (c) a balanced view, including non-positive content. Importantly, well-being did not change among participants across any condition, either demonstrating that browsing Instagram images does not immediately impact well-being, or that the manipulations used in the study were insufficient to induce change. However, individuals who reported higher social comparisons during exposure had worse well-being post-exposure than those with lower social comparison. Overall, these studies provide some evidence that exposure to idealised images on social media may have detrimental impacts on body satisfaction, consistent with that of the adult literature referenced above. However, inconsistent with adult populations, the impact on well-being is less clear. What is apparent though is the potentially important role of social comparisons, a topic which will be covered further in *'The Role of Social Comparisons Within the Tripartite Influence Model'*.

In summary, while some evidence suggests a weak, negative relationship between social media and body satisfaction and well-being (e.g., Holland & Tiggemann, 2016; Huang, 2017), the precise nature remains disputed. Overall, the research is limited by a number of shortcomings, including simplistic conceptualisations of social media such as duration of use and use limited to one platform, namely Facebook (e.g., Best et al., 2014; Verduyn et al., 2017). More recently, it appears that specific social media uses or activities, including passive use and appearance-focused use or photo-based activities, may be more detrimental than other types of use (e.g., Bij de Vaate et al., 2020; Saiphoo & Vahedi, 2019). However, as the majority of studies have utilised cross-sectional methods (Orben, 2020), further prospective research is needed to confirm temporal sequence between social media use and body satisfaction and well-being, especially among boys. The present thesis will use cross-sectional and prospective designs to examine the impact of a range of social media use measures on adolescents' body satisfaction and well-being over 1-year.

When reflecting on the role of social media use in experiences of body satisfaction and well-being, it appears that operationalisation of social media use is an important factor. Indeed, some inconsistencies within the literature may be attributed to different measures of social media use. Different operationalisations (e.g., overall time spent, passive use, and appearance-focused use) each capture a different element of the social media environment and experience. Consequently, it is perhaps not unsurprising that they may each have distinct relationships with body satisfaction and well-being. As presented above, a number of social media use measures appear important when considering the relationship with body satisfaction and well-being, specifically appearance-focused use, photo-based activities, social media intensity, and type of use (e.g., active, passive, 'liking'). This thesis will explore a range of operationalisations of social media within statistical models to ascertain the individual associations with body satisfaction and well-being and whether they indicate beneficial or detrimental effects. Exploring a number of social media use measures will provide a more nuanced understanding of these complex relationships. Specifically, this may identify

particular activities or uses which are beneficial and/or detrimental. This evidence can then be used to inform public guidelines around safe social media use practices for adolescents.

### **Mechanisms Underpinning the Relationships Between Social Media Use and Body Satisfaction and Well-Being**

The evident complexities within the relationships between social media use and body satisfaction and well-being have led scholars to identify and explore underlying mechanisms, including mediating factors. This information can then be used to inform constructs which may be targeted in future prevention and intervention efforts to promote positive, or mitigate negative, impacts on body satisfaction and well-being. It is helpful to consider existing theoretical perspectives within the literature, which postulate the mechanisms through which social media use might relate to body satisfaction and well-being. Although theories within the body image literature are well-developed, particularly for traditional forms of media, theoretical perspectives within the well-being literature are less established. Given this, a lack of application of theoretical frameworks has been identified as a shortcoming of empirical research investigating the impact of social media use on well-being (McCrory et al., 2020). In a systematic review which examined the impact of social media use on psychological well-being, 16 of the 22 included studies were not based on a theoretical foundation (Erfani & Abedin, 2018). The authors concluded that future research must work to develop new theories or test the appropriateness of existing theories. As mentioned previously, one of the most established sociocultural theories for the development of body image is the tripartite influence model (Thompson et al., 1999). This model posits that there are two mediating pathways through which sociocultural influences (e.g., media) influence body satisfaction and psychological functioning, namely internalisation of appearance ideals and comparisons.

Now that the empirical evidence of the direct relationships between social media use and body satisfaction and well-being has been described, an exploration of the indirect effects will be presented. Here, an examination of the mediating mechanisms through which social media use and

body satisfaction may be related will be provided. Further, this theoretical framework will be extended and applied within the context of well-being. The two mediators of interest in the present thesis are internalisation of appearance ideals and social comparisons.

### ***The Role of Internalisation of Appearance Ideals Within the Tripartite Influence Model***

Internalisation refers to the endorsement of societal ideals and their adoption as one's own personal standard of beauty (Thompson & Stice, 2001). The social media environment often presents a range of ideals, in terms of both appearance and life. Theoretically, exposure to these ideals will lead to increased investment in and salience of such ideals, resulting in higher internalisation and ultimately having a negative impact on body satisfaction and well-being. In this way, internalisation has been found to play a mediating role in the relationships between social media use and body satisfaction (Wang, Fardouly, et al., 2019). The direct and indirect effects between these variables will now be explored, including the relationship from social media to internalisation, internalisation to body (dis)satisfaction, and internalisation as a mediator, as well as trends in ideals for females and males, respectively.

As previously mentioned, social media typically contains idealised self-presentations, including appearance ideals. Given this, it is likely that exposure to such content on social media will result in higher levels of internalisation. In line with this, a meta-analysis demonstrated a positive relationship between social media use and internalisation of the thin-ideal among women (Mingoia, Hutchinson, Wilson, et al., 2017). Importantly, appearance-focused content and photo-based use appear more closely related to internalisation than more general social media use. Internalisation has also been identified as one of the most robust risk factors of body dissatisfaction among women (Thompson et al., 1999). A recent systematic review and meta-analysis of the cross-sectional relationships between internalisation and body dissatisfaction indicated medium to very large relationships with muscular- and thin-ideal internalisation, respectively (Paterna et al., 2021). Finally, in line with the tripartite influence model, internalisation has been found to mediate the relationship

between social media use and body satisfaction among adolescent boys and girls (Tiggemann & Slater, 2014; Wang, Fardouly, et al., 2019). Specifically, higher internalisation mediated the relationship between higher social media use and lower body satisfaction.

Given that the body image literature traditionally focused more explicitly on female body image, internalisation has typically identified and examined appearance ideals focused on thinness (Grogan, 2016; Mingoia, Hutchinson, Wilson, et al., 2017). However, more recent ideals now emphasise toned and muscular bodies among both men and women (Rodgers et al., 2018; Rodgers et al., 2012). It is imperative that research captures these recent trends and examines the distinct ways that thinness and muscularity ideals are related to body satisfaction and well-being. Specifically, revisions of the tripartite influence model provide preliminary support for the inclusion of both thin- and muscular-ideal internalisation among young men and women (Girard et al., 2018; Hazzard et al., 2019). The role of internalisation will be extended in *'Empirical Support for the Tripartite Influence Model Within the Context of Social Media Use'*.

### ***The Role of Social Comparisons Within the Tripartite Influence Model***

Social comparison theory proposes that humans have an innate drive to compare themselves against others as a means to determine their social status (Festinger, 2016). Social comparison evaluations can be applied to a range of personal and social attributes and can either be made against individuals considered better (upward) or worse (downward) than oneself. Comparisons are especially prevalent among adolescents, more so than in younger children and adults (Kraye et al., 2008; Myers & Crowther, 2009). To engage in comparisons, one needs information about others. Social media is an environment that provides individuals with seemingly infinite information about others, and therefore endless opportunities for social comparisons (Lee, 2014; Vogel et al., 2014). Young people report frequently comparing themselves with others on social media, at a higher rate than other contexts such as in face-to-face settings or with traditional media, with upward comparisons being the most common type of comparison (Fardouly et al.,

2017). Interviews with adolescents have revealed that they consider peer comparisons as almost inevitable on social media (Chua & Chang, 2016; Throuvala et al., 2019). Given that individuals tend to portray idealised versions of themselves online (Bareket-Bojmel et al., 2016), engaging in comparisons with this content which facilitates upward comparisons will likely undermine well-being (Liu et al., 2017).

Social media users have been found to be significantly more likely to engage in appearance comparisons than non-users (Meier & Gray, 2014). Research has also found that upward comparisons on social media were associated with poorer body image and mood outcomes, more so than comparisons made in person (Fardouly et al., 2017). In line with this, cross-sectional and prospective support has been found for the mediating role of comparisons between social media use and body satisfaction in adolescents and young adults (Chang et al., 2019; Fardouly & Vartanian, 2015; Rousseau et al., 2017). The role of social media comparisons will be extended in the subsequent section.

### ***Empirical Support for the Tripartite Influence Model Within the Context of Social Media Use***

Research has started to examine the relationships between social media use and body satisfaction within a sociocultural framework. Preliminary support has been found for the mediating roles of internalisation and comparisons in the relationship between social media use and body satisfaction in adolescent girls and young women. Specifically, greater social media use is associated with higher internalisation and comparisons which, in turn, is associated with lower body satisfaction (Lee & Lee, 2021; Scully et al., 2020). In research taking a biopsychosocial perspective, this has also been found among adolescent boys as well as girls (Rodgers et al., 2020). Among young Australian men, similar mediation effects have been found whereby muscular-ideal internalisation and comparisons have been found to consecutively mediate the relationship between frequency of viewing fitspiration content on social media and body satisfaction (Fatt et al., 2019). However, a number of gaps remain. First, these relationships have yet to be explored over multiple timepoints

which limits the ability to contribute to understanding of causality and sequential mediation. Second, these relationships have largely not been examined in adolescent boys. Study Three will extend and build upon these shortcomings by examining three-wave data over 1-year among adolescent boys and girls.

### ***Well-Being Within the Tripartite Influence Model***

As previously discussed, there is some empirical support that social media has the potential to significantly impact well-being. Early iterations of the tripartite influence model included psychological functioning as an outcome variable, although scholars proposed that diminished psychological functioning was a consequence of body dissatisfaction rather than an independent consequence of the three sociocultural influences, mediated by comparisons and internalisation (Keery et al., 2004; Thompson et al., 1999). However, it could be argued that psychological functioning, examined here as well-being, may be impacted directly and indirectly by social media use, through internalisation and comparisons. Social media presents a range of sociocultural norms alongside appearance ideals, including social relationship and romantic ideals. Increased exposure to these may increase pressure to achieve these narrowly defined ideals, contributing to greater internalisation which may result in negative self-evaluations and have a detrimental impact on well-being. Further, greater tendency to engage in comparisons with often idealised lifestyle presentations by others on social media will likely result in perceptions that others' lives and appearances are better than our own, which may diminish well-being.

Only very limited research has considered the relationship between internalisation and well-being. In one study among adolescents, Instagram use was found to be associated with internalisation of social, romantic, sexual, and professional ideals among adolescents, whereas Facebook use was associated with internalisation of social and romantic ideals (de Lenne et al., 2018). Further, Instagram use was indirectly related to diminished well-being through the internalisation of sexual ideals. However, no other evidence of mediation was demonstrated for the



other ideals, such as social. One reason for this lack of mediation could be the use of a simplistic measure of social media use, operationalised as time spent on social media, which does not capture how time was spent on social media. The author is unaware of any other research which has considered the relationship between internalisation of appearance ideals and well-being. Therefore, future research examining this and whether internalisation of other ideals mediates the relationship between specific types of social media use and well-being would be beneficial. If empirical research indicates that internalisation plays a mediating role in the relationship between social media use and well-being, this may inform prevention and intervention efforts. Specifically, interventions which target the reduction of internalisation as a risk factor may be developed and evaluated among adolescents.

Compared to internalisation, the relationship between comparisons and well-being within the context of social media is somewhat more established in the literature. Among young adults, social comparisons have been found to mediate the relationship between social media use and alternative conceptualisations of well-being (e.g., affect, self-esteem; Hanna et al., 2017; Sherlock & Wagstaff, 2018; Wang et al., 2017). Further, one study with participants aged 14-39 years found that the social media use and psychosocial well-being (loneliness, anxiety, and depression) relationships were mediated by social comparison and fear of missing out (Reer et al., 2019). A recent review concluded that social comparison is a key mechanism within the relationship between social media and subjective well-being (Verduyn et al., 2020). Specifically, passive use and engagement in upward comparisons appear to be especially detrimental for well-being. However, to date, research which has examined the mediating role of comparisons on the relationships between social media use and life satisfaction among adolescents is lacking. As a result, this will be explored in the empirical work of this thesis.

The aforementioned evidence suggests that it is appropriate to extend the tripartite influence model to include well-being, alongside body satisfaction, as an outcome variable within

the social media context. Further, given the limited theoretical underpinnings within the well-being literature (McCrory et al., 2020), it would be beneficial for research to use existing and established theories to help understand the complexities within the relationships between social media use and well-being. Research described in this thesis aimed to utilise cross-sectional and prospective designs to assess whether internalisation and comparisons are mechanisms through which social media use is related to body satisfaction and well-being. A model of the proposed relationships is presented in Chapter Five.

### ***Operationalisation of Social Media Use Within the Tripartite Influence Model***

When we consider the tripartite influence model, both appearance-focused use and photo-based activities (as discussed previously) may be especially relevant as a sociocultural influence. Despite preliminary evidence that appearance-focused use and/or photo-based activities may be more relevant to constructs within the tripartite influence model than general measures of social media use, little research to date has examined this. One study did find cross-sectional support for the relationships between appearance-related photo-based social media activities and greater internalisation and comparison, which were also associated with lower body satisfaction among young women (Lee & Lee, 2021). However, the role of operationalisation of social media was not examined.

Social media research would benefit from empirical studies which explore the most relevant operationalisation of social media use for inclusion within theoretical models, such as the tripartite influence model. Investigating which social media use measures are most appropriate when examining impacts on body satisfaction will contribute to understanding of these relationships and inform theory. This research will not only ensure consistency across studies, allowing for replication of findings, but will also provide clearer identification of specific elements of social media use to address and target in prevention and intervention efforts. Therefore, examination of the most

suitable operationalisation of social media use within the tripartite influence model will be a focus of Study Three, presented in Chapter Six.

### **Bidirectional Relationships Between Social Media Use and Body Satisfaction**

As described above, the literature has typically proposed that social media use impacts body image. However, some scholars have suggested that the reverse may also be possible, whereby body image impacts social media use (Perloff, 2014). Specifically, feelings about one's own self and appearance may motivate individuals to engage with social media in certain ways. Consistent with uses and gratifications theory (Katz et al., 1973), individuals may use (social) media to fulfil certain psychological needs. In line with this, poor body satisfaction may encourage heightened social media use or engagement in specific activities (e.g., viewing others' content or seeking ways to change one's appearance) in an attempt to alleviate concerns. The mediating pathways of appearance-ideal internalisation and comparisons may also function in the reverse direction. Adolescents who experience poor body satisfaction may feel inspired to compare themselves to social media content as a means of self-improvement (Rousseau et al., 2017). Given these individuals may be more vulnerable to engaging in comparisons, they may spend greater periods of time on social media. Unfortunately, we know that engagement with comparisons on social media typically results in diminished body image (Fardouly et al., 2017), further exacerbating concerns rather than alleviating them (Appel et al., 2016). Alternatively, it is also possible that these individuals may actively limit exposure to ideals as a way to lessen concerns, as a means of self-preservation (Rousseau & Eggermont, 2018). If individuals have experienced detrimental impacts to their body satisfaction as a result of social media use, for example through negative feedback, avoiding social media may act as a self-protecting mechanism. Further empirical research is needed to test these opposing proposals.

These alternative propositions suggest several directions for effects between social media use, appearance-ideal internalisation, comparisons, and body satisfaction. Despite these possibilities, research has rarely examined the temporal sequence of these relationships. Confirming

whether these relationships are unidirectional or bidirectional is essential to understanding the mechanisms which lead to poor body satisfaction. Further, this information would contribute to prospective understanding and knowledge of sociocultural models of body image, specifically the tripartite influence model. This knowledge may then be used to inform prevention and intervention efforts which mitigate negative, and promote positive, body image when using social media.

In partial support of bidirectional relationships within the tripartite influence model, a small number of prospective studies among adolescents have demonstrated a bidirectional relationship between appearance-ideal internalisation and body satisfaction over 6-months (Rodgers et al., 2015; Rousseau et al., 2020). The findings suggest that poor body image may lead to heightened desire to attain appearance ideals, which then may result in further detrimental impacts on body satisfaction. It appears that internalisation may serve as a maintenance factor for poor body image, whereby a vicious cycle is created and concerns are exacerbated over time. If this is the case, rather than traditional perspectives of linear relationships, future research should explore bidirectionality within sociocultural models.

Some research has started to examine the temporal sequencing between social media use and body satisfaction. Among girls, some evidence suggests a unidirectional relationship between active social media use and body image. Specifically, increases in other-orientated social media use (i.e., 'liking' or commenting on others' content) predicted decreases in appearance esteem two years later (aged 10-12 and 12-14 years; Steinsbekk et al., 2021). However, self-orientated social media use (i.e., posting or sharing user-generated content) was not related to appearance esteem. Rousseau et al. (2017) examined the bidirectional and indirect effects between passive Facebook use, Facebook comparisons, and body dissatisfaction. Cross-lagged modelling among adolescents demonstrated that, although no direct effects emerged, reciprocal and indirect effects through Facebook comparisons were found in both directions among boys, and indirectly from body dissatisfaction to passive Facebook use via comparisons among girls. This suggests that adolescents

who are experiencing body dissatisfaction engage in comparisons on social media, perhaps as a means of self-improvement. However, the findings of this study are limited as data were only collected over two timepoints which prohibits examination of sequential mediation (e.g., social media use at time 1 predicting comparisons at time 2, which then predicts body dissatisfaction at time 3). The present research will extend this study to examine these potentially mediated relationships between social media use and body satisfaction over three timepoints across 1-year.

### **Rationale and Aims of the Present Thesis**

The literature reported in the preceding chapters has demonstrated the complexities and inconsistencies within the relationships between social media use and body satisfaction and well-being. Simple measures of time spent on social media use do not allow for a nuanced examination of how social media time is actually used. In addition, the majority of the well-being literature does not utilise or test theoretical models to frame examination of the relationship with social media use. Although the body image literature is largely grounded in theory, a relatively limited number of studies have examined the relationships between social media use and body satisfaction among adolescents, particularly boys. If researchers were able to integrate the knowledge obtained from these distinct fields, advances could be made to inform theoretical perspectives. Finally, given the infancy of social media, the literature has largely relied on cross-sectional designs. Although such designs provide important first steps in understanding associations between social media use and body satisfaction, expanding this understanding through prospective designs will allow for causal and temporal inferences to be advanced.

This thesis will address and answer a number of research questions and aims. First, it will investigate the relationships between social media use and body satisfaction and well-being. Within this aim, the following will be addressed specifically: examination of direct effects between these key variables (including motivations for social media use), mediation of the social media and body satisfaction and well-being relationships via thin- and muscular-ideal internalisation and social

comparisons, and model specification of these proposed direct and indirect relationships. Second, the impact of the operationalisation of social media use will be examined within the context of body satisfaction. Third, the role of gender will be explored to test whether the relationships between social media use and body satisfaction and well-being are consistent among adolescent boys and girls. Specifically, each model tested in this research will examine gender invariance. This will provide understanding of whether the pathways in the proposed models are equivalent for boys and girls, or whether gender differences exist, informing future prevention efforts. Finally, as discussed below, in light of the context of this research being conducted among adolescents, the impact of completing body image assessments on adolescents' body image will also be investigated.

### ***Study One***

The first study, '*Motivations for Social Media Use: Associations With Social Media Engagement and Body Satisfaction and Well-Being Among Adolescents*' presented in Chapter Four, aims to test a cross-sectional model of the relationships between motivations for social media use, types of social media engagement, and body satisfaction and well-being. This model will be informed by uses and gratifications theory, whereby motivations are proposed to play a role in specific patterns of social media use and engagement. A range of motivations (information sharing, passing time, escapism, social interaction, social capital, and appearance feedback) and social media use constructs (intensity, photo-based use, active use, passive use, and 'liking' use) will be included to help elucidate the nuances in these relationships.

### ***Study Two***

The second study, '*Social Media, Body Satisfaction and Well-Being Among Adolescents: A Mediation Model of Appearance-Ideal Internalization and Comparison*' presented in Chapter Five, aims to cross-sectionally examine a sociocultural model of body image, the tripartite influence model, within the context of social media use. The model was extended for the inclusion of well-being as an additional outcome variable. Specifically, this study will examine the direct and indirect

associations between social media use and body satisfaction and well-being through appearance-ideal internalisation and comparisons.

### **Study Three**

The third study, *'Direct and Indirect Relationships Between Social Media Use and Body Satisfaction: A Prospective Study Among Adolescent Boys and Girls'* presented in Chapter Six, aims to explore the prospective relationships between social media use and body satisfaction over 1-year. Three-wave data were collected and examined to extend knowledge of bidirectional relationships. Specifically, this allows for the examination of bidirectional and sequential mediation over time. The tripartite influence model will be used as a theoretical framework. This study also aims to examine the most suitable operationalisation of social media use, comparing appearance-focused use and photo-based activities. It should be noted that the measure of appearance-focused use presented in Study Two and Three is consistent with the photo-based use measure outlined in Study One, which is distinct from the photo-based activities measure included in Study Three.

### **Study Four**

Body image is a personally sensitive topic, particularly within research among adolescents. Those responsible for allowing research to proceed, namely ethics committees, educators, and parents, may express some reservations about research of this nature. Indeed, during the course of this research, concerns were raised by one of the participating schools that students may be negatively impacted by responding to questions that require the young person to consider if they do not like, or are dissatisfied with, aspects of their appearance. Limited empirical evidence is available to inform considerations of potential harm from body image research participation by adolescents, resulting in a lack of understanding of the effects of completing body image assessments. Given the important implications that this may have on the research in this thesis, as well as within the body image field, further exploration of the potential effects is required. Consequently, I took the opportunity presented by the concerns raised about the research to undertake an additional study

to examine whether body image assessments cause harm to adolescents' body image over 6-months. Further detail and rationale are provided as a preamble to Chapter Seven.

The fourth and final study, *'The Impact of Completing Body Image Assessments on Adolescents' Body Image and Engagement in Body Change Strategies: Harmful or Harmless?'* presented in Chapter Seven, aims to explore the impact of completing body image assessments. Specifically, this quasi-experimental study, which used convenience sampling to determine grouping, aims to compare body image and body change strategy outcomes among adolescents who had, and had not (twice- vs once-completers), previously been exposed to body image assessments 6-months prior, and among adolescents who completed an assessment with only positively worded items or both positive and negative items (positive vs mixed valence).

Together, the studies presented in this thesis aim to provide a comprehensive exploration of the relationships between social media use and body satisfaction and well-being among adolescent boys and girls. These studies extend and build on established theories to identify and examine specific mechanisms which may contribute to poor body image and well-being. The research quality of the studies also extends and advances previous research in a number of avenues, including the use of nuanced measures of social media use, large sample sizes which contain adolescent boys as well as girls, and the collection of prospective data. Accordingly, these studies will provide vital information to scholars and stakeholders, including parents, educators, and policymakers. Specifically, findings from these studies may inform the development of guidelines which identify positive and negative aspects of social media use, enabling users to engage with social media in a way which may promote body satisfaction and well-being. Finally, this thesis will lay the theoretical foundations for further research within these fields.



## References

References for Chapter One, Two, and Three appear in the General References section following Chapter Eight.

## Chapter Four: Motivations for Social Media Use: Associations With Social Media Engagement and Body Satisfaction and Well-Being Among Adolescents

Hannah K. Jarman<sup>a</sup>, Mathew D. Marques<sup>a</sup>, Siân A. McLean<sup>a</sup>, Amy Slater<sup>b</sup>, and Susan J. Paxton<sup>a</sup>

<sup>a</sup>School of Psychology and Public Health, La Trobe University

<sup>b</sup>Centre for Appearance Research, University of the West of England

Corresponding author:

Hannah K. Jarman, School of Psychology and Public Health, La Trobe University

T: +61 9479 3879, E: [h.jarman@latrobe.edu.au](mailto:h.jarman@latrobe.edu.au)

\*Formatting of the published journal has been retained for this paper, including American spelling.

### Author contributions:

HKJ conceived of the study, participated in its design, facilitated study coordination, conducted the analyses, and drafted the manuscript; MDM participated in the design of the study, assisted with statistical analysis, and provided feedback on the manuscript; SAM participated in the design of the study and provided feedback on the manuscript; AS participated in the design of the study and provided feedback on the manuscript; SJP participated in the design of the study and provided feedback on the manuscript. All authors contributed to interpretation of results and read and approved the final manuscript.

**Submission status:** Published as Jarman, H. K., Marques, M. D., McLean, S. A., Slater, A., & Paxton, S. J. (2021). Motivations for Social Media Use: Associations With Social Media Engagement and Body Satisfaction and Well-Being Among Adolescents. *Journal of Youth and Adolescence*, 1-15.

<https://doi.org/10.1007/s10964-020-01390-z>

### Abstract

Adolescents are spending considerable time on social media, yet it is unclear whether motivations for social media use drive different forms of social media engagement, and their relationships with body satisfaction and well-being. This study tested a proposed model of the relationships between motivations for social media use, types of social media engagement, and body satisfaction and well-being. Responses to an online survey from 1,432 Australian adolescents ( $M_{\text{age}} = 13.45$  years,  $SD = 1.14$ , range 11-17; 55.4% boys) were collected. Structural equation modelling indicates excellent model fit. Specifically, motivations for social media use (passing time, escapism, social interaction, social capital, and appearance feedback) were associated with engagement (intensity, photo-based use, active use, passive use, and liking use) and revealed mixed associations with body satisfaction and well-being. The findings support the importance of considering motivations for social media use in future research.

**Keywords:** Adolescent, Body satisfaction, Motivations, Social media, Well-being

## **Introduction**

Adolescents are avid social media users, spending approximately three hours per day on social media (Mingoia, Hutchinson, Gleaves, et al., 2017) which suggests social media is central to their daily lives. Although it is likely that motivations for social media use predict engagement, it is unclear which types of motivations drive different forms of engagement. In addition, although the centrality of and investment in social media suggests that social media may influence adolescents' self-evaluations, including body satisfaction and well-being, little is known about the relationships between motivations for social media use, types of social media engagement, and body satisfaction and well-being. Examining these relationships will contribute to the understanding of mechanisms through which motivations for social media use (passing time, escapism, social interaction, social capital, and appearance feedback) impact body satisfaction and well-being, and potentially identify risk or protective factors for these outcomes. The present study aimed to test a proposed model of relationships between motivations for social media use, types of social media engagement, and body satisfaction and well-being among adolescents.

### **Social Media and Body Satisfaction and Well-Being**

Sociocultural theory suggests that appearance ideals are presented and reinforced through a number of channels, including the media, and that exposure to these influences impacts the development and maintenance of body dissatisfaction and psychological functioning (Keery et al., 2004; Thompson et al., 1999). In line with this, it has been proposed that exposure to social media, which often presents idealized lives and appearances, may reduce body satisfaction and well-being (Perloff, 2014). Reviews have concluded that there is a small, negative relationship between social media use and body satisfaction (e.g., Holland & Tiggemann, 2016) and some studies have found parallel findings for well-being, in that higher social media use has been associated with poorer well-being (e.g., Orben et al., 2019). Sociocultural theory also suggests that the relationships between social media use and body satisfaction and well-being are mediated by internalization of appearance ideals and comparisons (Rodgers & Melioli, 2016). Consistent with this, exposure to social media has

been found to increase internalization (Mingoia, Hutchinson, Wilson, et al., 2017) and comparisons (Fardouly et al., 2015) which, given the idealized presentation and content on social media, will likely result in negative self-evaluations.

Although research generally finds higher social media use is related to negative outcomes (Huang, 2017), some inconsistencies are apparent, whereby positive relationships between social media use and well-being have also been observed (e.g., Lai et al., 2018). These inconsistencies in relationships between social media and self-evaluation outcomes may be explained by differences in effects of specific types of social media engagement, and that how an individual uses social media will determine whether the outcome is positive or negative. One study examined the impact of active (interactive activities: e.g., posting, commenting) and passive (viewing social media of others without interacting: e.g., browsing) Facebook use on adolescent well-being, specifically depressed mood and loneliness (Frison & Eggermont, 2015). Active use predicted positive, whereas passive use predicted detrimental, effects on well-being 6-months later. Active use may enhance perceived social support where passive use may increase upward comparisons (comparisons with those considered to have more desirable characteristics), accounting for the differential effects on well-being. Although examination of the associations of different types of social media engagement may enhance understanding, to date social media use has primarily been operationalized as duration of use (Mingoia, Hutchinson, Wilson, et al., 2017), which does not capture the richness of the users' experience nor its possible impact. A potentially relevant concept is social media intensity, which refers to the extent to which an individual feels emotionally invested or connected to social media. Although related to duration of social media use, research suggests that social media intensity captures a distinct construct (Saiphoo & Vahedi, 2019) which should be examined alongside duration of use to accurately understand the nuances of the social media well-being relationship (Blomfield-Neira & Barber, 2014). The present research addresses limitations of the narrow focus on duration of social media use in previous research by considering relationships between an array of social media activities and body satisfaction and well-being.

## **Motivations for Social Media Use**

A well-established theory for understanding traditional media use is uses and gratification theory (Katz et al., 1973). This theory proposes that individuals use media purposively to fulfil certain psychological needs. The emphasis on the active and gratifying nature of media use is particularly applicable to the interactive social media environment. Social media allows the user to select and customize their experience, depending on their individual needs, providing them with more control over the content to which they are exposed (Dhir & Tsai, 2017). Theoretically, social media users' psychological needs will drive behavior to fulfil these needs. Thus, the present study proposes that motivations for social media use will play an integral role in the way individuals engage with social media.

To understand the role of motivations in adolescents' social media use, it is important to consider the developmental context of this population. Adolescence is characterized by an increase in peer influence, a desire for a sense of belonging, and exploration of the self and identity (Erikson, 1968; Neinstein & Anderson, 2002). A number of social media affordances align closely with these developmental needs. Social media provides users with the opportunity to develop, curate, and share information, consistent with exploration of the self and identity. The interactive nature of social media facilitates social interaction and feedback from others, consistent with importance of peer influence and a sense of belonging. Further, the popularity of social media has meant it is now considered habitual among many, even being used as a form of escapism from everyday life. Informed by these developmental considerations, a number of key motivations, distinct from those of adult populations (Dhir & Tsai, 2017), have been identified. These include motivations for social interaction, escapism, information sharing, passing time, social capital, and appearance feedback (e.g., Rodgers et al., 2020).

### **Motivations, Types of Social Media Engagement, and Body Satisfaction and Well-Being**

In consideration of uses and gratification theory, different motivations for social media use will likely contribute to different types of social media engagement. Empirical support for this proposition exists. In a prospective study that examined these proposed relationships among Flemish adolescents, a number of motivations for using Facebook predicted type of Facebook use over 18-months (Frison & Eggermont, 2016). The motivation ‘escapism’ positively predicted all types of Facebook use (active private, active public, and passive). The motivation ‘relationship maintenance’ positively predicted active private and passive Facebook use, but not active public use. ‘Information sharing’ positively predicted active public Facebook use. One motivation, ‘passing time’ did not predict passive Facebook use. This research suggests that adolescents’ motivations for Facebook use differentially impact their engagement with Facebook.

Motivations likely not only relate to how an individual engages in social media, but also their body satisfaction and well-being. It has been hypothesized that as specific motivations for social media use may result in specific types of social media engagement, this process may in turn lead to differential outcomes for body satisfaction and well-being (Rodgers, 2016). Yet, few studies have explored these proposed relationships. One study found that motivations for using social media to obtain information about body image was inversely associated with body satisfaction in young American and Korean adults, whereas using social media for self-status seeking regarding body image (i.e., seeking and maintaining social status through body image related posts) was positively associated with body satisfaction only in Korean participants (Lee et al., 2014). Within the well-being literature, motivations to use social media for information sharing and to maintain social interaction have been found to be positively associated with well-being (Rae & Lonborg, 2015). Conversely, motivations such as escapism and passing time may lead to problematic social media use (Ryan et al., 2014), resulting in detrimental effects on well-being. It has been suggested that motivations to increase social capital and obtain appearance feedback will also likely result in diminished body satisfaction and well-being due to those motivations likely leading to increased comparisons with

idealized self-presentations on social media (Rodgers, 2016), as engagement in comparisons on social media has been found to result in poorer body image and well-being (Fardouly et al., 2015).

Past research offers some support for the relationships between motivations for social media use and well-being. Among adolescents, total number of Facebook friends and the need to belong have been found to be associated with an increase in Facebook use, whereas perceived waste of time was associated with a decrease in Facebook use. In turn, Facebook use was positively associated with subjective well-being (Lai et al., 2018). These associations were largely consistent across gender, although stronger among boys. While these findings provide support for relationships between motivations, engagement, and well-being, this study, and the literature more generally, fails to differentiate between specific types of social media use (Orben, 2020). The lack of differentiation may also explain the positive association between social media use and well-being in studies examining Facebook use, while other studies suggest an inverse association between well-being and extent of social media use where other indicators of social media are utilized. The type of social media use may determine whether the association with body satisfaction and well-being is positive or negative. Future research is needed to examine this contention, with the potential to inform social media use guidelines for adolescents and their parents and educators by identifying beneficial or detrimental aspects of social media engagement.

The existing literature have a number of shortcomings which limit understanding of the complex relationships between motivations for social media use, social media engagement, and body satisfaction and well-being. First, research has largely not considered a full range of motivations for social media use or types of social media engagement. Second, although some research has started to examine these relationships in relation to well-being, investigation of the relationships between motivations for social media use and body satisfaction are still limited. Finally, the majority of research has examined Facebook use. However, in recent years Facebook use has declined, whereby approximately half of adolescents aged 13- to 17-years used the site in 2018, with



young people favoring photo-based platforms, including Instagram and Snapchat (Anderson & Jiang, 2018), which require exploration. Addressing these shortcomings will provide a more integrative view of the way that motivations for social media use and engagement are related to body satisfaction and well-being.

### **The Proposed Model**

In the present study, the proposed model suggests that motivations for social media use influence social media engagement which, in turn, impacts body satisfaction and well-being. Motivations typically precede behaviors so, in the proposed model, motivations for social media use may influence specific types of social media engagement (Frison & Eggermont, 2016). Further, social media engagement and exposure to content on social media has been found to negatively impact adolescents' self-evaluations, specifically body satisfaction (de Vries et al., 2016) and well-being (Orben et al., 2019). However, it is possible that the reverse is also true, whereby body satisfaction and well-being influence motivations for social media use and types of social media engagement. For example, an individual with poor body satisfaction and well-being may be more motivated to seek appearance feedback, or more likely to spend greater time using social media passively. Although both directions are possible, the present study will explore the associations between social media and body satisfaction and well-being as a way to further understand and potentially identify specific motivations or type of social media engagement that could enhance or diminish body satisfaction and well-being. Therefore, the proposed model is based on this assumed direction of relationships, although the cross-sectional nature of the study precludes confirmation of direction.

Research has begun to explore the role of gender within relationships between social media use and body image and well-being. Girls typically engage in greater appearance-focused social media use than boys (e.g., Instagram and Snapchat; Mingoia et al., 2019) and are also prone to lower body satisfaction (Carlisle et al., 2019) and well-being (González-Carrasco et al., 2017). However, boys and girls both spend considerable time on social media, approximately three hours per day

(Mingoia, Hutchinson, Gleaves, et al., 2017) and experience fear of negative evaluation and appearance pressures equally (Verrastro et al., 2020). According to previous research, the relationships between social media use and body satisfaction and well-being are equivalent for boys and girls (e.g., de Vries et al., 2016; Huang, 2017).

### **Current Study**

The present study tested a cross-sectional model of relationships between motivations for social media use (passing time, escapism, social interaction, social capital, and appearance feedback), types of social media engagement (intensity, photo-based use, active use, passive use, and liking use), and body satisfaction and well-being among adolescent boys and girls (see Figure 1). Guided by uses and gratification theory (Katz et al., 1973), greater motivation to use social media will likely be related to greater social media use. Therefore, the first hypothesis is that motivations for social media use will be positively associated with social media engagement. However, given the active nature of information sharing, and consistent with previous research reviewed above, it was hypothesized that information sharing motivation will be positively associated with active engagement (intensity, photo-based use, and active use) but not associated with inactive engagement (passive and liking use). Consistent with this, the second hypothesis was that social media intensity, photo-based use, passive use, and liking use will be negatively associated with body satisfaction and well-being, whereas active use will be positively associated with body satisfaction and well-being. Third, it was hypothesized that motivations for social media use will be directly associated with body satisfaction and well-being and indirectly associated through social media engagement. Consistent with previous research, it was hypothesized that greater social interaction and information sharing motivations will be associated with greater body satisfaction and well-being, whereas greater escapism, passing time, social capital, and appearance feedback motivations will be associated with poorer body satisfaction and well-being. Finally, consistent with previous literature, it was hypothesized that these associations will be equivalent across gender.

## Methods

### Participants

An initial sample of 1,579 adolescents aged 11 to 17 years was recruited, but 147 (9.3%) were excluded as they reportedly did not use social media, leaving a final sample of 1,432 for analyses ( $M_{\text{age}} = 13.54$  years,  $SD = 1.14$ ). Participants identified as male (55.17%), female (41.55%), 'other' (0.98%), or 'prefer not to say' (2.30%). Most participants were born in Australia or New Zealand (85.16%), followed by Asia (8.66%), Europe (3.93%), and other (2.24%). Participants' parents were born in Australia or New Zealand (mothers: 68.64%; fathers: 69.76%), followed by Asia (mothers: 14.50%; fathers: 11.11%), Europe (mothers: 10.56%; fathers: 12.45%), and other (mothers: 6.31%; fathers: 6.68%). Participants' self-reported home postcode was used to compute a score of relative socioeconomic advantage and disadvantage (Australian Bureau of Statistics, 2018), with a range of 1 (most disadvantaged) to 10 (most advantaged). The average score was high ( $M = 9.32$ ,  $SD = 1.12$ ), consistent with the demographic profile of the schools recruited.

### Measures

#### *Demographics*

Participants self-reported age, gender, school year, home postcode, and country of birth (self and parent).

#### *Motivations for Social Media Use*

The Motives for Facebook Use scale (Papacharissi & Mendelson, 2010) was used to assess general motivations for social media engagement. The scale was adapted to denote general as opposed to site-specific use by including "I use social media..." at the beginning of each item. Four motivation subscales relevant during adolescence were used (Frison & Eggermont, 2016): information sharing (5-items e.g., "To tell others a little bit about myself"), passing time (5-items e.g., "Because it passes the time away, particularly when I'm bored"), social interaction (2-items e.g., "To keep in touch with friends and family"), and escapism (3-items e.g., "So I can forget about

school, work, or other things"). Participants responded on a 5-point scale (1 = *strongly disagree*, 5 = *strongly agree*). Item responses for each subscale were averaged, with higher scores representing greater corresponding motivation. Scores of these four subscales have demonstrated good reliability among adolescent boys and girls ( $\alpha = .70 - .89$ ; Frison & Eggermont, 2016). Internal reliability in the current study were high ( $\alpha = .83 - .87$ ). Spearman-Brown coefficients for the 2-item social interaction was moderate ( $r_s = .65$ ).

Two additional motivation scales, social capital and appearance feedback, were developed for the purpose of this study using unpublished data. Social capital was defined as the motivation to gain social approval and status. Appearance feedback was defined as the motivation to obtain feedback in relation to one's own appearance. First, the authors used their content expertise to generate items relevant to these motivations. These scales initially contained 20- and 13-items, respectively. Second, to reduce participant burden, the subscales were shortened by examining inter-item correlations to inform inclusion or exclusion of items. This stage ensured no items within each scale were too weakly ( $r < .30$ ) or strongly ( $r > .90$ ) related (Boateng et al., 2018). The final shortened version of social capital contained 6-items ( $r = .55 - .79$ , e.g., "I use social media to impress people") and appearance feedback contained 5-items ( $r = .61 - .84$ , e.g., "I use social media to see if I look as good as my friends"). Participants responded on a 5-point scale (1 = *never*, 5 = *always*). Item responses were averaged, with higher scores representing greater corresponding motivation. Internal reliabilities in the current study were high (social capital  $\alpha = .91$ ; appearance feedback  $\alpha = .93$ ).

### ***Social Media Engagement***

A series of measures were used to capture social media use, including intensity, photo-based use, and type of use. Participants were asked if they had a social media profile (yes, no). If participants indicated "no", no additional social media use items were presented. Participants who responded "yes" ( $N = 1,432$ ; 90.69%) were provided with further social media items.

**Social Media Intensity.** Social media intensity and salience was measured with four items from the Facebook Intensity Scale (Ellison et al., 2007), adapted for general social media investment. Participants responded to items, including “I am proud to tell people I am on social media” on a 5-point scale (1 = *strongly disagree*, 5 = *strongly agree*). Item responses were averaged, with higher scores representing greater social media intensity. This scale has demonstrated good internal consistency, 2-week test-retest reliability, and structural validity among adolescents (Li et al., 2016). Internal reliability in the current study was high ( $\alpha = .83$ ).

**Photo-Based Social Media Use.** Participants also self-reported frequency of Snapchat and Instagram use on a 5-point scale (1 = *never*, 5 = *always*). These platforms are two of the most popular social media platforms among Western adolescents (Anderson & Jiang, 2018) and highly appearance-focused due to the dominance of photo-based content. Frequency of Instagram and Snapchat use were positively correlated ( $r_s = .40$ ) and so were averaged to represent photo-based social media use.

**Active, Passive and Liking Use.** The Different Types of Instagram use (Frison & Eggermont, 2017) scale was used to assess types of social media use. The scale was adapted to denote general social media use, rather than Instagram-specific use. The three-item scale focuses on active, passive and liking use (e.g., “How often do you ‘like’ content/things on social media”). Participants responded on a 7-point scale (1 = *never/hardly ever*, 7 = *more than 7 times a day*). The response scale was not continuous and the data was not normally distributed, therefore scores were dichotomized to represent non-daily (0 = *never/hardly ever – a few times a week*) or daily users (1 = *once a day – more than 7 times a day*).

### **Body Satisfaction**

Body satisfaction was indicated by three scales, including body shape satisfaction, appearance esteem and overvaluation of weight and shape.

**Body Shape Satisfaction.** An adapted version of the Body Shape Satisfaction Scale (Pingitore et al., 1997) measured body satisfaction with specific body parts. In the original 10-item scale, participants indicate how satisfied they are with a number of physical features. An additional four items were included for this research to ensure relevance for boys and girls (chest, muscles, overall body fat, hair). Participants responded on a 5-point scale (1 = *very dissatisfied*, 5 = *very satisfied*) and item responses were summed, with higher scores representing greater body shape satisfaction. Discriminant, convergent, and predictive validity as well as 2-week test-retest reliability has been demonstrated by scores on the original scale among adolescents (Bucchianeri et al., 2013). Internal reliability in the current study was high ( $\alpha = .95$ ).

**Appearance Esteem.** The Appearance Esteem subscale of the Body Esteem Scale (Mendelson et al., 2001) was used to measure appearance esteem. Participants respond to 10-items regarding how often statements about their appearance apply to them (e.g., “I’m pretty happy about the way I look”). Participants responded on a 5-point scale (1 = *never*, 5 = *always*). After reverse coding 6 negatively worded items, a mean score was calculated, with higher scores representing greater appearance esteem. Acceptable internal consistency, test-retest reliability, and structural and convergent validity has been demonstrated among adolescent boys and girls (Kling et al., 2019). Internal reliability in the current study was high ( $\alpha = .90$ ).

**Overvaluation of Weight and Shape.** Two-items from the Weight and Shape subscale of the Eating Disorder Examination Questionnaire (EDE-Q; Fairburn & Beglin, 1994) assessed overvaluation of weight and shape. Participants indicated how often over the past 28 days their weight and shape had influenced their self-concept (e.g., “Has your weight influenced how you think about (judge) yourself as a person?”). Participants responded on a 7-point scale (1 = *not at all*, 7 = *markedly/a lot*) and item responses were averaged then reversed to be consistent with the direction of the other body satisfaction scales. Higher scores indicate lower overvaluation of weight and shape. Scores on

this two-item scale have demonstrated acceptable internal consistency among adolescent girls (McLean et al., 2015). Spearman-Brown coefficient was high ( $r_s = .92$ ).

### ***Well-Being***

The Satisfaction with Life Scale (Diener et al., 1985) measured well-being using five-items (e.g., “I am satisfied with my life”). Participants responded on a 7-point scale (1 = *strongly disagree*, 7 = *strongly agree*) and item responses were averaged, with higher scores representing greater life satisfaction. Good construct validity and reliability has been found for scores on this scale among adolescents (Proctor et al., 2009). Internal reliability in the current study was high ( $\alpha = .92$ ).

### **Procedure**

Prior to study commencement, ethics approval was obtained from the University Human Ethics Committee (HEC18424). Two private, co-educational secondary schools in Melbourne, Australia were recruited to participate in a cross-sectional study. Informed, opt-out parent consent was obtained, with 35 parents opting to exclude their children from the survey (1.84% opt-out rate). Informed participant assent was obtained, and all data collections were facilitated by the lead author and a team of trained researchers. All students in grades 7-10 who had not been opted out were invited to participate in an online survey. The survey took approximately 30 minutes to complete.

### **Data Analysis**

Data screening, including inspection of statistical parameters of kurtosis and skewness, and their standard errors suggested that data were not normally distributed, and transformations did not correct normality; therefore, non-parametric analyses were conducted for descriptive statistics. Extent of missing data across each outcome was moderate (0-8.50%) and consistent with adolescent research (Diedrichs et al., 2015; Vannucci & Ohannessian, 2019). Little’s missing completely at random test (MCAR; Little, 1988) was non-significant ( $p > .05$ ), indicating that data were missing completely at random.

First, zero-order Spearman correlations were computed to assess associations between study variables for the total sample. Next, the proposed model was tested using structural equational modelling (SEM) in Mplus version 8 (Muthén & Muthén, 2017). A maximum likelihood estimator with robust standard errors was used to adjust for the non-normal distribution (Yuan & Bentler, 2000). Given the range in age of the sample and the possibility of developmentally distinct motivations, age was included in the model as a covariate to motivations for social media use. Body satisfaction was specified as a latent construct, indicated by body shape satisfaction, appearance esteem, and reverse-scored overvaluation with weight and shape. The endogenous variables body satisfaction and well-being were allowed to covary. Model fit was assessed using the following global indices: chi-square test statistic ( $\chi^2$ ) with degrees of freedom, Comparative Fit Index (CFI), Standardized Root Mean Square Residual (SRMR), and Root Mean Square Error of Approximation (RMSEA). Excellent model fit was indicated when  $CFI \geq .90$ ,  $SRMR \leq .05$ , and  $RMSEA \leq .08$  (Hu & Bentler, 1999). Effect sizes were used to interpret the findings, whereby  $d = .20$ ,  $.50$ , and  $.80$  was defined as small, medium, and large effects, respectively (Cohen, 1988). The model was also tested in the reverse direction.

To examine significant indirect effects within the model, 10,000 bootstrap samples with 95% bias-corrected confidence intervals were estimated (Mackinnon et al., 2004). Given the large number of comparisons examined, the Benjamini-Hochberg procedure (Benjamini & Hochberg, 1995) was used to manage the false-discovery rate (FDR), whereby significance levels were adjusted to account for the risk of Type 1 error. Finally, to assess whether the model pathways were equivalent across gender, multi-group-analyses was conducted using Wald tests to examine differences by gender in each pathway. Of the sample, 52 participants (3.63%) did not identify as male or female so were excluded for these multi-group analyses ( $N = 1,380$ ).



## Results

### Preliminary Analyses

Descriptive information and zero-order Spearman's correlations between all variables are presented in Table 1. As hypothesized, the associations between motivations for social media use and engagement variables were generally positive. Motivations for social media use and engagement variables were all inversely associated with appearance esteem and overvaluation of weight and shape. Specifically, only one relationship between motivations for social media use and engagement was not significant: social interaction motivation and active use. Motivations for social media use and engagement variables were inversely associated with body shape satisfaction, except for three relationships: information sharing motivations, social interaction motivations and active use. Well-being was inversely associated with all motivations for social media use, except social interaction motivations which was not associated. Well-being was also inversely associated with social media intensity, photo-based social media use and active use, but not associated with passive or liking use. The majority of correlations were small (Cohen, 1988).

### Model Fit

Global fit indices indicated excellent model fit;  $\chi^2(31) = 158.35, p < .001, CFI = .97, SRMR = .03, RMSEA = .05$  [90% confidence intervals = .05, .06]<sup>1</sup>. Figure 2 presents only the significant standardized path coefficients. Table 2 provides all standardized coefficients, 95% confidence intervals, and p-values. In general, the findings demonstrated support for direct associations between motivations for social media use and both social media engagement variables and body satisfaction and well-being in the model. There was no support for indirect associations between motivations and body satisfaction and well-being via social media engagement. When the model was

---

<sup>1</sup> Model invariance was established between schools. Following the Benjamini-Hochberg procedure, this multi-group analysis suggest only one parameter was significantly different by school; the covariance between passive use and liking use ( $\beta = -0.03, SE = 0.01, p < .001$ ). Overall, this provides support for model invariance across schools, suggesting the appropriateness of a single analysis including both schools.

tested in the reverse direction, poorer fit was indicated:  $\chi^2 (25) = 496.45, p < .001, CFI = .91, SRMR = .08, RMSEA = .11$  [90% CI = .11, .12].

Age only had a significant effect on the motivation escapism ( $\beta = 0.16, SE = 0.03, p < .001$ ), with no other significant effects (information sharing  $\beta = 0.05, SE = 0.03, p = .09$ ; passing time  $\beta = 0.05, SE = 0.03, p = .08$ ; social interaction  $\beta = 0.01, SE = 0.03, p = .80$ ; social capital  $\beta = 0.00, SE = 0.04, p = .99$ ; appearance feedback  $\beta = 0.07, SE = 0.04, p = .07$ ). The covariance between body satisfaction and well-being was high ( $\beta = 0.56, SE = 0.03$ ). Motivations for social media use were positively associated with social media engagement variables, demonstrating small to moderate effects. All motivations, except appearance feedback, were associated with social media intensity. All motivations, except information sharing and appearance feedback, were associated with photo-based social media use. Only two motivation variables, information sharing and social capital, were associated with active use. All motivations, except information sharing and appearance feedback, were associated with passive use. All motivations, except escapism and appearance feedback, were associated with liking use. These findings generally supported the hypotheses regarding the associations between motivations and social media use.

Six direct effects were found between motivations for social media use and body satisfaction and well-being variables. Escapism and appearance feedback motivations were inversely associated with body satisfaction and well-being. Passing time motivation was inversely associated with well-being. Information sharing motivation was positively associated with body satisfaction. Effects sizes of these relationships were small to moderate. There were no significant indirect effects, suggesting that the relationships between motivations for social media use and body satisfaction and well-being were not mediated by social media engagement.

### **Multi-Group Analyses by Gender**

Of the 62 pathways examined in the multi-group analyses, none met the FDR-corrected significance level after accounting for multiple comparisons. Therefore, in line with the final hypothesis, analyses revealed that the model was equivalent across gender.

### **Discussion**

Adolescents are prolific social media users, yet research is limited by simplistic conceptualization and measures of social media engagement. By exploring a range of motivations for social media use and social media engagement, researchers may begin to understand how these are associated with body satisfaction and well-being. The aim of the present study was to test a proposed model of relationships between motivations for social media use, types of social media engagement and body satisfaction and well-being among adolescents. The first hypothesis was largely supported, whereby motivations for social media use were positively associated with social media engagement. Within the model, none of the social media engagement measures were associated with body satisfaction or well-being, contrary to the second hypothesis. In addition, although there were no indirect relationships between motivations and body satisfaction and well-being, contrary to the third hypothesis, some direct effects emerged. Finally, the proposed model demonstrated excellent fit among adolescents and was equivalent across gender, in line with the fourth hypothesis.

Motivations for social media use were positively associated with engagement, consistent with previous research among adolescents which found that motivations for Facebook use predicted type of Facebook use (Frison & Eggermont, 2016), whilst also extending the findings to more current social media platforms, specifically Instagram and Snapchat. Contrary to the hypothesis, appearance feedback motivation was not associated with any social media engagement variables. Previous research examining appearance feedback found that actual peer appearance feedback did not predict social media use among adolescents (de Vries et al., 2016). Although one might assume that

individuals who are motivated to use social media to obtain appearance feedback may increase their use, such individuals may also actively avoid social media due to anticipated or experienced negative feedback on social media. Another potential reason for the lack of association may be that the photo-based social media variable did not capture specific appearance-focused activities, such as seeking appearance content, but instead measured frequency of use of photo-based sites such as Instagram and Snapchat. Although these sites primarily present images, without measuring exactly what young people are posting and viewing very little is still known about the exact nature of the content they are engaging with. For example, it is possible that adolescents are exposed to a mix of content, which may not always be dominated by appearance ideals. Instead adolescents may be more focused on relational posts which work to increase social connection with peers. As this is one of the first studies to examine social media motivations specific to body image, further research is needed to clarify these relationships.

Importantly, none of the social media engagement measures were associated with body satisfaction or well-being in the context of the multivariate model. Although reviews have indicated a negative relationship between social media use and body satisfaction (Holland & Tiggemann, 2016) and well-being (Huang, 2017), effects are often small to very small. In the present study, inspection of the zero-order correlations mostly suggests very small, negative associations between social media engagement and body satisfaction and well-being which disappear when the model is examined as a whole. One possibility is that social media engagement is less integral or impactful when motivations for social media use are accounted for, supporting the importance of inclusion of motivations in social media research. Another reason for the lack of association between social media engagement and body satisfaction and well-being within the model may be explained by the lack of alternative mediators between these relationships, such as social comparisons and fear of missing out (FOMO; e.g., Burnell et al., 2019).

There were no indirect relationships between motivations and body satisfaction and well-being which may suggest that social media engagement does not mediate these relationships. Perhaps the content to which individuals are exposed on social media is of more significance than the type of social media activity one is engaging in. For example, passive consumption of more or less appearance-focused content will result in more or less exposure to detrimental impacts, respectively. Investigating the type of content adolescents are engaging with on social media may be a new avenue for research to explore, with particular attention to rapidly changing social media trends and platforms.

A handful of direct effects emerged between motivations for social media use and body satisfaction and well-being. Motivations for social media use to pass time was inversely associated with well-being and escapism was inversely associated with body satisfaction and well-being. Being motivated to use social media to escape everyday life might indicate using social media as a maladaptive coping mechanism, thus accounting for the association with poor well-being. Appearance feedback motivation was inversely associated with body satisfaction and well-being, while information sharing was positively associated with body satisfaction. Of the limited research on this topic, one study found that motivations for social media use around seeking information specific to body image was inversely associated to body satisfaction (Lee et al., 2014). It appears that the motivation for information sharing and information seeking specific to body image (i.e., appearance feedback) are distinct motives with distinct outcomes. Sharing information on social media may provide perceived social support for adolescents (e.g., Lai et al., 2018), whereas seeking body image specific content may result in exposure and consumption of appearance-focused social media activities, which has been identified as a particularly harmful element of social media use (Holland & Tiggemann, 2016).

All of the pathways within the model were equivalent across gender, which replicates and extends findings among European adolescents (de Vries et al., 2016). This suggests that social and

appearance pressures experienced by adolescents are similar for both boys and girls, which is consistent with findings that social media images depict idealized male and female bodies (Carrotte et al., 2017). Although less research has examined the impact this has on boys, this type of content has been found to increase pressure and perpetuate the muscular ideal among young men (Tamplin et al., 2018). The findings indicate gender equivalence in the relationship between motivations, social media use, body satisfaction and well-being. These findings have important implications for guidelines, policy and prevention, whereby approaches and materials would likely be suitable for co-educational settings.

The proposed model included age as a covariate to motivations for social media use. Findings revealed that age only had a significant effect on one motivation: escapism. Specifically, older participants were more likely to report higher levels of escapism than young students. Given increasing academic pressure during adolescence, it is perhaps unsurprising that older adolescents are more likely to use social media as a coping mechanism to deal with stress. However, this is particularly concerning given that greater motivation for escapism was also related to lower body satisfaction and well-being in the present study. Although the present model accounts for any potential developmental effects, which extends previous research (Sheldon & Newman, 2019), the role of age within the model was not examined. Future research should explore if the relationships between motivations for social media use, social media engagement and body satisfaction and well-being vary by age.

When interpreting the findings, several limitations must be considered. First, the data were cross-sectional so causality or direction cannot be assumed. Although the present study proposes that motivations predict social media engagement and body satisfaction and well-being, it is possible that the reverse is true, whereby body satisfaction and well-being predict motivations for social media use and engagement, or that these relationships are reciprocal. Although the reverse model indicated poorer fit, suggesting some support for the hypothesized direction, prospective research is

needed to confirm this. Second, the single item measures for active, passive and liking use may have captured limited variability, particularly when dichotomized. Active use reported by the sample was especially low compared to other studies (e.g., Frison & Eggermont, 2017), perhaps reflecting recent trends in social media use, particularly differences between Facebook and Instagram/Snapchat use. Future research should be informed by adolescents to ensure current trends are captured, including the consideration of emerging platforms such as TikTok. Finally, the sample consisted of a homogenous sample of private school students with very high socioeconomic advantage. Future research should address this by recruiting different types of schools from a range of socioeconomic status areas.

The findings have both theoretical and practical implications. Theoretically, the study extends previous work by providing support for an integrated model that considers the relationships between motivations for social media use, social media engagement and body satisfaction and well-being in adolescents. The findings indicate that motivations for social media use are an important consideration when exploring these nuanced relationships. Some motivations (e.g., information sharing) had a positive relationship with body satisfaction, whereas other motivations (e.g., escapism and appearance feedback) had a negative relationship with body satisfaction and well-being. These distinct relationships point to the importance of identifying and differentiating between distinct motivations, which may be used to inform prevention, discussed below. These motivations appear to align closely with constructs such as identity and coping styles; for example, escapism might be considered a coping style used to deal with negative emotions or experiences. Further research is needed to clarify these relationships.

The findings also have important implications for prevention. The present study identified specific motivations which may be targeted in prevention. Specifically, as using social media for information sharing is associated with higher body satisfaction, prevention may encourage this type of use in young people by promoting positive interactions within social media communities (e.g.,

sharing hobbies or interests). Conversely, escapism and using social media to gain appearance feedback may be detrimental for body satisfaction and well-being, so these should be discouraged. Relationships in the model were invariant among boys and girls, so these types of approaches would be suitable within co-educational settings. Finally, educators and parents should have open, honest discussions with adolescents to help them to recognize their specific motivations for social media use and support them to move to more adaptive motivations. More broadly, public health messaging or government campaigns could advocate for social media features which encourage more positive aspects of information sharing and minimize negative aspects (e.g., making appearance feedback less accessible). In line with this, social media companies themselves should consider their responsibility of the well-being of users, particularly adolescents, and incorporate strategies that address and promote positive approaches to social media use.

### **Conclusion**

The present study extended previous research by providing support for an integrated model that considers the associations of motivations for social media use and types of social media engagement with body satisfaction and well-being in adolescents. Results showed that motivations for social media use were positively associated with type of social media engagement. These findings are consistent with uses and gratifications theory and add to research on applicability of this theory to the social media context. Motivations for social media use were also directly associated with body satisfaction and well-being, but contrary to predictions, these relationships were not mediated by type of social media engagement. In addition, with the inclusion of motivations, measures of social media engagement were not directly related to body satisfaction or well-being in the model. These findings may suggest that other aspects of the social media experience are important for adolescents, such as exposure to specific content, although this requires further research. Furthermore, it is possible that some motivations have a negative influence on body satisfaction while others have a positive influence. In this manner, findings revealed that motivations for escapism and appearance feedback motivations were negatively associated with body satisfaction



and well-being whereas motivation for information sharing was positively associated with body satisfaction. Prevention efforts that address motivations for using social media, with specific focus on reducing motivations associated with escapism and appearance feedback could be explored within co-educational settings.

## References

- Anderson, M., & Jiang, J. (2018). *Teens, social media, and technology 2018*. Pew Research Center.  
<https://www.pewresearch.org/internet/2018/05/31/teens-social-media-technology-2018/>
- Australian Bureau of Statistics. (2018). *Census of population and housing: Socio-economic indexes for areas (SEIFA) 2016*. Australian Government.  
<https://www.abs.gov.au/ausstats/abs@.nsf/mf/2033.0.55.001>
- Benjamini, Y., & Hochberg, Y. (1995). Controlling the false discovery rate: A practical and powerful approach to multiple testing. *Journal of the Royal Statistical Society: Series B (Methodological)*, 57(1), 289-300. <https://doi.org/10.1111/j.2517-6161.1995.tb02031.x>
- Blomfield-Neira, C. J., & Barber, B. L. (2014). Social networking site use: Linked to adolescents' social self-concept, self-esteem, and depressed mood. *Australian Journal of Psychology*, 66(1), 56-64. <https://doi.org/10.1111/ajpy.12034>
- Boateng, G. O., Neilands, T. B., Frongillo, E. A., Melgar-Quinonez, H. R., & Young, S. L. (2018). Best practices for developing and validating scales for health, social, and behavioral research: A primer. *Frontiers in Public Health*, 6, Article 149. <https://doi.org/10.3389/fpubh.2018.00149>
- Bucchianeri, M. M., Arikian, A. J., Hannan, P. J., Eisenberg, M. E., & Neumark-Sztainer, D. (2013). Body dissatisfaction from adolescence to young adulthood: Findings from a 10-year longitudinal study. *Body Image*, 10(1), 1-7. <https://doi.org/10.1016/j.bodyim.2012.09.001>
- Burnell, K., George, M. J., Vollet, J. W., Ehrenreich, S. E., & Underwood, M. K. (2019). Passive social networking site use and well-being: The mediating roles of social comparison and the fear of missing out. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, 13(3), Article 5. <https://doi.org/10.5817/cp2019-3-5>
- Carlisle, E., Fildes, J., Hall, S., Perrens, B., Perdriau, A., & Plummer, J. (2019). *Youth survey report*. Mission Australia. <https://www.missionaustralia.com.au/publications/youth-survey>

- Carrotte, E. R., Prichard, I., & Lim, M. S. (2017). "Fitspiration" on social media: A content analysis of gendered images. *Journal of Medical Internet Research*, 19(3), e95.  
<https://doi.org/10.2196/jmir.6368>
- Cohen, J. (1988). *Statistical power analysis for the behavioural sciences*. (2nd ed.). Lawrence Erlbaum Associates.
- de Vries, D. A., Peter, J., de Graaf, H., & Nikken, P. (2016). Adolescents' social network site use, peer appearance-related feedback, and body dissatisfaction: Testing a mediation model. *Journal of Youth and Adolescence*, 45(1), 211-224. <https://doi.org/10.1007/s10964-015-0266-4>
- Dhir, A., & Tsai, C.-C. (2017). Understanding the relationship between intensity and gratifications of Facebook use among adolescents and young adults. *Telematics and Informatics*, 34(4), 350-364. <https://doi.org/10.1016/j.tele.2016.08.017>
- Diedrichs, P. C., Atkinson, M. J., Steer, R. J., Garbett, K. M., Rumsey, N., & Halliwell, E. (2015). Effectiveness of a brief school-based body image intervention 'Dove Confident Me: Single Session' when delivered by teachers and researchers: Results from a cluster randomised controlled trial. *Behaviour Research and Therapy*, 74, 94-104.  
<https://doi.org/10.1016/j.brat.2015.09.004>
- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment*, 49(1), 71-75.  
[https://doi.org/https://doi.org/10.1207/s15327752jpa4901\\_13](https://doi.org/https://doi.org/10.1207/s15327752jpa4901_13)
- Ellison, N. B., Steinfield, C., & Lampe, C. (2007). The benefits of facebook "friends:" Social capital and college students' use of online social network sites. *Journal of Computer-Mediated Communication*, 12(4), 1143-1168. <https://doi.org/10.1111/j.1083-6101.2007.00367.x>
- Erikson, E. H. (1968). *Identity: Youth and Crisis*. Norton.
- Fairburn, C. G., & Beglin, S. J. (1994). Assessment of eating disorders: Interview or self-report questionnaire? *International Journal of Eating Disorders*, 16(4), 363-370.  
[https://doi.org/10.1002/1098-108X\(199412\)16:4<363::AID-EAT2260160405>3.0.CO;2-#](https://doi.org/10.1002/1098-108X(199412)16:4<363::AID-EAT2260160405>3.0.CO;2-#)

- Fardouly, J., Diedrichs, P. C., Vartanian, L. R., & 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. <https://doi.org/10.1016/j.bodyim.2014.12.002>
- Frison, E., & Eggermont, S. (2015). Toward an integrated and differential approach to the relationships between loneliness, different types of Facebook use, and adolescents' depressed mood. *Communication Research*, 47(5), 701-728. <https://doi.org/10.1177/0093650215617506>
- Frison, E., & Eggermont, S. (2016). Gender and Facebook motives as predictors of specific types of Facebook use: A latent growth curve analysis in adolescence. *Journal of Adolescence*, 52, 182-190. <https://doi.org/10.1016/j.adolescence.2016.08.008>
- Frison, E., & Eggermont, S. (2017). Browsing, posting, and liking on Instagram: The reciprocal relationships between different types of Instagram use and adolescents' depressed mood. *Cyberpsychology, Behavior and Social Networking*, 20(10), 603-609. <https://doi.org/10.1089/cyber.2017.0156>
- González-Carrasco, M., Casas, F., Malo, S., Viñas, F., & Dinisman, T. (2017). Changes with age in subjective well-being through the adolescent years: Differences by gender. *Journal of Happiness Studies*, 18(1), 63-88. <https://doi.org/10.1007/s10902-016-9717-1>
- 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. <https://doi.org/10.1016/j.bodyim.2016.02.008>
- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, 6(1), 1-55. <https://doi.org/10.1080/10705519909540118>
- Huang, C. (2017). Time spent on social network sites and psychological well-being: A meta-analysis. *Cyberpsychology, Behavior and Social Networking*, 20(6), 346-354. <https://doi.org/10.1089/cyber.2016.0758>

- Katz, E., Haas, H., & Gurevitch, M. (1973). On the use of the mass media for important things. *American Sociological Review*, 38(2), 164-181. <https://doi.org/10.2307/2094393>
- Keery, H., van den Berg, P., & Thompson, J. K. (2004). An evaluation of the tripartite influence model of body dissatisfaction and eating disturbance with adolescent girls. *Body Image*, 1(3), 237-251. <https://doi.org/10.1016/j.bodyim.2004.03.001>
- Kling, J., Kwakkenbos, L., Diedrichs, P. C., Rumsey, N., Frisen, A., Brandao, M. P., Silva, A. G., Dooley, B., Rodgers, R. F., & Fitzgerald, A. (2019). Systematic review of body image measures. *Body Image*, 30, 170-211. <https://doi.org/10.1016/j.bodyim.2019.06.006>
- Lai, H., Hsieh, P., & Zhang, R. (2018). Understanding adolescent students' use of Facebook and their subjective wellbeing: A gender-based comparison. *Behaviour & Information Technology*, 38(5), 533-548. <https://doi.org/10.1080/0144929X.2018.1543452>
- Lee, H. R., Lee, H. E., Choi, J., Kim, J. H., & Han, H. L. (2014). Social media use, body image, and psychological well-being: A cross-cultural comparison of Korea and the United States. *Journal of Health Communication*, 19(12), 1343-1358. <https://doi.org/10.1080/10810730.2014.904022>
- Li, J., Lau, J. T., Mo, P. K., Su, X., Wu, A. M., Tang, J., & Qin, Z. (2016). Validation of the social networking activity intensity scale among junior middle school students in China. *PLoS ONE*, 11(10), e0165695. <https://doi.org/10.1371/journal.pone.0165695>
- Little, R. J. (1988). A test of missing completely at random for multivariate data with missing values. *Journal of the American Statistical Association*, 83, 1198-1202. <https://doi.org/10.1080/01621459.1988.10478722>
- Mackinnon, D. P., Lockwood, C. M., & Williams, J. (2004). Confidence limits for the indirect effect: Distribution of the product and resampling methods. *Multivariate Behavioral Research*, 39(1), 99-128. [https://doi.org/10.1207/s15327906mbr3901\\_4](https://doi.org/10.1207/s15327906mbr3901_4)
- McLean, S. A., Paxton, S. J., Wertheim, E. H., & Masters, J. (2015). Photoshopping the selfie: Self photo editing and photo investment are associated with body dissatisfaction in adolescent

girls. *International Journal of Eating Disorders*, 48(8), 1132-1140.

<https://doi.org/10.1002/eat.22449>

Mendelson, B. K., Mendelson, M. J., & White, D. R. (2001). Body-esteem scale for adolescents and adults. *Journal of Personality Assessment*, 76(1), 90-106.

[https://doi.org/10.1207/S15327752JPA7601\\_6](https://doi.org/10.1207/S15327752JPA7601_6)

Mingoia, J., Hutchinson, A. D., Gleaves, D. H., Corsini, N., & Wilson, C. (2017). Use of social networking sites and associations with skin tone dissatisfaction, sun exposure, and sun protection in a sample of Australian adolescents. *Psychology & Health*, 32(12), 1502-1517.

<https://doi.org/10.1080/08870446.2017.1347788>

Mingoia, J., Hutchinson, A. D., Gleaves, D. H., & Wilson, C. (2019). The relationship between posting and photo manipulation activities on social networking sites and internalization of a tanned ideal among Australian adolescents and young adults. *Social Media + Society*, 5(1), 1-10.

<https://doi.org/10.1177/2056305118820419>

Mingoia, J., Hutchinson, A. D., Wilson, C., & Gleaves, D. H. (2017). The relationship between social networking site use and the internalization of a thin ideal in females: A meta-analytic review.

*Frontiers in Psychology*, 8, Article 1351. <https://doi.org/10.3389/fpsyg.2017.01351>

Muthén, L. K., & Muthén, B. O. (2017). *Mplus user's guide* (8th ed.). Muthén & Muthén.

Neinstein, L., & Anderson, M. (2002). Adolescent development. In L. Neinstein (Ed.), *Adolescent health care: a practical guide* (pp. 767–792). Lippincott Williams and Wilkins.

Orben, A. (2020). Teenagers, screens and social media: A narrative review of reviews and key studies. *Social Psychiatry and Psychiatric Epidemiology*, 55(4), 407-414.

<https://doi.org/10.1007/s00127-019-01825-4>

Orben, A., Dienlin, T., & Przybylski, A. K. (2019). Social media's enduring effect on adolescent life satisfaction. *Proceedings of the National Academy of Sciences*, 116(21), 10226-10228.

<https://doi.org/10.1073/pnas.1902058116>

- Papacharissi, Z., & Mendelson, A. (2010). Toward a new(er) sociability: Uses, gratifications, and social capital on Facebook. In S. Papathanassopoulos (Ed.), *Media perspectives for the 21st century* (pp. 212-230). Routledge.
- Perloff, R. M. (2014). Social media effects on young women's body image concerns: Theoretical perspectives and an agenda for research. *Sex Roles*, 71(11-12), 363-377.  
<https://doi.org/10.1007/s11199-014-0384-6>
- Pingitore, R., Spring, B., & Garfield, D. (1997). Gender differences in body satisfaction. *Obesity Research*, 5(5), 402-409. <https://doi.org/10.1002/j.1550-8528.1997.tb00662.x>
- Proctor, C., Linley, A. P., & Maltby, J. (2009). Youth life satisfaction measures: A review. *The Journal of Positive Psychology*, 4(2), 128-144. <https://doi.org/10.1080/17439760802650816>
- Rae, J. R., & Lonborg, S. D. (2015). Do motivations for using Facebook moderate the association between Facebook use and psychological well-being? *Frontiers in Psychology*, 6, Article 771.  
<https://doi.org/10.3389/fpsyg.2015.00771>
- Rodgers, R. F. (2016). The relationship between body image concerns, eating disorders and Internet use, Part II: An integrated theoretical model. *Adolescent Research Review*, 1(2), 121-137.  
<https://doi.org/10.1007/s40894-015-0017-5>
- Rodgers, R. F., McLean, S. A., Gordon, C. S., Slater, A., Marques, M. D., Jarman, H. K., & Paxton, S. J. (2020). Development and validation of the motivations for social media use scale (MSMU) among adolescents. *Adolescent Research Review*, 1-11. <https://doi.org/10.1007/s40894-020-00139-w>
- Rodgers, R. F., & Melioli, T. (2016). The relationship between body image concerns, eating disorders and Internet use, Part I: A review of empirical support. *Adolescent Research Review*, 1(2), 95-119. <https://doi.org/10.1007/s40894-015-0016-6>
- Ryan, T., Chester, A., Reece, J., & Xenos, S. (2014). The uses and abuses of Facebook: A review of Facebook addiction. *Journal of Behavioral Addictions*, 3(3), 133-148.  
<https://doi.org/10.1556/JBA.3.2014.016>

- Saiphoo, A. N., & Vahedi, Z. (2019). A meta-analytic review of the relationship between social media use and body image disturbance. *Computers in Human Behavior*, 101, 259-275.  
<https://doi.org/10.1016/j.chb.2019.07.028>
- Sheldon, P., & Newman, M. (2019). Instagram and American teens: Understanding motives for its use and relationship to excessive reassurance-seeking and interpersonal rejection. *The Journal of Social Media in Society*, 8(1), 1-16.
- Tamplin, N. C., McLean, S. A., & Paxton, S. J. (2018). Social media literacy protects against the negative impact of exposure to appearance ideal social media images in young adult women but not men. *Body Image*, 26, 29-37. <https://doi.org/10.1016/j.bodyim.2018.05.003>
- Thompson, J. K., Heinberg, L. J., Altabe, M., & Tantleff-Dunn, S. (1999). *Exacting beauty: Theory, assessment, and treatment of body image disturbance*. American Psychological Association.  
<https://doi.org/10.1037/10312-000>
- Vannucci, A., & Ohannessian, C. M. (2019). Social media use subgroups differentially predict psychosocial well-being during early adolescence. *Journal of Youth and Adolescence*, 48(8), 1469-1493. <https://doi.org/10.1007/s10964-019-01060-9>
- Verrastro, V., Fontanesi, L., Liga, F., Cuzzocrea, F., & Gugliandolo, M. C. (2020). Fear the Instagram: Beauty stereotypes, body image and Instagram use in a sample of male and female adolescents. *Qwerty-Open and Interdisciplinary Journal of Technology, Culture and Education*, 15(1), 31-49. <https://doi.org/10.30557/qw000021>
- Yuan, K. H., & Bentler, P. M. (2000). Three likelihood-based methods for mean and covariance structure analysis with nonnormal missing data. *Sociological Methodology*, 30(1), 165-200.  
<https://doi.org/10.1111/0081-1750.00078>



**Table 1***Means, Standard Deviations, and Zero-Order Spearman's Correlations of the Full Sample*

	M (SD)	Range	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Information sharing motivation	2.69 (0.88)	1-5	-													
2. Passing time motivation	3.44 (0.94)	1-5	.27**	-												
3. Escapism motivation	2.69 (1.06)	1-5	.28**	.48**	-											
4. Social interaction motivation	4.05 (0.86)	1-5	.27**	.08**	.08**	-										
5. Social capital motivation	1.71 (0.87)	1-5	.39**	.33**	.29**	.17**	-									
6. Appearance feedback motivation	1.42 (0.75)	1-5	.32**	.27**	.27**	.15**	.70**	-								
7. Social media intensity	3.38 (0.80)	1-5	.34**	.51**	.39**	.25**	.40**	.32**	-							
8. Photo-based SMU	3.36 (1.09)	1-5	.20**	.36**	.27**	.21**	.29**	.28**	.54**	-						
9. Active SMU	0.11 (.31)	0-1	.16**	.12**	.10**	.05	.19**	.15**	.24**	.13**	-					
10. Passive SMU	0.87 (.33)	0-1	.18**	.29**	.24**	.12**	.22**	.15**	.41**	.40**	.12**	-				
11. Liking SMU	0.70 (.46)	0-1	.21**	.28**	.22**	.15**	.28**	.21**	.41**	.39**	.14**	.49**	-			
12. Body shape satisfaction	50.21 (13.02)	14-70	-.03	-.17**	-.20**	-.03	-.15**	-.20**	-.13**	-.07*	-.03	-.10**	-.06*	-		
13. Appearance esteem	3.49 (0.09)	1-5	-.08**	-.21**	-.25**	-.10**	-.26**	-.34**	-.21**	-.18**	-.09**	-.09**	-.07*	-.65**	-	
14. Overvaluation of weight and shape <sup>a</sup>	5.24 (1.87)	1-7	-.18**	-.22**	-.25**	-.12**	-.30**	-.35**	-.22**	-.16**	-.09**	-.11**	-.13**	-.45**	-.57**	-
15. Well-being	5.34 (1.38)	1-7	-.07*	-.16**	-.25**	.00	-.16**	-.21**	-.11**	-.06*	-.06*	-.05	-.05	.52**	.50**	.31**

*Note.* SMU = social media use; M = mean; SD = standard deviation.<sup>a</sup> Reverse-scored.\*  $p \leq .05$ . \*\*  $p \leq .01$ .

**Table 2***Standardized Path Coefficients for the Hypothesized Model*

	$\beta$	95% CI	<i>p</i> -value
Information sharing M > Social media intensity	0.10	0.05, 0.15	<.001
Information sharing M > Photo-based SMU	0.02	-0.04, 0.08	.502
Information sharing M > Active SMU	0.10	0.03, 0.16	.003
Information sharing M > Passive SMU	0.05	-0.01, 0.11	.089
Information sharing M > Liking SMU	0.07	0.02, 0.13	.013
Information sharing M > Body satisfaction	0.11	0.04, 0.18	.002
Information sharing M > Well-being	0.05	-0.01, 0.11	.105
Passing time M > Social media intensity	0.35	0.30, 0.41	<.001
Passing time M > Photo-based SMU	0.24	0.17, 0.30	<.001
Passing time M > Active SMU	0.03	-0.03, 0.09	.270
Passing time M > Passive SMU	0.25	0.19, 0.31	<.001
Passing time M > Liking SMU	0.19	0.13, 0.25	<.001
Passing time M > Body satisfaction	-0.06	-0.14, 0.01	.105
Passing time M > Well-being	-0.08	-0.15, -0.01	.031
Escapism M > Social media intensity	0.15	0.10, 0.21	<.001
Escapism M > Photo-based SMU	0.08	0.02, 0.14	.008
Escapism M > Active SMU	0.01	-0.06, 0.07	.852
Escapism M > Passive SMU	0.08	0.03, 0.13	.002
Escapism M > Liking SMU	0.06	<-0.01, 0.11	.055
Escapism M > Body satisfaction	-0.19	-0.26, -0.12	<.001
Escapism M > Well-being	-0.20	-0.27, -0.13	<.001
Social interaction M > Social media intensity	0.14	0.09, 0.18	<.001
Social interaction M > Photo-based SMU	0.16	0.11, 0.22	<.001
Social interaction M > Active SMU	-0.03	-0.09, 0.03	.305
Social interaction M > Passive SMU	0.08	0.01, 0.14	.019
Social interaction M > Liking SMU	0.08	0.03, 0.14	.005
Social interaction M > Body satisfaction	-0.03	-0.09, 0.03	.348
Social interaction M > Well-being	0.05	-0.01, 0.10	.136
Social capital M > Social media intensity	0.18	0.12, 0.24	<.001
Social capital M > Photo-based SMU	0.10	0.02, 0.17	.009
Social capital M > Active SMU	0.17	0.07, 0.28	.001
Social capital M > Passive SMU	0.10	0.04, 0.15	.001

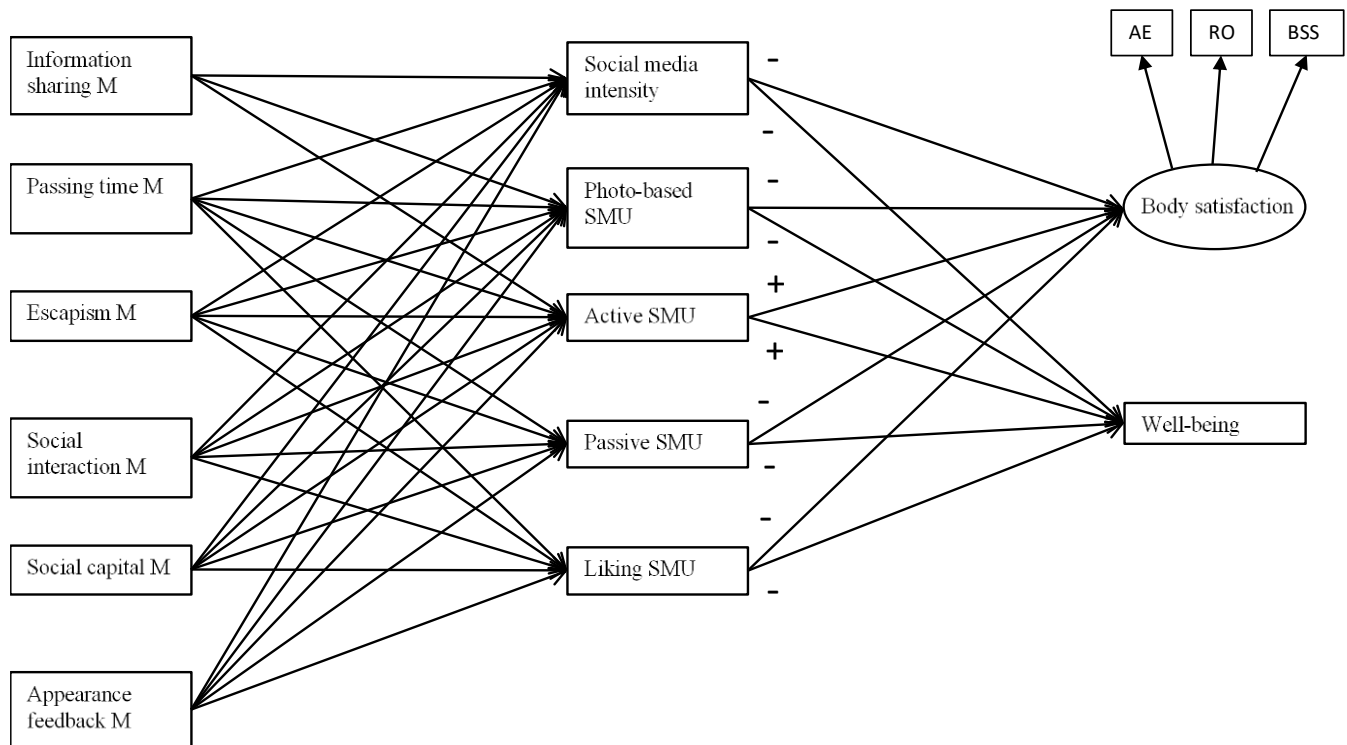
	$\beta$	95% CI	$p$ -value
Social capital M > Liking SMU	0.14	0.07, 0.21	<.001
Social capital M > Body satisfaction	-0.00	-0.10, 0.10	.962
Social capital M > Well-being	0.05	-0.04, 0.13	.261
Appearance feedback M > Social media intensity	-0.01	-0.08, 0.05	.675
Appearance feedback M > Photo-based SMU	0.07	<-0.01, 0.13	.054
Appearance feedback M > Active SMU	0.01	-0.09, 0.12	.812
Appearance feedback M > Passive SMU	-0.05	-0.11, <0.01	.060
Appearance feedback M > Liking SMU	-0.01	-0.07, 0.05	.719
Appearance feedback M > Body satisfaction	-0.30	-0.40, -0.20	<.001
Appearance feedback M > Well-being	-0.19	-0.28, -0.10	<.001
Social media intensity > Body satisfaction	-0.08	-0.16, <0.01	.059
Social media intensity > Well-being	-0.02	-0.10, 0.06	.656
Photo-based SMU > Body satisfaction	-0.00	-0.07, 0.07	.986
Photo-based SMU > Well-being	0.03	-0.03, 0.09	.357
Active SMU > Body satisfaction	-0.02	-0.09, 0.04	.494
Active SMU > Well-being	-0.05	-0.10, 0.01	.118
Passive SMU > Body satisfaction	-0.02	-0.09, 0.05	.517
Passive SMU > Well-being	0.03	-0.04, 0.10	.440
Liking SMU > Body satisfaction	0.06	-0.01, 0.12	.098
Liking SMU > Well-being	0.02	-0.04, 0.08	.497

*Note.* SMU = social media use; M = motivation; CI = confidence interval.

**Figure 1**

*Proposed Model of the Relationships Between Motivations for Social Media Use, Social Media*

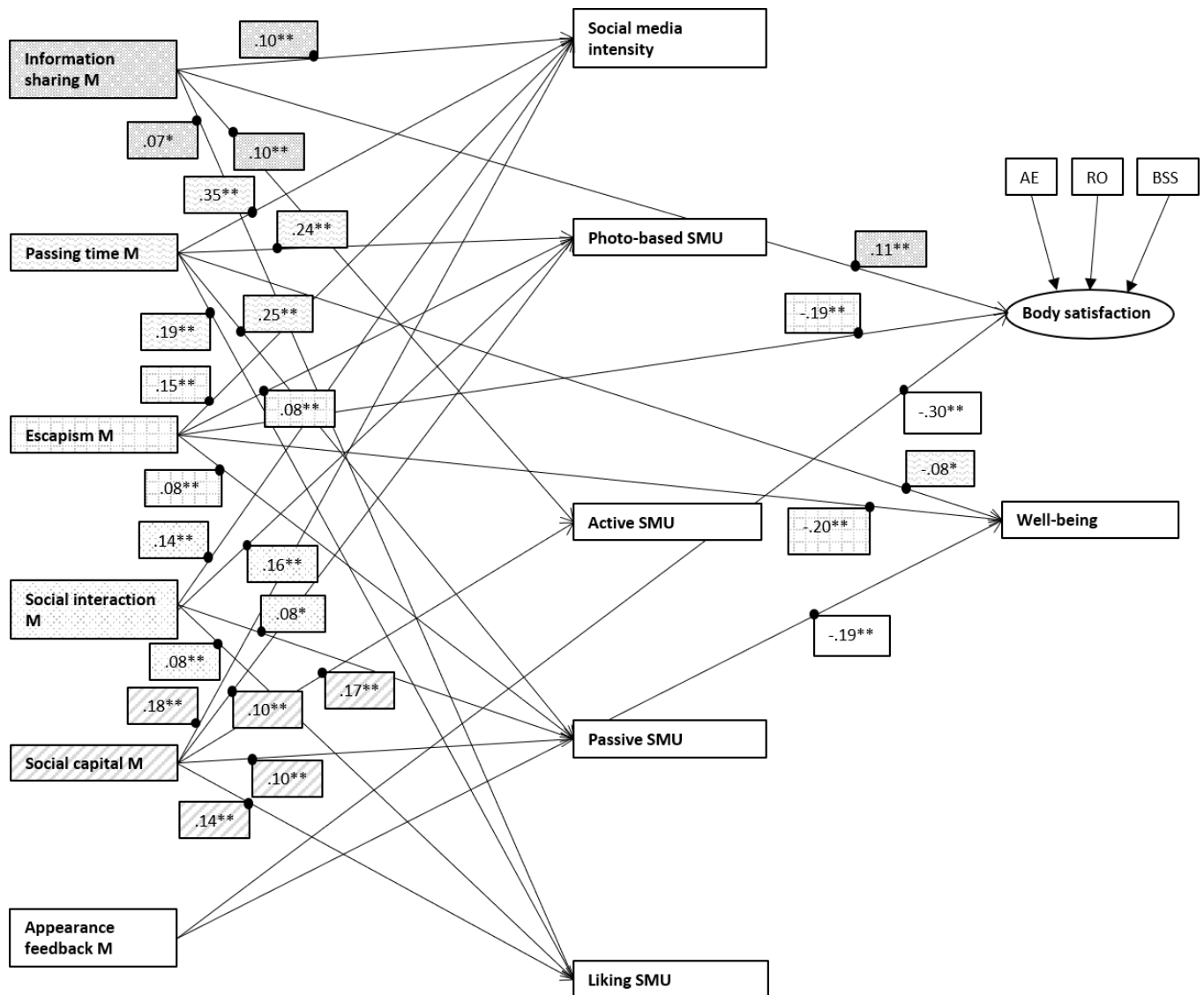
*Engagement and Body Satisfaction and Well-Being*



*Note.* All associations between motivations for social media use and social media engagement indicated above are hypothesized to be positive. Hypothesized associations between social media engagement and body satisfaction and well-being are indicated by a positive (+) or negative (-) symbol. Body satisfaction, represented by an oval, was a latent construct which is indicated by appearance esteem (AE), reverse-scored overvaluation of weight and shape (RO), and body shape satisfaction (BSS). M = motivation; SMU = social media use.

**Figure 2**

*Structural Equation Model Assessing the Mechanisms of Motivations for Social Media Use, Social Media Engagement, and Body Satisfaction and Well-Being*



*Note.* Only significant pathways are presented in this figure. Body satisfaction, represented by an oval, is a latent construct. M = motivation; SMU = social media use.

\*  $p \leq .05$ . \*\*  $p \leq .01$ .

## Chapter Five: Social Media, Body Satisfaction, and Well-Being Among Adolescents: A Mediation

### Model of Appearance-Ideal Internalization and Comparison

Hannah K. Jarman<sup>a</sup>, Mathew D. Marques<sup>a</sup>, Siân A. McLean<sup>a</sup>, Amy Slater<sup>b</sup>, and Susan J. Paxton<sup>a</sup>

<sup>a</sup>School of Psychology and Public Health, La Trobe University

<sup>b</sup>Centre for Appearance Research, University of the West of England

Corresponding author:

Hannah K. Jarman, School of Psychology and Public Health, La Trobe University

T: +61 9479 3879, E: [h.jarman@latrobe.edu.au](mailto:h.jarman@latrobe.edu.au)

\*Formatting of the published journal has been retained for this paper, including American spelling.

#### Author contributions:

HKJ conceived of the study, participated in its design, facilitated study coordination, conducted the analyses, and drafted the manuscript; MDM participated in the design of the study, assisted with statistical analysis, and provided feedback on the manuscript; SAM participated in the design of the study and provided feedback on the manuscript; AS participated in the design of the study and provided feedback on the manuscript; SJP participated in the design of the study and provided feedback on the manuscript. All authors contributed to interpretation of results and read and approved the final manuscript.

**Submission status:** Published as Jarman, H. K., Marques, M. D., McLean, S. A., Slater, A., & Paxton, S. J. (2021). Social media, body satisfaction and well-being among adolescents: A mediation model of appearance-ideal internalization and comparison. *Body Image*, 36, 139-148.

<https://doi.org/10.1016/j.bodyim.2020.11.005>

### **Highlights**

- Tested fit of the tripartite influence model adapted for a social media context.
- Social media was positively associated with poor body satisfaction and well-being.
- Comparisons and, to a lesser extent, appearance-ideal internalization, were mediators.
- The model demonstrated gender equivalence across adolescent boys and girls.

### Abstract

Despite adolescents' prolific use of social media, relationships between social media and body satisfaction and well-being are not yet well understood, especially among boys. This study tested a sociocultural model of body image within the context of social media among adolescent boys and girls. Specifically, this study examined whether appearance-ideal internalization and social appearance comparisons mediated relationships between social media engagement (intensity and appearance-focused use) and body satisfaction and subjective well-being. Australian adolescents between 11 and 17 years ( $N = 1,579$ ,  $M_{\text{age}} = 13.45$  years,  $SD = 1.15$ ; 55.4% boys) completed an online survey. Structural equation modelling indicated that only higher appearance-focused social media use was directly associated with lower body satisfaction and well-being. Generally, higher appearance-ideal internalization and comparisons mediated the relationships between higher social media engagement and lower body satisfaction and well-being. Multi-group analyses indicated these relationships were equivalent across gender. Findings supported the proposed model among boys and girls and extend existing theoretical knowledge to encompass male body image and well-being. Interventions which target internalization and comparisons in the context of social media are likely to be valuable in improving body satisfaction and subjective well-being in co-educational settings.

**Keywords:** Adolescent, Body image, Social media, Sociocultural theory, Structural equation modelling, Subjective well-being



## 1. Introduction

Social media use has increased dramatically in the last decade. Data suggest that 97% of US adolescents report using at least one social media platform (Anderson & Jiang, 2018). In a study of over 500 Australian adolescents, participants reported spending approximately three hours per day on social media (Mingoia et al., 2019). Such extensive social media use means it is now an integral part of adolescent life and development. However, elevated levels of social media use are associated with lower body satisfaction and well-being among adolescents (Orben et al., 2019; Saiphoo & Vahedi, 2019). Consequently, not only is it essential to understand the role of social media use for adolescents' development, but also the contributing mechanisms. This knowledge will inform interventions which may empower adolescents to use social media positively. This study tested a cross-sectional model examining potential mechanisms of the relationships between social media use and body satisfaction and subjective well-being among adolescent boys and girls.

### 1.1. Social Media and Body Satisfaction

Body image is defined as subjective thoughts and feelings experienced in relation to one's appearance (Grogan, 2016). Body satisfaction is an aspect of body image that primarily reflects satisfaction with appearance. Although research has mostly described the relationship between social media and body dissatisfaction, we will refer to body satisfaction for consistency with the other construct of interest, well-being. Research suggests that, as social media typically presents appearance-focused content, with users often portraying an idealized version of their appearance and life which is difficult to emulate, frequent social media users are at risk of lower body satisfaction (Perloff, 2014). While cross-sectional research supports an inverse association between time spent on social media and body satisfaction among adolescent boys and girls (e.g., Saiphoo & Vahedi, 2019), only a few studies have examined this relationship prospectively to provide support for a causal relationship. Tiggemann and Slater (2017) found that a greater number of Facebook friends, an indicator of social media engagement, predicted an increase in drive for thinness two years later among Australian adolescent girls. Similarly, de Vries et al. (2016) found that higher time

spent on social media predicted lower body satisfaction among adolescent boys and girls 18-months later. These findings suggest that elevated time spent on social media has a small, but significant, negative impact on adolescents' body satisfaction.

## **1.2. Social Media and Well-Being**

Subjective well-being refers to cognitive and affective evaluations of one's life, including satisfaction across a number of domains (Lopez et al., 2009). Relative to other well-being indices, such as self-esteem, loneliness and depression, subjective well-being has received less research attention within the social media literature (Huang, 2017) and, therefore, warrants further exploration. In the present study, we focus specifically on life satisfaction as our measure of subjective well-being, as previous studies have done (e.g., Twigg et al., 2020). Therefore, any reference to well-being made in the present study is referring to life satisfaction, unless otherwise stated. As with body satisfaction, it has been proposed that frequent exposure to images of the idealized lives of others on social media instils dissatisfaction with one's own life circumstances among adolescents (Weinstein, 2017). However, research examining the relationships between social media use and well-being have produced mixed findings. Some have found that more time spent on social media is associated with positive well-being among university (Valenzuela et al., 2009) and high school students (Lai et al., 2018), while others have reported the opposite relationship among university students (e.g., Chou & Edge, 2012). Repeated assessment of well-being and Facebook use over a two-week period found that higher Facebook use predicted reductions in well-being immediately and two-weeks later in young adults (Kross et al., 2013). Of the limited prospective literature, time spent on social media has been found to predict slight decreases in well-being in a large-scale representative study of British adolescents (Orben et al., 2019). Systematic reviews have demonstrated the complexities of the relationship, indicating both positive, for example increased social support, and negative, for example exposure to cyberbullying, impacts on well-being (Best et al., 2014; Erfani & Abedin, 2018). One shortcoming of the literature is the lack of consideration or application of theoretical frameworks as a way to determine the role of social

media in shaping well-being (Erfani & Abedin, 2018; McCrory et al., 2020), and only a handful of studies have sought to understand the mechanisms within this relationship (Frison & Eggermont, 2016). Taken together, the literature examining the relationship between social media use and well-being is complex and inconclusive, indicating the need for further investigation.

### **1.3. Types of Social Media Use**

Inconsistencies within the literature may be explained by several factors. First, social media use has been operationalized and measured in numerous ways. Most commonly, research has examined time spent on social media, often as frequency or duration of use (Sampasa-Kanyinga & Lewis, 2015). However, this approach does not capture the richness of the user's experience as an individual may spend considerable time on social media, yet not feel emotionally tied to or invested in social media, and vice versa. Social media investment may capture intensity; the extent to which an individual feels emotionally connected to social media and its integration in their daily life (Ellison et al., 2007). Consequently, it has been suggested that social media investment and activities may be of greater importance than time spent (Verduyn et al., 2017).

Additional measurement issues relate to the assessment of type of social media platform used and the nature of social media activities. Research has generally focused on engagement with Facebook (Verduyn et al., 2017). However, the social media environment is rapidly evolving, requiring research foci to adapt to this shifting environment. For example, Facebook use among adolescents has decreased, alongside an increase in newer platforms such as Instagram and Snapchat (Anderson & Jiang, 2018). Further, with the increasing popularity of these more visually based platforms, appearance-focused activities have become common, including photo-based activities such as posting, sharing, viewing, or commenting on photos, in addition to following appearance-focused accounts (e.g., models and fitness bloggers). Systematic reviews and meta-analysis have identified appearance-focused social media activities to be particularly detrimental to body satisfaction and well-being (Holland & Tiggemann, 2016; Saiphoo & Vahedi, 2019). Moving

beyond time spent on specific social media platforms, particularly Facebook, to examine intensity and appearance-focused use may provide a richer understanding of the impact of social media use on adolescents.

#### **1.4. Adolescence**

Today's adolescents are the first generation to have grown up in a fully digital era. As in the US and UK (Anderson & Jiang, 2018; Booker et al., 2018), Australian adolescents report spending approximately three hours per day on social media (Mingoia et al., 2019), making it a crucial part of their lives and development (Australian Psychological Society, 2017). Simultaneously, adolescence is a critical period where individuals are more vulnerable to external influences, such as social media, which may place them at a higher risk of developing poor body satisfaction and well-being (Rodgers, 2016). The role of peers becomes particularly important during adolescence, with heightened pressure to conform and fit in with peers. How they are perceived by others is extremely important and adolescents are highly vulnerable to interpersonal and social evaluations of the self (Nesi et al., 2018). The interactive nature of social media allows for feedback, including likes and comments, which has been found to impact Australian adolescent girls' well-being (Jong & Drummond, 2016). Puberty may also heighten appearance concerns and diminish well-being as adolescents experience changes to their body weight and shape and mood (Lewis-Smith et al., 2020). Given Australian adolescents' prolific use and their potential vulnerability for poor body satisfaction and well-being, it is imperative that scholars examine the impact social media use may have on this population.

#### **1.5. Tripartite Influence Model of Body Image**

Our investigation into mechanisms linking social media use and body satisfaction and well-being was guided by the well-established tripartite influence model (Thompson et al., 1999), which stipulates that appearance ideals are presented and reinforced through three primary sociocultural channels; media, parents, and peers. These influences impact the development and maintenance of body dissatisfaction and psychological functioning through two pathways: internalization of

appearance ideals (the extent to which an individual personally adopts socially defined appearance ideals) and social appearance comparisons (the tendency to compare one's physical appearance with that of another). According to the theory, exposure to sociocultural influences (e.g., media) will increase the likelihood that an individual will adopt appearance ideals as their personal standard and contribute to a greater tendency to make social appearance comparisons with such images. Due to the unrealistic nature of appearance ideals, an individual who compares themselves with these standards will likely feel that they do not match up to the appearance ideal, resulting in lower levels of body satisfaction and psychological functioning. These pathways have received cross-sectional and prospective support among adolescent samples (Keery et al., 2004; Papp et al., 2013; Rodgers et al., 2015).

In Western culture appearance ideals typically focus on thinness and leanness as well as muscularity, both of which have been identified as key factors among boys (Rodgers et al., 2012) and girls (Rodgers et al., 2018). Revisions to the tripartite influence model now account for these gender-based appearance ideals, specifically thin- and muscular-ideal internalization (Girard et al., 2018). To ensure that the tripartite influence model remains current for both boys and girls, the addition of both thin- and muscular-ideal internalization is important, as is attention to social media intensity and appearance-focused use.

### **1.6. The Tripartite Influence Model Applied to Social Media Use**

The tripartite influence model has been applied extensively to understanding the role of traditional media use on body image. Social media provides an additional and important avenue for disseminating appearance ideals, as well as seemingly endless opportunities for social and appearance comparisons (Fardouly & Vartanian, 2015; Holland & Tiggemann, 2016). Thus, the relevance of this model within a social media context requires investigation. Empirical support has been demonstrated for components of the model as applied to social media. Specifically, among young people, cross-sectional and prospective support for the relationships between higher social

media use and higher internalization (Mingoia et al., 2017; Rodgers et al., 2020; Tiggemann & Slater, 2013) and social and appearance comparisons (Fardouly et al., 2015; Rousseau et al., 2017) exists. However, examination of the integrated model within a social media context in adolescents has not yet been studied.

Although the tripartite influence model has primarily been examined in relation to body image, in earlier cross-sectional research empirical support was presented for the inclusion of psychological functioning as an outcome variable (Keery et al., 2004). Well-being may be considered an indicator of psychological functioning. Although psychological functioning has previously been included in the model as an outcome of body dissatisfaction, one might theoretically argue that internalization and comparisons are likely to mediate the relationship between social media use and well-being. Specifically, greater internalization may reinforce higher appearance and societal standards, and engaging in comparisons, specifically social and appearance comparisons, may result in negative self-evaluations and poorer well-being. Despite initial evidence to support such associations in children and adults (Easterbrook et al., 2014; Gerson et al., 2016), research is yet to explore the mediating role of appearance-ideal internalization and comparisons on the relationship between social media and well-being. Extending the tripartite influence model to include well-being may extend theoretical frameworks within the literature and provide greater understanding and clarity to the role of social media use in shaping well-being.

Girls typically spend more time on social media than boys (Booker et al., 2018; Vannucci & Ohannessian, 2019) and engage in more appearance-focused social media use and appearance comparisons (Mingoia et al., 2019). However, research suggests that the nature of the relationships between social media use and body satisfaction and well-being is similar in boys and girls (de Vries et al., 2016; Kross et al., 2013; Rousseau et al., 2017; Vannucci & Ohannessian, 2019; Wang et al., 2019). Consistent with this, theoretical and empirical research support the relevance of the tripartite influence model among adolescent boys and girls (Papp et al., 2013; Rodgers et al., 2015).

### 1.7. Research Aim and Hypotheses

The present study tested a modified version of the tripartite influence model within a social media context, incorporating well-being as an additional outcome (see Figure 1). Although the tripartite influence model typically considers the influence of the media, parents and peers, the current study will focus specifically on the influence of (social) media. We predicted that this model would demonstrate good fit across adolescent boys and girls. Specifically, higher social media use, operationalized as social media intensity and appearance-focused use, will be associated with higher thin- and muscular-ideal internalization and higher social and appearance comparisons (hypothesis 1). Higher thin- and muscular-ideal internalization and higher social and appearance comparisons will be associated with lower body satisfaction and well-being (hypothesis 2). Higher social media use will be directly and indirectly associated with lower body satisfaction and well-being, through thin- and muscular-ideal internalization and social and appearance comparisons (proposed mediators; hypothesis 3). Finally, we hypothesized that these relationships will be equivalent between adolescent boys and girls (hypothesis 4).

## 2. Materials and Methods

### 2.1. Participants

A total of 1,899 adolescents from two private, co-educational secondary schools in metropolitan Melbourne, Australia, were invited to participate in a longitudinal study examining social media use and body image and well-being. Data in the present study are from the first wave of data collected. Of all invited participants, only a small number of parents requested that their child not take part ( $n = 35$ ; 1.84% opt-out rate). Data were collected in 2019 from 1,579 adolescents in grades 7-10 ( $M_{\text{age}} = 13.45$  years,  $SD = 1.15$ , range = 11-17). Several students were absent from school during data collection ( $n = 260$ ) and a further 25 students chose not to participate without giving a reason. Students were eligible to participate in the study if they were in grades 7-10 and were proficient in English. No exclusion criteria were applied. Of the sample, 875 identified as male

(55.41%), 652 identified as female (41.29%), 16 identified as 'other' (mostly irrelevant responses; 1.01%), and 36 participants selected 'prefer not to say' (2.28%). Participants who identified as 'other' were asked to provide further information in an open-ended text box. Of these, only one participant identified as non-binary and all other responses were deemed inappropriate (e.g., 'attack helicopter') by the authors. The majority of participants were born in Australia or New Zealand (85.55%), followed by Asia (8.27%), Europe (3.88%) and other countries (2.30%). Participants' parents were born in Australia or New Zealand (mothers: 68.84%; fathers: 70.29%), followed by Asia (mothers: 14.66%; fathers: 11.09%), Europe (mothers: 9.99%; fathers: 11.99%) and other countries (mothers: 6.52%; fathers: 6.63%). Participants' home postcode was used to calculate a score of relative socioeconomic advantage and disadvantage (Australian Bureau of Statistics, 2018). Scores ranged from 1 (most disadvantaged) to 10 (most advantaged), with a mean of 9.30 ( $SD = 1.14$ ). This was expected due to the demographic profile of the two schools.

## **2.2. Measures**

### **2.2.1. Demographic Information**

Participants self-reported age, gender, school year, home postcode, and country of birth (self and parent).

### **2.2.2. Social Media Use**

Participants were asked if they had a social media profile (yes, no). If participants answered "no" ( $n = 147$ ), there were no further questions about social media use, if "yes" they completed further items.

**2.2.2.1. Social Media Intensity.** Social media intensity and salience was assessed with four items from the Facebook Intensity Scale (Ellison et al., 2007), adapted to denote general, as opposed to site specific, social media investment. Two items were excluded given the modification for general social media assessment made the Facebook friends' item invalid and the additional social media scale (described below) collected time spent on social media. Participants responded to items, such



as “Social media is part of my everyday activity” on a 5-point scale (1 = *strongly disagree*, 5 = *strongly agree*). Item responses were averaged, with higher scores representing greater social media intensity. Internal reliability was high (overall sample  $\alpha = .83$ ; boys  $\alpha = .83$ ; girls  $\alpha = .82$ ), and consistent with previous research suggesting good internal consistency, 2-week test-retest reliability, and structural validity among adolescents (Li et al., 2016).

**2.2.2.2. Appearance-Focused Social Media Use.** Participants also self-reported frequency of Snapchat and Instagram use on a 5-point scale (1 = *never*, 5 = *always*). These platforms are two of the most popular social media platforms among Western adolescents (Anderson & Jiang, 2018). Frequency of Instagram and Snapchat use were averaged ( $r_s = .40$ ) to represent appearance-focused social media use.

### **2.2.3. Body Satisfaction**

Three measures of body satisfaction were used. A modified version of the Body Shape Satisfaction Scale (Pingitore et al., 1997) measured body satisfaction with specific body parts. The original 10-item scale asks participants to rate how satisfied they are with a list of physical features. Four additional items were added to ensure relevance among adolescent boys (chest, muscles, overall body fat, hair). Participants responded on a 5-point scale (1 = *very dissatisfied*, 5 = *very satisfied*). Item responses were summed, with higher scores representing greater body shape satisfaction. Scores on the original scale have demonstrated discriminant, convergent, and predictive validity as well as 2-week test-retest reliability among adolescents (Bucchianeri et al., 2013; Paxton et al., 2006). Internal reliability in the current study was high (overall sample  $\alpha = .95$ ; boys  $\alpha = .95$ , girls  $\alpha = .95$ ).

The Appearance Esteem subscale of the Body Esteem Scale (Mendelson et al., 2001) was used to assess appearance esteem. The scale has 10-items which ask participants to report how often statements about their appearance apply to them (e.g., “I’m pretty happy about the way I look”). Participants responded on a 5-point scale (1 = *never*, 5 = *always*). Item responses were

averaged. Higher scores reflect greater appearance esteem. Scores on the subscale have demonstrated acceptable internal consistency, test-retest reliability, and structural and convergent validity among adolescent boys and girls (Kling et al., 2019; Mendelson et al., 2001). Internal reliability in the current study was high (overall sample  $\alpha = .90$ ; boys  $\alpha = .88$ , girls  $\alpha = .92$ ).

Two-items from the Weight and Shape subscales of the Eating Disorder Examination Questionnaire (EDE-Q; Fairburn & Beglin, 1994) measured overvaluation of weight and shape. Participants reported how often over the past 28 days their weight and shape had influenced their self-concept (e.g., “Has your weight influenced how you think about (judge) yourself as a person?”). Participants responded on a 7-point scale (1 = *not at all*, 7 = *markedly/a lot*). Item responses were averaged, then reversed to be consistent with the other body satisfaction measures. Higher scores represent lower overvaluation of weight and shape. Acceptable internal consistency has been demonstrated among adolescent girls for this two-item measure (McLean et al., 2015). Spearman-Brown coefficient was high (overall sample  $r_s = .92$ ; boys  $r_s = .91$ , girls  $r_s = .90$ ).

#### **2.2.4. Well-Being**

The 5-item Satisfaction with Life Scale (Diener et al., 1985) measured well-being. It included items such as “I am satisfied with my life”, to which participants responded on a 7-point scale (1 = *strongly disagree*, 7 = *strongly agree*). Item responses were averaged, with higher scores representing greater life satisfaction. Scores on this measure have demonstrated good construct validity and reliability among adolescents (Proctor et al., 2009). Internal reliability in the current study was high (overall sample  $\alpha = .92$ ; boys  $\alpha = .90$ , girls  $\alpha = .93$ ).

#### **2.2.5. Internalization of Appearance Ideals**

Internalization of the thin-ideal was assessed using the Thin/Low Body Fat subscale of the Sociocultural Attitudes Towards Appearance Questionnaire-4 (SATAQ-4; Schaefer et al., 2015) which contains 5-items (e.g., “I want my body to look very thin”). Items were modified to ensure that

participants understood they were referring to appearance ideals; specifically, the text “like celebrities and models” accompanied each item, “I want my body to look like it has little fat (e.g., like celebrities and models)”. All participants responded on a 5-point scale (1 = *definitely disagree*, 5 = *definitely agree*). Item responses were averaged; higher scores represent greater thin-ideal internalization. Scores on the SATAQ-4 have demonstrated excellent reliability and good convergent validity among adults (Schaefer et al., 2015) and good reliability among adolescents (Halliwell et al., 2015; McLean et al., 2015). Internal reliability in the current study was high (overall sample  $\alpha = .91$ ; boys  $\alpha = .88$ , girls  $.92$ ).

Internalization of the muscular-ideal was assessed using the Muscular subscale of the SATAQ-4R-Male (Schaefer et al., 2017) which contains 4-items (e.g., “It is important for me to look muscular”). As above, items were modified whereby “like sports stars and fitspiration posts” accompanied each muscular item, “I think a lot about looking muscular (e.g., like sports stars and fitspiration posts)”. All participants responded on a 5-point scale ranging from (1 = *definitely disagree*, 5 = *definitely agree*). Item responses were averaged, with higher scores representing greater muscular-ideal internalization. Scores on the SATAQ-4R-Male have demonstrated good reliability and construct validity among young men (Schaefer et al., 2017). Internal reliability in the current study was high (overall sample  $\alpha = .93$ ; boys  $\alpha = .92$ , girls  $.93$ ).

#### **2.2.6. Social and Appearance Comparisons on Social Media**

Three measures assessed social and appearance comparisons. The text “on social media” was added to all comparison measures to capture comparisons that occurred on social media. A single item scale (Lee, 2014) assessed frequency of comparisons (“I think I often compare myself with others on social media”). Additionally, negative social comparisons were assessed using three items (e.g., “On social media, I often think that others are doing better than me”; Frison & Eggermont, 2016; Lee, 2014). Participants responded to these measures on a 5-point scale (1 = *strongly disagree*, 5 = *strongly agree*). Responses to these three items were averaged, with higher

scores representing a greater tendency to engage in negative social comparisons on social media. Scores on the original items have demonstrated acceptable internal consistency among adolescent boys and girls (Frison & Eggermont, 2016). Internal reliability in the current study was high (overall sample  $\alpha = .87$ ; boys  $\alpha = .87$ , girls  $.85$ ).

Five items from the Upward Physical Appearance Comparison Scale (O'Brien et al., 2009) were used to assess tendency to make upward appearance comparisons. Participants responded to items (e.g., "On social media, I tend to compare myself to people I think look better than me") on a 5-point scale (1 = *strongly disagree*, 5 = *strongly agree*). Responses to items were averaged, with higher scores representing a greater tendency to engage in upward appearance comparisons on social media. Scores on these five items have demonstrated high construct validity and internal validity among adolescent girls (McLean et al., 2016). Reliability in the current study was very high (overall sample  $\alpha = .97$ ; boys  $\alpha = .97$ , girls  $.97$ ). The single-item frequency of social media comparisons was positively and strongly correlated with the social ( $r_s = .63, p < .001$ ) and appearance ( $r_s = .76, p < .001$ ) comparison scales, indicating convergent validity of these measures.

### **2.3. Procedure**

Ethics approval was attained from the [name redacted for blind review] Human Ethics Committee (HEC18424). School principals were given information about the study and invited to participate. Informed, opt-out parental consent and active participant assent was obtained. Students in grade 7-10 who had not been opted out by their parents were invited to complete an online questionnaire via Qualtrics. Questionnaires were completed during normal class time under the supervision of a teacher and a trained researcher. To ensure privacy, students were spaced out as much as possible in their classroom and the class teacher and research ensured students were not interacting or viewing others' screens. The questionnaire took approximately 30 minutes to complete. Participants completed the measures in the order described above.

## **2.4. Data Analytical Plan**

### **2.4.1. Data Preparation and Preliminary Analyses**

Data were assessed for normality and univariate outliers. The data were not normally distributed, and transformations did not restore normality; therefore, non-parametric analyses were performed. The frequency of missing data across each outcome was moderate (0-12.2%), consistent with empirical research with adolescents (Diedrichs et al., 2015; Vannucci & Ohannessian, 2019). Little's missing completely at random (MCAR) test was performed (Little, 1988) and produced non-significant results ( $p > .05$ ), suggesting that the data were missing completely at random. Of the sample, 147 adolescents (9.3%) reported that they did not use social media. Subsequently, these participants were excluded from the analyses. The final sample comprised 1,432 participants. A sensitivity analysis delivered 80% power to detect a true correlation  $r > .074$  for our sample ( $n = 1,432$ ). Mean scores, standard deviations and zero-order Spearman correlations were calculated to assess associations between variables.

### **2.4.2. Main Analyses**

The proposed model was examined using structural equation modelling (SEM) in Mplus version 8 (Muthén & Muthén, 2017). As the data were not normally distributed, Maximum Likelihood Robust (MLR) estimator with robust standard errors was used for analyses (Yuan & Bentler, 2000). Body satisfaction and social and appearance comparisons were specified as latent constructs. Given that body image is a multifaceted construct which encompasses a range of elements, the latent construct for body satisfaction was indicated by three body image scales; body shape satisfaction, appearance esteem, and reverse-scored overvaluation with weight and shape. Social media comparisons were indicated by one single-item measure and two scales; frequency, social, and appearance comparisons, respectively. Global fit indices were used to determine the goodness-of-fit of the model: chi-square test statistic ( $\chi^2$ ) with degrees of freedom, Comparative Fit Index (CFI), Standardized Root Mean Square Residual (SRMR), and Root Mean Square Error of

Approximation (RMSEA). Excellent model fit is indicated when  $CFI > .95$ ,  $SRMR < .05$ , and  $RMSEA < .08$  (Hu & Bentler, 1999).

To establish the robustness of indirect effects within the model, 10,000 bootstrap samples with 95% bias-corrected bootstrap CIs were estimated (Mackinnon, Lockwood, & Williams, 2004). If the CI of the indirect effect does not include zero, we can reject the null hypothesis and infer support for the indirect effect. Given the large number of indirect effects, the Benjamini-Hochberg procedure for adjusted significance tests (Benjamini & Hochberg, 1995) was used to reduce the risk of Type 1 error.

Finally, to test our hypothesis that the relationships within the model would not be significantly different across gender, we conducted a multi-group SEM. In this analysis we constrained the measurement model, keeping the factor loadings to be equal by boys and girls. Since we were testing whether the structural part of the model was different by gender, all paths were allowed to be freely estimated (as were all intercepts). Wald tests were then used to compare the strength of each path by gender. Participants who did not identify as male or female ( $n = 52$ ) were excluded from the multi-group analyses.

### 3. Results

#### 3.1. Descriptive Statistics and Correlations

Zero-order correlations are presented in Table 1. The majority of correlations were significant and demonstrated the expected patterns of associations. Specifically, social media use was weakly associated with higher thin- and muscular-ideal internalization and lower body satisfaction and well-being and moderately associated with comparison variables. Thin-ideal internalization was more strongly associated with all study variables than muscular-ideal internalization, demonstrating medium-large as opposed to small effects. The comparison variables were moderately-strongly associated with lower body satisfaction and well-being. All three body satisfaction variables were moderately-strongly associated with higher well-being. Only two of the

relationships did not meet statistical significance; muscular-ideal internalization with both body satisfaction and well-being. Although other associations were statistically significant their effect size indicated negligible relationships ( $r_s < .10$ ).

### 3.2. Model Testing

Our proposed model was examined and suggested an excellent “approximate fit” of the model ( $\chi^2 (28) = 210.54, p < .001, CFI = .95, SRMR = .04, RMSEA = .07$  [90% CI = .06, .08])<sup>2</sup>. Figure 2 displays the standardized path coefficients and standard errors in parentheses. Overall, the model explained 53.6% of the variance for body satisfaction and 14.8% of the variance for well-being. Social media intensity was positively associated with thin- and muscular-ideal internalization and social and appearance comparisons. Appearance-focused social media use was positively associated with thin-ideal internalization, social and appearance comparisons, body satisfaction and well-being. Thin-ideal internalization was positively associated with social and appearance comparisons and negatively associated with body satisfaction. Social and appearance comparisons were negatively associated with body satisfaction and well-being. Most of these associations were in the hypothesized direction, with the exception of muscular-ideal internalization with body satisfaction and with well-being which, contrary to our predictions, were positive.

Table 2 displays only the significant indirect effects. A full list of indirect effects is available as a supplementary table. The findings indicated that the relationship between social media intensity and body satisfaction was mediated by: thin-ideal internalization; muscular-ideal internalization; social and appearance comparisons; and thin-ideal internalization and social and appearance comparisons. The relationship between social media intensity and well-being was mediated by: muscular-ideal internalization; social and appearance comparisons; and thin-ideal internalization and social and appearance comparisons. For appearance-focused social media use, the indirect

---

<sup>2</sup> The model was also tested in the reverse direction. This reversed model suggested poor fit:  $\chi^2 (29) = 599.03, p < .001$  ( $CFI = .87, SRMR = .12, RMSEA = .12$  [90% CI = .11, .12]), which supports the proposed direction of the original model.

effects to body satisfaction were mediated by: thin-ideal internalization; social and appearance comparisons; and both thin-ideal internalization and social and appearance comparisons. Finally, the relationship between appearance-focused social media use and well-being was mediated by: social and appearance comparisons; and thin-ideal internalization and social and appearance comparisons. All significant indirect effects were maintained following the Benjamini-Hochberg procedure for adjusted significance tests (Benjamini & Hochberg, 1995).

The multi-group analyses demonstrated that, in general, the strength of each path did not significantly differ by gender (all were at  $p > .10$ ), with two exceptions: thin-ideal internalization and comparisons (Wald =  $-.31$ , SE =  $.06$ ,  $p \leq .001$ ) and appearance-focused social media use and muscular-ideal internalization (Wald =  $.13$ , SE =  $.07$ ,  $p = .04$ ). However, only the relationship between thin-ideal internalization and comparisons was maintained when the Benjamini-Hochberg procedure of adjusted significance tests was used to reduce the risk of Type 1 error. Our findings, therefore, suggest overall homogeneity in our structural model across gender<sup>3</sup>. These findings indicate that the relationships within the model were largely consistent between boys and girls.

#### 4. Discussion

The present study tested a modified version of the tripartite influence model within a social media context among adolescents. Our proposed model, which hypothesized that higher intensity of social media and appearance-focused use would relate to lower body satisfaction and lower well-being directly and indirectly through higher thin- and muscular-ideal internalization and social and appearance comparisons, was partially supported. The model pathways were largely consistent across gender, providing support for the relevance of the model within a social media context among adolescent boys and girls.

---

<sup>3</sup> When the model was examined by gender, it demonstrated excellent fit among both samples:  
Boys -  $\chi^2 (28) = 102.04$ ,  $p < .001$ , CFI =  $.96$ , SRMR =  $.04$ , RMSEA =  $.06$ ; 90% CIs  $[.05, .07]$ .  
Girls -  $\chi^2 (28) = 144.60$ ,  $p < .001$ , CFI =  $.94$ , SRMR =  $.04$ , RMSEA =  $.09$ ; 90% CIs  $[.07, .10]$ .



Our first hypothesis, that higher social media use would be associated with higher appearance-ideal internalization and comparisons, received partial support. Although social media intensity and appearance-focused use were positively associated with thin-ideal internalization and social and appearance comparisons, the relationship with muscular-ideal internalization varied according to the social media measure. Specifically, social media intensity, but not appearance-focused use, was positively associated with muscular-ideal internalization and thus a unique predictor of muscular-ideal internalization. That appearance-focused use was not a unique predictor of muscular-ideal internalization may be considered in the context of the measure for this variable which assessed frequency of using Instagram and Snapchat. Although one might assume that these sites present appearance-focused content (Rodgers & Melioli, 2016), it is possible that there is more variability in the images that adolescents are exposed, including content among peers which is not related to appearance or muscularity (e.g., food, nature, animals), which may account for our unexpected findings. It may also be that muscular ideals are underrepresented on social media platforms such as Instagram and Snapchat, which are more prevalent among girls than boys (Anderson & Jiang, 2018). However, it is important to note that the effects between social media use and appearance-ideal internalization were notably small. Future research should explore a range of distinct social media use measures to understand the impact of these more clearly.

Thin-ideal internalization was inversely associated with body satisfaction but not well-being, providing partial support for our second hypothesis. Although the relationship between internalization and body satisfaction is well established in adolescent girls (Rodgers et al., 2015), little research has examined the relationship between internalization and well-being, with one study having found that internalization of consumer culture ideals inversely predicted well-being among children (Easterbrook et al., 2014). Perhaps subjective well-being is more closely tied to other life circumstances, such as family and peer relationships or academic success, and so is relatively independent of appearance ideals. More research is needed to confirm and extend these findings.

Regarding muscular-ideal internalization, our model indicated a small, positive relationship with body satisfaction and well-being, the direction of which is inconsistent with our prediction and inconsistent with the direction of the zero-order correlations. It is possible that if ideals are perceived to be attainable, they may serve to inspire adolescents and motivate them to alter their appearance or life, resulting in positive impact on body image and well-being (de Lenne et al., 2018). In line with this, some research on appearance comparisons among adults has suggested that men tend to be hopeful that they can achieve appearance ideals, resulting in higher body esteem (Franzoi et al., 2012). Given that diet culture often presents exercise as an accessible solution for increased muscularity, this self-hopeful approach may also be relevant for internalization of muscular ideals, although further research would be necessary to confirm this. However, inspection of the zero-order correlations revealed that muscular-ideal internalization was not associated with well-being or body shape satisfaction, and only weakly negatively associated with the other two body satisfaction variables. One explanation may be that muscular-ideal internalization exerts a unique suppression effect which, when not accounted for, obscures the relationship between social media use and body satisfaction and well-being. Consistent with the literature around suppression effects (Mackinnon et al., 2000), the inclusion of muscular-ideal internalization is likely important as it may provide a more accurate interpretation of this relationship. Research should continue to explore the role of muscular-ideal internalization in the relationship between social media use and body satisfaction and well-being.

Social and appearance comparisons were strongly associated with body satisfaction and well-being, providing partial support for hypothesis 2. The relationships between comparisons and body satisfaction and well-being were stronger than those between thin- and muscular-ideal internalization and body satisfaction and well-being. Within the well-being literature, this finding is novel and may be explained by the inclusion of a range of comparisons, such as social comparisons. When an individual is exposed to social media content, often portraying idealized appearances and lives, it is likely that they will compare themselves against these ideals, resulting in negative self-

evaluations. Although not all previous evaluations of the tripartite influence model among adolescents and adults have included social or appearance comparisons (Papp et al., 2013; Tylka, 2011), the present study supports the importance and consideration of these comparisons. Furthermore, Fardouly et al. (2017) found that appearance comparisons made on social media were more detrimental than those made on traditional media and in everyday life among women. Social media users who compare themselves may engage in upward comparisons, particularly given the idealized appearances and lives presented on social media, which will likely lead to detrimental effects on body satisfaction and well-being (Wang et al., 2017). These findings provide support for the mediating role of social media comparisons between social media use and body satisfaction and well-being among adolescents.

Hypothesis 3 was largely supported. First, appearance-focused social media use was directly associated with body satisfaction and well-being. Contrary to our hypothesis, within the model, higher appearance-focused social media use was associated with higher body satisfaction and well-being. The reason for this is not clear. As this reflects a cross-sectional association, it is possible that individuals who are more confident in their appearance may also be more likely to engage in appearance-focused social media use, but this possibility would require clarification with further longitudinal research. Furthermore, the coefficients were very small for this relationship, and the zero-order correlations demonstrated a negative relationship which, again, points to the possibility of suppression effects. Social media intensity was not directly associated with either outcome, but instead found to impact body satisfaction and well-being indirectly through the mediating pathways of internalization and social and appearance comparisons. Intensity of use may not be detrimental to body satisfaction or well-being in itself, but when the user engages with certain activities or content, including appearance-focused content, damaging effects appear. Second, social and appearance comparisons as a single mediator, and thin-ideal internalization and social and appearance comparisons as multiple mediators, mediated all pathways between social media use and body satisfaction and well-being. These findings are consistent with the literature, whereby internalization

(Mingoia et al., 2017; Tiggemann & Slater, 2013) and social and appearance comparisons (Fardouly et al., 2015; Rousseau et al., 2017) mediate relationships between social media and body satisfaction and well-being among adolescents and adults. The present study extends past findings by providing partial support for the mediating pathways within the tripartite influence model in the context of social media and with the inclusion of well-being. Exploring possible mechanisms that drive this relationship, such as internalization and social and appearance comparisons, is important to understanding the role that social media plays on well-being.

When examined across gender, there were very few differences in the relationships within the model for boys and girls, supporting hypothesis 4. A content analysis by Deighton-Smith and Bell (2018) found that social media, specifically fitspiration posts, frequently objectify men and women, which works to perpetuate appearance ideals. Given this, and the prevalence of social media use among both boys and girls (Anderson & Jiang, 2018), exposure to social media will likely be associated with increased internalization and comparisons among boys and girls, resulting in diminished body satisfaction and well-being. Consequently, it is unsurprising that these relationships were largely consistent across gender. Only two relationships in the proposed model varied by gender. First, in line with previous research (Rodgers et al., 2020), thin-ideal internalization was more strongly associated with comparisons among girls than boys. Second, appearance-focused social media use was significantly associated with muscular-ideal internalization only among boys, not girls. This latter finding may suggest that social media content presents and reinforces the muscular ideal among males more so than females (Fatt et al., 2019). However, the latter effect was not maintained when the Benjamini-Hochberg procedure for adjusted significance was applied, therefore should be interpreted with caution.

This study presents a novel investigation of the tripartite influence model adapted to a social media context among a large sample of both adolescent boys and girls. However, a number of limitations must be considered. The data were cross-sectional, limiting the interpretation of

causality. Despite this, fit indices of the reverse model indicated poor fit, providing some support for the direction of relationships. Future prospective and experimental methods should examine the causality of the proposed relationships, also accounting for the potential that relationships are reciprocal. Finally, while our sample of adolescents was large enough to test a detailed model and have sufficient power to detect small effects, it consisted of a homogenous group of Australian students from high socioeconomic backgrounds which may limit generalizability. Further, given that adolescents are developmentally distinct from younger children and adults, these findings may not be generalizable among these populations so warrant further study.

#### **4.1. Conclusions**

Findings from the present study have theoretical and practical implications. Our results confirm the usefulness of a modified version of the tripartite influence model as a meaningful framework for understanding the mechanisms in the relationships between social media use and body satisfaction and well-being. In addition, the present study has successfully modified and extended this model to include well-being and findings suggest that inconsistent relationships (Best et al., 2014; Erfani & Abedin, 2018) between social media use and well-being may be accounted for by mechanisms, specifically social and appearance comparisons and, to a lesser extent, internalization. From a practical perspective, as the final model is largely consistent across gender, prevention and intervention efforts are likely to be both necessary and relevant within co-educational settings. Further, our findings suggest that social media intensity and appearance-focused use, not merely time spent on social media, should be addressed in interventions.

## References

- Anderson, M., & Jiang, J. (2018). *Teens, social media, and technology 2018*. Pew Research Center.  
<https://www.pewresearch.org/internet/2018/05/31/teens-social-media-technology-2018/>
- Australian Bureau of Statistics. (2018). *Census of population and housing: Socio-economic indexes for areas (SEIFA) 2016*. Australian Government.  
<https://www.abs.gov.au/ausstats/abs@.nsf/mf/2033.0.55.001>
- Australian Psychological Society. (2017). *Digital Me: A survey exploring the effect of social media and digital technology on Australians' wellbeing*. <https://www.qfcc.qld.gov.au/digital-me-survey-exploring-effect-social-media-and-digital-technology-australians-wellbeing>
- Benjamini, Y., & Hochberg, Y. (1995). Controlling the false discovery rate: A practical and powerful approach to multiple testing. *Journal of the Royal Statistical Society: Series B (Methodological)*, 57(1), 289-300. <https://doi.org/https://doi.org/10.1111/j.2517-6161.1995.tb02031.x>
- 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.  
<https://doi.org/10.1016/j.childyouth.2014.03.001>
- Booker, C. L., Kelly, Y. J., & Sacker, A. (2018). Gender differences in the associations between age trends of social media interaction and well-being among 10-15 year olds in the UK. *BMC Public Health*, 18(1), 321. <https://doi.org/10.1186/s12889-018-5220-4>
- Bucchianeri, M. M., Arikian, A. J., Hannan, P. J., Eisenberg, M. E., & Neumark-Sztainer, D. (2013). Body dissatisfaction from adolescence to young adulthood: Findings from a 10-year longitudinal study. *Body Image*, 10(1), 1-7. <https://doi.org/10.1016/j.bodyim.2012.09.001>
- Chou, H. T., & Edge, N. (2012). "They are happier and having better lives than I am": The impact of using Facebook on perceptions of others' lives. *Cyberpsychology, Behavior and Social Networking*, 15(2), 117-121. <https://doi.org/10.1089/cyber.2011.0324>

- de Lenne, O., Vandenbosch, L., Eggermont, S., Karsay, K., & Trekels, J. (2018). Picture-perfect lives on social media: A cross-national study on the role of media ideals in adolescent well-being. *Media Psychology*, 23(1), 52-78. <https://doi.org/10.1080/15213269.2018.1554494>
- de Vries, D. A., Peter, J., de Graaf, H., & Nikken, P. (2016). Adolescents' social network site use, peer appearance-related feedback, and body dissatisfaction: Testing a mediation model. *Journal of Youth and Adolescence*, 45(1), 211-224. <https://doi.org/10.1007/s10964-015-0266-4>
- Deighton-Smith, N., & Bell, B. T. (2018). Objectifying fitness: A content and thematic analysis of #fitspiration images on social media. *Psychology of Popular Media Culture*, 7(4), 467-483. <https://doi.org/10.1037/ppm0000143>
- Diedrichs, P. C., Atkinson, M. J., Steer, R. J., Garbett, K. M., Rumsey, N., & Halliwell, E. (2015). Effectiveness of a brief school-based body image intervention 'Dove Confident Me: Single Session' when delivered by teachers and researchers: Results from a cluster randomised controlled trial. *Behaviour Research and Therapy*, 74, 94-104. <https://doi.org/10.1016/j.brat.2015.09.004>
- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment*, 49(1), 71-75. [https://doi.org/https://doi.org/10.1207/s15327752jpa4901\\_13](https://doi.org/https://doi.org/10.1207/s15327752jpa4901_13)
- Easterbrook, M. J., Wright, M. L., Dittmar, H., & Banerjee, R. (2014). Consumer culture ideals, extrinsic motivations, and well-being in children. *European Journal of Social Psychology*, 44(4), 349-359. <https://doi.org/10.1002/ejsp.2020>
- Ellison, N. B., Steinfield, C., & Lampe, C. (2007). The benefits of facebook "friends:" Social capital and college students' use of online social network sites. *Journal of Computer-Mediated Communication*, 12(4), 1143-1168. <https://doi.org/10.1111/j.1083-6101.2007.00367.x>
- Erfani, S. S., & Abedin, B. (2018). Impacts of the use of social network sites on users' psychological well-being: A systematic review. *Journal of the Association for Information Science and Technology*, 69(7), 900-912. <https://doi.org/10.1002/asi.24015>

- Fairburn, C. G., & Beglin, S. J. (1994). Assessment of eating disorders: Interview or self-report questionnaire? *International Journal of Eating Disorders*, 16(4), 363-370.  
[https://doi.org/10.1002/1098-108X\(199412\)16:4<363::AID-EAT2260160405>3.0.CO;2-#](https://doi.org/10.1002/1098-108X(199412)16:4<363::AID-EAT2260160405>3.0.CO;2-#)
- Fardouly, J., Diedrichs, P. C., Vartanian, L. R., & Halliwell, E. (2015). The mediating role of appearance comparisons in the relationship between media usage and self-objectification in young women. *Psychology of Women Quarterly*, 39(4), 447-457.  
<https://doi.org/10.1177/0361684315581841>
- Fardouly, J., Pinkus, R. T., & Vartanian, L. R. (2017). The impact of appearance comparisons made through social media, traditional media, and in person in women's everyday lives. *Body Image*, 20, 31-39. <https://doi.org/10.1016/j.bodyim.2016.11.002>
- 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, 82-88.  
<https://doi.org/10.1016/j.bodyim.2014.10.004>
- Fatt, S. J., Fardouly, J., & Rapee, R. M. (2019). #malefitspo: Links between viewing fitspiration posts, muscular-ideal internalisation, appearance comparisons, body satisfaction, and exercise motivation in men. *New Media & Society*, 21(6), 1311-1325.  
<https://doi.org/10.1177/1461444818821064>
- Franzoi, S. L., Vasquez, K., Sparapani, E., Frost, K., Martin, J., & Aebly, M. (2012). Exploring body comparison tendencies: Women are self-critical whereas men are self-hopeful. *Psychology of Women Quarterly*, 36(1), 99-109. <https://doi.org/10.1177/0361684311427028>
- 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. <https://doi.org/10.1089/cyber.2015.0296>
- Gerson, J., Plagnol, A. C., & Corr, P. J. (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. <https://doi.org/10.1016/j.chb.2016.06.023>



- Girard, M., Chabrol, H., & Rodgers, R. F. (2018). Support for a modified tripartite dual pathway model of body image concerns and risky body change behaviors in French young men. *Sex Roles*, 78(11-12), 799-809. <https://doi.org/10.1007/s11199-017-0850-z>
- Grogan, S. (2016). *Body image: Understanding body dissatisfaction in men, women and children* (3rd ed.). Routledge. <https://doi.org/10.4324/9781315681528>
- Halliiwell, E., Jarman, H. K., McNamara, A., Risdon, H., & Jankowski, G. (2015). Dissemination of evidence-based body image interventions: A pilot study into the effectiveness of using undergraduate students as interventionists in secondary schools. *Body Image*, 14, 1-4. <https://doi.org/10.1016/j.bodyim.2015.02.002>
- 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. <https://doi.org/10.1016/j.bodyim.2016.02.008>
- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, 6(1), 1-55. <https://doi.org/10.1080/10705519909540118>
- Huang, C. (2017). Time spent on social network sites and psychological well-being: A meta-analysis. *Cyberpsychology, Behavior and Social Networking*, 20(6), 346-354. <https://doi.org/10.1089/cyber.2016.0758>
- Jong, S. T., & Drummond, M. J. N. (2016). Hurry up and 'like' me: Immediate feedback on social networking sites and the impact on adolescent girls. *Asia-Pacific Journal of Health, Sport and Physical Education*, 7(3), 251-267. <https://doi.org/10.1080/18377122.2016.1222647>
- Keery, H., van den Berg, P., & Thompson, J. K. (2004). An evaluation of the tripartite influence model of body dissatisfaction and eating disturbance with adolescent girls. *Body Image*, 1(3), 237-251. <https://doi.org/10.1016/j.bodyim.2004.03.001>

- Kling, J., Kwakkenbos, L., Diedrichs, P. C., Rumsey, N., Frisen, A., Brandao, M. P., Silva, A. G., Dooley, B., Rodgers, R. F., & Fitzgerald, A. (2019). Systematic review of body image measures. *Body Image*, 30, 170-211. <https://doi.org/10.1016/j.bodyim.2019.06.006>
- Kross, E., Verduyn, P., Demiralp, E., Park, J., Lee, D. S., Lin, N., Shablack, H., Jonides, J., & Ybarra, O. (2013). Facebook use predicts declines in subjective well-being in young adults. *PLoS ONE*, 8(8), e69841. <https://doi.org/10.1371/journal.pone.0069841>
- Lai, H., Hsieh, P., & Zhang, R. (2018). Understanding adolescent students' use of Facebook and their subjective wellbeing: A gender-based comparison. *Behaviour & Information Technology*, 38(5), 533-548. <https://doi.org/10.1080/0144929X.2018.1543452>
- Lee, S. Y. (2014). How do people compare themselves with others on social network sites?: The case of Facebook. *Computers in Human Behavior*, 32, 253-260. <https://doi.org/10.1016/j.chb.2013.12.009>
- Lewis-Smith, H., Bray, I., Salmon, D., & Slater, A. (2020). Prospective pathways to depressive symptoms and disordered eating in adolescence: A 7-year longitudinal cohort study. *Journal of Youth and Adolescence*, 49(10), 2060-2074. <https://doi.org/10.1007/s10964-020-01291-1>
- Li, J., Lau, J. T., Mo, P. K., Su, X., Wu, A. M., Tang, J., & Qin, Z. (2016). Validation of the social networking activity intensity scale among junior middle school students in China. *PLoS ONE*, 11(10), e0165695. <https://doi.org/10.1371/journal.pone.0165695>
- Little, R. J. (1988). A test of missing completely at random for multivariate data with missing values. *Journal of the American Statistical Association*, 83, 1198-1202. <https://doi.org/10.1080/01621459.1988.10478722>
- Lopez, S. J., Snyder, C. R., Diener, E., Oishi, S., & Lucas, R. E. (2009). Subjective well-being: The science of happiness and life satisfaction. In *The Oxford handbook of positive psychology* (pp. 186-194). Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780195187243.013.0017>

- Mackinnon, D. P., Krull, J. L., & Lockwood, C. M. (2000). Equivalence of the mediation, confounding and suppression effect. *Prevention Science*, 1(4), 173-181.  
<https://doi.org/10.1023/A:1026595011371>
- McCrory, A., Best, P., & Maddock, A. (2020). The relationship between highly visual social media and young people's mental health: A scoping review. *Children and Youth Services Review*, 115, 105053. <https://doi.org/10.1016/j.childyouth.2020.105053>
- McLean, S. A., Paxton, S. J., & Wertheim, E. H. (2016). Does media literacy mitigate risk for reduced body satisfaction following exposure to thin-ideal media? *Journal of Youth and Adolescence*, 45(8), 1678-1695. <https://doi.org/10.1007/s10964-016-0440-3>
- McLean, S. A., Paxton, S. J., Wertheim, E. H., & Masters, J. (2015). Photoshopping the selfie: Self photo editing and photo investment are associated with body dissatisfaction in adolescent girls. *International Journal of Eating Disorders*, 48(8), 1132-1140.  
<https://doi.org/10.1002/eat.22449>
- Mendelson, B. K., Mendelson, M. J., & White, D. R. (2001). Body-esteem scale for adolescents and adults. *Journal of Personality Assessment*, 76(1), 90-106.  
[https://doi.org/10.1207/S15327752JPA7601\\_6](https://doi.org/10.1207/S15327752JPA7601_6)
- Mingoia, J., Hutchinson, A. D., Gleaves, D. H., & Wilson, C. (2019). The relationship between posting and photo manipulation activities on social networking sites and internalization of a tanned ideal among Australian adolescents and young adults. *Social Media + Society*, 5(1), 1-10.  
<https://doi.org/10.1177/2056305118820419>
- Mingoia, J., Hutchinson, A. D., Wilson, C., & Gleaves, D. H. (2017). The relationship between social networking site use and the internalization of a thin ideal in females: A meta-analytic review. *Frontiers in Psychology*, 8, Article 1351. <https://doi.org/10.3389/fpsyg.2017.01351>
- Muthén, L. K., & Muthén, B. O. (2017). *Mplus user's guide* (8th ed.). Muthén & Muthén.
- Nesi, J., Choukas-Bradley, S., & Prinstein, M. J. (2018). Transformation of adolescent peer relations in the social media context: Part 1-A theoretical framework and application to dyadic peer

relationships. *Clinical Child and Family Psychology Review*, 21(3), 267-294.

<https://doi.org/10.1007/s10567-018-0261-x>

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(3), 201-206.

<https://doi.org/10.1016/j.bodyim.2009.03.003>

Orben, A., Dienlin, T., & Przybylski, A. K. (2019). Social media's enduring effect on adolescent life satisfaction. *Proceedings of the National Academy of Sciences*, 116(21), 10226-10228.

<https://doi.org/10.1073/pnas.1902058116>

Papp, I., Urban, R., Czegledi, E., Babusa, B., & Tury, F. (2013). Testing the tripartite influence model of body image and eating disturbance among Hungarian adolescents. *Body Image*, 10(2), 232-242. <https://doi.org/10.1016/j.bodyim.2012.12.006>

Paxton, S. J., Neumark-Sztainer, D., Hannan, P. J., & Eisenberg, M. E. (2006). Body dissatisfaction prospectively predicts depressive mood and low self-esteem in adolescent girls and boys. *Journal of Clinical Child and Adolescent Psychology*, 35(4), 539-549.

[https://doi.org/10.1207/s15374424jccp3504\\_5](https://doi.org/10.1207/s15374424jccp3504_5)

Perloff, R. M. (2014). Social media effects on young women's body image concerns: Theoretical perspectives and an agenda for research. *Sex Roles*, 71(11-12), 363-377.

<https://doi.org/10.1007/s11199-014-0384-6>

Pingitore, R., Spring, B., & Garfield, D. (1997). Gender differences in body satisfaction. *Obesity Research*, 5(5), 402-409. <https://doi.org/10.1002/j.1550-8528.1997.tb00662.x>

Proctor, C., Linley, A. P., & Maltby, J. (2009). Youth life satisfaction measures: A review. *The Journal of Positive Psychology*, 4(2), 128-144. <https://doi.org/10.1080/17439760802650816>

Rodgers, R. F. (2016). The relationship between body image concerns, eating disorders and Internet use, Part II: An integrated theoretical model. *Adolescent Research Review*, 1(2), 121-137.

<https://doi.org/10.1007/s40894-015-0017-5>

- Rodgers, R. F., Franko, D. L., Lovering, M. E., Luk, S., Pernal, W., & Matsumoto, A. (2018). Development and validation of the female muscularity scale. *Sex Roles*, 78(1-2), 18-26. <https://doi.org/10.1007/s11199-017-0775-6>
- Rodgers, R. F., Ganchou, C., Franko, D. L., & Chabrol, H. (2012). Drive for muscularity and disordered eating among French adolescent boys: A sociocultural model. *Body Image*, 9(3), 318-323. <https://doi.org/10.1016/j.bodyim.2012.03.002>
- Rodgers, R. F., McLean, S. A., & Paxton, S. J. (2015). Longitudinal relationships among internalization of the media ideal, peer social comparison, and body dissatisfaction: Implications for the tripartite influence model. *Developmental Psychology*, 51(5), 706-713. <https://doi.org/10.1037/dev0000013>
- Rodgers, R. F., & Melioli, T. (2016). The relationship between body image concerns, eating disorders and Internet use, Part I: A review of empirical support. *Adolescent Research Review*, 1(2), 95-119. <https://doi.org/10.1007/s40894-015-0016-6>
- Rodgers, R. F., Slater, A., Gordon, C. S., McLean, S. A., Jarman, H. K., & Paxton, S. J. (2020). A biopsychosocial model of social media use and body image concerns, disordered eating, and muscle-building behaviors among adolescent girls and boys. *Journal of Youth and Adolescence*, 49(2), 399-409. <https://doi.org/10.1007/s10964-019-01190-0>
- Rousseau, A., Eggermont, S., & Frison, E. (2017). The reciprocal and indirect relationships between passive Facebook use, comparison on Facebook, and adolescents' body dissatisfaction. *Computers in Human Behavior*, 73, 336-344. <https://doi.org/10.1016/j.chb.2017.03.056>
- Saiphoo, A. N., & Vahedi, Z. (2019). A meta-analytic review of the relationship between social media use and body image disturbance. *Computers in Human Behavior*, 101, 259-275. <https://doi.org/10.1016/j.chb.2019.07.028>
- Sampasa-Kanyinga, H., & Lewis, R. F. (2015). Frequent use of social networking sites is associated with poor psychological functioning among children and adolescents. *Cyberpsychology, Behavior and Social Networking*, 18(7), 380-385. <https://doi.org/10.1089/cyber.2014.0377>

- Schaefer, L. M., Burke, N. L., Thompson, J. K., Dedrick, R. F., Heinberg, L. J., Calogero, R. M., Bardone-Cone, A. M., Higgins, M. K., Frederick, D. A., Kelly, M., Anderson, D. A., Schaumberg, K., Nerini, A., Stefanile, C., Dittmar, H., Clark, E., Adams, Z., Macwana, S., Klump, K. L., Vercellone, A. C., Paxton, S. J., & Swami, V. (2015). Development and validation of the sociocultural attitudes towards appearance questionnaire-4 (SATAQ-4). *Psychological Assessment*, 27(1), 54-67. <https://doi.org/10.1037/a0037917>
- Schaefer, L. M., Harriger, J. A., Heinberg, L. J., Soderberg, T., & Thompson, J. K. (2017). Development and validation of the sociocultural attitudes towards appearance questionnaire-4-revised (SATAQ-4R). *International Journal of Eating Disorders*, 50(2), 104-117. <https://doi.org/10.1002/eat.22590>
- Thompson, J. K., Heinberg, L. J., Altabe, M., & Tantleff-Dunn, S. (1999). *Exacting beauty: Theory, assessment, and treatment of body image disturbance*. American Psychological Association. <https://doi.org/10.1037/10312-000>
- Tiggemann, M., & Slater, A. (2013). NetGirls: The Internet, Facebook, and body image concern in adolescent girls. *International Journal of Eating Disorders*, 46(6), 630-633. <https://doi.org/10.1002/eat.22141>
- Tiggemann, M., & Slater, A. (2017). Facebook and body image concern in adolescent girls: A prospective study. *International Journal of Eating Disorders*, 50(1), 80-83. <https://doi.org/10.1002/eat.22640>
- Twigg, L., Duncan, C., & Weich, S. (2020). Is social media use associated with children's well-being? Results from the UK Household Longitudinal Study. *Journal of Adolescence*, 80, 73-83. <https://doi.org/10.1016/j.adolescence.2020.02.002>
- Tylka, T. L. (2011). Refinement of the tripartite influence model for men: Dual body image pathways to body change behaviors. *Body Image*, 8(3), 199-207. <https://doi.org/10.1016/j.bodyim.2011.04.008>

- Valenzuela, S., Park, N., & Kee, K. F. (2009). Is there social capital in a social network site?: Facebook use and college students' life satisfaction, trust, and participation. *Journal of Computer-Mediated Communication*, 14(4), 875-901. <https://doi.org/10.1111/j.1083-6101.2009.01474.x>
- Vannucci, A., & Ohannessian, C. M. (2019). Social media use subgroups differentially predict psychosocial well-being during early adolescence. *Journal of Youth and Adolescence*, 48(8), 1469-1493. <https://doi.org/10.1007/s10964-019-01060-9>
- Verduyn, P., Ybarra, O., Resibois, N., 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. <https://doi.org/10.1111/sipr.12033>
- Wang, J. L., Wang, H. Z., 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 networking site usage and subjective well-being. *Frontiers in Psychology*, 8, Article 771. <https://doi.org/10.3389/fpsyg.2017.00771>
- Wang, Y., Fardouly, J., Vartanian, L. R., & Lei, L. (2019). Selfie-viewing and facial dissatisfaction among Chinese adolescents: A moderated mediation model of general attractiveness internalization and body appreciation. *Body Image*, 30, 35-43. <https://doi.org/10.1016/j.bodyim.2019.05.001>
- Weinstein, E. (2017). Adolescents' differential responses to social media browsing: Exploring causes and consequences for intervention. *Computers in Human Behavior*, 76, 396-405. <https://doi.org/10.1016/j.chb.2017.07.038>
- Yuan, K. H., & Bentler, P. M. (2000). Three likelihood-based methods for mean and covariance structure analysis with nonnormal missing data. *Sociological Methodology*, 30(1), 165-200. <https://doi.org/10.1111/0081-1750.00078>

**Table 1***Mean, Standard Deviations, Theoretical Score Range, and Zero-Order Spearman's Correlations*

	<i>M (SD)</i>	Range	1	2	3	4	5	6	7	8	9	10
1. Social media intensity	3.38 (0.80)	1-5	-									
2. Appearance-focused social media use	3.36 (1.09)	1-5	.54**	-								
3. Muscular internalization	2.58 (1.10)	1-5	.17**	.11**	-							
4. Thin internalization	2.50 (1.05)	1-5	.22**	.18**	.29**	-						
5. Frequency of comparisons	2.31 (1.23)	1-5	.32**	.27**	.16**	.48**	-					
6. Social comparisons	2.36 (1.05)	1-5	.30**	.22**	.17**	.44**	.63**	-				
7. Appearance comparisons	2.21 (1.17)	1-5	.31**	.30**	.21**	.55**	.76**	.70**	-			
8. Body shape satisfaction	50.21 (13.02)	14-70	-.13**	-.07*	.03	-.32**	-.33**	-.37**	-.41**	-		
9. Appearance esteem	3.49 (0.09)	1-5	-.21**	-.18**	-.06*	-.48**	-.49**	-.52**	-.60**	.65**	-	
10. Overvaluation of weight and shape <sup>a</sup>	5.24 (1.87)	1-7	-.22**	-.16**	-.16**	-.46**	-.48**	-.46**	-.53**	.45**	.57**	-
11. Well-being	5.34 (1.38)	1-7	-.11**	-.06*	-.02	-.21**	-.26**	-.44**	-.34**	.52**	.50**	.31**

*Note.* *M* = mean, *SD* = standard deviation.<sup>a</sup> Reverse-scored.\* $p < .05$ . \*\*  $p < .001$ .



**Table 2**

*Significant Indirect Effects After Bootstrapping From Social Media Intensity/Appearance-Focused Social Media Use to Body Satisfaction/Well-Being*

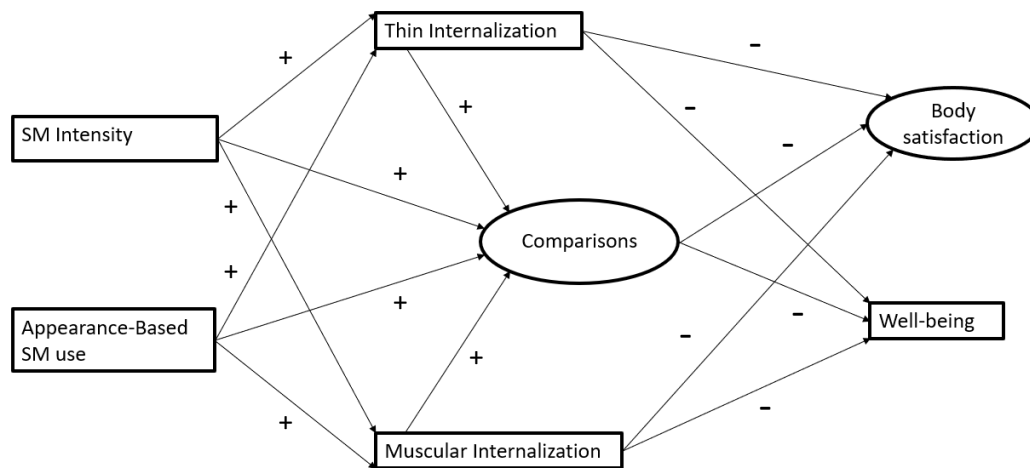
Indirect path	$\beta$	SE	95% CI
SM intensity > Thin internalization > Body satisfaction	-.04**	.01	-.06, -.02
SM intensity > Muscular internalization > Body satisfaction	.02*	.01	.01, .04
SM intensity > Comparisons > Body satisfaction	-.10**	.02	-.14, -.06
SM intensity > Thin internalization > Comparisons > Body satisfaction	-.06**	.01	-.09, -.04
SM intensity > Muscular internalization > Well-being	.01*	.01	.01, .03
SM intensity > Comparisons > Well-being	-.06**	.01	-.09, -.04
SM intensity > Thin internalization > Comparisons > Well-being	-.04**	.01	-.06, -.02
Appearance-focused SM > Thin internalization > Body satisfaction	-.02*	.01	-.04, -.00
Appearance-focused SM > Comparisons > Body satisfaction	-.07**	.02	-.02, -.04
Appearance-focused SM > Thin internalization > Comparisons > Body satisfaction	-.03*	.01	-.05, -.01
Appearance-focused SM > Comparisons > Well-being	-.04**	.01	-.07, -.02
Appearance-focused SM > Thin internalization > Comparisons > Well-being	-.02*	.01	-.03, -.00

*Note.* SM = social media; CI = confidence interval.

\*  $p < .05$ . \*\*  $p < .001$

**Figure 1**

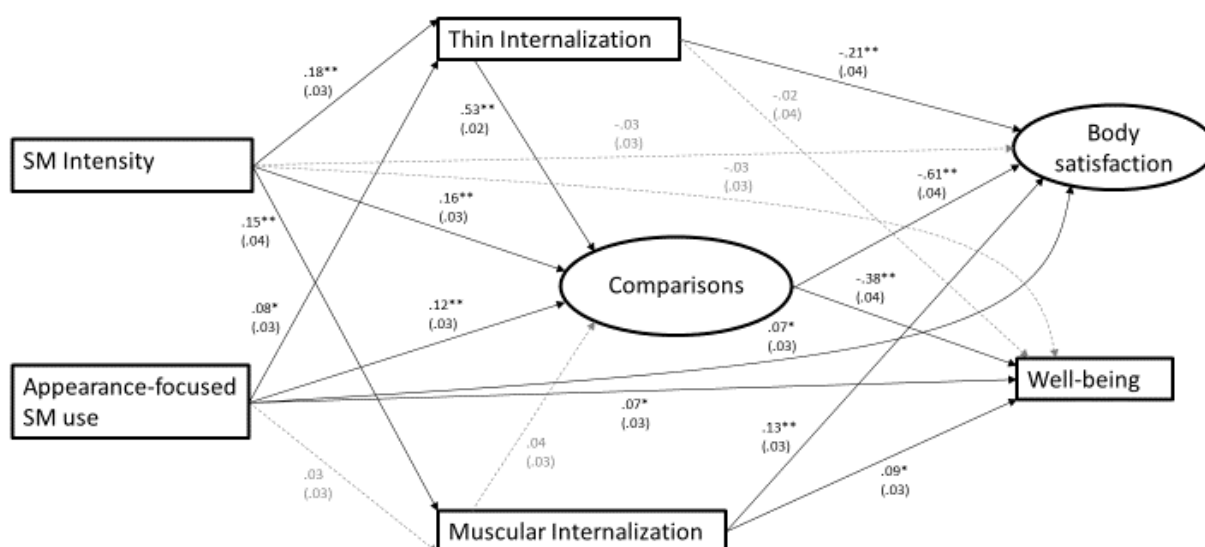
*Proposed Model of the Relationships Between Social Media Use, Appearance-Ideal Internalization, Comparisons, Body Satisfaction, and Well-Being*



*Note.* Ovals represent latent constructs; SM = social media; + = positive association; - = negative association.

**Figure 2**

*Structural Equation Model Assessing the Mechanisms of Social Media Use on Body Satisfaction and Well-Being*



*Note.* Ovals represent latent constructs. Dashed lines represent non-significant paths. SM = social media.

\* $p < 0.05$ . \*\* $p < 0.001$ .

**Supplementary Table S1***All Indirect Effects After Bootstrapping From Social Media Intensity/Appearance-Focused Social**Media Use to Body Satisfaction/Well-Being*

Indirect path	$\beta$	SE	95% CI
SM intensity > Thin internalization > Body satisfaction	-.04**	.01	-.06, -.02
SM intensity > Muscular internalization > Body satisfaction	.02*	.01	.00, .04
SM intensity > Comparisons > Body satisfaction	-.10**	.02	-.14, -.06
SM intensity > Thin internalization > Comparisons > Body satisfaction	-.06**	.01	-.09, -.04
SM intensity > Muscular internalization > Comparisons > Body satisfaction	-.00	.00	-.01, .00
SM intensity > Thin internalization > Well-being	-.00	.01	-.02, .01
SM intensity > Muscular internalization > Well-being	.01*	.01	.01, .03
SM intensity > Comparisons > Well-being	-.06**	.01	-.09, -.04
SM intensity > Thin internalization > Comparisons > Well-being	-.04**	.01	-.06, -.02
SM intensity > Muscular internalization > Comparisons > Well-being	-.00	.00	-.01, .00
Appearance-focused SM > Thin internalization > Body satisfaction	-.02*	.01	-.04, -.00
Appearance-focused SM > Muscular internalization > Body satisfaction	.00	.01	-.00, .01
Appearance-focused SM > Comparisons > Body satisfaction	-.07**	.02	-.02, -.04
Appearance-focused SM > Thin internalization > Comparisons > Body satisfaction	-.03*	.01	-.05, -.01
Appearance-focused SM > Muscular internalization > Comparisons > Body satisfaction	-.00	.00	-.00, .00
Appearance-focused SM > Thin internalization > Well-being	-.00	.00	-.01, .00
Appearance-focused SM > Muscular internalization > Well-being	.00	.00	-.00, .01
Appearance-focused SM > Comparisons > Well-being	-.04**	.01	-.07, -.02
Appearance-focused SM > Thin internalization > Comparisons > Well-being	-.02*	.01	-.03, -.00
Appearance-focused SM > Muscular internalization > Comparisons > Well-being	.00	.00	-.00, .00

*Note.* SM = social media; CI = confidence interval.\*  $p < .05$ . \*\*  $p < .001$

**Chapter Six: Direct and Indirect Relationships Between Social Media Use and Body Satisfaction: A  
Prospective Study Among Adolescent Boys and Girls**

Hannah K. Jarman<sup>a</sup>, Siân A. McLean<sup>a</sup>, Amy Slater<sup>b</sup>, Mathew D. Marques<sup>a</sup>, and Susan J. Paxton<sup>a</sup>

<sup>a</sup>School of Psychology and Public Health, La Trobe University

<sup>b</sup>Centre for Appearance Research, University of the West of England

Corresponding author:

Hannah K. Jarman, School of Psychology and Public Health, La Trobe University

T: +61 9479 3879, E: [h.jarman@latrobe.edu.au](mailto:h.jarman@latrobe.edu.au)

**Author contributions:**

HKJ conceived of the study, participated in its design, facilitated study coordination, conducted the analyses, and drafted the manuscript; MDM participated in the design of the study, assisted with statistical analysis, and provided feedback on the manuscript; SAM participated in the design of the study and provided feedback on the manuscript; AS participated in the design of the study and provided feedback on the manuscript; SJP participated in the design of the study and provided feedback on the manuscript. All authors contributed to interpretation of results and read and approved the final manuscript.

**Submission status:** An edited version is in press in *New Media & Society*.

### Abstract

Cross-sectional research suggests a small, inverse association between social media use and body satisfaction. However, less is known regarding prospective, bidirectional, or mediating effects. This study used a three-wave design to examine direct and indirect effects between social media use and body satisfaction, via thin-ideal and muscular-ideal internalisation and social comparisons.

Adolescents ( $N = 1,911$ ;  $M_{\text{age}} = 14.27$ ,  $SD = 1.08$ ) were invited to complete three online surveys over 1-year. Cross-lagged panel models indicated acceptable fit for two operationalisations of social media use, with better fit statistics for the appearance-focused use rather than photo-based activities model. Despite largely no direct effects, indirect effects were found. Social comparisons mediated the relationships over time, whereby higher social media use predicted higher comparisons, which predicted lower body satisfaction. The reverse direction was also found. Gender invariance indicates that prevention aimed at reducing comparisons may be suitable for boys and girls.

**Keywords:** Social media, body satisfaction, adolescents, prospective, bidirectional, mediation, sociocultural

## **Introduction**

Over the past decade social media use has grown exponentially. Adolescents are the most prolific users, with the proportion of adolescents using social media multiple times a day doubling from 34% in 2012 to 70% in 2016 (Rideout & Robb, 2018). Social media provides an ideal platform for fulfilling developmental needs specific to adolescence, including heightened importance of peers and social acceptance, and identity exploration and formation (Erikson, 1968). Further, this environment is typically dominated by photos, which frequently present appearance-focused and idealised content (Perloff, 2014). There is cross-sectional and prospective support for the relationship between social media use and poorer body satisfaction (e.g., de Vries et al., 2016; Saiphoo & Vahedi, 2019). Although it is also possible that the reverse is true, whereby body satisfaction impacts social media use, this has largely remained unexplored within the literature, particularly using prospective data to confirm directionality, with few exceptions (e.g., Rousseau et al., 2017). The current study will, therefore, examine the temporal relationship between social media use and body satisfaction among adolescents, and explore potential mediating mechanisms, namely thin- and muscular-ideal internalisation and social comparisons.

### **Sociocultural Theories of the Development and Maintenance of Body Image**

According to sociocultural theories of body image, specifically the tripartite influence model, three primary sociocultural influences contribute to the development of body image concerns; media, peers and parents/family (Thompson et al., 1999), with media the focus of the present study. In the model, relationships between sociocultural influences and body image are proposed to be mediated by appearance-ideal internalisation and social comparison. Appearance-ideal internalisation refers to the degree to which individuals assimilate socially defined appearance ideals as their own standard and strive to achieve those standards (Mingoia et al., 2017). Comparisons refer to the inclination to compare one's physical appearance with that of others (Vogel et al., 2015). Specifically, the model proposes that greater exposure to sociocultural influences increases

internalisation and comparisons, resulting in poor body satisfaction due to negative self-evaluation of one's appearance against unattainable appearance ideals. The tripartite influence model has received substantial support among adolescent and adult populations (e.g., Papp et al., 2013; Rodgers et al., 2011). Further, some studies have established support for elements of the model with prospective data (e.g., Hoffmann & Warschburger, 2019; Rodgers et al., 2015).

### **Social Media Use Impacts Body Satisfaction**

To date, only a small number of cross-sectional studies have examined a sociocultural model of body image within the context of social media (e.g., Jarman et al., 2021; Lee & Lee, 2021), providing preliminary support. We refer to this model as the social media influence model. Several prospective studies have examined the relationship between social media use and body satisfaction, although these have not included examination of all mediating components within the social media influence model. These studies showed that higher social media use predicted lower body satisfaction among adolescents (de Vries et al., 2016), with evidence that this relationship is also mediated by comparisons (Chang et al., 2019). These findings provide support for elements of the sociocultural model in the context of social media; however, research is yet to examine the social media influence model prospectively among adolescents, a primary aim of this research.

### **Temporal Direction of the Relationship Between Social Media Use and Body Satisfaction**

Although the tripartite influence model postulates that (social) media use predicts body image concerns directly and also indirectly through appearance-ideal internalisation and comparisons, some scholars have proposed that these relationships may work in the reverse or be bidirectional (Perloff, 2014; Rousseau & Eggermont, 2018). Such proposals are consistent with uses and gratifications theory (Katz et al., 1973) which postulates that individuals use (social) media as a means to fulfil individual psychological needs. In this manner, attitudes, desires, and motivations directly shape media consumption.



Applied to considerations of the social media and body image relationship, it is possible that body satisfaction may direct social media engagement. Specifically, individuals with poor body satisfaction may seek out distinct gratifications from social media, increasing frequency of use or engagement with specific activities (e.g., comparing oneself, viewing others' profiles or posting images to obtain appearance feedback), with the aim of self-improvement (Rousseau et al., 2017). This may also operate through mediation, whereby poor body satisfaction may promote increased desire to achieve appearance ideals and engagement in comparisons to determine physical attractiveness, resulting in increased use. Although prospective evidence regarding the direction of the social media and body satisfaction relationship is limited, empirical research does support bidirectionality among adolescents through direct and indirect effects, such as comparisons (Rousseau et al., 2017; Wang et al., 2019). However, this research has only collected data at two timepoints, limiting investigation of a temporal mediation sequence. The present study will extend the existing literature to provide a three-wave prospective examination of the direct and indirect relationships between social media use and body satisfaction, via thin-ideal and muscular-ideal internalisation and social comparisons.

### **Operationalisation of Social Media Use**

Earlier research has focussed on, and operationalised, social media use as time spent, primarily on Facebook (Saiphoo & Vahedi, 2019). A continued focus on Facebook is likely to be limiting, as newer sites such as Instagram and Snapchat become increasingly popular among adolescents (Anderson & Jiang, 2018). Subjective accounts indicate the relevance of these platforms for body image whereby adolescents consider Instagram and Snapchat to be especially damaging for body image, likely attributable to the platforms' appearance potency (Royal Society for Public Health, 2017). These sites tend to provide an appearance-focused environment, with the addition of peer interaction through likes and comments likely to fuel the saliency of such content. In line with sociocultural theories, appearance-focused social media use, here defined and measured as

Instagram and Snapchat use, likely influences body image by presenting and reinforcing the importance of appearance ideals and facilitating comparisons. Consistent with this, appearance-focused social media use, specifically exposure to fitspiration content on Instagram, appears to be more harmful for body image than general time spent on social media (Fardouly et al., 2017). This finding has been supported by a meta-analysis which demonstrated stronger effect sizes on body dissatisfaction for appearance-focused social media use than more general use (Saiphoo & Vahedi, 2019).

Although appearance-focused use appears important, social media use can encompass a range of activities. One of the most popular activities is photo-based use, defined as engagement with photos (e.g., viewing, posting, interacting with self and others' photos; Anderson & Jiang, 2018). The majority of images posted on social media contain people, including selfies and friends (Hu et al., 2014). Given this content typically depicts idealised self-presentations (Bell, 2019), it is likely that users will engage in upward comparisons, resulting in diminished body satisfaction. In line with this proposal, photo-based activities have been found to be more detrimental for body satisfaction than general social media use (e.g., Holland & Tiggemann, 2016), a finding supported by a small number of cross-sectional studies among adolescents (e.g., McLean et al., 2015; Meier & Gray, 2014).

It appears then that both the broad social media environment (e.g., Instagram and Snapchat use) and specific online activities (e.g., photo-based) may play a role in body satisfaction. Indeed, operationalisations of both appearance-focused platform use and photo-based social media activities have been supported in cross-sectional investigations of the social media influence model among girls and women (Fardouly et al., 2017; Lee & Lee, 2021; Scully et al., 2020). However, it is possible that different operationalisations of social media use may be more or less relevant than others within such models. Comparing different operationalisations may offer a deeper, more

nuanced understanding of the effect of social media use on body satisfaction. Specifically, it may clarify which aspects of social media use are more relevant to consider and assess in research in this context, with the possibility to inform future research and prevention efforts on specific types of use to target. In addition, examining these relationships prospectively would provide temporal understanding of these pathways over time. Consequently, a secondary aim of this research is to test social media use operationalisation within the social media influence model. Specifically, we aim to test and compare two models; one with appearance-focused platform use and one with photo-based activities on social media as the measure of social media use.

### **The Role of Gender**

Although girls typically report spending more time on Instagram and Snapchat than boys (Mingoia et al., 2019), both boys and girls experience concerns regarding negative evaluation and appearance pressures on social media (Verrastro et al., 2020). Therefore, the mechanisms in the relationship between social media use and body satisfaction likely operate in the same way, regardless of gender. A meta-analytic review of cross-sectional research found that gender did not moderate the relationship between social media use and body satisfaction (Saiphoo & Vahedi, 2019). Similarly, prospective research suggests that these relationships are largely equivalent in adolescent boys and girls (de Vries et al., 2016; Hoffmann & Warschburger, 2019). In relation to the tripartite influence model, empirical support has emerged among males and females (Girard et al., 2018; Rodgers et al., 2011). However, cross-sectional examinations of the social media influence model have largely included only female samples (e.g., Lee & Lee, 2021; Scully et al., 2020). A final aim of the current study was to examine if the direct and indirect relationships between social media use and body satisfaction were consistent across gender, when explored prospectively.

## The Present Study

The aim of the present study was to examine the temporal direct and indirect relationships between social media use and body satisfaction, via thin- and muscular-ideal internalisation and social comparison, at three timepoints over 1-year. A further aim was to explore the impact of operationalisation of social media use within the model, testing two models: appearance-focused use and photo-based activities. The final aim was to examine whether the direct and indirect relationships were consistent across gender.

**Hypothesis 1:** Direct relationships between social media use and body satisfaction will be inverse and bidirectional, whereby greater social media use will predict lower body satisfaction and vice-versa.

**Hypothesis 2:** Thin- and muscular-ideal internalisation and social comparisons will mediate the relationship from social media use to body satisfaction, whereby greater social media use will predict higher thin- and muscular-ideal internalisation and comparison which will, in turn, predict lower body satisfaction.

**Research question 1:** Is the prospective relationship from body satisfaction to social media use mediated by thin- and muscular-ideal internalisation and social comparisons?

**Research question 2:** Is there a relative fit difference between models with different operationalisations of social media use (appearance-focused vs photo-based use)?

**Hypothesis 3:** The relationships within the models will be equivalent across gender.

## Method

### Participants

This study was pre-registered on the Open Science Framework (<https://bit.ly/f3cm5>). Participants were recruited from two private, co-educational secondary schools in Melbourne,

Australia. The total sample, who completed at least one timepoint, was 1,911 11-16-year-olds (55.83% male;  $M_{\text{age at time 1}} = 14.27$ ,  $SD = 1.08$ ). Participants either completed all three timepoints ( $n = 915$ ; 47.9% retention), a combination of two timepoints ( $n = 667$ ), or only one timepoint ( $n = 329$ ). Most participants were born in Australia/New Zealand (85%). The Index of Relative Socioeconomic Advantage and Disadvantage (Australian Bureau of Statistics, 2018), based on participants' home postcode, indicated that participants were socioeconomically advantaged, with a mean score of 9.30 ( $SD = 1.17$ , range 1-10). A sensitivity analysis (Faul et al., 2009) demonstrated that the sample ( $N = 1,911$ ) had sufficient power (>80%) to detect small effect sizes ( $r = .06$ ).

## Measures

### *Demographics*

Participants completed self-reported demographic information, including date of birth, gender, country of birth, and home postcode.

### *Social Media Use*

**Appearance-Focused Social Media Platform Use.** Participants completed two-items to assess how frequently they use Instagram and Snapchat using a 5-point scale (1 = *never*, 5 = *always*). These items were averaged, with higher scores representing higher frequency of appearance-focused social media platform use. The Spearman-Brown coefficient was moderate over the three timepoints ( $r_s = .58-.61$ ).

**Photo-Based Social Media Activities.** Engagement in photo-based social media activities was measured using the Photo subscale of the Facebook Questionnaire (Meier & Gray, 2014). Given declines in adolescents' Facebook use, participants were asked to report on social media use generally, rather than specific to Facebook. One item was omitted ("Create a photo album with photos of yourself and friends/family") as this feature is not available across platforms. The remaining modified 6-item scale asked participants to report how frequently they engaged in photo-

based activities (e.g., “post a photo”) on a 5-point scale (1 = *almost never or never*, 5 = *nearly every time I log on*). Item responses were averaged, with higher scores representing greater engagement with photo-based activities on social media. Internal reliability was high ( $\alpha = .80-.83$ )

### ***Internalisation of Appearance Ideals***

Internalisation of appearance-ideals were assessed using two measures: the 5-item Thin/Low Body Fat subscale of the Sociocultural Attitudes Towards Appearance Questionnaire-4 (SATAQ-4; Schaefer et al., 2015) for thin-ideal internalisation and the 4-item Muscular subscale of the SATAQ-4R-Male (Schaefer et al., 2017) for muscular-ideal internalisation. Participants indicate their agreement with items using a 5-point Likert scale (1 = *definitely disagree*, 5 = *definitely agree*). Each item was accompanied with text to specify appearance ideals which were being referred to (e.g., thin-ideal internalisation; “I want my body to look very thin [e.g., like celebrities and models]”: muscular-ideal internalisation; “It is important for me to look muscular [e.g., like sports stars and fitspiration posts]”). Item responses were averaged, with higher scores representing greater thin- and muscular-ideal internalisation, respectively. Internal reliability was high (thin-ideal  $\alpha = .91-.92$ ; muscular-ideal  $\alpha = .93-.94$ )

### ***Comparisons on Social Media***

To capture the multifaceted nature of social media comparisons, three aspects were assessed (a) frequency of general comparisons; (b) social comparisons; and (c) appearance comparisons. To ensure the measures assessed comparisons on social media, the stem “On social media...” was included at the beginning of each item. First, a single item measure assessed frequency of engagement in social media comparisons (“I think I often compare myself with others on social media”; Lee, 2014). Second, engagement in negative social comparisons on social media was measured using 3-items (e.g., “I often think that others are having a better life than me”; Frison & Eggermont, 2016; Lee, 2014). Finally, the 5-item Upward Physical Appearance Comparison Scale

(O'Brien et al., 2009) assessed the tendency to engage in appearance comparisons on social media (e.g., "I tend to compare myself to people I think look better than me").

Participants responded to all 9-items using a 5-point Likert scale (1 = *strongly disagree*, 5 = *strongly agree*). A principal component analysis (PCA) with oblimin rotation confirmed a single component which explained 76.24% of the total variance, with all items demonstrating satisfactory loading (all > .70). Consequently, the regression score from the PCA was used as a scale score in all subsequent analyses, with higher scores representing greater tendency to engage in comparisons on social media.

### **Body Satisfaction**

Satisfaction with appearance was measured using a modified version of the Body Shape Satisfaction Scale (Pingitore et al., 1997). Four-items (chest, muscles, overall body fat, hair) were added to the original 10-item scale, whereby participants were asked to report how satisfied they were with a list of physical features using a 5-point scale (1 = *very dissatisfied*, 5 = *very satisfied*). Item responses were summed, with higher scores representing greater body satisfaction. Internal reliability was high ( $\alpha = .95-.96$ ).

### **Procedure**

Ethical approval was obtained from the University Ethics Committee. Informed opt-out parental consent was used whereby parents were informed of the research and provided with the opportunity to opt-out their child, along with active participant assent from adolescents. Participants completed online surveys during class time on three occasions, approximately 6-months apart (2019-2020). Some participants completed the final survey during COVID-19 restrictions which meant that researchers were not able to attend schools to supervise data collection. However, these sessions were supervised by a classroom teacher and participants viewed a video of the lead author providing instructions to facilitate data collection.

## Statistical Analyses

A series of cross lagged panel models (CLPM) were conducted to examine prospective relationships between social media use and body satisfaction using MPlus 8.0 (Muthén & Muthén, 2017). Full information maximum likelihood procedure was used to account for missing data. Maximum likelihood estimation with robust standard errors was used to correct for skewness (Yuan & Bentler, 2000). Given scale scores used different response scales, all variables were standardised in Mplus. Age was included as a covariate in all models. Initial model statistics demonstrated poor model fit and therefore were not interpretable. As a result, a modification was made to the pre-registration to re-specify models as stationary CLPM. In addition, a more stringent threshold of  $p \leq .01$  was used to reduce the likelihood of Type I error given the number of tests performed. The magnitude of the effects are described using Cohen's  $d$  (Cohen, 1988).

Two models were examined separately, whereby the only difference was the operationalisation of social media use: appearance-focused use vs photo-based activities. Model fit indices of each model were considered, alongside the Bayesian Information Criterion (BIC), to determine which model demonstrated better fit to the data. If one model had a BIC at least 10 units less than the alternative model, that model was considered preferable. However, if the models were within 10 units the findings would be considered ambiguous (Kass & Raftery, 1995).

To examine gender invariance in the model, multigroup analyses were performed to test whether the strengths of relationships differed across gender (i.e., boys and girls) over the three timepoints. Participants who did not identify as male or female were excluded for these analyses ( $n = 45$ ). These analyses were run on both models (appearance-focused use vs photo-based activities). Given the large number of effects, the Benjamini-Hochberg approach for adjusted significance was used to reduce the possibility of Type 1 error (Benjamini & Hochberg, 1995).



## Results

### Attrition Analyses

We conducted a Poisson regression using the demographic items of age, gender, country of birth, and socioeconomic status to predict the number of subsequent timepoints participants responded to. Analyses suggested that participants born in Australia/New Zealand were significantly more likely to complete more timepoints ( $\beta = -0.699$ ,  $p = .002$ ,  $CI_{99} [-1.286, -0.112]$ ), while all other predictors were non-significant.

### Descriptive Statistics

Table 1 displays the means, standard deviations, and correlations between variables across all three timepoints. In general, photo-based activities and, to a lesser extent, appearance-focused social media use, demonstrated a small, inverse association with body satisfaction. Overall, thin-ideal internalisation and comparisons were positively associated with social media use and inversely associated with body satisfaction, with small-to-medium and medium strength, respectively. Although muscular-ideal internalisation demonstrated small positive associations with appearance-focused social media use, it was inconsistently related to photo-based activities or body satisfaction.

### Cross-Lagged Paths Between Social Media Use and Body Satisfaction Over Time

For both appearance-focused use and photo-based activities, two stationary CLPMs were conducted separately to examine the bidirectional relationships between social media use, appearance-ideal internalisation, social comparisons, and body satisfaction (Figure 1 and Figure 2, respectively). All path coefficients for each model are presented in supplementary materials. Contrary to our prediction that social media use would predict body satisfaction over time, and that body satisfaction would predict social media use over time (hypothesis 1), no significant direct relationship was found in either direction in the photo-based activities model; social media use to body satisfaction ( $B = 0.007$ ,  $p = .661$ ,  $CI_{99} [-0.036, 0.051]$ ), body satisfaction to social media use ( $B =$

0.038,  $p = .082$ ,  $CI_{99} [-0.018, 0.094]$ ). In the appearance-focused use model, a unidirectional relationship was found, whereby body satisfaction predicted greater social media use over time ( $B = 0.048$ ,  $p = .006$ ,  $CI_{99} [0.003, 0.093]$ ), but the reverse was non-significant ( $B = -0.002$ ,  $p = .910$ ,  $CI_{99} [-0.042, 0.038]$ ).

Next, we examined whether relationships between social media use and body dissatisfaction were mediated by thin- and muscular-ideal internalisation and comparisons. Regarding the relationships from social media use to body satisfaction, in line with the social media influence model, thin-ideal internalisation and comparisons mediated the relationship from social media use to body satisfaction over time in both models (appearance-focused use; comparison  $B = -0.015$ ,  $p < .001$ ,  $CI_{99} [-0.023, -0.007]$ : photo-based activities; thin-ideal internalisation  $B = -0.007$ ,  $p = .010$ ,  $CI_{99} [-0.013, 0.000]$ , comparisons  $B = -0.022$ ,  $p < .001$ ,  $CI_{99} [-0.032, -0.012]$ ), with the exception of thin-ideal internalisation in the appearance-focused use model ( $B = -0.003$ ,  $p = .022$ ,  $CI_{99} [-0.007, 0.000]$ ). Specifically, higher social media use predicted higher thin-ideal internalisation and comparisons which, in turn, predicted lower body satisfaction over time. These effects were small. In addition, the social media to body satisfaction relationship was not mediated by muscular-ideal internalisation in either model (appearance-focused use;  $B = 0.002$ ,  $p = .042$ ,  $CI_{99} [-0.001, 0.005]$ : photo-based activities;  $B = 0.001$ ,  $p = .532$ ,  $CI_{99} [-0.002, 0.004]$ ).

Regarding the relationships from body satisfaction to social media use, in line with uses and gratifications theory, the prospective relationship from body satisfaction to social media use was mediated by comparisons in the photo-based activities model ( $B = -0.011$ ,  $p = .001$ ,  $CI_{99} [-0.019, -0.002]$ ), with small effects, but not the appearance-focused use model ( $B = -0.004$ ,  $p = .039$ ,  $CI_{99} [-0.010, 0.001]$ ). This relationship was not mediated over time by muscular-ideal internalisation (appearance-focused use  $B = <0.001$ ,  $p = .567$ ,  $CI_{99} [-0.001, 0.001]$ : photo-based activities  $B = <0.001$ ,  $p = .740$ ,  $CI_{99} [-0.001, 0.001]$ ) or thin-ideal internalisation (appearance-focused use  $B = -0.001$ ,  $p =$

.336,  $CI_{99} [-0.004, 0.002]$ : photo-based activities  $B = -0.004$ ,  $p = .039$ ,  $CI_{99} [-0.009, 0.001]$ ) in either model.

### Operationalisation of Social Media Use

To examine the operationalisation of social media use with the better model fit, two models were compared (appearance-focused use vs. photo-based activities). Both models demonstrated acceptable fit; appearance-focused use  $\chi^2 = 750.186$ ,  $df = 60$ ,  $p < .001$ , comparative fit index ( $CFI$ ) = .900, root mean square error of approximation ( $RMSEA$ ) = .078 (90%  $CI = 0.073, 0.083$ ), and standardized root mean squared residual ( $SRMR$ ) = .045; photo-based  $\chi^2 = 808.171$ ,  $df = 60$ ,  $p < .001$ ,  $CFI = .885$ ,  $RMSEA = .081$  (90%  $CI = 0.076, 0.086$ ),  $SRMR = .047$ . To examine which operationalisation of social media use demonstrated better fit, BIC was considered. The appearance-focused use model demonstrated a smaller BIC value (sample-size adjusted BIC = 53,872.406) than the photo-based activities model (sample-size adjusted BIC = 54,475.791), indicating that the model with social media operationalised as appearance-focused use provided better fit than the model with the photo-based activities measure.

### Multigroup Analysis

Gender invariance within the two models was then assessed by examining the strength of relationships by gender (boys, girls). The model fit was acceptable for both models (appearance-focused use  $\chi^2 = 769.809$ ,  $df = 118$ ,  $p < .001$ ,  $CFI = .886$ ,  $RMSEA = .085$ ,  $SRMR = .054$ ; photo-based activities  $\chi^2 = 820.770$ ,  $df = 118$ ,  $p < .001$ ,  $CFI = .868$ ,  $RMSEA = .088$ ,  $SRMR = .058$ ). Supporting hypothesis 3, none of the direct or indirect effects between social media use and body satisfaction were different by gender across the two models following Benjamini-Hochberg adjustment. Full multigroup results, which examined gender across all pathways within the model, can be found in the supplementary tables.

## Discussion

We aimed to prospectively examine direct and indirect relationships between social media use and body satisfaction through thin- and muscular-ideal internalisation and social comparisons at three timepoints over 1-year. We also aimed to explore the impact of operationalisations of social media use, as well as investigating whether relationships were consistent across gender. Contrary to hypothesis 1, social media use did not directly predict body satisfaction over time. The same pattern of results was largely found for the reverse direction, with the exception of a unidirectional relationship from body satisfaction to social media use only in the appearance-focused use model. However, bidirectional mediation was found via comparisons. Specifically, higher social media use predicted higher comparisons, resulting in lower body satisfaction, and the reverse was also observed, providing partial support of hypothesis 2. Although both operationalisations of social media use had acceptable fit within the proposed model, the appearance-focused use model demonstrated better fit to the data than the photo-based activities model. Finally, in line with hypothesis 3, the direct and indirect relationships within the models were equivalent among boys and girls.

Prospective modelling found that relationships over time from social media use to body satisfaction were present only when mediated through comparisons, and, to a lesser extent, thin-ideal internalisation. Higher social media use predicted greater thin-ideal internalisation and comparisons 6-months later, which in turn predicted lower body satisfaction at 1-year follow-up. These findings are theoretically consistent with the (social) media element of the tripartite influence model (Thompson et al., 1999). Importantly, social media use and body satisfaction were only related through thin-ideal internalisation and comparisons, suggesting indirect, rather than direct, effects (Lee & Lee, 2021; Scully et al., 2020). However, given the saliency of appearance-focused and idealised content portrayed on social media, and the seemingly endless opportunities for comparisons, it is likely that social media use will facilitate comparisons and reinforce internalisation,

resulting in poor body satisfaction over time. These findings align with theoretical perspectives regarding the relationship between social media use and body satisfaction (Perloff, 2014), emphasising the importance of examining mediating psychological processes such as thin-ideal internalisation and comparisons.

When the reverse pathways were examined, higher body satisfaction directly predicted higher social media use only in the model that contained the appearance-focused use measure of social media. Consistent with previous research (e.g., Rousseau et al., 2017), the relationship from body satisfaction to social media use was mediated by comparison in the photo-based social media model. Regarding the mediation, lower body satisfaction predicted higher comparison 6-months later, which in turn predicted higher social media use at 1-year follow-up. These findings suggest that adolescents' body image may predict social media use over time, providing preliminary support for the application of uses and gratification theory (Katz et al., 1973) in this context. Further, consistent with previous research (e.g., Saiphoo & Vahedi, 2019), the effects found were small. However, the present research is the first that the authors are aware of which provides prospective support for these pathways, extending current theoretical knowledge about these relationships over time.

Interestingly, for the appearance-focused social media use model, direct and indirect pathways demonstrated different valence. In the direct pathway, lower body satisfaction predicted lower social media use. Whereas for the mediated pathway, lower body satisfaction predicted higher appearance-focused social media use through higher comparisons. The key element seems to be the effect of the mediating variable, comparisons. When the direct relationship is considered, lower body satisfaction may predict lower social media use as a means to avoid certain detrimental aspects of the social media environment (e.g., negative feedback). This might be analogous to self-preservation or selective avoidance (Rousseau & Eggermont, 2018). However, when low body satisfaction leads to engagement in comparisons, higher engagement with social media appears to

follow, likely for gratification seeking, potentially as a drive for self-improvement (Rousseau et al., 2017). These findings highlight the complexity in the prospective relationships between social media and body satisfaction and emphasise the need to consider the role of mediating processes. Further research is needed to confirm the valence of these relationships and the applicability of uses and gratification theory within this context.

The indirect relationships between social media use and body satisfaction through comparison were found to be bidirectional, indicating the possibility of a feedback loop or spiral. Through greater comparison: 1) greater social media use predicted lower body satisfaction, and (2) lower body satisfaction predicted greater social media use, which, when operating in combination, might form a continuous loop over time. Social media appears to facilitate comparisons, thereby promoting the development of low body satisfaction and in turn, low body satisfaction prompts comparisons, thereby encouraging increased social media use. Social media, which often promotes appearance ideals, may be sought as a means to seek gratifications or cope with or alleviate appearance concerns, as previously mentioned. However, this appears a maladaptive coping mechanism when comparisons result. Although these findings provide the first prospective support of this relationship in three-wave data, replication is needed, including utilisation of more timepoints and extending the time period beyond one year. If these findings are reproduced, it would suggest that these relationships are not linear and theoretical frameworks should be modified to account for this feedback loop (Rodgers, 2016).

The observed relationships between muscular-ideal internalisation and other study variables were largely inconsistent with the study hypotheses. Inspection of the correlations indicated that muscular-ideal internalisation was generally not related to photo-based social media use or body satisfaction, and in CLPM, nor did it mediate this relationship. This finding is contrary to the tripartite influence model (Thompson et al., 1999) and empirical findings which have demonstrated that for boys and men greater social media use is associated with higher muscular-ideal internalisation and

appearance comparisons which are then associated with lower body satisfaction (Fatt et al., 2019; Rodgers et al., 2020). However, given the cross-sectional nature of these studies, the different findings may be due to time effects. A negative association between muscular-ideal internalisation and body satisfaction, as found previously, suggests initial concerns about achieving this ideal. However, over time adolescents may consider this ideal more attainable than others (e.g., thin-ideal), perhaps in particular for boys who move towards the muscular-ideal as they progress through puberty (Ricciardelli & Yager, 2015). These individuals may feel motivated by this appearance standard, rather than having a negative impact on their body image (Fardouly et al., 2021; Robinson et al., 2017). Alternatively, it is possible that a body satisfaction measure focused more specifically on elements of muscle satisfaction, drive for muscularity, or muscle building behaviours, rather than the more global body image assessment used in the present study, may indicate different results. For example, Rodgers et al. (2020) found that muscular-ideal internalisation was directly related to muscle building behaviours, but not body (dis)satisfaction, among adolescent boys and girls. However, additional research is needed with more nuanced assessments to dissect these relationships further.

Both models demonstrated acceptable fit with the data, supporting the role of both appearance-focused platform use and photo-based activities within the social media influence model. These results support previous research which has found that internalisation and comparison mediate the relationships between these operationalisations and body satisfaction (Fardouly et al., 2017; Lee & Lee, 2021; Scully et al., 2020). Further, the findings extend knowledge by providing prospective support for these relationships over time, as well as the relevance among adolescent boys. When the models were compared, the appearance-focused use model indicated preferable fit in comparison to the photo-based activities model. Given that the social media environment is highly appearance-focused (Holland & Tiggemann, 2016), exposure will likely increase internalisation and comparison. It is possible that the social media environment, encompassing a wide range of

interactions more broadly, is more strongly related to low body satisfaction than an operationalisation of social media use that focuses on a single type of activity, namely photo-based activities. However, it is worth noting that the photo-based activities measure used in the present study did not differentiate between different types of use (e.g., passive [viewing or browsing photos] vs active [posting or uploading photos]). Some evidence suggests that these types of use may be differentially related to body satisfaction, with positive associations for active use and negative associations for passive use among adolescent girls (Chang et al., 2019). Therefore, combining these types of uses in the photo-based activities measure may have somewhat diluted or obscured the effects within the model. However, the present research demonstrates the first direct comparison of two operationalisations of social media use. Given the differential effects of these two models, future research which extends these comparisons within theoretical models would be fruitful.

When gender equivalence within both models was examined, gender invariance was found whereby none of the direct or indirect effects between social media use and body satisfaction were significantly different by gender. Overall, the current findings suggest that the mechanisms within the relationships between social media and body satisfaction are present in an equivalent manner, and to a similar extent, among adolescent boys and girls. This finding is consistent with previous research among adolescents (e.g., de Vries et al., 2016). Although the tripartite influence model was originally developed for females (Thompson et al., 1999), the results provide evidence that the social media influence model is also appropriate for males, specifically adolescent boys. Given the relatively limited research among adolescent boys, these findings extend theoretical knowledge to provide support for indirect bidirectional effects over time among boys as well as girls.

This research has a number of limitations. First, the measure of appearance-focused social media use did not explicitly examine content. Therefore, it may have also captured non-appearance-focused content present on Instagram and Snapchat (e.g., memes, travel). Future research should



explore specific content with which adolescents engage to better understand the impact on body satisfaction. Second, participants were 11–16 years-old, encompassing a somewhat broad developmental spectrum. Although age was included as a covariate within the models, the sample size was not sufficient to explore the role of age more specifically, a suggested direction for future research. Third, the sample were a homogenous group of predominantly White adolescents from socioeconomic advantage. Therefore findings may not be generalisable to other populations.

Several important implications arise from this research. First, findings extend theoretical knowledge in support of the tripartite influence model and uses and gratification theory within a social media context among adolescents, including understanding of the indirect bidirectional prospective relationships between social media use and body satisfaction. These results indicate that current aetiological approaches within prevention and intervention which target social comparisons and thin-ideal internalisation may be helpful and relevant within co-educational settings (Gordon et al., 2020). The indirect bidirectional relationships between social media use and body satisfaction indicate a feedback loop may be occurring whereby greater social media use may lead to poorer body image which concurrently reinforces greater engagement with social media. Consequently, it is imperative that theoretical models explore this notion and, if necessary, modify theories appropriately to account for new understanding. Finally, given the potential detrimental impacts of social media use on body satisfaction, these findings have implications for policies and practices of social media platforms. Companies could employ policies and implement technological modifications which discourage unhelpful behaviours such as comparisons. In 2019, Instagram took measures to remove users' ability to observe the number of likes on posts across a number of countries, although recent changes now make this an optional feature for all users (Instagram, 2021). Although no empirical research has examined the impact of removing the visibility of this feature, women report that removal will likely encourage fewer social media comparisons and improve mental health (Prichard et al., 2021). However, additional and more extensive policies should be considered and

implemented by social media platforms to promote positive well-being among adolescents and young people.

## **Conclusion**

The present findings provide valuable insights to the prospective direct and indirect relationships between social media use and body satisfaction across three timepoints. Although direct effects were generally not observed in the present study, indirect effects were found. Specifically, comparisons appear to be an important mechanism within the relationships between social media use and body satisfaction, with bidirectional mediation found over time. Further, the present study demonstrates the possibility of a feedback loop occurring whereby, through comparisons, higher social media use predicts lower body satisfaction, which then predicts higher social media use. Interventions which attempt to interrupt this loop and prevent concerns from escalating are important for adolescent boys and girls.

## References

- Anderson, M., & Jiang, J. (2018). *Teens, social media, and technology 2018*. Pew Research Center.  
<https://www.pewresearch.org/internet/2018/05/31/teens-social-media-technology-2018/>
- Australian Bureau of Statistics. (2018). *Census of population and housing: Socio-economic indexes for areas (SEIFA) 2016*. Australian Government.  
<https://www.abs.gov.au/ausstats/abs@.nsf/mf/2033.0.55.001>
- Bell, B. T. (2019). "You take fifty photos, delete forty nine and use one": A qualitative study of adolescent image-sharing practices on social media. *International Journal of Child-Computer Interaction*, 20, 64-71. <https://doi.org/10.1016/j.ijcci.2019.03.002>
- Benjamini, Y., & Hochberg, Y. (1995). Controlling the false discovery rate: A practical and powerful approach to multiple testing. *Journal of the Royal Statistical Society: Series B (Methodological)*, 57(1), 289-300. <https://doi.org/https://doi.org/10.1111/j.2517-6161.1995.tb02031.x>
- Chang, L., Li, P., Loh, R. S. M., & Chua, T. H. H. (2019). A study of Singapore adolescent girls' selfie practices, peer appearance comparisons, and body esteem on Instagram. *Body Image*, 29, 90-99. <https://doi.org/10.1016/j.bodyim.2019.03.005>
- Cohen, J. (1988). *Statistical power analysis for the behavioural sciences*. (2nd ed.). Lawrence Erlbaum Associates.
- de Vries, D. A., Peter, J., de Graaf, H., & Nikken, P. (2016). Adolescents' social network site use, peer appearance-related feedback, and body dissatisfaction: Testing a mediation model. *Journal of Youth and Adolescence*, 45(1), 211-224. <https://doi.org/10.1007/s10964-015-0266-4>
- Erikson, E. H. (1968). *Identity: Youth and Crisis*. Norton.
- Fardouly, J., Pinkus, R. T., & Vartanian, L. R. (2021). Targets of comparison and body image in women's everyday lives: The role of perceived attainability. *Body Image*, 38, 219-229.  
<https://doi.org/10.1016/j.bodyim.2021.04.009>

- Fardouly, J., Willburger, B. K., & Vartanian, L. R. (2017). Instagram use and young women's body image concerns and self-objectification: Testing mediational pathways. *New Media & Society*, 20(4), 1380-1395. <https://doi.org/10.1177/1461444817694499>
- Fatt, S. J., Fardouly, J., & Rapee, R. M. (2019). #malefitspo: Links between viewing fitspiration posts, muscular-ideal internalisation, appearance comparisons, body satisfaction, and exercise motivation in men. *New Media & Society*, 21(6), 1311-1325. <https://doi.org/10.1177/1461444818821064>
- Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G\*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, 41(4), 1149-1160. <https://doi.org/10.3758/brm.41.4.1149>
- 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. <https://doi.org/10.1089/cyber.2015.0296>
- Girard, M., Chabrol, H., & Rodgers, R. F. (2018). Support for a modified tripartite dual pathway model of body image concerns and risky body change behaviors in French young men. *Sex Roles*, 78(11-12), 799-809. <https://doi.org/10.1007/s11199-017-0850-z>
- Gordon, C. S., Rodgers, R. F., Slater, A. E., McLean, S. A., Jarman, H. K., & Paxton, S. J. (2020). A cluster randomized controlled trial of the SoMe social media literacy body image and wellbeing program for adolescent boys and girls: Study protocol. *Body Image*, 33, 27-37. <https://doi.org/10.1016/j.bodyim.2020.02.003>
- Hoffmann, S., & Warschburger, P. (2019). Prospective relations among internalization of beauty ideals, body image concerns, and body change behaviors: Considering thinness and muscularity. *Body Image*, 28, 159-167. <https://doi.org/10.1016/j.bodyim.2019.01.011>

- 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.  
<https://doi.org/10.1016/j.bodyim.2016.02.008>
- Hu, Y., Manikonda, L., & Kambhampati, S. (2014). What we Instagram: A first analysis of Instagram photo content and user types. Proceedings of the Eighth International AAAI Conference on Weblogs and Social Media, Ann Arbor, Michigan, USA.
- Instagram. (2021, 26 May). *Giving People More Control on Instagram and Facebook*.  
<https://about.instagram.com/blog/announcements/giving-people-more-control>
- Jarman, H. K., Marques, M. D., McLean, S. A., Slater, A., & Paxton, S. J. (2021). Social media, body satisfaction and well-being among adolescents: A mediation model of appearance-ideal internalization and comparison. *Body Image*, 36, 139-148.  
<https://doi.org/10.1016/j.bodyim.2020.11.005>
- Kass, R. E., & Raftery, A. E. (1995). Bayes factors. *Journal of the American Statistical Association*, 90(430), 773-795. <https://doi.org/10.1080/01621459.1995.10476572>
- Katz, E., Haas, H., & Gurevitch, M. (1973). On the use of the mass media for important things. *American Sociological Review*, 38(2), 164-181. <https://doi.org/10.2307/2094393>
- Lee, M., & Lee, H.-H. (2021). Social media photo activity, internalization, appearance comparison, and body satisfaction: The moderating role of photo-editing behavior. *Computers in Human Behavior*, 114, 106579. <https://doi.org/10.1016/j.chb.2020.106579>
- Lee, S. Y. (2014). How do people compare themselves with others on social network sites?: The case of Facebook. *Computers in Human Behavior*, 32, 253-260.  
<https://doi.org/10.1016/j.chb.2013.12.009>
- McLean, S. A., Paxton, S. J., Wertheim, E. H., & Masters, J. (2015). Photoshopping the selfie: Self photo editing and photo investment are associated with body dissatisfaction in adolescent

girls. *International Journal of Eating Disorders*, 48(8), 1132-1140.

<https://doi.org/10.1002/eat.22449>

Meier, E. P., & Gray, J. (2014). Facebook photo activity associated with body image disturbance in adolescent girls. *Cyberpsychology, Behavior and Social Networking*, 17(4), 199-206.

<https://doi.org/10.1089/cyber.2013.0305>

Mingoia, J., Hutchinson, A. D., Gleaves, D. H., & Wilson, C. (2019). The relationship between posting and photo manipulation activities on social networking sites and internalization of a tanned ideal among Australian adolescents and young adults. *Social Media + Society*, 5(1), 1-10.

<https://doi.org/10.1177/2056305118820419>

Mingoia, J., Hutchinson, A. D., Wilson, C., & Gleaves, D. H. (2017). The relationship between social networking site use and the internalization of a thin ideal in females: A meta-analytic review.

*Frontiers in Psychology*, 8, Article 1351. <https://doi.org/10.3389/fpsyg.2017.01351>

Muthén, L. K., & Muthén, B. O. (2017). *Mplus user's guide* (8th ed.). Muthén & Muthén.

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(3), 201-206.

<https://doi.org/10.1016/j.bodyim.2009.03.003>

Papp, I., Urban, R., Czegledi, E., Babusa, B., & Tury, F. (2013). Testing the tripartite influence model of body image and eating disturbance among Hungarian adolescents. *Body Image*, 10(2),

232-242. <https://doi.org/10.1016/j.bodyim.2012.12.006>

Perloff, R. M. (2014). Social media effects on young women's body image concerns: Theoretical perspectives and an agenda for research. *Sex Roles*, 71(11-12), 363-377.

<https://doi.org/10.1007/s11199-014-0384-6>

Pingitore, R., Spring, B., & Garfield, D. (1997). Gender differences in body satisfaction. *Obesity*

*Research*, 5(5), 402-409. <https://doi.org/10.1002/j.1550-8528.1997.tb00662.x>

- Prichard, I., O'Toole, S., Wu, Y., Harford, J., & Tiggemann, M. (2021). No likes, no problem? Users' reactions to the removal of Instagram number of likes on other people's posts and links to body image. *Body Image*, 38, 72-79. <https://doi.org/10.1016/j.bodyim.2021.03.007>
- Ricciardelli, L. A., & Yager, Z. (2015). *Adolescence and body image: From development to preventing body dissatisfaction*. Routledge.
- Rideout, V., & Robb, M. B. (2018). *Social Media, Social Life: Teens Reveal Their Experiences*. Common Sense Media. <https://www.commonsensemedia.org/research/social-media-social-life-2018>
- Robinson, L., Prichard, I., Nikolaidis, A., Drummond, C., Drummond, M., & Tiggemann, M. (2017). Idealised media images: The effect of fitspiration imagery on body satisfaction and exercise behaviour. *Body Image*, 22, 65-71. <https://doi.org/10.1016/j.bodyim.2017.06.001>
- Rodgers, R., Chabrol, H., & Paxton, S. J. (2011). An exploration of the tripartite influence model of body dissatisfaction and disordered eating among Australian and French college women. *Body Image*, 8(3), 208-215. <https://doi.org/10.1016/j.bodyim.2011.04.009>
- Rodgers, R. F. (2016). The relationship between body image concerns, eating disorders and Internet use, Part II: An integrated theoretical model. *Adolescent Research Review*, 1(2), 121-137. <https://doi.org/10.1007/s40894-015-0017-5>
- Rodgers, R. F., McLean, S. A., & Paxton, S. J. (2015). Longitudinal relationships among internalization of the media ideal, peer social comparison, and body dissatisfaction: Implications for the tripartite influence model. *Developmental Psychology*, 51(5), 706-713. <https://doi.org/10.1037/dev0000013>
- Rodgers, R. F., Slater, A., Gordon, C. S., McLean, S. A., Jarman, H. K., & Paxton, S. J. (2020). A biopsychosocial model of social media use and body image concerns, disordered eating, and muscle-building behaviors among adolescent girls and boys. *Journal of Youth and Adolescence*, 49(2), 399-409. <https://doi.org/10.1007/s10964-019-01190-0>

Rousseau, A., & Eggermont, S. (2018). Media ideals and early adolescents' body image: Selective avoidance or selective exposure? *Body Image*, 26, 50-59.

<https://doi.org/10.1016/j.bodyim.2018.06.001>

Rousseau, A., Eggermont, S., & Frison, E. (2017). The reciprocal and indirect relationships between passive Facebook use, comparison on Facebook, and adolescents' body dissatisfaction.

*Computers in Human Behavior*, 73, 336-344. <https://doi.org/10.1016/j.chb.2017.03.056>

Royal Society for Public Health. (2017). *Social Media and Young People's Mental Health and Wellbeing*. <https://www.rsph.org.uk/our-work/campaigns/status-of-mind.html>

Saiphoo, A. N., & Vahedi, Z. (2019). A meta-analytic review of the relationship between social media use and body image disturbance. *Computers in Human Behavior*, 101, 259-275.

<https://doi.org/10.1016/j.chb.2019.07.028>

Schaefer, L. M., Burke, N. L., Thompson, J. K., Dedrick, R. F., Heinberg, L. J., Calogero, R. M., Bardone-Cone, A. M., Higgins, M. K., Frederick, D. A., Kelly, M., Anderson, D. A., Schaumberg, K., Nerini, A., Stefanile, C., Dittmar, H., Clark, E., Adams, Z., Macwana, S., Klump, K. L., Vercellone, A. C., Paxton, S. J., & Swami, V. (2015). Development and validation of the sociocultural attitudes towards appearance questionnaire-4 (SATAQ-4). *Psychological Assessment*, 27(1), 54-67. <https://doi.org/10.1037/a0037917>

Schaefer, L. M., Harriger, J. A., Heinberg, L. J., Soderberg, T., & Thompson, J. K. (2017). Development and validation of the sociocultural attitudes towards appearance questionnaire-4-revised (SATAQ-4R). *International Journal of Eating Disorders*, 50(2), 104-117.

<https://doi.org/10.1002/eat.22590>

Scully, M., Swords, L., & Nixon, E. (2020). Social comparisons on social media: Online appearance-related activity and body dissatisfaction in adolescent girls. *Irish Journal of Psychological Medicine*, 1-12. <https://doi.org/10.1017/ipm.2020.93>



- Thompson, J. K., Heinberg, L. J., Altabe, M., & Tantleff-Dunn, S. (1999). *Exacting beauty: Theory, assessment, and treatment of body image disturbance*. American Psychological Association.  
<https://doi.org/10.1037/10312-000>
- Verrastro, V., Fontanesi, L., Liga, F., Cuzzocrea, F., & Gugliandolo, M. C. (2020). Fear the Instagram: Beauty stereotypes, body image and Instagram use in a sample of male and female adolescents. *Qwerty-Open and Interdisciplinary Journal of Technology, Culture and Education*, 15(1), 31-49. <https://doi.org/10.30557/qw000021>
- Vogel, E. A., Rose, J. P., Okdie, B. M., 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. <https://doi.org/10.1016/j.paid.2015.06.026>
- Wang, Y., Xie, X., Fardouly, J., Vartanian, L. R., & Lei, L. (2019). The longitudinal and reciprocal relationships between selfie-related behaviors and self-objectification and appearance concerns among adolescents. *New Media & Society*, 23(1), 56-77.  
<https://doi.org/10.1177/1461444819894346>
- Yuan, K. H., & Bentler, P. M. (2000). Three likelihood-based methods for mean and covariance structure analysis with nonnormal missing data. *Sociological Methodology*, 30(1), 165-200.  
<https://doi.org/10.1111/0081-1750.00078>

**Table 1**

*Summary of Means, Standard Deviations, and Correlations Between Social Media Use, Thin- and Muscular-Ideal Internalisation, Social Comparisons, and Body Satisfaction Over Three Timepoints*

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1.T1AfSM	3.36	1.09	-	<b>0.78</b>	<b>0.62</b>	<b>0.52</b>	<b>0.48</b>	<b>0.36</b>	<b>-0.08</b>	<b>-0.09</b>	<b>-0.08</b>	<b>0.18</b>	<b>0.20</b>	<b>0.21</b>	<b>0.13</b>	<b>0.11</b>	<b>0.08</b>	<b>0.30</b>	<b>0.28</b>	<b>0.25</b>
2.T2AfSM	3.34	1.11		-	<b>0.69</b>	<b>0.46</b>	<b>0.53</b>	<b>0.38</b>	-0.04	<b>-0.06</b>	<b>-0.08</b>	<b>0.16</b>	<b>0.21</b>	<b>0.21</b>	<b>0.12</b>	<b>0.10</b>	<b>0.09</b>	<b>0.24</b>	<b>0.29</b>	<b>0.25</b>
3.T3AfSM	3.45	1.08			-	<b>0.43</b>	<b>0.50</b>	<b>0.46</b>	-0.02	-0.04	<b>-0.08</b>	<b>0.17</b>	<b>0.20</b>	<b>0.21</b>	<b>0.12</b>	<b>0.10</b>	<b>0.10</b>	<b>0.22</b>	<b>0.26</b>	<b>0.30</b>
4.T1PhSM	2.45	0.75				-	<b>0.63</b>	<b>0.53</b>	<b>-0.10</b>	<b>-0.14</b>	<b>-0.16</b>	<b>0.25</b>	<b>0.31</b>	<b>0.30</b>	<b>0.06</b>	0.05	-0.01	<b>0.35</b>	<b>0.33</b>	<b>0.34</b>
5.T2PhSM	2.39	0.75					-	<b>0.63</b>	<b>-0.07</b>	<b>-0.12</b>	<b>-0.11</b>	<b>0.24</b>	<b>0.33</b>	<b>0.33</b>	<b>0.09</b>	<b>0.11</b>	0.04	<b>0.31</b>	<b>0.44</b>	<b>0.38</b>
6.T3PhSM	2.36	0.24						-	<b>-0.12</b>	<b>-0.15</b>	<b>-0.16</b>	<b>0.21</b>	<b>0.30</b>	<b>0.35</b>	0.02	<b>0.07</b>	0.03	<b>0.31</b>	<b>0.37</b>	<b>0.44</b>
7.T1BS	50.64	12.49							-	<b>0.68</b>	<b>0.63</b>	<b>-0.33</b>	<b>-0.29</b>	<b>-0.27</b>	0.02	0.03	0.01	<b>-0.43</b>	<b>-0.34</b>	<b>-0.34</b>
8.T2BS	49.91	12.65								-	<b>0.73</b>	<b>-0.32</b>	<b>-0.40</b>	<b>-0.36</b>	0.02	0.00	0.05	<b>-0.43</b>	<b>-0.46</b>	<b>-0.43</b>
9.T3BS	49.11	12.94									-	<b>-0.32</b>	<b>-0.36</b>	<b>-0.41</b>	0.04	0.04	<b>0.06</b>	<b>-0.41</b>	<b>-0.44</b>	<b>-0.52</b>
10.T1TI	2.50	1.05										-	<b>-0.36</b>	<b>-0.41</b>	<b>0.28</b>	0.04	<b>0.06</b>	<b>0.57</b>	<b>-0.44</b>	<b>-0.52</b>
11.T2TI	2.57	1.07											-	<b>0.60</b>	<b>0.12</b>	<b>0.23</b>	0.04	<b>0.46</b>	<b>0.56</b>	<b>0.48</b>
12.T3TI	2.73	1.14												-	0.01	0.05	<b>0.15</b>	<b>0.44</b>	<b>0.46</b>	<b>0.65</b>
13.T1MI	2.58	1.10													-	0.05	<b>0.15</b>	<b>0.23</b>	<b>0.46</b>	<b>0.65</b>
14.T2MI	2.60	1.12														-	<b>0.61</b>	<b>0.11</b>	<b>0.21</b>	<b>0.11</b>
15.T3MI	2.59	1.16															-	<b>0.07</b>	<b>0.11</b>	<b>0.12</b>
16.T1COMP	0.00	1.00																-	<b>0.11</b>	<b>0.12</b>
17.T2COMP	0.00	1.00																	-	<b>0.66</b>
18.T3COMP	0.00	1.00																		-

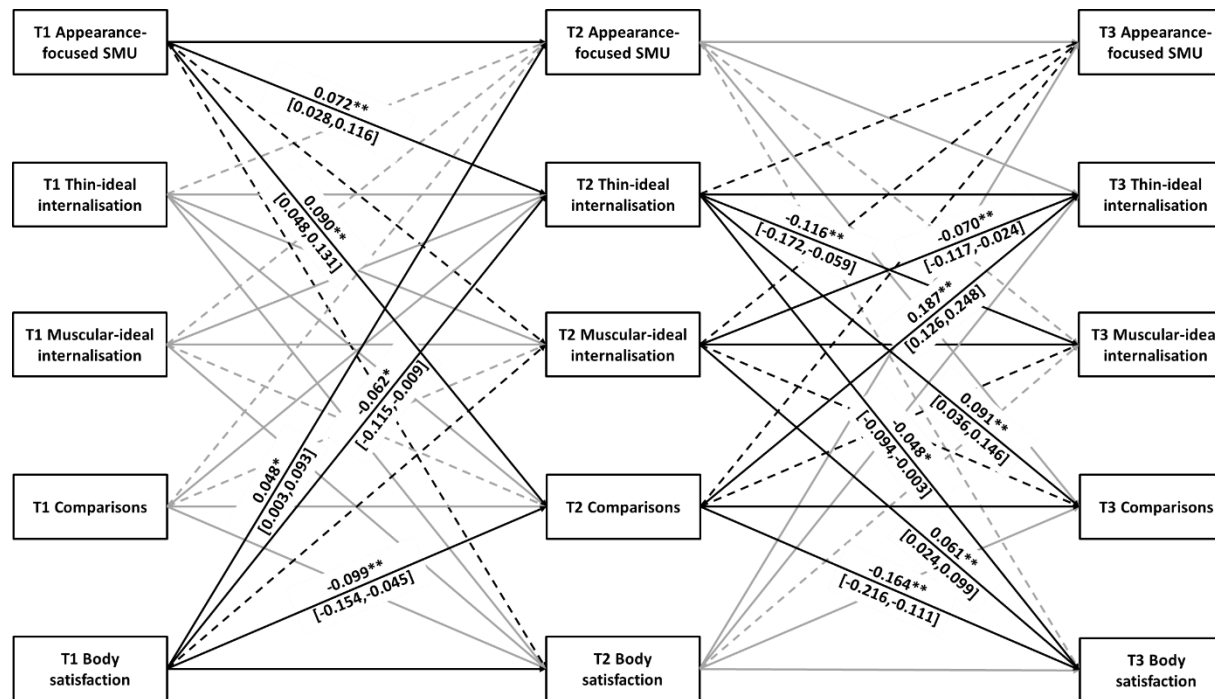
*Notes.* T1 = Time 1; T2 = Time 2; T3 = Time 3; AfSM = Appearance-Focused Social Media; PhSM = Photo-Based Social Media; BS = Body Satisfaction; TI =

Thin-Ideal Internalisation; MI = Muscular-Ideal Internalisation; COMP = Comparisons.

$p \leq .01$ , where  $r \geq 0.06$ , is indicated in bold.

**Figure 1**

*Stationary Cross-Lagged Panel Model of the Associations Between Appearance-Focused Social Media Use, Thin- and Muscular-Ideal Internalisation, Social Comparisons, and Body Satisfaction*



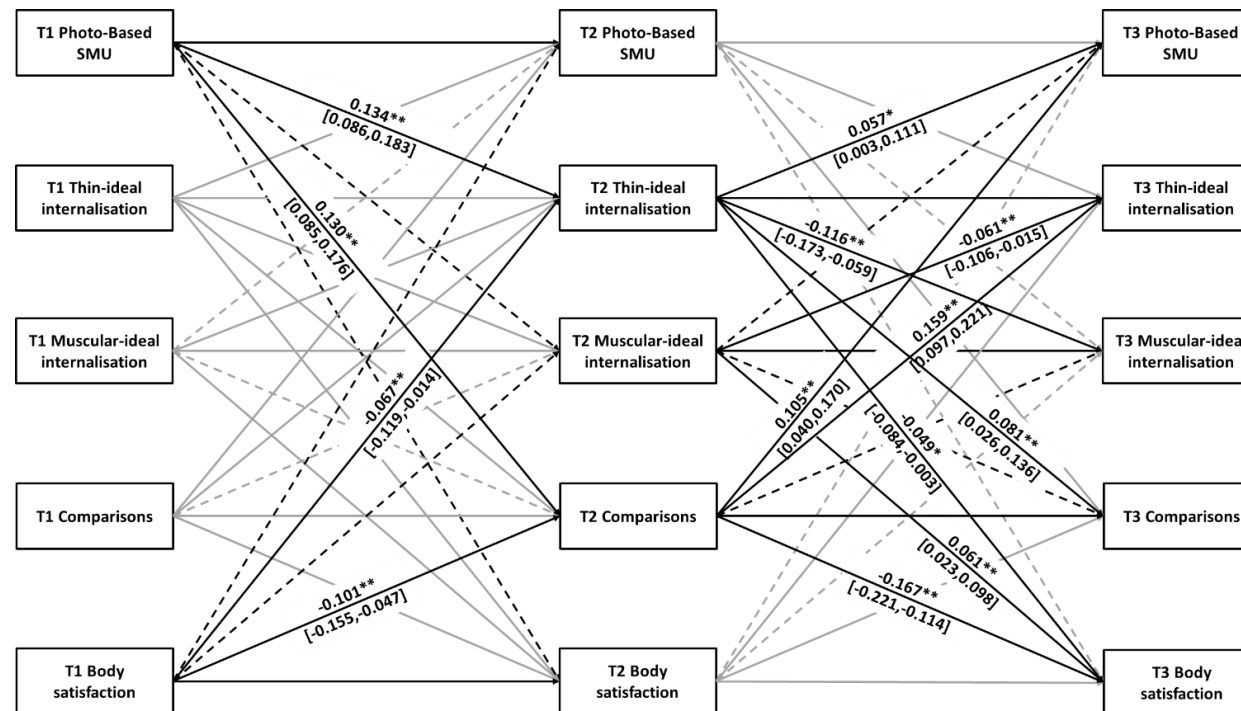
*Notes.* For clarity, the cross-lagged effects of social media use and body satisfaction are displayed on the left-hand side only, with the cross-lagged effects of the mediating variables (thin- and muscular-ideal internalisation and comparisons) displayed on the right-hand side. Coefficients are unstandardised,

including 99% confidence intervals. Coefficients for the autoregressive pathways can be found in the supplementary materials. Dashed lines represent non-significant effects. SMU = Social Media Use.

\* $p \leq .01$ . \*\* $p \leq .001$ .

**Figure 2**

*Stationary Cross-Lagged Panel Model of the Associations Between Photo-Based Social Media Activities, Thin- and Muscular-Ideal Internalisation, Social Comparisons, and Body Satisfaction*



*Notes.* For clarity, the cross-lagged effects of social media use and body satisfaction are displayed on the left-hand side only, with the cross-lagged effects of the mediating variables (thin- and muscular-ideal internalisation and comparisons) displayed on the right-hand side. Coefficients are unstandardised,

including 99% confidence intervals. Coefficients for the autoregressive pathways can be found in the supplementary materials. Dashed lines represent non-significant effects. SMU = Social Media Use.

\* $p \leq .01$ . \*\* $p \leq .001$ .

**Supplementary Table S1***Direct and Indirect Path Coefficients for Stationary Cross Lagged Panel Models of Social Media Use and Body Satisfaction*

Parameters	Appearance-Focused SM Model			Photo-Based SM Activities Model		
	<i>B</i>	99% CIs	<i>p</i>	<i>B</i>	99% CIs	<i>p</i>
Direct effects						
Social Media Use > Body Satisfaction	-0.002	[-0.042,0.038]	.910	0.007	[-0.036,0.051]	.661
Body Satisfaction > Social Media Use	0.048	[0.003,0.093]	.006	0.038	[-0.018,0.094]	.082
Indirect effects						
Social Media Use > Thin-Internalisation > Body Satisfaction	-0.003	[-0.007,0.000]	.022	-0.007	[-0.013,-0.000]	.010
Social Media Use > Muscular-Internalisation > Body Satisfaction	0.002	[-0.001,0.005]	.042	0.001	[-0.002,0.004]	.532
Social Media Use > Comparison > Body Satisfaction	-0.015	[-0.023,-0.007]	<.001	-0.022	[-0.032,-0.012]	<.001
Body Satisfaction > Thin-Internalisation > Social Media Use	-0.001	[-0.004,0.002]	.336	-0.004	[-0.009,0.001]	.039
Body Satisfaction > Muscular-Internalisation > Social Media Use	0.000	[-0.001,0.001]	.567	0.000	[-0.001,0.001]	.740
Body Satisfaction > Comparison > Social Media Use	-0.004	[-0.010,0.001]	.039	-0.011	[-0.019,-0.002]	.001

*Note.* SM = social media; CI = confidence interval.

# Supplementary Table S2

## Path Coefficients for Stationary Cross Lagged Panel Models of Social Media Use and Body

### Satisfaction

Predictor	Outcome	Appearance-Focused SM Model			Photo-Based SM Activities Model		
		<i>B</i>	99% CIs	<i>p</i>	<i>B</i>	99% CIs	<i>p</i>
Social Media Use	Social Media Use	0.720	[0.679,0.760]	<.001	0.528	[0.531,0.633]	<.001
	Body Satisfaction	-0.002	[-0.042,0.038]	.910	0.007	[-0.036,0.051]	.661
	Thin-Internalisation	0.072	[0.028,0.116]	<.001	0.134	[0.086,0.183]	<.001
	Muscular-Internalisation	0.039	[-0.004,0.082]	.021	0.012	[-0.036,0.060]	.525
Body Satisfaction	Comparison	0.090	[0.048,0.131]	<.001	0.130	[0.085,0.176]	<.001
	Body Satisfaction	0.617	[0.566,0.669]	<.001	0.617	[0.565,0.668]	<.001
	Thin-Internalisation	-0.062	[-0.115,-0.009]	.003	-0.067	[-0.119,-0.014]	<.001
	Muscular-Internalisation	0.015	[-0.038,0.068]	.468	0.018	[-0.035,0.071]	.372
Thin-Internalisation	Comparison	-0.099	[-0.154,-0.045]	<.001	-0.101	[-0.155,-0.047]	<.001
	Social Media Use	0.048	[0.003,0.093]	.006	0.038	[-0.018,0.094]	.082
	Thin-Internalisation	0.461	[0.399,0.524]	<.001	0.449	[0.387,0.512]	<.001
	Muscular-Internalisation	-0.116	[-0.172,-0.059]	<.001	-0.116	[-0.173,-0.059]	<.001
Muscular-Internalisation	Comparison	0.091	[0.036,0.146]	<.001	0.081	[0.026,0.136]	<.001
	Social Media Use	0.019	[-0.028,0.065]	.304	0.057	[0.003,0.111]	.007
	Body Satisfaction	-0.048	[-0.094,-0.003]	.006	-0.049	[-0.084,-0.003]	.006
	Muscular-Internalisation	0.617	[0.568,0.665]	<.001	0.618	[0.569,0.667]	<.001
Comparison	Comparison	-0.016	[-0.058,0.027]	.336	-0.006	[-0.048,0.037]	.736
	Social Media Use	0.012	[-0.024,0.049]	.377	-0.006	[-0.049,0.037]	.715
	Body Satisfaction	0.061	[0.024,0.099]	<.001	0.061	[0.023,0.098]	<.001
	Thin-Internalisation	-0.070	[-0.117,-0.024]	<.001	-0.061	[-0.106,-0.015]	.001
Age <sup>a</sup>	Comparison	0.544	[0.481,0.608]	<.001	0.526	[0.460,0.591]	<.001
	Social Media Use	0.045	[-0.007,0.096]	.026	0.105	[0.040,0.170]	<.001
	Body Satisfaction	-0.164	[-0.216,-0.111]	<.001	-0.167	[-0.221,-0.114]	<.001
	Thin-Internalisation	0.187	[0.126,0.248]	<.001	0.159	[0.097,0.221]	<.001
	Muscular-Internalisation	0.047	[-0.013,0.106]	.043	0.055	[-0.005,0.116]	.019
	Social Media Use	-0.050	[-0.114,0.014]	.043	0.020	[-0.049,0.089]	.453
	Body Satisfaction	0.054	[-0.003,0.111]	.014	0.054	[-0.002,0.111]	.013
	Thin-Internalisation	-0.062	[-0.129,0.005]	.017	-0.059	[-.126,0.007]	.021
	Muscular-Internalisation	-0.019	[-0.085,0.047]	.459	-0.013	[-0.079,0.052]	.600
	Comparison	-0.051	[-0.117,0.015]	.046	-0.046	[-0.112,0.020]	.071

Note. SM = social media; CI = confidence interval.

<sup>a</sup> age was included as a covariate



## Supplementary Table S3

*Multigroup Analyses to Examine Gender Differences in the Direct Effects of the Appearance-Focused Social Media Use Model*

Predictor	Outcome	Boys			Girls			Gender Differences		
		<i>B</i>	99% CIs	<i>p</i>	<i>B</i>	99% CIs	<i>p</i>	<i>B</i>	99% CIs	<i>p</i>
AF Social Media Use	AF Social Media Use	0.739	[0.688,0.789]	<.001	0.663	[0.585,0.741]	<.001	-	-	-
	Body Satisfaction	0.008	[-0.052,0.068]	.734	-0.004	[-0.067,0.058]	.858	0.012	[-0.074,0.099]	.715
	Thin-Internalisation	0.069	[-0.002,0.139]	.013	0.048	[-0.021,0.117]	.074	0.020	[-0.079,0.119]	.596
	Muscular-Internalisation	0.098	[0.032,0.164]	<.001	0.040	[-0.030,0.111]	.143	0.058	[-0.039,0.154]	.125
	Comparison	0.082	[0.014,0.150]	.002	0.048	[-0.015,0.111]	.051	0.034	[-0.059,0.127]	.350
Body Satisfaction	Body Satisfaction	0.629	[0.561,0.689]	<.001	.651	[0.568,0.734]	<.001	-	-	-
	Thin-Internalisation	-0.041	[-0.118,0.035]	.165	-0.114	[-0.199,-0.030]	.001	0.073	[-0.041,0.187]	.099
	Muscular-Internalisation	0.039	[-0.033,0.111]	.166	-0.039	[-0.133,0.054]	.277	0.078	[-0.040,0.196]	.088
	Comparison	-0.095	[-0.172,-0.019]	.001	-0.108	[-0.188,-0.029]	<.001	0.013	[-0.097,0.123]	.754
	AF Social Media Use	0.023	[-0.032,0.077]	.278	0.078	[0.003,0.154]	.008	-0.055	[-0.149,0.038]	.126
Thin-Internalisation	Thin-Internalisation	0.356	[0.259,0.453]	<.001	0.460	[0.344,0.577]	<.001	-	-	-
	Muscular-Internalisation	-0.067	[-0.143,0.010]	.024	-0.066	[-0.171,0.039]	.106	-0.001	[-0.130,0.129]	.987
	Comparison	-0.026	[-0.105,0.054]	.406	0.071	[-0.013,0.155]	.029	-0.097	[-0.212,0.019]	.031
	AF Social Media Use	-0.031	[-0.089,0.028]	.180	0.055	[-0.033,0.142]	.110	-0.085	[-0.191,0.021]	.038
	Body Satisfaction	-0.014	[-0.076,0.049]	.577	-0.034	[-0.110,0.042]	.254	0.020	[-0.079,0.119]	.599
Muscular-Internalisation	Muscular-Internalisation	0.540	[0.456,0.625]	<.001	0.530	[0.415,0.645]	<.001	-	-	-
	Comparison	0.173	[0.095,0.251]	<.001	-0.028	[-0.092,0.036]	.257	<b>0.201</b>	<b>[0.100,0.302]</b>	<b>&lt;.001</b>
	AF Social Media Use	0.042	[-0.019,0.102]	.076	0.039	[-0.019,0.096]	.082	0.003	[-0.080,0.086]	.927
	Body Satisfaction	0.019	[-0.051,0.089]	.479	0.014	[-0.042,0.071]	.514	0.005	[-0.085,0.095]	.891
	Thin-Internalisation	0.085	[-0.008,0.178]	.018	-0.022	[-0.091,0.047]	.407	0.107	[-0.008,0.223]	.017
Comparison	Comparison	0.420	[0.323,0.518]	<.001	0.588	[0.497,0.679]	<.001	-	-	-
	AF Social Media Use	-0.004	[-0.068,0.060]	.874	0.083	[-0.009,0.175]	.020	-0.087	[-0.199,0.025]	.046
	Body Satisfaction	-0.129	[-0.203,-0.054]	<.001	-0.105	[-0.188,-0.023]	.001	-0.023	[-0.134,0.088]	.593
	Thin-Internalisation	0.069	[-0.020,0.159]	.047	0.155	[0.052,0.259]	<.001	-0.086	[-0.223,0.051]	.105
	Muscular-Internalisation	0.097	[0.015,0.179]	.002	-0.039	[-0.060,0.139]	.306	0.057	[-0.071,0.186]	.252

*Note.* Bold indicates effects which remained significant following Benjamini-Hochberg procedure of adjusted significance. CI = confidence interval; AF = appearance-focused.

# Supplementary Table S4

## Multigroup Analyses to Examine Gender Differences in the Indirect Effects of the Appearance-Focused Social Media Use Model

	Boys			Girls			Gender Differences		
	<i>B</i>	99% CIs	<i>p</i>	<i>B</i>	99% CIs	<i>p</i>	<i>B</i>	99% CIs	<i>p</i>
AF Social Media Use > Thin-Internalisation > Body Satisfaction	-0.001	[-0.005,0.003]	.585	-0.002	[-0.006,0.003]	.320	0.001	[-0.005,0.007]	.769
AF Social Media Use > Muscular-Internalisation > Body Satisfaction	0.002	[-0.005,0.009]	.486	0.001	[-0.002,0.003]	.551	0.001	[-0.006,0.009]	.650
AF Social Media Use > Comparison > Body Satisfaction	-0.010	[-0.021,<0.000]	.011	-0.005	[-0.013,0.003]	.091	-0.005	[-0.019,0.008]	.283
Body Satisfaction > Thin-Internalisation > AF Social Media Use	0.001	[-0.002,0.005]	.323	-0.006	[-0.018,0.005]	.155	0.007	[-0.004,0.019]	.100
Body Satisfaction > Muscular-Internalisation > AF Social Media Use	0.002	[-0.002,-0.005]	.265	-0.002	[-0.006,0.003]	.368	0.003	[-0.003,0.009]	.159
Body Satisfaction > Comparison > AF Social Media Use	0.000	[-0.006,0.006]	.874	-0.009	[-0.021,0.003]	.045	0.009	[-0.004,0.022]	.065

*Note.* CI = confidence interval; AF = appearance-focused.

Supplementary Table S5

*Multigroup Analyses to Examine Gender Differences in the Direct Effects of the Photo-Based Social Media Activities Model*

Predictor	Outcome	Boys			Girls			Gender Differences		
		<i>B</i>	99% CIs	<i>p</i>	<i>B</i>	99% CIs	<i>p</i>	<i>B</i>	99% CIs	<i>p</i>
PB Social Media Use	PB Social Media Use	0.525	[0.445,0.605]	<.001	0.585	[0.508,0.662]	<.001	-	-	-
	Body Satisfaction	0.028	[-0.036,0.092]	.261	0.011	[-0.055,0.078]	.655	0.017	[-0.076,0.1097]	.643
	Thin-Internalisation	0.112	[0.034,0.190]	<.001	0.098	[0.022,0.173]	.001	0.015	[-0.094,0.123]	.729
	Muscular-Internalisation	0.079	[0.011,0.147]	.003	0.025	[-0.050,0.101]	.390	0.054	[-0.048,0.155]	.173
	Comparison	0.080	[0.005,0.154]	.006	0.104	[0.035,0.173]	<.001	-0.024	[-0.126,0.078]	.541
Body Satisfaction	Body Satisfaction	0.627	[0.559,0.696]	<.001	0.647	[0.564,0.730]	<.001	-	-	-
	Thin-Internalisation	-0.044	[-0.120,0.031]	.131	-0.120	[-0.205,-0.036]	<.001	0.076	[-0.038,0.190]	.086
	Muscular-Internalisation	0.040	[-0.032,0.112]	.150	-0.036	[-0.131,0.058]	.321	0.076	[-0.024,0.195]	.097
	Comparison	-0.098	[-0.157,-0.022]	.001	-0.114	[-0.193,-0.035]	>.001	0.015	[-0.095,0.125]	.720
	PB Social Media Use	-0.001	[-0.075,0.073]	.974	0.100	[0.012,0.189]	.004	-0.101	[-0.217,0.014]	.024
Thin-Internalisation	Thin-Internalisation	0.354	[0.257,0.452]	<.001	0.451	[0.336,0.567]	<.001	-	-	-
	Muscular-Internalisation	-0.070	[-0.147,0.007]	.019	-0.065	[-0.171,0.040]	.111	-0.005	[-0.136,0.126]	.924
	Comparison	-0.021	[-0.101,0.059]	.501	0.061	[-0.023,0.145]	.060	-0.082	[-0.198,0.034]	.068
	PB Social Media Use	0.000	[-0.046,0.078]	.999	0.078	[-.011,0.166]	.025	-0.078	[-0.196,0.040]	.091
	Body Satisfaction	-0.012	[-0.075,0.050]	.615	-0.035	[-0.112,0.041]	.235	0.023	[-0.076,0.122]	.547
Muscular-Internalisation	Muscular-Internalisation	0.547	[0.463,0.631]	<.001	0.529	[0.414,0.643]	<.001	-	-	-
	Comparison	0.181	[0.100,0.262]	<.001	-0.030	[-0.094,0.034]	.223	<b>0.211</b>	<b>[0.108,0.314]</b>	<b>&lt;.001</b>
	PB Social Media Use	0.100	[0.025,0.176]	.001	-0.017	[-0.081,0.048]	.509	<b>0.117</b>	<b>[0.018,0.216]</b>	<b>.002</b>
	Body Satisfaction	-0.018	[-0.052,0.088]	.518	0.016	[-0.041,0.072]	.477	0.002	[-0.088,0.092]	.957
	Thin-Internalisation	0.087	[-0.005,0.179]	.015	-0.023	[-0.091,0.045]	.384	0.110	[-0.005,0.224]	.014
Comparison	Comparison	0.415	0.316,0.513]	<.001	0.575	[0.483,0.667]	<.001	-	-	-
	PB Social Media Use	0.036	[-0.058,0.129]	.326	0.138	[0.047,0.22907]	<.001	-0.102	[-0.233,0.028]	.043
	Body Satisfaction	-0.135	[-0.211,-0.059]	<.001	-0.113	[-0.195,-0.031]	<.001	-0.022	[-0.133,0.090]	.616
	Thin-Internalisation	0.053	[-0.0408,0.145]	.144	0.141	[0.039,0.242]	<.001	-0.088	[-0.226,0.050]	.100
	Muscular-Internalisation	0.097	[0.013,0.181]	.003	0.046	[-0.054,0.145]	.234	0.051	[-0.079,0.181]	.311

*Note.* Bold indicates effects which remained significant following Benjamini-Hochberg procedure of adjusted significance. CI = confidence interval; PB = photo-based.

### Supplementary Table S6

#### *Multigroup Analyses to Examine Gender Differences in the Indirect Effects of the Photo-Based Social Media Activities Model*

	Boys			Girls			Gender Differences		
	<i>B</i>	99% CIs	<i>p</i>	<i>B</i>	99% CIs	<i>p</i>	<i>B</i>	99% CIs	<i>p</i>
PB Social Media Use > Thin-Internalisation > Body Satisfaction	-0.001	[-0.008,0.006]	.618	-0.003	[-0.011,0.004]	.254	0.002	[-0.008,0.013]	.610
PB Social Media Use > Muscular-Internalisation > Body Satisfaction	0.001	[-0.004,0.007]	.528	0.000	[-0.001,0.002]	.575	0.001	[-0.005,0.007]	.667
PB Social Media Use > Comparison > Body Satisfaction	-0.001	[-0.022,<0.000]	.013	-0.012	[-0.023,-0.001]	.007	0.001	[-0.015,0.017]	.871
Body Satisfaction > Thin-Internalisation > PB Social Media Use	0.000	[-0.003,0.003]	.999	-0.009	[-0.022,0.004]	.064	0.009	[-0.004,0.023]	.074
Body Satisfaction > Muscular-Internalisation > PB Social Media Use	0.004	[-0.004,0.012]	.172	0.001	[-0.002,0.003]	.567	0.003	[-0.005,0.011]	.275
Body Satisfaction > Comparison > PB Social Media Use	-0.004	[-0.013,0.006]	.335	-0.016	[-0.030,-0.001]	.006	0.012	[-0.005,0.030]	.071

*Note.* CI = confidence interval; PB = photo-based.

## **Chapter Seven: The Impact of Completing Body Image Assessments on Adolescents' Body Image and Engagement in Body Change Strategies: Harmful or Harmless?**

### **Preamble to Chapter Seven**

Prior to baseline data collection, a principal of one of the schools recruited for the present research expressed some concerns regarding the body image assessments included in the participant survey. Specifically, the school principal requested that negatively worded items (e.g., “I feel ashamed of how I look”; a reverse-scored item from the Appearance Esteem Scale) and items which identified body change strategies (e.g., “taken diet pills or laxatives”, “used a protein or energy supplement”) be omitted from the survey amid fears that these items may trigger new or existing concerns among younger students. Although items of this nature are frequently used in adolescent research, I have experienced these types of concerns raised by educators and parents whilst conducting body image research previously, prior to my PhD, as well as hearing anecdotal accounts of a similar nature from colleagues. Given that these concerns are shared by a number of individuals, it was important that considerations of how to proceed be informed by empirical findings from the literature regarding the impact of completing body image assessments on well-being and subsequent development of body image concerns. As will be presented in the paper below, I found that only a small number of studies have examined whether these types of surveys impact body image. Further, this research was outdated (almost 20-years prior) and samples had not included adolescent boys.

In light of the lack of clear evidence from the literature that may have refuted the school principal's concerns, following consultation with my supervisors, I agreed to omit these items and scales from the survey for Year 7 and 8 students at that school. For Year 9 and 10 students at that school, and all students at the other recruited school (Year 7-9), the original survey was disseminated. Having made these changes to the planned data collection for a small proportion of

the participant sample, I recognised that this presented an opportunity to examine the impact of completing body image assessments among adolescent boys and girls.

Given that concerns regarding body image assessments in adolescents may impact research design and implementation, it seemed important to address the question of whether body image assessments are harmful for adolescents. Although this was not a priority of the present thesis, I believe it is of importance within the field of body image. If previous exposure to body image assessments, including those with negatively worded items, has an impact on body image this would have significant implications for body image research. It would cast doubt on the reliability and validity of prospective designs, as used in Study Three (Chapter Six), and their ability to accurately capture and measure body image over time. Importantly, if body image assessments did cause harm to adolescents, this would have profound ethical implications which may halt research of this nature. As a consequence, I believe that this research would provide a valuable contribution to the field. Hence, the preceding paper has been included within the current thesis.



## The Impact of Completing Body Image Assessments on Adolescents' Body Image and Engagement in Body Change Strategies: Harmful or Harmless?

Hannah K. Jarman<sup>a</sup>, Amy Slater<sup>b</sup>, Siân A. McLean<sup>a</sup>, Mathew D. Marques<sup>a</sup>, and Susan J. Paxton<sup>a</sup>

<sup>a</sup>School of Psychology and Public Health, La Trobe University

<sup>b</sup>Centre for Appearance Research, University of the West of England

Corresponding author:

Hannah K. Jarman, School of Psychology and Public Health, La Trobe University

T: +61 9479 3879, E: [h.jarman@latrobe.edu.au](mailto:h.jarman@latrobe.edu.au)

### Author contributions:

HKJ conceived of the study, participated in its design, facilitated study coordination, conducted the analyses, and drafted the manuscript; MDM participated in the design of the study, assisted with statistical analysis, and provided feedback on the manuscript; SAM participated in the design of the study and provided feedback on the manuscript; AS participated in the design of the study and provided feedback on the manuscript; SJP participated in the design of the study and provided feedback on the manuscript. All authors contributed to interpretation of results and read and approved the final manuscript.

**Submission status:** Published as Jarman, H. K., Slater, A., McLean, S. A., Marques, M. D., & Paxton, S. J. (2021). The impact of completing body image assessments on adolescents' body image and

engagement in body change strategies: Harmful or harmless? *Body Image*, 39, 131-138.

<https://doi.org/10.1016/j.bodyim.2021.07.003>

### Abstract

Parents and educators have raised concerns that participating in body image research may cause or increase poor body image and engagement in body change strategies. This quasi-experimental study compared body image and body change strategy outcomes among adolescents who had, and had not, previously been exposed to the same assessment questions 6-months prior (twice- vs once-completers). Comparison was also made between groups who completed an assessment containing only positively worded items or both positive and negative items (positive vs mixed valence). Boys and girls ( $N = 1,532$ ,  $M_{age} = 13.83$ ,  $SD = 1.18$ ) completed online measures of body dissatisfaction, body appreciation, overvaluation of weight and shape, appearance esteem and body change strategies. In regression analyses, neither body image nor body change strategies were predicted by group (completion or valence groups), except lower body dissatisfaction and higher body appreciation among twice-completers. Most participants did not experience individual-level change in body image or body change strategies over 6-months. Findings suggest that body image assessments may not put adolescents at risk of poor body image or engagement with body change strategies, however; experimental research is needed. Some improvement in body image may have implications for prospective and prevention research.

**Keywords:** Adolescents, assessment, research, harm, risk, body image

## Introduction

Conducting research to examine body image and unhealthy behaviours to pursue weight and shape change among adolescents is important to understand the development of risk factors for, and best approaches to prevent, these concerns and behaviours. Despite this importance, some parents and educators express concerns that participating in body image and disordered eating research may cause short-term distress and/or medium to longer-term harm to children and adolescents. Arguments that exposure to items assessing these constructs may either contribute to the development of new concerns or trigger existing concerns have been reported (Damiano et al., 2020). There is also some suggestion that asking adolescents to report disordered eating or body change strategies (e.g., use of diet pills or protein supplements) may inadvertently encourage or inspire such behaviours, a concern raised by schools, the setting in which most research with adolescents takes place (Wilksch & Wade, 2009). These contentions suggest that parents and educators have concern about the potential for ongoing negative implications of young people being exposed to questioning about their body image and eating behaviours. The perception appears to be that the questioning contained in the research may lead to the development of problems that would not otherwise arise in the absence of the research. In addition, from a practical perspective, our research group has been asked by some schools to remove negatively worded items (e.g., overvaluation of weight and shape) and items assessing disordered eating, as they believe these may have a negative impact on students by encouraging negative thoughts and behaviours. These concerns are also reflected within research practice. Specifically, body image research is considered above low risk by ethics committees, indicating the perception that discomfort or harm may result from participating in the research and that specific strategies must be in place in the research protocol to reduce the risk of harm. Given the concerns outlined above and their potential impact on research design, recruitment, and implementation, it is imperative that research examines whether assessments of body image and body change behaviours are harmful for adolescents.

Few studies have explored the impact of completing body image assessments on body image or body change behaviours. Celio et al. (2003) examined whether completion of survey items that focused on risky weight control behaviours and attitudes increased incidence of these behaviours among girls aged 11-12 years. Incidence of risky weight control behaviours among participants who completed the survey on one occasion or two occasions over a 1-year period were compared to determine if there were differences between those exposed or not exposed to such items previously. No group differences were found between once- or twice-completers for excessive weight and shape concerns. Interestingly, rates of weight change behaviours, including dieting, starving, skipping meals, use of laxatives/diuretics, and vomiting, decreased over time among twice-completers, rather than increased as those with concerns about this kind of research may have predicted. In line with other health risk behaviour literature (Rodgers et al., 2015), it is possible that exposure to these types of assessments may actually help adolescents identify and reappraise such strategies as problematic, and even discourage risky behaviours or encourage help seeking. Although it appears that completing body image assessments demonstrated minimal risk for increased body change behaviours and attitudes (Celio et al., 2003), this claim is based on research conducted almost two decades ago and which only included adolescent girls.

More recently, a study designed to explore parents' perceptions of the impact of participating in body image assessments showed that parents were primarily positive or neutral about their child's participation (Damiano et al., 2020). However, up to 3.2% reported a perceived negative impact on their child, including that assessments were boring or time-consuming, or prompted negative self-evaluations. One recommendation made in the paper to ensure the conduct of safe body image research was that body image surveys should use positively word items and use distractor items to obscure the body image focus (Damiano et al., 2020). It is noted, however, that the focus of this study was primary-school aged children who had participated in research from the age of 3 to 8 years and recommendations may not be applicable to older age groups. Furthermore,

at present, no empirical data exist to support or refute any impact of using negatively worded items among children or adolescents. The current study aims to address this gap.

The two studies above represent the limited research in this domain, and the authors are unaware of any other studies which have tested whether completing body image assessments increases poor body image and body change behaviours in adolescent boys and girls at a later timepoint. Further, as noted above, no research has examined whether participants report different outcomes if completing assessments containing some negatively worded items compared to only positively worded items. Consequently, the present study explored two research questions; (1) is extent of exposure to body image assessments (twice- vs once-completer groups) differentially associated with body image-related outcomes (body dissatisfaction, body appreciation, overvaluation of weight and shape, and appearance esteem) and engagement in body change strategies at 6-months, and (2) is valence of body image assessments (positive vs mixed valence groups) differentially associated with body (dis)satisfaction and body appreciation at 6-months. Individual-level change scores over the 6-month period for twice-completers were also examined to further identify if there were any detrimental effects from participating in body image research. The purpose of this research was to examine medium-term (6-month) harm among adolescents. Given that gender differences and developmental and psychosocial shifts throughout adolescence are related to body image (Bucchianeri et al., 2013; Lacroix et al., 2020), age and gender were included in the models as covariates.

## **Method**

### **Design**

The present study originated from an opportunity that arose during data collection for a prospective examination of relationships between social media and body image and well-being among adolescents. Utilising a quasi-experimental design, the present study compared outcomes for groups according to their extent of exposure to a body image assessment (twice- vs once-

completers), and whether they received positive only or mixed valence survey items (positive vs mixed valence). These groups formed over the course of the study based on participant circumstance (i.e., absence from school, school year).

### **Sampling Procedures and Participants**

The research was approved by the University Human Ethics Committee (HEC18424). Two private, co-educational secondary schools in Melbourne, Australia were recruited to take part. The present study examines data from baseline and 6-month assessments. Informed, opt-out parent consent and informed participant assent was obtained, with 35 (1.84%) parents choosing to opt-out their child from the study. All remaining students in grade 7 – 10 (typically aged 12-16 years) were invited to participate in the research. Trained researchers attended the school during normal class time to facilitate online survey completion at baseline and 6-month follow-up. Researchers delivered instructions to students during data collections and provided supervision alongside class teachers to ensure the survey was completed silently and independently.

Participants ( $N = 1,583$ ) identified as male (55.97%), female (40.81%), or 'other/not listed' (1.33%), with 1.90% preferring not to respond. Given that gender is included as a covariate in the analyses and the numbers were low for 'other' and 'prefer not to respond' gender responses ( $n = 51$ ), these latter participants were excluded from analyses, resulting in a final sample of 1,532 adolescents aged 11 – 17 years ( $M_{age} = 13.83$ ,  $SD = 1.18$ ). Socioeconomic status of the sample was calculated using self-reported home postcode (Australian Bureau of Statistics, 2018) and indicated high socioeconomic advantage (range = 1 – 10,  $M = 9.27$ ,  $SD = 1.24$ ), consistent with the school demographics. The majority of participants were born in Australia or New Zealand (86.00%).

### **Participant Grouping**

Depending on whether participants completed the survey at both baseline and 6-month timepoints or only at 6-months, they were automatically designated as being in the twice-

completers group ( $n = 1,318$ ) or once-completers group ( $n = 214$ ), respectively. The primary reason for students only completing the 6-month assessment was that they were not present during baseline data collection, either due to absenteeism or other school commitments (e.g., sports or music lessons).

Prior to data collection, one of the schools had expressed concerns about some negatively worded items in the assessment. Consequently, they requested that measures which included any negatively worded items (contained in the measures body change strategies to lose weight and gain muscle, overvaluation of weight and shape, and appearance esteem) were removed for their younger students (grades 7 and 8). For measures that contained both positively and negatively worded items, the authors decided to remove the entire measures in question, rather than just omit negatively worded items, as selective omission would likely affect the reliability and validity of scores on the measures. Therefore, these participants completed an assessment which only contained positively worded items (body [dis]satisfaction and body appreciation), comprising the positive valence group for the purposes of the present study ( $n = 364$ ). Note, the body dissatisfaction measure is positively worded, so was kept in the survey for all participants, but reverse-scoring means it is presented here as body dissatisfaction. The positive valence group only consisted of students in grades 7 and 8, therefore the comparison group (mixed valence;  $n = 611$ ) also only contained students in grades 7 and 8. All grades 9 and 10 students were excluded from analyses of the effects of item valence on outcomes ( $n = 657$ ). By comparing the groups outlined above, we are able to indicate whether exposure to body image assessments resulted in differential impacts on body image and body change strategies.

## **Measures**

### ***Demographics***

Self-reported age, gender, and home postcode.



### ***Body Dissatisfaction***

Body dissatisfaction was assessed using the Body Shape Satisfaction Scale (Pingitore et al., 1997), where participants rate their satisfaction with 10 physical features (e.g., face, body shape) on a 5-point scale (1 = *very dissatisfied*, 5 = *very satisfied*). In the present study, four additional items were included to ensure relevance among adolescent boys (chest, overall body fat, hair, and muscles; Jarman et al., 2021). Items were reverse-coded and summed, with higher scores representing greater body dissatisfaction. Scores on the original scale have demonstrated discriminant, convergent, and predictive validity, as well as 2-week test-retest reliability among adolescents (Bucchianeri et al., 2013; Paxton et al., 2006). Internal reliability in the present study was high ( $\alpha = .95$ ).

### ***Body Appreciation***

Positive body image was assessed using the Body Appreciation Scale-2 for Children (Halliwell et al., 2017). Participants report how often they agree with 10-items (e.g., I feel love for my body) on a 5-point scale (1 = *never*, 5 = *always*). A mean score was calculated, with higher scores representing greater body appreciation. Scores on this scale have demonstrated good internal consistency, 6-week test-retest reliability, and construct validity among early adolescents (Halliwell et al., 2017). Internal reliability in the present study was high ( $\alpha = .95$ ).

### ***Body Change Strategies***

Body change strategies to lose weight and gain muscle were assessed using six items from prior research conducted by the Centre for Appearance Research, UK (unpublished data). Participants were asked if, over the past 28 days, they had engaged in strategies to lose weight or keep from gaining weight (taken diet pills or laxatives, used a food substitute [e.g., powder or special drink], exercised a lot) and strategies to gain muscle (used a protein or energy supplement [e.g.,

powder drink or bar], lifted weights, eaten extra food to gain bulk) by indicating yes or no. Analyses were conducted separately for each of the six items.

### ***Overvaluation of Weight and Shape***

Two items from the Weight and Shape subscale of the Eating Disorder Examination Questionnaire (Fairburn & Beglin, 1994) were used to assess overvaluation of weight and shape. Participants indicate how often their self-concept has been impacted by their weight and shape over the past 28 days (e.g., Has your shape influenced how you think about [judge] yourself as a person?) using a 7-point scale (1 = *not at all*, 7 = *markedly/a lot*). A mean score was calculated, with higher scores representing greater overvaluation of weight and shape. Scores on these items have demonstrated good reliability among adolescents (McLean et al., 2015; Mond et al., 2014). Spearman-Brown coefficients for the 2-item overvaluation of weight and shape subscale indicated high internal consistency reliability ( $r_s = .92$ ).

### ***Appearance Esteem***

Appearance esteem was assessed using the appearance subscale of the Body Esteem Scale (Mendelson et al., 2001). Participants report how often statements about their appearance apply to them (e.g., I am pretty happy about the way I look) on a 5-point scale (1 = *never*, 5 = *always*). After reverse-scoring six items a mean score was calculated, with higher scores representing greater appearance esteem. Scores on the subscale have shown good internal consistency, test-retest reliability, and structural and convergent validity among adolescents (Kling et al., 2019; Mendelson et al., 2001). Internal reliability in the present study was high ( $\alpha = .90$ ).

### ***Analysis Strategy***

Sample characteristics were examined to provide descriptive data. Demographic equivalence of groups by age was tested on both groups (once- vs twice-completers and positive vs mixed valence assessment) with independent samples t-tests. Demographic equivalence of groups by

gender and socioeconomic status was assessed using a chi-square test for one group (positive vs mixed valence) and using Fischer exact test for the other group comparison (once- vs twice-completers) as the cells had an expected count below five.

To examine our research questions, (1) is level of exposure to assessments (once- vs twice-completers) differentially associated with body image-related outcomes and body change strategies at 6-months, and (2) is item valence (positive vs mixed valence) differentially associated with body dissatisfaction and body appreciation at 6-months, separate regression models were run in Mplus 8 (Muthén & Muthén, 2017). Linear regressions were conducted for the continuous variables where body dissatisfaction, body appreciation, overvaluation of weight and shape, and appearance esteem were dependent variables. Logistic regressions were conducted for analyses where dependent variables were dichotomous. These were the six body change strategy variables. Age and gender were included in the models as covariates. The data were not normally distributed so a maximum likelihood robust (MLR) estimator was used to deal with deviations from normality in all linear regression analyses (Yuan & Bentler, 2000) and a maximum likelihood estimator was used in the logistic regression analyses. All models report betas (standardised  $\beta$  for linear regressions, unstandardised B for logistic regressions) and 95% Confidence Intervals (CIs), and odds ratios were reported for the logistic regressions. Effect sizes ( $f^2$ ) were calculated using the formula  $R^2 / 1 - R^2$ , whereby  $f^2 \geq 0.02$ ,  $f^2 \geq 0.15$ , and  $f^2 \geq 0.35$  represent small, medium, and large effect sizes, respectively (Cohen, 1988; Cohen et al., 2003). Post-hoc sensitivity analyses were conducted using G\*Power 3.1 (Faul et al., 2009) for the proposed regression models, entering the total sample size of each group, alpha value .05 and power .80. The results indicated effect size  $f^2$  of .006 for the once-vs twice-completers models and .010 for the positive vs mixed valence models which, as indicated previously, represents adequate power to detect very small effects.

Although average scores can indicate group-level changes, this approach does not capture individual-level changes (Jacobson & Truax, 1991). Therefore, the proportion of individuals who experienced reliable change in body image from baseline to 6-month follow-up was examined by calculating a change score (time 1 – time 2) to explore the proportion of individuals who had no change, worsened, or improved at the second assessment, following earlier exposure to the assessment questions. Given that time 1 and time 2 scores were only available for twice-completers, these analyses were conducted among these participants only. For the continuous body image variables (body dissatisfaction, body appreciation, overvaluation of weight and shape, and appearance esteem), the change score was divided by the standard error of the difference between the two scores and standardised to create a z-score (Iverson, 2019). The resultant score is the reliable change index (Jacobson & Truax, 1991). If the standardised score is larger than the desired level of significance ( $p < .05$ ,  $\pm 1.96$ ) then the change score is interpreted as likely to occur beyond chance and indicative of reliable change (Jacobson & Truax, 1991). Thus, for scales with a positive valence (body appreciation, appearance esteem) scores which were greater than 1.96 reflected worsening (reduced scores), whereas scores below -1.96 reflected improvement (increased scores). Alternatively, for scales with a negative valence (body dissatisfaction and overvaluation of weight and shape) scores which were greater than 1.96 reflected improvement (reduced scores), whereas scores below -1.96 reflected worsening (increased scores). For body change strategy items, a positive score, zero, or negative score was allocated based on participants' change score only (+1 = increased engagement with body change strategies; 0 = no change; -1 = reduced engagement with body change strategies). Given the nature of these nominal data, reliable change could not be calculated so these scores represent actual change. The proportion of participants who worsened, experienced no change, and improved are reported. As an additional analysis, a chi-square test was conducted to examine whether the proportion of change (worsened, stayed the same, improved) differed by valence group (positive vs mixed). Body dissatisfaction and body appreciation were the

variables included in these analyses as they were the only measures completed by both valence groups.

## Results

Missing data across the two timepoints were assessed and the extent of missing data was reasonable for school-based research (0 – 14.90%). An administrative error occurred whereby some adolescents ( $n = 161$ ) did not receive the 2-item overvaluation of weight and shape scale at 6-month follow-up. Given that some data were not missing completely at random, full information maximum likelihood estimation was used to handle missing data. Table 1 displays demographic characteristics and equivalence of the sample. Once- and twice-completers did not differ by gender ( $\chi^2[1, N = 1,532] = 0.03, p = .882$ ) or socioeconomic status ( $\chi^2[7, N = 1,203] = 3.80, p = .811$ ). However, groups differed by age, whereby the twice-completers were significantly younger than once-completers,  $t(297.361) = 2.67, p = .008, d = 0.19$ . For the positive vs mixed valence, groups did not differ by gender ( $\chi^2[1, N = 975] = 0.26, p = .640$ ) or socioeconomic status ( $\chi^2[7, N = 738] = 9.93, p = .179$ ). However, they did differ by age, whereby the positive valence group were significantly younger than the mixed valence only group,  $t(739.83) = 4.86, p < .001, d = 0.32$ .

Summary statistics and regression coefficients for the once- vs twice-completer groups are presented in Table 2. The linear regression models revealed that group significantly predicted body dissatisfaction and body appreciation, whereby twice-completers reported significantly lower body dissatisfaction and higher body appreciation than once-completers. No significant effects were found in the remaining linear and logistic regression models; overvaluation of weight and shape, appearance esteem, strategies to lose weight or keep from gaining weight: taken diet pills or laxatives; used a food substitute (e.g., powder or special drink); exercised a lot, and strategies to gain muscle: used a protein or energy supplement (e.g., powder drink or bar); lifted weights; eaten extra food to gain bulk.

In relation to the positive and mixed valence groups, summary statistics and regression coefficients are reported in Table 3. Linear regression models showed that group did not significantly predict body dissatisfaction or body appreciation. Results from all regression analysis did not change substantially when covariates were omitted, whereby all significant and non-significant effects remained.

Figure 1 presents the proportion of participants who experienced change in body image (improvement or worsening) over the 6-month follow-up. For the body change strategies, of which actual (not reliable) change was calculated due to the nominal nature of the data, similar proportions worsened (1.67% - 13.49%) as improved (1.56% - 13.15%). Specifically, the proportions were as follows; strategies to lose weight or keep from gaining weight: taken diet pills or laxatives (1.67% worsened, 96.77% experienced no change, 1.56% improved), used a food substitute (e.g., powder or special drink; 9.02% worsened, 85.08% experienced no change, 5.90% improved), and exercised a lot (13.49% worsened, 73.36% experienced no change, 13.15% improved); and strategies to gain muscle: used a protein or energy supplement (e.g., powder drink or bar; 10.24% worsened, 81.63% experienced no change, 8.13% improved); lifted weights (12.12% worsened, 76.64% experienced no change, 11.23% improved); and eaten extra food to gain bulk (8.13% worsened, 84.19% experienced no change, 7.68% improved). For the continuous variables, for which the reliable change index, which indicates change beyond chance, was examined, the proportion of participants who worsened (2.46% – 4.80%) was also similar to the proportion that improved (2.62% - 3.07%). Specifically, the proportions were as follows; body dissatisfaction (3.25% worsened, 93.74% experienced no reliable change, 3.01% improved), body appreciation (2.46% worsened, 94.92% experienced no reliable change, 2.62% improved), overvaluation of weight and shape (4.80% worsened, 92.13% experienced no reliable change, 3.07% improved), and appearance esteem (3.24% worsened, 93.85% experienced no reliable change, 2.91% improved). With the exception of using a food substitute (9.02% worsened vs 5.90% improved), the proportions appeared relatively

consistent across the actual and reliable change scores, with most participants not experiencing change in body image.

When the proportions (worsened, no reliable change, improved) were examined by valence group (positive vs mixed), no differences were found for body dissatisfaction ( $\chi^2[2, N = 1,230] = 5.65, p = .055$ ) or body appreciation ( $\chi^2[2, N = 1,261] = 3.79, p = .153$ ), indicating that the proportions were equivalent across the positive and mixed valence groups.

### Discussion

The present study examined whether completing body image assessments was associated with body image-related outcomes and engagement in body change strategies over 6-months. Specifically, body image was compared among participants who had been and had not been previously exposed to body image assessments (twice- vs once-completers) and among participants who completed an assessment with only positively worded body image items compared with those who completed an assessment which also included negatively worded body image items (positive vs mixed valence). With some exceptions, findings suggest that previous exposure to body image assessments was largely not associated with body image or body change strategies among adolescents. In addition, the presence of negatively worded body image items relative to only positive items was not associated with levels of body dissatisfaction or body appreciation. Individual-level change scores indicated that body image and body change strategies did not change over 6-months for the majority of participants. Further, there was no difference in the proportion of participants who experienced worsening, no change, or improvement in body dissatisfaction or body appreciation between participants exposed to only positively, or both positively and negatively, worded items.

Consistent with previous research (Celio et al., 2003), adolescents who were previously exposed to body image assessments reported equivalent, or slight improvements (body

dissatisfaction and body appreciation) in body image at the second assessment relative to those who had not previously completed the assessment. This appears to demonstrate that those who had already been exposed to items assessing body image did not have poorer outcomes at a latter point in time compared with those without previous exposure. Contrary to the views of some parents and educators, a focus on body image in research assessments does not appear to promote new or existing body image concerns. Instead, participants reported improvements in body dissatisfaction and body appreciation. In line with this, brief surveys have been found to impact attitudinal changes in a number of other fields (e.g., tanning and alcohol behaviours; McCambridge & Kypri, 2011; Rodgers et al., 2015). For example, one study found that a brief online survey which assessed awareness of tanning-related health risks demonstrated unintentional intervention effects, whereby participants self-reported lower health-risk behaviours, such as sunbed use, four months later (Rodgers et al., 2015). It is possible that exposure to body image items (e.g., I appreciate the different and unique things about my body) may encourage participants to reappraise their relationship with their body, resulting in the promotion of positive body image, including body appreciation and acceptance. These results might explain improvements in body image seen in control groups in prevention and treatment research exposed only to assessments rather than any form of intervention (e.g., Halliwell et al., 2018). Although the effects in the present study were small, if participants do report improvements in body image measures after completing multiple assessments, it may have significant implications for research and prevention. Therefore, additional studies should be conducted and future research using experimental methods with random allocation to condition should examine the impact of exposure to positive body image items as a possible micro-intervention.

Extending exploration of findings beyond average responses, the present study examined reliable, individual-level change in body image to identify the proportion of participants who experienced no change, worsening, or improvement in body image. Findings demonstrated that



among participants who completed body image measures on two occasions, body image stayed relatively consistent over the 6-month period. In other words, the majority of participants did not experience reliable change in body image-related outcomes 6-months later. This suggests that, for most participants, completing body image assessments did not impact their body image or engagement in body change strategies, either positively or negatively. Inspection of the proportion who did experience change over time showed that the proportion of participants who experienced worsened body image was largely equivalent to the proportion of participants who experienced improved body image. Similarly, there was no statistically significant difference in proportions of participants who had no change, worsening, or improvement in body image according to exposure to positively or mixed valence assessment items. This suggests that the valence of items did not impact change over time.

Taken together, the findings for individual-level change related to frequency of assessment and valence of assessment items may suggest that changes over time in body image and body change strategies occurred due to factors independent of participation in the research. Given that adolescence is a critical period for the development of body image, typically characterised by increased appearance pressures and the onset of body image concerns (Rohde et al., 2015), changes in a small proportion of participants over the 6-month period were unsurprising. Alternatively, the possibility, remote though it appears, that some participants reacted negatively to the assessment cannot be ruled out. Although some control was exercised (e.g., including covariates such as age and gender), due to the quasi-experimental study design one cannot ascertain the reasons for change in body image, regardless of the direction of that change, either improvement or worsening. Certainly, these data may then indicate that participating in body image assessments are largely not associated with any harmful effects on body image or body change strategies for the vast majority of adolescents. However, more evidence is necessary from studies which utilise experimental designs

with random allocation and longer follow-up periods to examine potential delayed effects before more conclusive claims are made.

The present study examined an array of body change strategies, ranging from mild (e.g., exercise) to severe behaviours (e.g., taking diet pills). Findings revealed that none of the body change strategies differed according to whether participants had or had not previously been exposed to the assessment. Further, the majority of participants reported the same level of each body change strategy 6-months later, and the proportion of adolescents who worsened or improved appeared equivalent. These findings indicate that completing body image assessments was not associated with changes in engagement with body change strategies. Given the pervasiveness of diet culture within Western societies, it is likely that adolescents are already aware of body change strategies, including through channels such as social media (Yee et al., 2020) and peers (Piatkowski et al., 2019). Therefore, it appears unlikely that completion of study assessments represents the first time adolescents are exposed to such behaviours.

The findings also revealed that the levels of body dissatisfaction or body appreciation did not differ between participants who completed a positively worded body image assessment and those who completed an assessment which included negatively worded items. This suggests that exposure to negatively worded items does not trigger body image concerns. According to sociocultural theory (Thompson et al., 1999), body image is developed and maintained through three primary channels: the media, peers, and parents/family. These influences are likely to have a substantially greater impact on adolescents' body image than brief exposure to negatively worded items in a research assessment. Although scholars have recommended that body image assessments should use positively word items and obscure the body image focus when conducting research with children (Damiano et al., 2020), this approach may be overly cautious for adolescents given the findings from the present study gave no indication that assessments containing negatively worded items are more

harmful than assessments only including positively worded items among adolescents. However, given this study is one of the first of its kind, additional research is necessary to confirm and extend these findings.

Although the present study has some strengths, including the prospective nature of the data and wide variety of body image constructs examined, it is important to interpret these findings in the context of several limitations. First, the quasi-experimental design whereby inclusion in group was automatically designated on the basis of participant circumstance (e.g., having been present for one or two assessment timepoints) rather than random allocation reduces the ability to preclude alternative explanations for the results. For example, individuals who were only present for one assessment (once-completers) may have been experiencing issues at home or in school which may have introduced bias within groups. Future experimental studies with designs which utilise random allocation would be fruitful. Second, our sample contained a homogenous group of primarily White, socioeconomically advantaged adolescents. Future research should recruit participants from a wide-ranging sociodemographic area. Further, obtaining larger samples which allow examination of the data by age or gender would also be beneficial, given differences in body image and body change strategies may exist. Third, although the body change strategy items included in the present study are frequently used in research (McCabe et al., 2001; Neumark-Sztainer et al., 2012), these items do not represent a validated or established measure. Building on the present findings, future research should also examine the effect of using more extensive and established disordered eating scales among adolescents. Fourth, whilst the collection of objective measures of body image may be a strength, it may also miss an important aspect of the subjective experience of participating in body image research, for which qualitative research would be beneficial. Finally, given the nominal nature of the body change strategy items, the change score for those items represented actual change, not reliable change. Therefore, it is likely that some of this change occurred due to chance.

## Conclusions

The present study indicates that body image assessments do not appear to put adolescents at increased risk of developing or exacerbating body image concerns. Specifically, whether adolescents completed the assessment previously or not over a 6-month period did not predict body image-related outcomes, except for slightly lower body dissatisfaction and higher body appreciation among twice-completers. Further, no evidence suggests that body image assessments encourage body change strategies among adolescents. There was no difference in body image among participants who completed an assessment containing negatively worded items than an assessment containing only positively worded items. Although these findings provide preliminary support that body image assessments do not appear to cause harm to the majority of adolescents, further research is needed to extend these findings, with use of experimental designs to reduce bias.

## References

- Australian Bureau of Statistics. (2018). *Census of population and housing: Socio-economic indexes for areas (SEIFA) 2016*. Australian Government.  
<https://www.abs.gov.au/ausstats/abs@.nsf/mf/2033.0.55.001>
- Bucchianeri, M. M., Arikian, A. J., Hannan, P. J., Eisenberg, M. E., & Neumark-Sztainer, D. (2013). Body dissatisfaction from adolescence to young adulthood: Findings from a 10-year longitudinal study. *Body Image*, 10(1), 1-7. <https://doi.org/10.1016/j.bodyim.2012.09.001>
- Celio, A. A., Bryson, S., Killen, J. D., & Taylor, C. B. (2003). Are adolescents harmed when asked risky weight control behavior and attitude questions? Implications for consent procedures. *International Journal of Eating Disorders*, 34(2), 251-254. <https://doi.org/10.1002/eat.10188>
- Cohen, J. (1988). *Statistical power analysis for the behavioural sciences*. (2nd ed.). Lawrence Erlbaum Associates.
- Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences*. (3rd ed.). Lawrence Erlbaum.
- Damiano, S. R., McLean, S. A., Nguyen, L., Yager, Z., & Paxton, S. J. (2020). Do we cause harm? Understanding the impact of research with young children about their body image. *Body Image*, 34, 59-66. <https://doi.org/10.1016/j.bodyim.2020.05.008>
- Fairburn, C. G., & Beglin, S. J. (1994). Assessment of eating disorders: Interview or self-report questionnaire? *International Journal of Eating Disorders*, 16(4), 363-370.  
[https://doi.org/10.1002/1098-108X\(199412\)16:4<363::AID-EAT2260160405>3.0.CO;2-#](https://doi.org/10.1002/1098-108X(199412)16:4<363::AID-EAT2260160405>3.0.CO;2-#)
- Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G\*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, 41(4), 1149-1160. <https://doi.org/10.3758/brm.41.4.1149>

- Halliwel, E., Jarman, H. K., Tylka, T., & Slater, A. (2017). Adapting the Body Appreciation Scale-2 for children: A psychometric analysis of the BAS-2C. *Body Image*, 21, 97-102.  
<https://doi.org/10.1016/j.bodyim.2017.03.005>
- Halliwel, E., Jarman, H. K., Tylka, T. L., & Slater, A. (2018). Evaluating the impact of a brief yoga intervention on preadolescents' body image and mood. *Body Image*, 27, 196-201.  
<https://doi.org/10.1016/j.bodyim.2018.10.003>
- Iverson, G. L. (2019). Reliable Change Index. In Kreutzer J., DeLuca J., & Caplan B. (Eds.), *Encyclopedia of Clinical Neuropsychology*. Springer. [https://doi.org/https://doi.org/10.1007/978-3-319-56782-2\\_1242-3](https://doi.org/https://doi.org/10.1007/978-3-319-56782-2_1242-3)
- Jacobson, N. S., & Truax, P. (1991). Clinical significance: A statistical approach to defining meaningful change in psychotherapy research. *Journal of Consulting and Clinical Psychology*, 59(1), 12-19. <https://doi.org/10.1037/10109-042>
- Jarman, H. K., Marques, M. D., McLean, S. A., Slater, A., & Paxton, S. J. (2021). Social media, body satisfaction and well-being among adolescents: A mediation model of appearance-ideal internalization and comparison. *Body Image*, 36, 139-148.  
<https://doi.org/10.1016/j.bodyim.2020.11.005>
- Kling, J., Kwakkenbos, L., Diedrichs, P. C., Rumsey, N., Frisen, A., Brandao, M. P., Silva, A. G., Dooley, B., Rodgers, R. F., & Fitzgerald, A. (2019). Systematic review of body image measures. *Body Image*, 30, 170-211. <https://doi.org/10.1016/j.bodyim.2019.06.006>
- Lacroix, E., Atkinson, M. J., Garbett, K. M., & Diedrichs, P. C. (2020). One size does not fit all: Trajectories of body image development and their predictors in early adolescence. *Development and Psychopathology*, 1-10. <https://doi.org/10.1017/S0954579420000917>
- McCabe, M., Ricciardelli, L. A., & Banfielf, S. (2001). Body image, strategies to change muscles and weight, and puberty: Do they impact on positive and negative affect among adolescent boys and girls? *Eating Behaviors*, 2, 129-149. [https://doi.org/10.1016/S1471-0153\(01\)00025-3](https://doi.org/10.1016/S1471-0153(01)00025-3)

- McCambridge, J., & Kypri, K. (2011). Can simply answering research questions change behaviour? Systematic review and meta analyses of brief alcohol intervention trials. *PLoS ONE*, 6(10), e23748. <https://doi.org/10.1371/journal.pone.0023748>
- McLean, S. A., Paxton, S. J., Wertheim, E. H., & Masters, J. (2015). Photoshopping the selfie: Self photo editing and photo investment are associated with body dissatisfaction in adolescent girls. *International Journal of Eating Disorders*, 48(8), 1132-1140. <https://doi.org/10.1002/eat.22449>
- Mendelson, B. K., Mendelson, M. J., & White, D. R. (2001). Body-esteem scale for adolescents and adults. *Journal of Personality Assessment*, 76(1), 90-106. [https://doi.org/10.1207/S15327752JPA7601\\_6](https://doi.org/10.1207/S15327752JPA7601_6)
- Mond, J., Hall, A., Bentley, C., Harrison, C., Gratwick-Sarll, K., & Lewis, V. (2014). Eating-disordered behavior in adolescent boys: Eating disorder examination questionnaire norms. *International Journal of Eating Disorders*, 47(4), 335-341. <https://doi.org/10.1002/eat.22237>
- Muthén, L. K., & Muthén, B. O. (2017). *Mplus user's guide* (8th ed.). Muthén & Muthén.
- Neumark-Sztainer, D., Wall, M., Story, M., & Standish, A. R. (2012). Dieting and unhealthy weight control behaviors during adolescence: Associations with 10-year changes in body mass index. *Journal of Adolescent Health*, 50(1), 80-86. <https://doi.org/10.1016/j.jadohealth.2011.05.010>
- Paxton, S. J., Neumark-Sztainer, D., Hannan, P. J., & Eisenberg, M. E. (2006). Body dissatisfaction prospectively predicts depressive mood and low self-esteem in adolescent girls and boys. *Journal of Clinical Child and Adolescent Psychology*, 35(4), 539-549. [https://doi.org/10.1207/s15374424jccp3504\\_5](https://doi.org/10.1207/s15374424jccp3504_5)
- Piatkowski, T. M., White, K. M., Hides, L. M., & Obst, P. L. (2019). Australia's adonis: Understanding what motivates young men's lifestyle choices for enhancing their appearance. *Australian Psychologist*, 55(2), 156-168. <https://doi.org/10.1111/ap.12451>

- Pingitore, R., Spring, B., & Garfield, D. (1997). Gender differences in body satisfaction. *Obesity Research*, 5(5), 402-409. <https://doi.org/10.1002/j.1550-8528.1997.tb00662.x>
- Rodgers, R. F., Franko, D. L., Gottlieb, M., & Daynard, R. (2015). Decreases in tanning behaviors following a short online survey: Potential for prevention? *Preventive Medicine Reports*, 2, 76-78. <https://doi.org/10.1016/j.pmedr.2015.01.002>
- Rohde, P., Stice, E., & Marti, C. N. (2015). Development and predictive effects of eating disorder risk factors during adolescence: Implications for prevention efforts. *International Journal of Eating Disorders*, 48(2), 187-198. <https://doi.org/10.1002/eat.22270>
- Thompson, J. K., Heinberg, L. J., Altabe, M., & Tantleff-Dunn, S. (1999). *Exacting beauty: Theory, assessment, and treatment of body image disturbance*. American Psychological Association. <https://doi.org/10.1037/10312-000>
- Wilksch, S. M., & Wade, T. D. (2009). Reduction of shape and weight concern in young adolescents: A 30-month controlled evaluation of a media literacy program. *Journal of the American Academy of Child and Adolescent Psychiatry*, 48(6), 652-661. <https://doi.org/10.1097/CHI.0b013e3181a1f559>
- Yee, Z. W., Griffiths, S., Fuller-Tyszkiewicz, M., Blake, K., Richardson, B., & Krug, I. (2020). The differential impact of viewing fitspiration and thinspiration images on men's body image concerns: An experimental ecological momentary assessment study. *Body Image*, 35, 96-107. <https://doi.org/10.1016/j.bodyim.2020.08.008>
- Yuan, K. H., & Bentler, P. M. (2000). Three likelihood-based methods for mean and covariance structure analysis with nonnormal missing data. *Sociological Methodology*, 30(1), 165-200. <https://doi.org/10.1111/0081-1750.00078>



**Table 1**

*Demographic Characteristics and Equivalence of the Sample by Groups (Once- vs Twice-Completers and Positive vs Mixed Valence)*

	Completion status			Assessment item valence		
	Once-completers ( <i>n</i> = 214)	Twice-completers ( <i>n</i> = 1,318)	<i>p-value</i>	Positive valence ( <i>n</i> = 364)	Mixed valence ( <i>n</i> = 611)	<i>p-value</i>
	<i>Mean (SD)</i>			<i>Mean (SD)</i>		
Age (years)	14.02 (1.12)	13.80 (1.19)	.008	12.95 (0.73)	13.18 (0.71)	<.001
Socioeconomic status	9.26 (1.29)	9.27 (1.24)	.811	9.34 (1.13)	9.30 (1.13)	.179
	Percentage (%)			Percentage (%)		
Gender	58.41% boys	57.74% boys	.882	55.77% boys	57.45% boys	.640

**Table 2**

*Summary Statistics and Regression Results for Group (Once- and Twice-Completers) Predicting Body Image and Body Change Strategies*

	Once-completers		Twice-completers		Regression		95% Confidence	Effect size	
Linear regressions	(n = 214)		(n = 1,318)		coefficient		interval	f <sup>2</sup>	
	n	M (SD)	n	M (SD)	B	p-value			
Body dissatisfaction	210	36.43 (13.45)	1,292	33.65 (12.42)	-0.07	.008	[-0.12,-0.02]		-.22
Body appreciation	213	3.52 (0.98)	1,303	3.73 (0.92)	0.08	.005	[0.02,0.13]		.23
Overvaluation of weight and shape	181	3.02 (1.92)	813	2.79 (1.82)	-0.05	.165	[-0.11,0.02]		-.13
Appearance esteem	195	3.34 (0.95)	956	3.47 (0.87)	0.05	.079	[-0.01,0.11]		.15
Logistic regressions	n	% 'yes'	n	% 'yes'	B	p-value	95% Confidence interval	Effect size f <sup>2</sup>	Odds ratio
Body change strategies to lose weight or keep from gaining weight:									
Taken diet pills or laxatives	193	2.59	962	2.29	-0.13	.796	[-1.12,0.86]	.04	0.88
Used a food substitute	192	11.46	961	12.49	0.10	.684	[-0.39,0.59]	.03	1.11
Exercised a lot	193	57.51	960	53.54	-0.16	.317	[-0.48,0.15]	.02	0.85
Body change strategies to gain muscle:									
Used a protein or energy supplement	193	15.54	961	18.42	0.21	.328	[-0.22,0.64]	.10	1.24
Lifted weights	193	34.72	960	37.71	0.15	.383	[-0.19,0.50]	.19	1.17
Eaten extra food to gain bulk	193	20.73	960	16.88	-0.29	.175	[-0.71,0.13]	.52	0.75

*Note.* Age and gender were included as covariates in all regression analyses.

**Table 3**

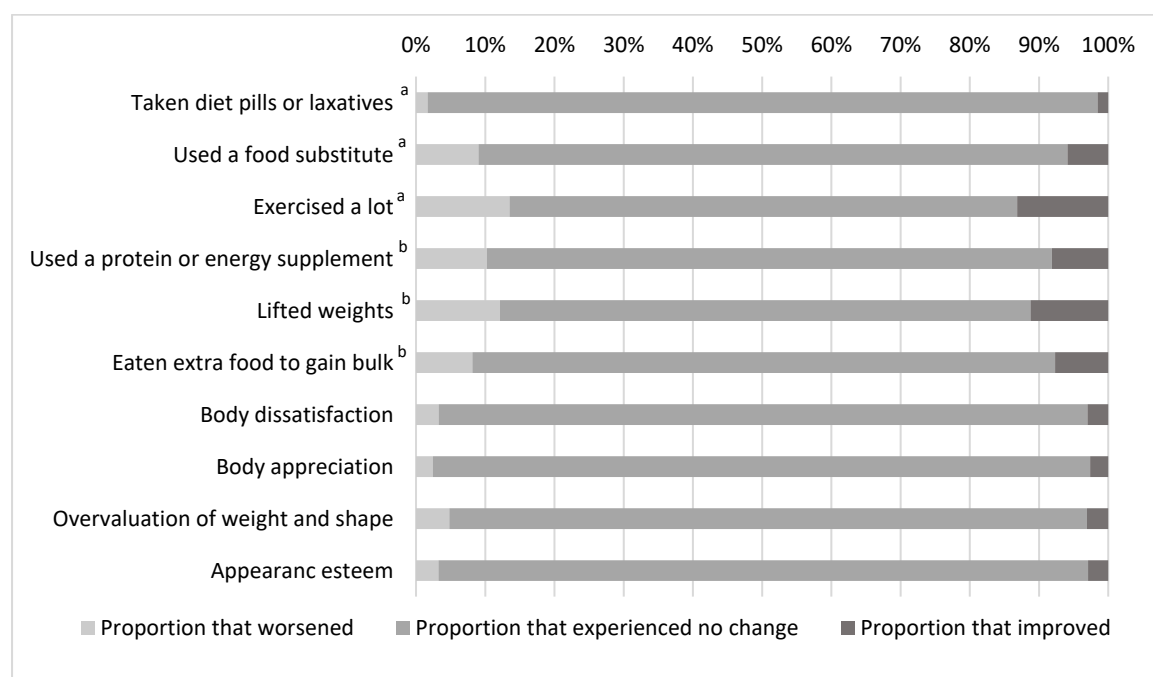
*Summary Statistics and Regression Results for Group (Positive and Mixed Valence) Predicting Body Dissatisfaction and Body Appreciation*

Linear regressions	Positive valence ( <i>n</i> = 364)		Mixed valence ( <i>n</i> = 611)		Regression coefficient		95% Confidence Interval	Effect size <i>f</i> <sup>2</sup>
	<i>n</i>	<i>M</i> ( <i>SD</i> )	<i>n</i>	<i>M</i> ( <i>SD</i> )	<i>β</i>	<i>p</i> -value		
Body dissatisfaction	356	32.81 (12.70)	595	32.97 (12.29)	-0.01	.653	[-0.08,0.05]	.05
Body appreciation	361	3.75 (0.93)	605	3.79 (0.92)	-0.02	.553	[-0.08,0.04]	.03

*Note.* Age and gender were included as covariates in all regression analyses.

**Figure 1**

*Proportion of Change Score for Each Measure Over 6-months*



*Note.* <sup>a</sup> body change strategies to lose weight or keep from gaining weight, <sup>b</sup> body change strategies to gain muscle.

Actual change is represented for body change strategies <sup>a,b</sup>. Reliable change is indicated for body dissatisfaction, body appreciation, overvaluation of weight and shape, and appearance esteem.

## Chapter Eight: Integrated Discussion

### Chapter Overview

The present thesis used sociocultural theory of body image to examine the direct and indirect relationships between social media use and body satisfaction and well-being through thin- and muscular-ideal internalisation and social comparisons. The following discussion will (1) provide a brief review of the integrated research findings and how these relate to previous research; (2) consider the theoretical and practical implications of the findings; (3) identify the limitations of the research; and (4) suggest future directions for research to extend these findings.

### Brief Review of the Findings

The review of the research findings will be organised according to the research questions and aims addressed in this thesis. First, the relationships between social media use and body satisfaction and well-being will be explored. Second, the impact of social media operationalisation will be discussed within the context of body satisfaction. Third, the role of gender will be examined to investigate whether the relationships between social media use and body satisfaction and well-being are consistent among adolescent boys and girls. Finally, the impact of completing body image assessments on adolescents' body image will be explored. The discussion of the results will be amalgamated to provide an integrative overview of the relationships between social media use and body satisfaction and well-being across all studies.

### *The Relationships Between Social Media Use and Body Satisfaction and Well-Being*

Given the complexities of the relationships between social media use and body satisfaction and well-being examined within this thesis, the results will be reported across three areas: direct effects (including motivations for social media use), indirect effects through thin- and muscular-ideal internalisation and social comparisons, and overall model specifications. Finally, a discussion of the effect sizes of these relationships will be presented.

### **Direct Effects Between Social Media Use and Body Satisfaction and Well-Being.**

***Direct Effects Between Social Media Use and Body Satisfaction.*** Examination of the correlations between social media use and body satisfaction indicated that they were predominantly negatively correlated, demonstrating small effects ( $r \leq -.22$ ). This suggests that higher social media use was associated with lower body satisfaction among adolescents. This finding is consistent with previous research that has examined the direct relationships between social media and body satisfaction. Specifically, cross-sectional support has been found for a small, negative association between time spent on social media and body satisfaction (Holland & Tiggemann, 2016; Saiphoo & Vahedi, 2019).

Although the relationships between social media use and body satisfaction were found to be correlated in the present research, when these were examined within the various proposed models (which included motivations for social media use and mediating variables: appearance-ideal internalisation and social comparisons), the majority of proposed direct effects were not supported. While this finding is inconsistent with the literature presented above, it is likely that this lack of association may be attributable to the inclusion and role of motivations for social media use and mediating variables within the proposed models. This notion will be explored further in subsequent sections.

While the majority of direct relationships between social media use and body satisfaction within the various models in the thesis were not significant, there was one exception. In both the cross-sectional and prospective examinations of the tripartite influence model (Study Two and Three, respectively), a direct relationship was found, whereby higher appearance-focused social media use was associated with higher body satisfaction. When this relationship was observed in cross-sectional analyses in Study Two, it was cautiously presumed that appearance-focused social media use may predict body satisfaction. This direction from social media use to body satisfaction is in line with the tripartite influence model (e.g., Keery et al., 2004), as well as previous empirical

research that has found that social media use predicted lower body satisfaction 18-months later among Dutch adolescents (de Vries et al., 2016). However, given the cross-sectional nature of these findings, causality could not be determined. Therefore, Study Three examined this model prospectively, including the direct effect between social media use and body satisfaction. These findings indicated a unidirectional relationship between social media use and body satisfaction, whereby greater body satisfaction predicted greater appearance-focused social media use over 1-year. These results demonstrate that initial assumptions of directionality in cross-sectional work may be incorrect when compared to prospective examinations, supporting the importance of prospective data to confirm causality. This finding of a unidirectional relationship is in line with uses and gratification theory (Katz et al., 1973) which posits that individuals are purposive in how they consume (social) media, with the drive to satisfy their psychological needs. In this instance, individuals with lower body satisfaction were more likely to use appearance-focused social media at lower frequencies at subsequent timepoints. It is possible that these individuals avoid social media as means of self-preservation or selective avoidance (Rousseau & Eggermont, 2018). If appearance-focused use is perceived to demonstrate some threat to body satisfaction, this may result in reduced engagement on social media as a strategy to avoid detrimental impacts.

*Direct Effects Between Social Media Use and Well-Being.* The correlations between social media use and well-being were either small and negative ( $r \leq -.11$ ), or negligible. These results are consistent with some literature which has found little to no association with time spent on social media and intensity of use in cross-sectional research (Huang, 2017; Orben & Przybylski, 2019). However, the inconsistency of the present findings mean they do not provide strong evidence to clarify the mixed results within the literature more broadly.

When the direct relationships between social media use and well-being were tested cross-sectionally within the proposed model in Study One, alongside motivations for social media use, well-being was not associated with any measure of social media use (social media intensity, active

us, passive use, liking use, and photo-based use). When the direct relationships were examined cross-sectionally within the proposed model in Study Two, alongside mediating variables appearance-ideal internalisation and comparisons, social media intensity was not associated with well-being. However, appearance-focused use, examined in Study Two, was associated with lower well-being, demonstrating a small effect. In line with the rationale for the explanation of a positive relationship between appearance-focused use and body satisfaction, individuals with poor well-being may perceive that appearance-focused use has a negative impact on their well-being, resulting in lower appearance-focused use as a self-protective strategy. The well-being literature often considers an inverse relationship between social media use and well-being to support the displacement hypothesis, which suggests that increased use displaces engagement in other important activities which promote well-being. Further, the fact that no positive relationship was found between active use and well-being in Study One disputes the stimulation hypothesis, which has suggested that social media use may enhance well-being through social connection. While the finding of a direct relationship between appearance-focused social media use and well-being is an extension to knowledge in this area, given no previous empirical examination exists, further research is needed to confirm and extend these results. However, as described above, the cross-sectional nature of these data mean that findings need replication and confirmation before substantial claims can be made regarding causality, an aim of future prospective analyses with these data.

### ***The Role of Motivations Within the Relationships Between Social Media Use and Body***

***Satisfaction and Well-Being.*** As previously mentioned, the examination of the proposed model in Study One (including motivations for social media use) found no direct effects between social media use and body satisfaction and well-being, a finding somewhat consistent with Study Two (including mediating variables). However, while Study Two found a small, positive association between appearance-focused use and body satisfaction and well-being, this relationship was not found in Study One. It should be noted that appearance-focused use (i.e., Instagram and Snapchat use) was labelled as such in Study Two, but labelled 'photo-based use' in Study One. These distinct results



between the two models indicate that the inclusion of social media motivation may have accounted for a substantial proportion of the relationships between social media use and body satisfaction and well-being in Study One, resulting in some dilution of effects. If so, this might indicate that motivations play an important role in body satisfaction and well-being, beyond that of social media engagement, and therefore require further examination.

Study One also found some cross-sectional support for the direct relationships between a number of motivations for social media use and body satisfaction and well-being. These relationships were not mediated by social media use, contrary to predictions. In relation to the observed direct relationships, escapism and appearance-feedback motivations were associated with lower body satisfaction and well-being, and motivation to pass time was associated with lower well-being. Information sharing motivation was associated with higher body satisfaction. The patterns of positive and negative relationships suggest that motivations which are related to poor well-being may represent maladaptive coping mechanisms or identity (e.g., escapism from daily stressors), whereas the motivations which are related to greater well-being may provide opportunities for building social connection (e.g., information sharing through joint hobbies). These findings are consistent with previous research which found motivations demonstrated some positive and some negative impacts on well-being (Perugini & Solano, 2021). However, given these findings are cross-sectional it is important to consider that these pathways may be bidirectional. In this manner, levels of body satisfaction and well-being will likely play a role in adolescents' motivations for using social media. For example, poor body satisfaction may prompt use of social media for obtaining appearance-related feedback as a means to seek reassurance or validation regarding one's appearance (Perloff, 2014). Therefore, prospective research is needed to confirm the temporal sequence within these relationships. This is an aim of future analyses using the present data. Such analyses were beyond the scope of the thesis.

### **Indirect Effects Through Appearance-Ideal Internalisation and Comparisons.**

***Indirect Effects of Social Media Use to Body Satisfaction and Well-Being.*** In line with the tripartite influence model, there was cross-sectional and prospective support for the mediating role of comparison, and to a lesser extent for thin-ideal internalisation, within the relationships between social media use and body satisfaction. Higher social media use was associated with higher thin-ideal internalisation and comparisons which, in turn, were associated with lower body satisfaction. This finding is consistent with previous cross-sectional research evaluating sociocultural models of body satisfaction within a social media context among girls (Lee & Lee, 2021; Scully et al., 2020). Examinations of these relationships are scarcer among boys than girls, demonstrating a novel contribution of the present research. A more detailed discussion of gender will be presented in a subsequent section. This is the first prospective research to include both thin- and muscular-ideal internalisation and comparison as mediators within the relationships between social media use and body satisfaction and well-being. The prospective findings suggest that social media use increases thin-ideal internalisation and comparison over 6-months, which then predict lower body satisfaction at 1-year follow-up among adolescents.

In relation to well-being, support for the mediating role of thin-ideal internalisation and comparisons in the relationships between social media use and well-being was also observed in the cross-sectional tripartite influence model in Study 2. For comparisons, these findings support previous research among young adults that examined broader concepts of well-being (e.g., affect, self-esteem; Hanna et al., 2017; Sherlock & Wagstaff, 2018; Wang et al., 2017). Findings from the present research extend to adolescents, with a particular focus on life satisfaction. Given the present research is the first to examine well-being as an outcome variables within the proposed sociocultural model, support for the mediating role of thin-ideal internalisation is novel. Internalisation of sexual ideals, but not social, romantic, or professional ideals, has previously been found to mediate the relationship between Instagram use and well-being among adolescents (de Lenne et al., 2018). The present research builds on these findings. It appears that exposure to social media is associated with

greater investment in thin-ideal representations and engagement in comparisons, which was also found to be associated with poor well-being. Given the results are cross-sectional, further research is needed before claims of causality can be made. Future analyses will be conducted on these data to examine this. Such analyses were beyond the scope of the thesis.

Muscular-ideal internalisation cross-sectionally mediated some of the relationships from social media use to body satisfaction and well-being, depending on the type of social media use variable. Specifically, cross-sectional support was found for mediation of the social media intensity, but not appearance-focused use, relationship to body satisfaction and well-being, whereby higher social media intensity was associated with higher muscular-ideal internalisation which, in turn, was associated with higher body satisfaction and well-being. However, when examined prospectively, muscular-ideal internalisation did not mediate the relationships between social media use (appearance-focused use or photo-based activities) and body satisfaction. It is possible that the relationship is correlational, but not causal, whereby muscular-ideal internalisation and body satisfaction and well-being are related but not impacted by each other over time. Previous cross-sectional research has indicated sequential mediation among men through muscular-ideal internalisation and comparison, whereby higher fitspiration viewing was related to lower body satisfaction through both of these mechanisms, respectively (Fatt et al., 2019). Although sequential mediation was not examined within the prospective model (Study Three), the cross-sectional examination of the tripartite influence model (Study Two) indicated that muscular-ideal internalisation was an independent, not sequential, mediator. The inconsistent findings between cross-sectional and prospective data highlight the importance of longitudinal research to confirm causality of relationships over time. The present study is one of the first to examine these relationships prospectively among adolescent boys and girls. Consequently, future research should use this as a foundation to explore these temporal relationships further.

To obtain a better understanding of the role of muscular-ideal internalisation on the relationships between social media use and body satisfaction and well-being, it may be helpful to inspect the correlations between these variables. In Study Two and Three (examinations of the tripartite influence model), muscular-ideal internalisation was not related to well-being or body satisfaction, the latter either cross-sectionally or prospectively. Consistent with this, research among adolescent boys and girls and young men has found that muscular-ideal internalisation is related to muscle building behaviours but not body (dis)satisfaction (Girard et al., 2018; Rodgers et al., 2020). It is possible that muscular-ideal internalisation may predict specific forms of body image concerns (e.g., dissatisfaction with muscularity) or behaviours (e.g., muscle building) rather than to more universal assessments of body satisfaction. Further, it is possible that muscular ideals may be perceived as more achievable, particularly for boys, resulting in inspiration rather than dissatisfaction. An experimental study found that thin- and athletic- but not muscular-ideal images are detrimental to body satisfaction, leading the authors to suggest that these images may highlight the importance of health and fitness as opposed to achieving an ideal appearance (Robinson et al., 2017). In addition, adolescents may perceive muscular-ideal internalisation as more attainable than thin-ideal internalisation, especially among boys whose bodies start to resemble a more muscular-ideal as they move through puberty (Ricciardelli & Yager, 2015). However, given the inconsistencies within the literature and the present studies, further research is needed to examine muscular-ideal internalisation and its role in the relationships between social media use and body satisfaction and well-being.

***Indirect Effects of Body Satisfaction to Social Media Use.*** Study Three provided the opportunity to prospectively examine the relationship from body satisfaction to social media use. In line with the cross-sectional results in Study Two, an indirect effect was found through comparisons over 1-year. Specifically, lower body satisfaction predicted higher comparisons which, in turn predicted higher social media use. These results are in line with a small number of studies which have examined the indirect relationship from body satisfaction to social media use. For example,

Rousseau et al. (2017) found indirect, but not direct, effects between body dissatisfaction and passive Facebook use through comparisons among adolescents within their two-wave panel study. The present findings extend this limited evidence by using three-wave panel data to confirm mediation across three timepoints over 1-year. The findings indicate that, through comparisons, individuals who have low levels of body satisfaction will use social media at a higher rate than those with high body satisfaction. It is likely that this is driven by a need to seek gratifications or compare oneself with others, as a means of self-improvement (Rousseau et al., 2017).

The present study was the first, that the author is aware of, to prospectively examine the mediating roles of thin- or muscular-ideal internalisation on the relationship from body satisfaction to social media use. Interestingly, no evidence of mediation over time of this direction of relationship was found by either of these variables. When examining the direct relationships, lower body satisfaction predicted higher thin-ideal internalisation, and higher thin-ideal internalisation also predicted higher photo-based, but not appearance-focused, social media use. However, no such direct effects were found for muscular-ideal internalisation. Of the limited prospective research, it has been found that body dissatisfaction directly predicts higher internalisation among adolescent girls (Rodgers et al., 2015), and higher internalisation directly predicts overall social media use (at 1-year but not 6-month follow-up; Vandenbosch & Eggermont, 2016). It should be noted that this previous research examined general internalisation of mass media broadly, rather than specific to thin- or muscular-ideals as used in the present research, although one might argue that media ideals tend to be highly focused on either thin or muscular appearance for females and males, respectively. The relationship from thin-ideal internalisation to appearance-focused use was not evident in the present research. While the lack of a relationship over 6-months is consistent with findings from Vandenbosch and Eggermont (2016), the authors did find that the relationship over 1-year follow-up was significant. Consequently, it would be beneficial for research to examine these pathways prospectively and over more timepoints and/or longer timeframes to understand these relationships more clearly. Further, no previous research has tested this reverse mediation in line with the

direction proposed by uses and gratification theory, so more research is needed to confirm or clarify the present findings.

### **Model Specification Across Studies.**

#### ***Direct vs. Indirect Effects Between Social Media Use and Body Satisfaction and Well-Being.***

Given there was, largely, no direct effect between measures of social media use and body satisfaction and well-being, but indirect effects were observed, it appears that these relationships are mediated. Specifically, the relationship is being accounted for by the effects of comparisons and, to some extent, thin-ideal internalisation. Although original proposals of the tripartite influence model did not include a direct pathway from traditional media influences to body (dis)satisfaction (Thompson et al., 1999), some of the more recent iterations of the model have, with varied levels of support. Some empirical evidence supports a direct relationship between media exposure and body dissatisfaction (e.g., Keery et al., 2004; Tylka, 2011), whereas other evidence does not (e.g., Papp et al., 2013; Rodgers et al., 2011), of which the latter are consistent with the findings of the present research. Specific to social media, research examining sociocultural models has largely found that the relationship between high social media use and low body satisfaction is mediated by high thin-ideal internalisation and comparisons among adolescent girls and boys (Lee & Lee, 2021; Rodgers et al., 2020; Scully et al., 2020). In line with the present research findings, it appears that the inclusion of mediators, specifically social comparisons and thin-ideal internalisation, are especially important when considering the relationships between social media use and body satisfaction and well-being. This may be attributable to certain features of social media which make it a more pervasive and salient environment for young people than traditional forms of media, including interaction and content presented by peers. These features may create environments that are especially conducive to internalisation of, and comparison with, content.

Within the well-being literature, some scholars have interpreted a lack of direct relationships between social media use and well-being as evidence that these two constructs are not related.

However, the present research provides evidence for the indirect, rather than direct, relationships between social media use and body satisfaction and well-being. Consequently, initial claims that a relationship does not exist appear to have been premature. Instead, the relationship seems primarily indirect, through mechanisms including social comparisons and thin-ideal internalisation. Hence, future research should examine these, and other potential, mediating pathways within the relationships between social media use and body satisfaction and well-being.

***Valence of Relationships Between Social Media Use and Body Satisfaction and Well-Being.***

Interestingly, the valence of the relationships between social media use and body satisfaction and well-being was different depending on whether the effect was direct or indirect. These findings were cross-sectional for well-being and both cross-sectional and prospective for body satisfaction. Hence, prospective evidence will be presented below as this provides some indication of temporal relationships. Direct effects indicated a positive relationship, whereby lower body satisfaction predicted lower social media use, perhaps in an attempt from individuals to protect themselves against harmful content, such as negative feedback on social media. In this instance, it may be considered as self-preservation or selective avoidance (Rousseau & Eggermont, 2018). However, the indirect effect was inverse, such that when lower body satisfaction predicted engagement in comparisons on social media, higher social media use resulted. It is possible that in the context of low body satisfaction, comparisons are used as a way to seek gratification and validation, as a means of self-improvement (Rousseau et al., 2017). When considering the relationship from social media use to body satisfaction, social media appears especially detrimental if mediators, specifically comparisons and thin-ideal internalisation, develop. In other words, these appear to be the mechanisms through which social media use can become damaging to adolescents over time. Given the seemingly endless opportunities for comparisons on social media, particularly for those that are exposed to appearance-focused content, it is highly likely that social media use will lead to comparisons, resulting in lower body satisfaction and well-being. As well as demonstrating the importance of including mediators when exploring the relationships between social media use and

body satisfaction and well-being, this finding provides some insight into potential mechanisms for prevention and intervention efforts, as discussed below.

### ***Operationalisation of Social Media Use***

Across the studies presented in this thesis, a range of operationalisations of social media use were used in an attempt to explore the nuances of the social media experience. Overall, these measures were highly correlated with each other, indicating that they are measuring a similar construct. Study Three examined two different operationalisations of social media use: appearance-focused site use and photo-based activities. Both models demonstrated acceptable fit with the data, supporting their relevance within sociocultural frameworks for understanding the relationships between social media use and body satisfaction. However, despite some similarities in these measures, they also indicated some differential relationships within the model. For example, the direct effect from body satisfaction to social media use was only present within the appearance-focused model and not the photo-based activities model. When these models were compared, data demonstrated a significantly better fit to the appearance-focused model than the photo-based activities model. It is likely that within the appearance-focused social media environment (e.g., Instagram and Snapchat) there are many elements which reinforce the importance of appearance through means such as appearance-focused imagery (e.g., selfies, use of filters), and salient messaging through social interactions (e.g., appearance-focused comments or reinforcement). These factors may be especially relevant when understanding the role on body satisfaction and are consistent with the role of sociocultural influences presented within the tripartite influence model. In addition, assessing photo-based activities (e.g., posting or viewing photos) may not capture specific types of content or the environment that adolescents are being exposed to. For example, photo-based activities may comprise of a more varied array of content (e.g., travel, food, nature, funny videos), with potentially less of an appearance-focused content, than examination of the social media environment more broadly. However, given the preliminary nature of this type of



research, additional studies examining the role of operationalisation of social media use are warranted.

### ***The Equivalence of The Relationships by Gender***

Relationships between social media use and body satisfaction and well-being appeared equivalent across gender. Specifically, no direct or indirect pathways differed significantly between boys and girls across the studies (Study One, Two, and Three). These findings are consistent with longitudinal research (e.g., Boer et al., 2021; de Vries et al., 2016) and meta-analyses (Huang, 2017; Saiphoo & Vahedi, 2019). Social media has been found to present and reinforce appearance ideals which portray both female and male bodies and appearance ideals (Carrotte et al., 2017; Tiggemann & Zaccardo, 2018). Although some evidence suggests that girls spend more time on social media, both boys and girls are frequent users (Anderson & Jiang, 2018). Further, adolescent boys and girls both report experiencing appearance pressures and concerns about negative evaluation from others on social media (Verrastro et al., 2020). Given this, it is perhaps unsurprising that the mechanisms in the relationships between social media use and body satisfaction and well-being are consistent for boys and girls. Although some minor gender differences were found in a very small number of pathways within the models, given these were not central to the aims of this thesis which investigated the direct and indirect relationships between social media use and body satisfaction and well-being, they are not reported in text. However, exploration of these in more detail would be fruitful in future research.

### ***Effect Sizes of the Relationships Between Social Media Use and Body Satisfaction and Well-Being***

It is important to highlight and address the issue of the size of the effects found in the direct and indirect relationships between social media use and body satisfaction and well-being. According to convention (Cohen, 1988), these effect sizes were small to very small. Nevertheless, these findings are consistent with cross-sectional meta-analyses which indicate small effects sizes between social media use and body satisfaction ( $r = .17$ ; Saiphoo & Vahedi, 2019) and well-being ( $r = .10$ ;

Appel et al., 2019). Further, effect sizes have been found to be smaller for positive indicators of well-being, such as life satisfaction ( $r = .03$ ), as compared to negative indicators (e.g., depression and loneliness; Huang, 2017), leading some scholars to describe the relationships as tenuous at best. While these effect sizes are small, it is important to interpret them within their context. First, the scale of the issue must be considered. The popularity and saliency of, and exposure to, social media is substantial among the majority of adolescents, both in Australia and worldwide. This means that it is not just an issue which effects a small number or proportion of individuals. Instead, it has global implications. Second, the potential consequences of the issue require attention. The detrimental physical, psychological, and social impacts which can occur as a result of body dissatisfaction or poor well-being during adolescence are significant (e.g., depression, eating disorders, and suicidal ideation; Morales-Vives & Duenas, 2018; Perkins & Brausch, 2019; Stice et al., 2011). Given the debilitating and even life threatening nature of these outcomes, it is essential that risk factors, no matter how small, are examined within research. In summary, despite small effect sizes of the relationships between social media use and body satisfaction and well-being, when considering the widespread use and important implications, these findings still indicate important and meaningful impacts which are worth exploring in future research.

Given the complexities of human behaviour, scholars have suggested that small effects within psychological research should not automatically be considered irrelevant and unmeaningful (Funder & Ozer, 2019; Götz et al., 2021). In an attempt to capture nuances within the relationships between social media use and body satisfaction and well-being, the present research tested several extensive, complex models which account for a large number of relationships and parameters between a variety of measures. Despite the importance of research to examine these complexities, it is also possible that this approach may have diluted effects slightly compared to more parsimonious models. Further, given the socio-economic advantage evident in the present sample, it might be proposed that the effects would be larger in a more generalisable sample of adolescents. For example, better well-being outcomes have been found for adolescents whose parents earn

higher household income (Twigg et al., 2020). Of course, it is important not to inflate the findings in any way, but it is possible that these factors may have played a role so should be noted. Although the effects are statistically significant but small, and not as harmful as some media might portray, when the widespread use and important implications are considered, these findings still indicate practically meaningful impacts which are worth exploring in future research. However, it would be beneficial for replication of this research to ensure confidence in the robust nature of the results.

### ***Do Body Image Assessments Cause Harm?***

During the research process, it became apparent that a small proportion of schools and parents had concerns that body image assessments may have detrimental impacts on adolescent body image. A request from one school principal to remove some measures for their student cohort provided an opportunity to examine whether such concerns were warranted. Study Four used a quasi-experimental design to explore whether completing body image assessments was related to elevated appearance concerns or engagement in body change strategies over time among adolescents. The findings suggest that body image assessments do not put adolescents at increased risk of poor body image or elevated engagement in body change strategies. In fact, the results indicated that previous exposure to body image assessments 6-months earlier predicted lower body dissatisfaction and higher body appreciation among adolescents compared with participants who had not been exposed to the same measures at the earlier point in time. These findings are consistent with previous research using a similar design with adolescent girls whereby girls with previous exposure to assessments of body image and eating concerns did not differ on outcomes of excessive weight and shape concerns but did have lower engagement in weight change behaviours (e.g., dieting, use of laxatives/diuretics) than girls who had not previously received the same assessments (Celio et al., 2003). In addition, this study was the first to examine the impact of valence of the body image assessment items (positive vs mixed valence), with results suggesting that the valence did not impact body image-related variables. A final finding of this study was that the majority of participants' body image and body change behaviours stayed the same over the 6-month

period, with small equivalent changes in both direction (both worsening and improving at a similar rate), suggesting overall stability over time.

Findings from the present study and previous research suggest that repeated exposure to the body image assessment may actually improve body image, specifically body satisfaction and appreciation, over time. Exposure to some body image items (e.g., I appreciate the different and unique things about my body) may promote aspects of positive body image among adolescents, which result in improved body image 6-months later. This finding is contrary to concerns of some parents and educators (Wilksch & Wade, 2009). With that in mind, it is possible that self-reported body satisfaction in Study Four may have been elevated over time due to repeated exposure to body image assessments. If so, the impact of social media use may be higher, resulting in lower body satisfaction, than we found in the current research. However, this is purely speculative. Given the important implications of this potential impact of assessment for longitudinal research and prevention efforts, further research is required, including use of experimental designs with random allocation to groups to allow for more substantive claims to be made.

### **Theoretical Implications**

The findings of the present research provide initial support for sociocultural theories of body image in the context of social media use. Specifically, this thesis examined and demonstrated support for an extension of the tripartite influence model within the context of social media. While a number of studies have used sociocultural theories as a framework to understand the impact of social media use on body satisfaction, these have relied on cross-sectional data and primarily been examined among females (Lee & Lee, 2021; Scully et al., 2020). The current findings are novel in that they demonstrate support for these relationships prospectively and contribute to knowledge among both boys and girls. Further, the findings highlight the importance of mediating pathways in the relationships between social media use and body satisfaction, specifically thin-ideal internalisation and comparisons. Given the empirical support of comparisons as a mediator within experimental

research with adults (e.g., Fardouly et al., 2015), it appears to play an especially important role; whereas thin-ideal internalisation may be less important when also considered alongside comparisons as a mediator. However, more research is needed to understand the role of muscular-ideal internalisation within these relationships. Overall, these findings indicate the importance of considering the full tripartite influence model when examining the relationships between social media use and body satisfaction and well-being, as comparisons and thin-ideal internalisation seem to account for these relationships, both cross-sectionally and over time.

One particular shortcoming of the well-being literature is that empirical research is largely not informed by established theoretical perspectives and frameworks. Therefore, an additional focus of this thesis was to extend the tripartite influence model for the inclusion of well-being as an additional outcome variable. Preliminary support was found for the addition of well-being within the model, particularly for the mediating role of comparisons. This suggests that comparisons on social media play a role in body satisfaction and well-being. The mediating roles of thin- and muscular-ideal internalisation demonstrated mixed effects, so further research would be beneficial. It is possible that broader conceptualisations of internalisations, beyond appearance ideals, would be especially impactful on well-being. Instead of focusing exclusively on appearance ideals, other ideals (e.g., personal, relational, romantic, lifestyle) may also be relevant within the context of social media use and well-being (de Lenne et al., 2018).

The findings also provide support for uses and gratification theory within a social media context, whereby body satisfaction predicted social media use directly and indirectly through comparisons. This suggests that an individuals' self-evaluations impact how they engage in social media including actively seeking out or avoiding certain content or uses to fulfill psychological needs, with evaluations that result in a poor outcome predicting increased use through comparisons. While uses and gratification theory was originally developed in relation to use of traditional forms of media, the present research has extended theoretical knowledge for its application within the

context of social media. Distinct from traditional media, social media provides a number of unique affordances such as the active nature of use which allows users to choose the content they view and how they interact, opportunities for selective self-presentation, and algorithms which direct users to content depending on demographic information and/or previous use. These features may amplify gratifications beyond that capable of traditional media. Further, evidence of the bidirectional relationships between body satisfaction and social media use, through comparisons, indicate the considerable toxicity of the social media environment for adolescents. Given that the majority of extant research examining the relationships between social media use and body satisfaction has used a sociocultural framework and collected cross-sectional data, uses and gratification theory and the possibility of the reverse or bidirectional relationships has largely been ignored. The present research was novel in that it was one of the first to prospectively examine bidirectionality of these relationships among adolescents, including both direct and indirect effects through social comparisons and thin- and muscular-ideal internalisation. These findings contribute to and extend theoretical knowledge in relation to uses and gratification theory. Further prospective research would be beneficial to replicate and extend these findings.

A further implication of the results is the importance of operationalisation of social media use when unpicking the relationships with body satisfaction and well-being. This research was one of the first to examine different operationalisations of social media use within a sociocultural framework. Both models examined in Study Three, using different operationalisations of social media use, were found to have acceptable fit within the data; although appearance-focused site use demonstrated better fit when compared to photo-based activities. While these models, overall, found similar direct and indirect effects between social media use and body satisfaction, a number of pathways differed. This indicates that clear conceptualisation and operationalisation of social media use is warranted to enhance understanding of these complex relationships. By examining and comparing a number of different operationalisations of social media use, a more systematic and nuanced overview of the relationships with body satisfaction and well-being can result. Further, it is

important that the field consistently define and operationalise social media use as this would allow for direct comparisons and replication across studies. Therefore, this should be a focus of future research.

Although the mechanisms within the tripartite influence model are proposed to be unidirectional, the results suggest that they are in fact bidirectional. Given the finding that, through comparisons, low body satisfaction predicted high social media use, and that high social media use predicted low body satisfaction, it appears that there may be a continuous loop occurring. Paradoxically, although individuals with low body satisfaction may use social media to seek gratification or positive appraisals, this may actually lead to upward comparisons, resulting in poor self-evaluations and lower body satisfaction. Therefore, when engaging in comparisons, social media use may, in fact, be a maladaptive coping mechanism. The idea of a feedback loop supports proposals made by Perloff (2014), whereby it was suggested that these relationships work in a circular fashion. The present findings demonstrate that social media influences body satisfaction and well-being through mediating variables such as comparisons and appearance-ideal internalisation. These effects then impact gratifications sought from social media, which determines social media engagement, reinforcing the spiral. The present research was novel in that it examined these relationships prospectively over three timepoints. Building on this contribution, future research now needs to examine these relationships across more than three timepoints to determine the sequential temporal relationships of these continuous loop or spiral effects over time. If these bidirectional findings are replicated in future research, theoretical frameworks and models will need to be modified accordingly to account for this.

### **Practical Implications**

The present findings highlight the detrimental impact of engaging in comparisons on social media. These results, coupled with the increasing popularity of social media among adolescents, indicate the urgent need for prevention and intervention efforts which aim to reduce these negative

effects. It would be helpful to address these issues among children and young adolescents, before individuals become fully invested in social media, when they may be more open and receptive to prevention and intervention messaging. This approach is consistent with reviews of body image interventions which have demonstrated greater effectiveness of interventions aimed at younger rather than older adolescents, before body image attitudes become engrained (Kusina & Exline, 2019; Yager et al., 2013). Targeting children and early adolescents may also be beneficial as early interventions have more potential to alter long-term trajectories. Universal approaches would likely be more appropriate, given the widespread use of social media among adolescents. Further, the finding of gender equivalence in the relationships between social media use and body satisfaction and well-being indicates that such approaches would be relevant among both adolescent boys and girls. With wide reaching capabilities and cost-effective practices, schools provide an ideal setting for such efforts (Pulimeno et al., 2020), specifically co-educational settings. In addition, school interventions have the capacity to address and modify the immediate social and peer environment which may improve peer acceptance and reduce comparisons and peer pressure to achieve and maintain appearance ideals (McLean et al., 2017), possibly leading to more sustained effects.

The present prospective findings indicate that social media use is not directly related to poor body satisfaction and well-being. Instead, the findings highlight the importance of targeting comparisons, in particular, as a mechanism within the relationships between social media use and body satisfaction and well-being to support prevention. Research should extend current aetiological approaches to prevention and early intervention which target risk factors such as comparisons and thin-ideal internalisation. Simply telling adolescents to stop or reduce their social media use would likely not be an effective strategy, given the saliency of social media and how engrained it is in the daily lives of most adolescents. Alternatively, prevention and intervention should focus on expanding existing body image and media literacy programs for relevance within the context of social media, of which some research has already begun (see Crossman, 2017; Gordon et al., 2020). Media literacy refers to skills to critically evaluate media content and has the potential to reduce the credibility and



saliency of media content (Irving et al., 1998). This is likely a useful component, as a more critical view of social media content may reduce the likelihood of upward comparisons with others on social media. Interventions which also include a specific focus on well-being may be especially helpful, given well-being also appears to be an important aspect in this area.

As well as developing and evaluating school-based interventions, it is also important that public messaging and campaigns are developed and disseminated within the wider community to minimise the potential detrimental impacts on body satisfaction and well-being for adolescents. In line with the intervention strategies outlined above, campaigns could promote and advocate specific types of social media use which may be helpful, whilst also raising awareness and providing alternative strategies for uses which may be more damaging. For example, users may be encouraged to use social media for purposes which facilitate information sharing, such as following or sharing hobbies with others online (Gordon et al., 2020). In addition, the public should be informed of the negative impacts of comparisons on social media. While psychoeducation may not be enough on its own to encourage a reduction in these behaviours among all users, a universal approach does have the potential to modify the social media landscape more broadly over time. If users are made more aware of the detrimental aspects of posting idealised appearance and other content, they may be discouraged to post this type of content online which, if adopted by increasing numbers of people, could lead to some social or societal changes. An example of a social movement of this nature is the #nomakeupselfie campaign which encouraged women to post selfies with no make-up on to social media to raise money for cancer research (Lewis, 2014). The campaign went viral, with tens of thousands of photos a day being posted with the hashtag. Researchers caught onto this movement, and found empirical support that no make-up selfies were significantly less harmful for body image than images of women wearing make-up (Fardouly & Rapee, 2019).

The present research indicates that, through comparisons, social media use can be detrimental to body satisfaction over time. These findings strengthen calls for social media

companies to take some social responsibility for the impact of social media (Bensen, 2021), particularly among younger users. As has been recommended by the government in the United Kingdom (House of Commons, 2021), it is essential that social media companies and governments work closely alongside researchers to ensure policy or platform changes are evidence-based. For example, Norway recently passed legislation which requires social media influencers to attach disclaimer labels to retouched images (Grant, 2021). While this may seem like a positive move, traditional media and social media research has consistently demonstrated that this approach does not mitigate the negative impact of idealised images on body satisfaction or mood, nor reduce comparisons, among adults (e.g., Livingston et al., 2020). This emphasises the importance of social media companies and governments to work closely with researchers to ensure meaningful change and impact through evidence-based practices. Using the present findings as a springboard, social media changes should target the reduction of comparisons on social media. Recently, Instagram trialled removal of the visibility of the number of likes on posts, although now this is an optional feature (Instagram, 2021). While empirical evidence does not yet support or refute this move, subjective reports from women do indicate this may be helpful at reducing comparisons (Prichard et al., 2021). Building on from this, collaboration between social media companies/governments and researchers is essential to ensure approaches are effective at reducing potential negative impacts on body satisfaction and well-being.

Finally, the present research provides preliminary support that body image assessments do not appear harmful for body image and body change strategies among adolescents. This finding demonstrates important ethical implications for body image research, which may also extend and be applicable within the eating disorder field. It is hoped that the findings from Study Four can be used to reassure parents and educators about the impact of such research, possibly resulting in improved rates of school and participant recruitment, including parental consent. In addition, the findings may be used to support body image researchers in their future ethics applications and research practices.

Although randomised experimental studies are needed to confirm these results, it is hoped that this research may be a steppingstone to further, more definitive outcomes.

### **Limitations**

A number of limitations need to be considered when interpreting the results of this thesis. First, as with the majority of previous research, the present study relied on retrospective self-reported social media use. However, research suggests that adolescents and adults are not necessarily accurate in their recall: either as a result of retrospective bias or social desirability. Young adults typically overestimate their daily social media use by anywhere between 51 minutes (Sewall et al., 2020) up to 256 minutes (Ernala et al., 2020). Adolescents' tendency to overestimate their social media use has also been found, with particular difficulties with retrospective reporting of more fragmented sites (e.g., Snapchat) compared to less (e.g., Instagram; Verbeij et al., 2021). Further, research suggests that estimated use has been found to be more strongly correlated with well-being than actual use (Sewall et al., 2020). Therefore, it appears that retrospective accounts of use may be inaccurate and, possibly, inflating effects of the relationships, specifically those between social media use and well-being. A recent meta-analysis found that adolescents, in particular, are poor at reporting media usage, with especially low reliability for reports of number of hours (Scharkow, 2019). Although the measures used in the present thesis used closed responses, which produce less error than open responses (Ernala et al., 2020), there are still issues around subjectivity of response. For example, some users may perceive 'often', for example, differently than others. Consequently, it should be noted that the methodology used in the present research may be more closely aligned to perceived than actual social media use (Sewall et al., 2020), which is still arguably of significance.

Second, given the largely cross-sectional nature of the data, causality cannot be assumed. Although some of the findings were supported prospectively in Study Three, these data were observational so have less power to detect causal effects than experimental designs. Although a

number of aspects were included in the research which aimed to increase the robustness of the findings, such as the inclusion of a large sample size, covariates, a number of mediators, as well as power and sensitivity analysis (Musci & Stuart, 2019), future research would benefit from experimental methods to confirm these relationships. Study Four was developed from an opportunity during recruitment, therefore a quasi-experimental design was required, making randomisation impossible. Instead, factors such as absence and school and year level determined which group participants were allocated to. Therefore, it is possible that external factors may have played a role in the results, so future research which randomises participants to groups is needed before substantive claims regarding research harms can be made.

Third, the measures of social media used in the present research focused on overall social media use, rather than site specific use. However, given the varied affordances of social media platforms, and the different ways that adolescents use them, it is likely that platforms will have different impacts on body image and well-being. Relatedly, the measure of appearance-focused use assessed in the present research may not have accurately captured this type of content. For example, adolescents may use Instagram to follow other types of content, including non-appearance-focused uses (e.g., hobbies, memes, food, travel) or content which promotes positive body image. If so, it is possible that the findings reported here may actually be a slight under-estimation of the relationship between appearance-focused social media use and body satisfaction and well-being. It would be beneficial for future research to capture the type of content adolescents are exposed to. This limitation points to the need for the literature to develop established measures of social media use and examine their psychometric properties to allow for consistency and replication across studies.

Finally, the sample consisted of a homogenous group of White, socioeconomically advantaged adolescents in Melbourne, Australia. Therefore the results may not be generalisable to other samples. Country of study has been found to moderate the effects found between social

media use and body satisfaction, with inflated effects among Australian populations (Saiphoo & Vahedi, 2019). However, given that social media is a global phenomenon used by humans all across the world, we might anticipate the findings to be similar to those conducted in other countries, as has been found in previous research among adolescents in, for example, Europe and Asia (de Vries et al., 2016; Wang, Fardouly, et al., 2019). Although the relationships between social media use and body satisfaction and well-being may be of global interest, variations in social media platforms, uses, and cultures may produce different results. Therefore possible cross-cultural differences should be explored in future research.

Despite these limitations, the present research has demonstrated significant contributions to knowledge of the relationships between social media use and body satisfaction and well-being. Theoretical understanding has been extended through use of sophisticated analytic approaches among a large sample of adolescent boys and girls. This research has enhanced understanding of the direct and indirect relationships, through mediating variables thin- and muscular-ideal internalisation and social comparisons. Further, extending previous research, the prospective data presented here allows causality to be determined over three timepoints across 1-year.

### **Directions for Future Research**

The present research has provided a preliminary foundation for understanding the relationships between social media use and body satisfaction and well-being and impetus for a variety of avenues for further exploration. Consequently, there are a number of suggested directions for future research.

The present research provided support for the prospective relationships between social media use and body satisfaction over three timepoints across 1-year. Although this builds on and extends much previous research that has largely relied on cross-sectional or two-wave data, future research would benefit from examining these relationships across more timepoints. The bidirectional relationships found indicate a feedback loop may be occurring between social media

use and body satisfaction through comparisons. However, given data was only collected over three timepoints, the present research was unable to confirm the existence of this perpetuating cycle. If research can map out these relationships over more timepoints, a more nuanced understanding can begin to extend current knowledge. There are two ways this can be done, of which both offer important implications. First, given that 6-month intervals might be considered a long period of time, particularly for children and adolescents, a number of other factors (e.g., puberty) may be playing a role in the relationships between social media use and body satisfaction and well-being. Therefore, shorter time periods would allow for a better understanding of the more immediate or short-term effects of social media use which are not captured in the present research. Second, data should also be collected over longer period of times beyond 1-year. This would provide more clarity of the long-term impacts of use which may develop over time. One method which is able to capture both of these approach is measurement burst design. This methodology combines bursts of experience sampling methods (i.e., concentrated repeated assessment) over a short period of time with repeated prospective surveys over a longer period of time (Stawski et al., 2015). By using this approach, scholars may start to unpick the length of time social media may take to exert causal impacts on body satisfaction and well-being. In other words, how short-term impacts may accumulate into longer-term outcomes. Understanding the maintenance and reinforcement of such processes (e.g., feedback loop) may inform the most appropriate times and methods for prevention and intervention among adolescents.

Another important avenue that the present research has identified for further clarification is the operationalisation of social media use. Study Three was one of the first studies to compare the role of different operationalisations of social media use within sociocultural models. In addition, the studies presented in this thesis extended previous work by using more sophisticated measures of social media use than time spent online, specifically accounting for type of activities (e.g., photo-based, active, passive) and the social media environment (e.g., Instagram and Snapchat). Future research is now needed to extend and build on this. Given the considerable variation in scales used,

both here and across studies, it would be helpful for research to establish consistent measures of social media use, including examination of psychometric properties (Sigerson & Cheng, 2018). This research would ensure the validity of social media use scales as well as provide the opportunity for replication and comparison among studies with different populations and across varied cultures. If such research finds that these measures do not have validity, one may question whether conclusions drawn from studies using these measures are accurate or applicable. Hence, such research would have considerable implications for theory and knowledge.

While the present research has made significant contributions towards theoretical knowledge and temporal relationships between self-reported social media use and body satisfaction and well-being among adolescents, future research should also focus its attention to objective measures of social media use. Unlike retrospective self-reported accounts of social media use, this approach is not limited by biases. Although it has been proposed that experience sampling methods may reduce recall bias, due to short periods of time for reporting use (e.g., 1-hour), such approaches still rely on subjective measures which have been found to demonstrate inaccuracies (e.g., Verbeij et al., 2021). Alternatively, a number of methods for collecting objective data are available to researchers. First, passive sensing apps which collect information on duration of screen time and app use, such as eMoodie, have been found to be feasible and acceptable among adolescents and do not appear to have a marked impact on duration on mobile use (Domoff et al., 2020). This type of data collection could be used in future research with adolescents to determine if the results found in the present research can be replicated when using objective data. Second, the utilisation of data mining and scraping would be a fruitful direction for future research. These methods of data collection provide promising new opportunities, allowing the collection of large amounts of available data (Moessner et al., 2018). Researchers could also use these methods to collect data on the type of content that users are engaging with, including appearance-focused content such as thinspiration or fitspiration images. If objective methods of data collection are combined with subjective reports of body satisfaction and well-being, scholars could obtain a more comprehensive understanding of the

impact of social media use on adolescents and other populations for which social media use is relevant.

The present research was novel in its examination of mediating variables over more than two timepoints. The findings emphasised the importance of the mediating role of comparisons within the relationships between social media use and body satisfaction over time. Building on this work, further exploration of this role is warranted. Although the present findings were supported prospectively, the study design was observational. Therefore, future research should examine these relationships using experimental methods to confirm causality. In a similar design to Kleemans et al. (2018), adolescents could be randomly assigned to view different social media content (e.g., appearance-focused vs non-appearance focused) and effects on body satisfaction and well-being of exposure observed. Additionally, this kind of experimental research could include a comparison manipulation which instructs participants to complete questions which elicit engagement in upward social comparisons, a design used in research examining the impact of exposure to traditional media on body satisfaction among adolescent girls (McLean et al., 2016). Building on the present findings, this methodology could confirm and provide additional understanding of the causality of these relationships over time among adolescents.

## **Conclusion**

The present thesis aimed to investigate the direct and indirect relationships between social media use and body satisfaction and well-being through thin- and muscular-ideal internalisation and social comparisons among adolescent boys and girls. A number of empirical studies were conducted to test this. The findings of the present thesis indicate that the relationships between social media use and body satisfaction and well-being are primarily indirect rather than direct. Specifically, social comparisons and, somewhat, thin-ideal internalisation appear to play a mediating role in these relationships. Bidirectional mediation was found whereby higher comparisons mediated the relationships between higher social media use and lower body satisfaction and well-being. The



prospective findings are novel and contribute to theoretical knowledge regarding the temporal direction of these relationships, providing support for both sociocultural models of body image and uses and gratification theory within a social media context. These findings are among the first to indicate the possibility of a feedback loop over time whereby, through comparisons, higher social media use predicts lower body satisfaction which, in turn predicts higher social media use. Extending research which has primarily examined these proposed relationships among girls, the present research contributes to knowledge by providing evidence of gender equivalence among boys and girls. Practically, these results suggest that aetiologically informed approaches to prevention and early intervention which target comparisons may be fruitful within co-educational settings.

### General References

- Al Sabbah, H., Vereecken, C. A., Elgar, F. J., Nansel, T., Aasvee, K., Abdeen, Z., Ojala, K., Ahluwalia, N., & Maes, L. (2009). Body weight dissatisfaction and communication with parents among adolescents in 24 countries: International cross-sectional survey. *BMC Public Health*, 9, 52. <https://doi.org/10.1186/1471-2458-9-52>
- Alhabash, S., & McAlister, A. R. (2015). Redefining virality in less broad strokes: Predicting viral behavioral intentions from motivations and uses of Facebook and Twitter. *New Media & Society*, 17(8), 1317-1339. <https://doi.org/https://doi.org/10.1177%2F1461444814523726>
- All Party Parliamentary Group on Body Image. (2012). *Reflections on body image*. [http://issuu.com/bodyimage/docs/reflections\\_on\\_body\\_image](http://issuu.com/bodyimage/docs/reflections_on_body_image)
- Anderson, M., & Jiang, J. (2018). *Teens, social media, and technology 2018*. Pew Research Center. <https://www.pewresearch.org/internet/2018/05/31/teens-social-media-technology-2018/>
- Appel, H., Gerlach, A. L., & Crusius, J. (2016). The interplay between Facebook use, social comparison, envy, and depression. *Current Opinion in Psychology*, 9, 44-49. <https://doi.org/10.1016/j.copsyc.2015.10.006>
- Appel, M., Marker, C., & Gnambs, T. (2019). Are social media ruining our lives? A review of meta-analytic evidence. *Review of General Psychology*, 24(1), 60-74. <https://doi.org/10.1177/1089268019880891>
- Australian Bureau of Statistics. (2019). *Causes of Death, Australia, 2019*. Australian Government. <http://www.abs.gov.au/ausstats/abs@.nsf/mf/3303.0?OpenDocument>
- Australian Psychological Society. (2017). *Digital Me: A survey exploring the effect of social media and digital technology on Australians' wellbeing*. <https://www.qfcc.qld.gov.au/digital-me-survey-exploring-effect-social-media-and-digital-technology-australians-wellbeing>
- Bareket-Bojmel, L., Moran, S., & Shahar, G. (2016). Strategic self-presentation on Facebook: Personal motives and audience response to online behavior. *Computers in Human Behavior*, 55, 788-795. <https://doi.org/10.1016/j.chb.2015.10.033>

- Barr-Anderson, D. J., van den Berg, P., Neumark-Sztainer, D., & Story, M. (2008). Characteristics associated with older adolescents who have a television in their bedrooms. *Pediatrics*, 121(4), 718-724. <https://doi.org/10.1542/peds.2007-1546>
- Barry, C. T., Sidoti, C. L., Briggs, S. M., Reiter, S. R., & Lindsey, R. A. (2017). Adolescent social media use and mental health from adolescent and parent perspectives. *Journal of Adolescence*, 61, 1-11. <https://doi.org/10.1016/j.adolescence.2017.08.005>
- Bayer, J. B., Ellison, N. B., Schoenebeck, S. Y., & Falk, E. B. (2016). Sharing the small moments: Ephemeral social interaction on Snapchat. *Information, Communication & Society*, 19(7), 956-977. <https://doi.org/10.1080/1369118x.2015.1084349>
- Bell, B. T. (2019). "You take fifty photos, delete forty nine and use one": A qualitative study of adolescent image-sharing practices on social media. *International Journal of Child-Computer Interaction*, 20, 64-71. <https://doi.org/10.1016/j.ijcci.2019.03.002>
- Bell, B. T., Cassarly, J. A., & Dunbar, L. (2018). Selfie-objectification: Self-objectification and positive feedback ("likes") are associated with frequency of posting sexually objectifying self-images on social media. *Body Image*, 26, 83-89. <https://doi.org/10.1016/j.bodyim.2018.06.005>
- Benowitz-Fredericks, C. A., Garcia, K., Massey, M., Vasagar, B., & Borzekowski, D. L. (2012). Body image, eating disorders, and the relationship to adolescent media use. *Pediatric Clinics of North America*, 59(3), 693-704, ix. <https://doi.org/10.1016/j.pcl.2012.03.017>
- Bensen, P. (2021, 16 April). The warning sign: How social media companies can address social responsibility. *Forbes*.  
<https://www.forbes.com/sites/forbesbusinesscouncil/2021/04/16/the-warning-sign-how-social-media-companies-can-address-social-responsibility/?sh=4ecddfe113b4>
- 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. <https://doi.org/10.1016/j.childyouth.2014.03.001>

- Bij de Vaate, N. A. J. D., Veldhuis, J., & Konijn, E. A. (2020). How online self-presentation affects well-being and body image: A systematic review. *Telematics and Informatics*, 47, 101316. <https://doi.org/10.1016/j.tele.2019.101316>
- Blakemore, S. J., & Mills, K. L. (2014). Is adolescence a sensitive period for sociocultural processing? *Annual Review of Psychology*, 65, 187-207. <https://doi.org/10.1146/annurev-psych-010213-115202>
- Blond, A. (2008). Impacts of exposure to images of ideal bodies on male body dissatisfaction: A review. *Body Image*, 5(3), 244-250. <https://doi.org/10.1016/j.bodyim.2008.02.003>
- Boer, M., Stevens, G. W. J. M., Finkenauer, C., de Looze, M. E., & van den Eijnden, R. J. J. M. (2021). Social media use intensity, social media use problems, and mental health among adolescents: Investigating directionality and mediating processes. *Computers in Human Behavior*, 116, 106645. <https://doi.org/10.1016/j.chb.2020.106645>
- Bornioli, A., Lewis-Smith, H., Slater, A., & Bray, I. (2020). Body dissatisfaction predicts the onset of depression among adolescent females and males: A prospective study. *Journal of Epidemiology & Community Health*, 75(4), 343-348. <https://doi.org/10.1136/jech-2019-213033>
- Bornioli, A., Lewis-Smith, H., Smith, A., Slater, A., & Bray, I. (2019). Adolescent body dissatisfaction and disordered eating: Predictors of later risky health behaviours. *Social Science and Medicine*, 238, 112458. <https://doi.org/10.1016/j.socscimed.2019.112458>
- Boyd, D. M., & Ellison, N. B. (2007). Social network sites: Definition, history, and scholarship. *Journal of Computer-Mediated Communication*, 13(1), 210-230. <https://doi.org/10.1111/j.1083-6101.2007.00393.x>
- Brown, A., & Knight, T. (2015). Shifts in media images of women appearance and social status from 1960 to 2010: A content analysis of beauty advertisements in two Australian magazines. *Journal of Aging Studies*, 35, 74-83. <https://doi.org/10.1016/j.jaging.2015.08.003>

- Brown, J. D., & Bobkowski, P. S. (2011). Older and newer media: Patterns of use and effects on adolescents' health and well-being. *Journal of Research on Adolescence*, 21(1), 95-113.  
<https://doi.org/10.1111/j.1532-7795.2010.00717.x>
- 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.  
<https://doi.org/10.1016/j.bodyim.2016.08.007>
- Bucchianeri, M. M., Arikian, A. J., Hannan, P. J., Eisenberg, M. E., & Neumark-Sztainer, D. (2013). Body dissatisfaction from adolescence to young adulthood: Findings from a 10-year longitudinal study. *Body Image*, 10(1), 1-7. <https://doi.org/10.1016/j.bodyim.2012.09.001>
- Bucchianeri, M. M., & Neumark-Sztainer, D. (2014). Body dissatisfaction: An overlooked public health concern. *Journal of Public Mental Health*, 13(2), 64-69. <https://doi.org/10.1108/jpmh-11-2013-0071>
- Burnette, C. B., Kwitowski, M. A., & Mazzeo, S. E. (2017). "I don't need people to tell me I'm pretty on social media": A qualitative study of social media and body image in early adolescent girls. *Body Image*, 23, 114-125. <https://doi.org/10.1016/j.bodyim.2017.09.001>
- Carlisle, E., Fildes, J., Hall, S., Perrens, B., Perdriau, A., & Plummer, J. (2019). *Youth survey report*. Mission Australia. <https://www.missionaustralia.com.au/publications/youth-survey>
- Carr, C. T., & Hayes, R. A. (2015). Social media: Defining, developing, and divining. *Atlantic Journal of Communication*, 23(1), 46-65. <https://doi.org/10.1080/15456870.2015.972282>
- Carrard, I., Rothen, S., & Rodgers, R. F. (2020). Body image and disordered eating in older women: A tripartite sociocultural model. *Eating Behaviors*, 38, 101412.  
<https://doi.org/10.1016/j.eatbeh.2020.101412>
- Carrotte, E. R., Prichard, I., & Lim, M. S. (2017). "Fitspiration" on social media: A content analysis of gendered images. *Journal of Medical Internet Research*, 19(3), e95.  
<https://doi.org/10.2196/jmir.6368>

- Casale, S., Gemelli, G., Calosi, C., Giangrasso, B., & Fioravanti, G. (2019). Multiple exposure to appearance-focused real accounts on Instagram: Effects on body image among both genders. *Current Psychology*, 40, 2877-2886. <https://doi.org/10.1007/s12144-019-00229-6>
- Celio, A. A., Bryson, S., Killen, J. D., & Taylor, C. B. (2003). Are adolescents harmed when asked risky weight control behavior and attitude questions? Implications for consent procedures. *International Journal of Eating Disorders*, 34(2), 251-254. <https://doi.org/10.1002/eat.10188>
- Chang, L., Li, P., Loh, R. S. M., & Chua, T. H. H. (2019). A study of Singapore adolescent girls' selfie practices, peer appearance comparisons, and body esteem on Instagram. *Body Image*, 29, 90-99. <https://doi.org/10.1016/j.bodyim.2019.03.005>
- Chen, X., & Page, A. (2016). Stability and instability of subjective well-being in the transition from adolescence to young adulthood: Longitudinal evidence from 20991 young Australians. *PLoS ONE*, 11(5), e0156399. <https://doi.org/10.1371/journal.pone.0156399>
- Chou, H. T., & Edge, N. (2012). "They are happier and having better lives than I am": The impact of using Facebook on perceptions of others' lives. *Cyberpsychology, Behavior and Social Networking*, 15(2), 117-121. <https://doi.org/10.1089/cyber.2011.0324>
- Chua, T. H. H., & Chang, L. (2016). Follow me and like my beautiful selfies: Singapore teenage girls' engagement in self-presentation and peer comparison on social media. *Computers in Human Behavior*, 55, 190-197. <https://doi.org/10.1016/j.chb.2015.09.011>
- Cohen, J. (1988). *Statistical power analysis for the behavioural sciences*. (2nd ed.). Lawrence Erlbaum Associates.
- Cohen, R., Newton-John, T., & Slater, A. (2017). The relationship between Facebook and Instagram appearance-focused activities and body image concerns in young women. *Body Image*, 23, 183-187. <https://doi.org/10.1016/j.bodyim.2017.10.002>
- Coulthard, N., & Ogden, J. (2018). The impact of posting selfies and gaining feedback ('likes') on the psychological wellbeing of 16-25 year olds: An experimental study. *Cyberpsychology: Journal*

of *Psychosocial Research on Cyberspace*, 12(2), Article 4. <https://doi.org/10.5817/cp2018-2-4>

- Course-Choi, J., & Hammond, L. (2021). Social media use and adolescent well-being: A narrative review of longitudinal studies. *Cyberpsychology, Behavior and Social Networking*, 24(4), 223-236. <https://doi.org/10.1089/cyber.2020.0020>
- Coyne, S. M., Padilla-Walker, L. M., & Howard, E. (2013). Emerging in a digital world. *Emerging Adulthood: A decade review of media use, effects, and gratifications in emerging adulthood*, 1(2), 125-137. <https://doi.org/10.1177/2167696813479782>
- Crossman, J. M. (2017). Fitspiration to inspire or to mire? A review of the literature and educational implications. *LEARNing Landscapes*, 10(2), 115-130. <https://doi.org/10.36510/learnland.v10i2.805>
- de Lenne, O., Vandenbosch, L., Eggermont, S., Karsay, K., & Trekels, J. (2018). Picture-perfect lives on social media: A cross-national study on the role of media ideals in adolescent well-being. *Media Psychology*, 23(1), 52-78. <https://doi.org/10.1080/15213269.2018.1554494>
- de Vries, D. A., Peter, J., de Graaf, H., & Nikken, P. (2016). Adolescents' social network site use, peer appearance-related feedback, and body dissatisfaction: Testing a mediation model. *Journal of Youth and Adolescence*, 45(1), 211-224. <https://doi.org/10.1007/s10964-015-0266-4>
- Deighton-Smith, N., & Bell, B. T. (2018). Objectifying fitness: A content and thematic analysis of #fitspiration images on social media. *Psychology of Popular Media Culture*, 7(4), 467-483. <https://doi.org/10.1037/ppm0000143>
- Department of Education and Training. (2016). *Victorian student health and wellbeing survey, 'About you'*. <https://www.education.vic.gov.au/about/research/Pages/studenthealthsurvey.aspx>
- Dhir, A., & Tsai, C.-C. (2017). Understanding the relationship between intensity and gratifications of Facebook use among adolescents and young adults. *Telematics and Informatics*, 34(4), 350-364. <https://doi.org/10.1016/j.tele.2016.08.017>

- Diener, E., & Chan, M. Y. (2011). Happy people live longer: Subjective well-being contributes to health and longevity. *Applied Psychology: Health and Well-Being*, 3(1), 1-43.  
<https://doi.org/10.1111/j.1758-0854.2010.01045.x>
- Diener, E., Oishi, S., & Tay, L. (2018). Advances in subjective well-being research. *Nature Human Behaviour*, 2(4), 253-260. <https://doi.org/10.1038/s41562-018-0307-6>
- Dobson, S., & Beltman, M. (2019). Powerful and pervasive, or personal and positive: Views of young girls, parents and educators about media. *Issues in Educational Research*, 91(1), 38-54.  
<https://doi.org/10.3316/aeipt.223906>
- Dohnt, H. K., & Tiggemann, M. (2006). Body image concerns in young girls: The role of peers and media prior to adolescence. *Journal of Youth and Adolescence*, 35(2), 135-145.  
<https://doi.org/10.1007/s10964-005-9020-7>
- Domo. (2017). *Data Never Sleeps 5.0*. [https://web-assets.domo.com/blog/wp-content/uploads/2017/07/17\\_domo\\_data-never-sleeps-5-01.png](https://web-assets.domo.com/blog/wp-content/uploads/2017/07/17_domo_data-never-sleeps-5-01.png)
- Domo. (2019). *Data Never Sleeps 7.0*. <https://www.domo.com/learn/infographic/data-never-sleeps-7>
- Ellison, N. B., Steinfield, C., & Lampe, C. (2007). The benefits of facebook "friends:" Social capital and college students' use of online social network sites. *Journal of Computer-Mediated Communication*, 12(4), 1143-1168. <https://doi.org/10.1111/j.1083-6101.2007.00367.x>
- Engeln, R., Loach, R., Imundo, M. N., & Zola, A. (2020). Compared to Facebook, Instagram use causes more appearance comparison and lower body satisfaction in college women. *Body Image*, 34, 38-45. <https://doi.org/10.1016/j.bodyim.2020.04.007>
- Erfani, S. S., & Abedin, B. (2018). Impacts of the use of social network sites on users' psychological well-being: A systematic review. *Journal of the Association for Information Science and Technology*, 69(7), 900-912. <https://doi.org/10.1002/asi.24015>
- Erikson, E. H. (1968). *Identity: Youth and Crisis*. Norton.



Faelens, L., Hoorelbeke, K., Soenens, B., Van Gaeveren, K., De Marez, L., De Raedt, R., & Koster, E. H.

W. (2021). Social media use and well-being: A prospective experience-sampling study.

*Computers in Human Behavior*, 114, 106510. <https://doi.org/10.1016/j.chb.2020.106510>

Fardouly, J., Diedrichs, P. C., Vartanian, L. R., & 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. <https://doi.org/10.1016/j.bodyim.2014.12.002>

Fardouly, J., Pinkus, R. T., & Vartanian, L. R. (2017). The impact of appearance comparisons made through social media, traditional media, and in person in women's everyday lives. *Body Image*, 20, 31-39. <https://doi.org/10.1016/j.bodyim.2016.11.002>

Fardouly, J., & Rapee, R. M. (2019). The impact of no-makeup selfies on young women's body image. *Body Image*, 28, 128-134. <https://doi.org/10.1016/j.bodyim.2019.01.006>

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, 82-88. <https://doi.org/10.1016/j.bodyim.2014.10.004>

Fatt, S. J., Fardouly, J., & Rapee, R. M. (2019). #malefitspo: Links between viewing fitspiration posts, muscular-ideal internalisation, appearance comparisons, body satisfaction, and exercise motivation in men. *New Media & Society*, 21(6), 1311-1325. <https://doi.org/10.1177/1461444818821064>

Ferguson, C. J., Munoz, M. E., Garza, A., & Galindo, M. (2014). Concurrent and prospective analyses of peer, television and social media influences on body dissatisfaction, eating disorder symptoms and life satisfaction in adolescent girls. *Journal of Youth and Adolescence*, 43(1), 1-14. <https://doi.org/10.1007/s10964-012-9898-9>

Festinger, L. (2016). A theory of social comparison processes. *Human Relations*, 7(2), 117-140. <https://doi.org/10.1177/001872675400700202>

- Fox, J., & Vendemia, M. A. (2016). Selective self-presentation and social comparison through photographs on social networking sites. *Cyberpsychology, Behavior and Social Networking*, 19(10), 593-600. <https://doi.org/10.1089/cyber.2016.0248>
- Frison, E., & Eggermont, S. (2015). Toward an integrated and differential approach to the relationships between loneliness, different types of Facebook use, and adolescents' depressed mood. *Communication Research*, 47(5), 701-728.  
<https://doi.org/10.1177/0093650215617506>
- Frison, E., & Eggermont, S. (2016a). Exploring the relationships between different types of Facebook use, perceived online social support and adolescents' depressed mood. *Social science computer review*, 34(2), 153-171.  
<https://doi.org/https://doi.org/10.1177%2F0894439314567449>
- Frison, E., & Eggermont, S. (2016b). Gender and Facebook motives as predictors of specific types of Facebook use: A latent growth curve analysis in adolescence. *Journal of Adolescence*, 52, 182-190. <https://doi.org/10.1016/j.adolescence.2016.08.008>
- Frith, K., Shaw, P., & Cheng, H. (2005). The construction of beauty: A cross-cultural analysis of women's magazine advertising. *Journal of Communication*, 55(1), 56-70.  
<https://doi.org/10.1111/j.1460-2466.2005.tb02658.x>
- Funder, D. C., & Ozer, D. J. (2019). Evaluating effect size in psychological research: Sense and nonsense. *Advances in Methods and Practices in Psychological Science*, 2(2), 156-168.  
<https://doi.org/10.1177/2515245919847202>
- Gerson, J., Plagnol, A. C., & Corr, P. J. (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. <https://doi.org/10.1016/j.chb.2016.06.023>
- Gerwin, R. L., Kaliebe, K., & Daigie, M. (2018). The interplay between digital media use and development. *Child and Adolescent Psychiatric Clinics of North America*, 27(2), 345-355.  
<https://doi.org/https://doi.org/10.1016/j.chc.2017.11.002>

- Gil-Or, O., Levi-Belz, Y., & Turel, O. (2015). The "Facebook-self": characteristics and psychological predictors of false self-presentation on Facebook. *Frontiers in Psychology*, 6, Article 99. <https://doi.org/10.3389/fpsyg.2015.00099>
- Girard, M., Chabrol, H., & Rodgers, R. F. (2018). Support for a modified tripartite dual pathway model of body image concerns and risky body change behaviors in French young men. *Sex Roles*, 78(11-12), 799-809. <https://doi.org/10.1007/s11199-017-0850-z>
- González-Carrasco, M., Casas, F., Malo, S., Viñas, F., & Dinisman, T. (2017). Changes with age in subjective well-being through the adolescent years: Differences by gender. *Journal of Happiness Studies*, 18(1), 63-88. <https://doi.org/10.1007/s10902-016-9717-1>
- Gordon, C. S., Rodgers, R. F., Slater, A. E., McLean, S. A., Jarman, H. K., & Paxton, S. J. (2020). A cluster randomized controlled trial of the SoMe social media literacy body image and wellbeing program for adolescent boys and girls: Study protocol. *Body Image*, 33, 27-37. <https://doi.org/10.1016/j.bodyim.2020.02.003>
- Götz, F. M., Gosling, S. D., & Rentfrow, P. J. (2021). Small effects: The indispensable foundation for a cumulative psychological science. *Perspectives on Psychological Science*. <https://doi.org/https://doi.org/10.1177%2F1745691620984483>
- Grabe, S., Ward, L. M., & Hyde, J. S. (2008). The role of the media in body image concerns among women: A meta-analysis of experimental and correlational studies. *Psychological Bulletin*, 134(3), 460-476. <https://doi.org/10.1037/0033-2909.134.3.460>
- Grant, K. (2021, 6 July). Influencers react to Norway photo edit law: 'Welcome honesty' or a 'shortcut'? BBC. <https://www.bbc.com/news/newsbeat-57721080>
- Groesz, L. M., Levine, M. P., & Murnen, S. K. (2002). The effect of experimental presentation of thin media images on body satisfaction: A meta-analytic review. *International Journal of Eating Disorders*, 31(1), 1-16. <https://www.ncbi.nlm.nih.gov/pubmed/11835293>
- Grogan, S. (2016). *Body image: Understanding body dissatisfaction in men, women and children* (3rd ed.). Routledge. <https://doi.org/10.4324/9781315681528>

- Hale, L., & Guan, S. (2015). Screen time and sleep among school-aged children and adolescents: A systematic literature review. *Sleep Medicine Reviews*, 21, 50-58.  
<https://doi.org/10.1016/j.smr.2014.07.007>
- Halliwell, E., Diedrichs, P. C., & Orbach, S. (2014). *Costing the invisible: A review of the evidence examining the links between body image, aspirations, education and workplace confidence*. Centre for Appearance Research. <https://uwe-repository.worktribe.com/output/806655/costing-the-invisible-a-review-of-the-evidence-examining-the-links-between-body-image-aspirations-education-and-workplace-confidence>
- Halliwell, E., & Dittmar, H. (2004). Does size matter? The impact of models body size. *Journal of Social and Clinical Psychology*, 23, 104-122. <https://doi.org/10.1521/jscp.23.1.104.26989>
- Hamer, M., Stamatakis, E., & Mishra, G. (2009). Psychological distress, television viewing, and physical activity in children aged 4 to 12 years. *Pediatrics*, 123(5), 1263-1268.  
<https://doi.org/10.1542/peds.2008-1523>
- Hanna, E., Ward, L. M., Seabrook, R. C., Jerald, M., Reed, L., Giaccardi, S., & Lippman, J. R. (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. <https://doi.org/10.1089/cyber.2016.0247>
- Harriger, J. A., Serier, K. N., Luedke, M., Robertson, S., & Bojorquez, A. (2018). Appearance-related themes in children's animated movies released between 2004 and 2016: A content analysis. *Body Image*, 26, 78-82. <https://doi.org/10.1016/j.bodyim.2018.06.004>
- Hazzard, V. M., Schaefer, L. M., Schaumberg, K., Bardone-Cone, A. M., Frederick, D. A., Klump, K. L., Anderson, D. A., & Thompson, J. K. (2019). Testing the tripartite influence model among heterosexual, bisexual, and lesbian women. *Body Image*, 30, 145-149.  
<https://doi.org/10.1016/j.bodyim.2019.07.001>

- Herbozo, S., Tantleff-Dunn, S., Gokee-Larose, J., & Thompson, J. K. (2004). Beauty and thinness messages in children's media: A content analysis. *Eating Disorders*, 12(1), 21-34.  
<https://doi.org/10.1080/10640260490267742>
- Ho, S. S., Lee, E. W. J., & Liao, Y. (2016). Social network sites, friends, and celebrities: The roles of social comparison and celebrity involvement in adolescents' body image dissatisfaction. *Social Media + Society*, 2(3), 1-11. <https://doi.org/10.1177/2056305116664216>
- 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.  
<https://doi.org/10.1016/j.bodyim.2016.02.008>
- House of Commons. (2021). *Changing the perfect picture: an inquiry into body image: Government Response to the Committee's Sixth Report of Session 2019–21*.  
<https://committees.parliament.uk/committee/328/women-and-equalities-committee/publications/>
- Hu, Y., Manikonda, L., & Kambhampati, S. (2014). What we Instagram: A first analysis of Instagram photo content and user types. Proceedings of the Eighth International AAAI Conference on Weblogs and Social Media, Ann Arbor, Michigan, USA.
- Huang, C. (2017). Time spent on social network sites and psychological well-being: A meta-analysis. *Cyberpsychology, Behavior and Social Networking*, 20(6), 346-354.  
<https://doi.org/10.1089/cyber.2016.0758>
- Hummel, A. C., & Smith, A. R. (2015). Ask and you shall receive: Desire and receipt of feedback via Facebook predicts disordered eating concerns. *International Journal of Eating Disorders*, 48(4), 436-442. <https://doi.org/10.1002/eat.22336>
- Instagram. (2021, 26 May). *Giving People More Control on Instagram and Facebook*.  
<https://about.instagram.com/blog/announcements/giving-people-more-control>
- Irving, L. M., Dupen, J., & Berel, S. (1998). A media literacy program for high school females. *Eating Disorders*, 6(2), 119-131. <https://doi.org/10.1080/10640269808251248>

- Jankowski, G. S., Fawkner, H., Slater, A., & Tiggemann, M. (2014). "Appearance potent"? A content analysis of UK gay and straight men's magazines. *Body Image*, 11(4), 474-481.  
<https://doi.org/10.1016/j.bodyim.2014.07.010>
- Kalpidou, M., Costin, D., & Morris, J. (2011). The relationship between Facebook and the well-being of undergraduate college students. *Cyberpsychology, Behavior and Social Networking*, 14(4), 183-189. <https://doi.org/10.1089/cyber.2010.0061>
- Kansky, J., Allen, J. P., & Diener, E. (2016). Early adolescent affect predicts later life outcomes. *Applied Psychology: Health and Well-Being*, 8(2), 192-212.  
<https://doi.org/10.1111/aphw.12068>
- Kaplan, A. M., & Haenlein, M. (2010). Users of the world, unite! The challenges and opportunities of social media. *Business Horizons*, 53(1), 59-68. <https://doi.org/10.1016/j.bushor.2009.09.003>
- Katz, E., Haas, H., & Gurevitch, M. (1973). On the use of the mass media for important things. *American Sociological Review*, 38(2), 164-181. <https://doi.org/10.2307/2094393>
- Kaye-Tzadok, A., Kim, S. S., & Main, G. (2017). Children's subjective well-being in relation to gender — What can we learn from dissatisfied children? *Children and Youth Services Review*, 80, 96-104. <https://doi.org/10.1016/j.childyouth.2017.06.058>
- Keery, H., van den Berg, P., & Thompson, J. K. (2004). An evaluation of the tripartite influence model of body dissatisfaction and eating disturbance with adolescent girls. *Body Image*, 1(3), 237-251. <https://doi.org/10.1016/j.bodyim.2004.03.001>
- Keles, B., McCrae, N., & Grealish, A. (2019). A systematic review: The influence of social media on depression, anxiety and psychological distress in adolescents. *International Journal of Adolescence and Youth*, 25(1), 79-93. <https://doi.org/10.1080/02673843.2019.1590851>
- Kelly, Y., Zilanawala, A., Booker, C., & Sacker, A. (2018). Social media use and adolescent mental health: Findings from the UK millennium cohort study. *EClinicalMedicine*, 6, 59-68.  
<https://doi.org/10.1016/j.eclinm.2018.12.005>

- Keresteš, G., & Štulhofer, A. (2020). Adolescents' online social network use and life satisfaction: A latent growth curve modeling approach. *Computers in Human Behavior*, 104, 106187. <https://doi.org/10.1016/j.chb.2019.106187>
- Kieling, C., Baker-Henningham, H., Belfer, M., Conti, G., Ertem, I., Omigbodun, O., Rohde, L. A., Srinath, S., Ulkuer, N., & Rahman, A. (2011). Child and adolescent mental health worldwide: Evidence for action. *The Lancet*, 378(9801), 1515-1525. [https://doi.org/10.1016/s0140-6736\(11\)60827-1](https://doi.org/10.1016/s0140-6736(11)60827-1)
- Kim, J. W., & Chock, T. M. (2017). Personality traits and psychological motivations predicting selfie posting behaviors on social networking sites. *Telematics and Informatics*, 34(5), 560-571. <https://doi.org/10.1016/j.tele.2016.11.006>
- Kleemans, M., Daalmans, S., Carbaat, I., & Anschütz, D. (2018). Picture perfect: The direct effect of manipulated Instagram photos on body image in adolescent girls. *Media Psychology*, 21(1), 93-110. <https://doi.org/10.1080/15213269.2016.1257392>
- Kraut, R., Patterson, M., Lundmark, V., Kieslet, S., Mukophadhyay, T., & Scherlis, W. (1998). Internet paradox: A social technology that reduces social involvement and psychological well being. *American Psychologist*, 53(9), 1017-1031. <https://doi.org/https://doi.org/10.1037//0003-066x.53.9.1017>
- Krayer, A., Ingledew, D. K., & Iphofen, R. (2008). Social comparison and body image in adolescence: A grounded theory approach. *Health Education Research*, 23(5), 892-903. <https://doi.org/10.1093/her/cym076>
- Kross, E., Verduyn, P., Demiralp, E., Park, J., Lee, D. S., Lin, N., Shaback, H., Jonides, J., & Ybarra, O. (2013). Facebook use predicts declines in subjective well-being in young adults. *PLoS ONE*, 8(8), e69841. <https://doi.org/10.1371/journal.pone.0069841>
- Kusina, J. R., & Exline, J. J. (2019). Beyond body image: A systematic review of classroom-based interventions targeting body image of adolescents. *Adolescent Research Review*, 1-19. <https://doi.org/10.1007/s40894-019-00121-1>

- Lai, H., Hsieh, P., & Zhang, R. (2018). Understanding adolescent students' use of Facebook and their subjective wellbeing: A gender-based comparison. *Behaviour & Information Technology*, 38(5), 533-548. <https://doi.org/10.1080/0144929X.2018.1543452>
- Latif, A., & Khan, B. (2020). Gender differences in socio-cultural attitude towards appearance. *Pakistan Journal of Gender Studies*, 20(2), 1-24.  
<https://doi.org/https://doi.org/10.46568/pjgs.v20i2.95>
- Leary, M. R. (1995). *Self-presentation: Impression management and interpersonal behavior*. Brown & Benchmark.
- Lee, M., & Lee, H.-H. (2020). A test of the expanded tripartite dual pathway model in physically active Korean men. *Sex Roles*, 82, 743-753. <https://doi.org/10.1007/s11199-019-01082-4>
- Lee, M., & Lee, H.-H. (2021). Social media photo activity, internalization, appearance comparison, and body satisfaction: The moderating role of photo-editing behavior. *Computers in Human Behavior*, 114, 106579. <https://doi.org/10.1016/j.chb.2020.106579>
- Lee, S. Y. (2014). How do people compare themselves with others on social network sites?: The case of Facebook. *Computers in Human Behavior*, 32, 253-260.  
<https://doi.org/10.1016/j.chb.2013.12.009>
- Lenhart, A., Smith, A., Anderson, M., Duggan, M., & Perrin, A. (2015). *Teens, Technology and Friendships*. Pew Research Center.  
<https://www.pewresearch.org/internet/2015/08/06/teens-technology-and-friendships/>
- Levine, M. P., & Murnen, S. K. (2009). "Everybody knows that mass media are/are not [pick one] a cause of eating disorders": A critical review of evidence for a causal link between media, negative body image, and disordered eating in females. *Journal of Social and Clinical Psychology*, 28(1), 9-42. <https://doi.org/https://doi.org/10.1521/jscp.2009.28.1.9>
- Lewis, L. (2014, 25 March). #nomakeupselfies - why it worked. *The Guardian*.  
<https://www.theguardian.com/voluntary-sector-network/2014/mar/25/nomakeupselfie-viral-campaign-cancer-research>



- Li, P., Chang, L., Chua, T. H. H., & Loh, R. S. M. (2018). "Likes" as KPI: An examination of teenage girls' perspective on peer feedback on Instagram and its influence on coping response. *Telematics and Informatics*, 35(7), 1994-2005. <https://doi.org/10.1016/j.tele.2018.07.003>
- Liu, D., Baumeister, R. F., Yang, C., & Hu, B. (2019). Digital communication media use and psychological well-being: A meta-analysis. *Journal of Computer-Mediated Communication*, 24, 259–274. <https://doi.org/10.1093/ccc/zmz013>
- Liu, W., Mei, J., Tian, L., & Huebner, E. S. (2015). Age and gender differences in the relation between school-related social support and subjective well-being in school among students. *Social Indicators Research*, 125(3), 1065-1083. <https://doi.org/10.1007/s11205-015-0873-1>
- Livingston, J., Holland, E., & Fardouly, J. (2020). Exposing digital posing: The effect of social media self-disclaimer captions on women's body dissatisfaction, mood, and impressions of the user. *Body Image*, 32, 150-154. <https://doi.org/10.1016/j.bodyim.2019.12.006>
- López-Guimerà, G., Levine, M. P., Sánchez-Carracedo, D., & Fauquet, J. (2010). Influence of mass media on body image and eating disordered attitudes and behaviors in females: A review of effects and processes. *Media Psychology*, 13(4), 387-416. <https://doi.org/10.1080/15213269.2010.525737>
- Loth, K. A., Watts, A. W., van den Berg, P., & Neumark-Sztainer, D. (2015). Does body satisfaction help or harm overweight teens? A 10-year longitudinal study of the relationship between body satisfaction and body mass index. *Journal of Adolescent Health*, 57(5), 559-561. <https://doi.org/10.1016/j.jadohealth.2015.07.008>
- Lowes, J., & Tiggemann, M. (2003). Body dissatisfaction, dieting awareness and the impact of parental influence in young children. *British Journal of Health Psychology*, 8, 135-147. <https://doi.org/10.1348/135910703321649123>
- Luo, M., & Hancock, J. T. (2019). Self-disclosure and social media: Motivations, mechanisms and psychological well-being. *Current Opinion in Psychology*, 31, 110-115. <https://doi.org/10.1016/j.copsy.2019.08.019>

- Manago, A. M., Graham, M. B., Greenfield, P. M., & Salimkhan, G. (2008). Self-presentation and gender on MySpace. *Journal of Applied Developmental Psychology*, 29(6), 446-458.  
<https://doi.org/10.1016/j.appdev.2008.07.001>
- Marengo, D., Longobardi, C., Fabris, M. A., & Settanni, M. (2018). Highly-visual social media and internalizing symptoms in adolescence: The mediating role of body image concerns. *Computers in Human Behavior*, 82, 63-69. <https://doi.org/10.1016/j.chb.2018.01.003>
- Mascheroni, G., Vincent, J., & Jimenez, E. (2015). "Girls are addicted to likes so they post semi-naked selfies": Peer mediation, normativity and the construction of identity online. *Journal of Psychosocial Research on Cyberspace*, 9(1), Article 5. <https://doi.org/10.5817/CP2015-1-5>
- McCabe, M. P., & Ricciardelli, L. A. (2004). Body image dissatisfaction among males across the lifespan. *Journal of psychosomatic research*, 56(6), 675-685. [https://doi.org/10.1016/s0022-3999\(03\)00129-6](https://doi.org/10.1016/s0022-3999(03)00129-6)
- McCrory, A., Best, P., & Maddock, A. (2020). The relationship between highly visual social media and young people's mental health: A scoping review. *Children and Youth Services Review*, 115, 105053. <https://doi.org/10.1016/j.childyouth.2020.105053>
- McLaughlin, K. A., & King, K. (2015). Developmental trajectories of anxiety and depression in early adolescence. *Journal of Abnormal Child Psychology*, 43(2), 311-323.  
<https://doi.org/10.1007/s10802-014-9898-1>
- McLean, S. A., Jarman, H. K., & Rodgers, R. F. (2019). How do "selfies" impact adolescents' well-being and body confidence? A narrative review. *Psychology Research and Behavior Management*, 12, 513-521. <https://doi.org/10.2147/PRBM.S177834>
- McLean, S. A., Paxton, S. J., & Wertheim, E. H. (2016). Does media literacy mitigate risk for reduced body satisfaction following exposure to thin-ideal media? *Journal of Youth and Adolescence*, 45(8), 1678-1695. <https://doi.org/10.1007/s10964-016-0440-3>
- McLean, S. A., Paxton, S. J., Wertheim, E. H., & Masters, J. (2015). Photoshopping the selfie: Self photo editing and photo investment are associated with body dissatisfaction in adolescent

girls. *International Journal of Eating Disorders*, 48(8), 1132-1140.

<https://doi.org/10.1002/eat.22449>

McLean, S. A., Rodgers, R. F., Slater, A., Jarman, H. K., Gordon, C. S., & Paxton, S. J. (2021). Clinically significant body dissatisfaction: prevalence and association with depressive symptoms in adolescent boys and girls. *European Child & Adolescent Psychiatry*, 1-12.

<https://doi.org/10.1007/s00787-021-01824-4>

McLean, S. A., Wertheim, E. H., Masters, J., & Paxton, S. J. (2017). A pilot evaluation of a social media literacy intervention to reduce risk factors for eating disorders. *International Journal of Eating Disorders*, 50(7), 847-851. <https://doi.org/10.1002/eat.22708>

Meier, E. P., & Gray, J. (2014). Facebook photo activity associated with body image disturbance in adolescent girls. *Cyberpsychology, Behavior and Social Networking*, 17(4), 199-206.

<https://doi.org/10.1089/cyber.2013.0305>

Michikyan, M., & Suarez-Orozco, C. (2016). Adolescent media and social media use: Implications for development. *Journal of Adolescent Research*, 31(4), 411-414.

<https://doi.org/https://doi.org/10.1177%2F0743558416643801>

Mingoia, J., Hutchinson, A. D., Gleaves, D. H., Corsini, N., & Wilson, C. (2017). Use of social networking sites and associations with skin tone dissatisfaction, sun exposure, and sun protection in a sample of Australian adolescents. *Psychology & Health*, 32(12), 1502-1517.

<https://doi.org/10.1080/08870446.2017.1347788>

Mingoia, J., Hutchinson, A. D., Wilson, C., & Gleaves, D. H. (2017). The relationship between social networking site use and the internalization of a thin ideal in females: A meta-analytic review.

*Frontiers in Psychology*, 8, Article 1351. <https://doi.org/10.3389/fpsyg.2017.01351>

Mission Australia. (2012). *Youth survey*. <https://www.missionaustralia.com.au/publications/youth-survey>

- Moessner, M., Feldhege, J., Wolf, M., & Bauer, S. (2018). Analyzing big data in social media: Text and network analyses of an eating disorder forum. *International Journal of Eating Disorders*, 51(7), 656-667. <https://doi.org/10.1002/eat.22878>
- Morales-Vives, F., & Duenas, J. M. (2018). Predicting suicidal ideation in adolescent boys and girls: The role of psychological maturity, personality traits, depression and life satisfaction. *The Spanish Journal of Psychology*, 21, E10. <https://doi.org/10.1017/sjp.2018.12>
- Moreno, M. A., & Uhls, Y. T. (2019). Applying an affordances approach and a developmental lens to approach adolescent social media use. *Digital Health*, 5, 1-6. <https://doi.org/10.1177/2055207619826678>
- Musci, R. J., & Stuart, E. (2019). Ensuring causal, not casual, inference. *Prevention Science*, 20(3), 452-456. <https://doi.org/10.1007/s11121-018-0971-9>
- Myers, D. G., & Diener, E. (1995). Who is happy? *Psychological Science*, 6(1), 10-19. <https://doi.org/https://doi.org/10.1111%2Fj.1467-9280.1995.tb00298.x>
- Myers, T. A., & Crowther, J. H. (2009). Social comparison as a predictor of body dissatisfaction: A meta-analytic review. *Journal of Abnormal Psychology*, 118, 683-698. <https://doi.org/10.1037/a0016763>
- Nadkarni, A., & Hofmann, S. G. (2012). Why do people use Facebook? *Personality and Individual Differences*, 52(3), 243-249. <https://doi.org/10.1016/j.paid.2011.11.007>
- Neinstein, L., & Anderson, M. (2002). Adolescent development. In L. Neinstein (Ed.), *Adolescent health care: a practical guide* (pp. 767-792). Lippincott Williams and Wilkins.
- Nesi, J., Choukas-Bradley, S., & Prinstein, M. J. (2018). Transformation of adolescent peer relations in the social media context: Part 1-A theoretical framework and application to dyadic peer relationships. *Clinical Child and Family Psychology Review*, 21(3), 267-294. <https://doi.org/10.1007/s10567-018-0261-x>
- 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(3), 201-206.

<https://doi.org/10.1016/j.bodyim.2009.03.003>

Odgers, C. L., & Robb, M. B. (2020). *Tweens, teens, tech, and mental health: Coming of age in an increasingly digital, uncertain, and unequal world*. Common Sense Media.

<https://www.commonsensemedia.org/sites/default/files/uploads/pdfs/tweens-teens-tech-and-mental-health-full-report-final-for-web1.pdf>

Office for Youth. (2011). *Sizing up body image: What South Australia's young people say about body image*. Australian Government. <https://officeforyouth.sa.gov.au/resources/resources>

Orben, A. (2020). Teenagers, screens and social media: A narrative review of reviews and key studies. *Social Psychiatry and Psychiatric Epidemiology*, 55(4), 407-414.

<https://doi.org/10.1007/s00127-019-01825-4>

Orben, A., Dienlin, T., & Przybylski, A. K. (2019). Social media's enduring effect on adolescent life satisfaction. *Proceedings of the National Academy of Sciences*, 116(21), 10226-10228.

<https://doi.org/10.1073/pnas.1902058116>

Orben, A., & Przybylski, A. K. (2019). The association between adolescent well-being and digital technology use. *Nature Human Behaviour*, 3(2), 173-182. <https://doi.org/10.1038/s41562-018-0506-1>

<https://doi.org/10.1038/s41562-018-0506-1>

Orth, U., Maes, J., & Schmitt, M. (2015). Self-esteem development across the life span: A longitudinal study with a large sample from Germany. *Developmental Psychology*, 51(2), 248-259.

<https://doi.org/10.1037/a0038481>

Page, A. S., Cooper, A. R., Griew, P., & Jago, R. (2010). Children's screen viewing is related to psychological difficulties irrespective of physical activity. *Pediatrics*, 126(5), e1011-1017.

<https://doi.org/10.1542/peds.2010-1154>

Papp, I., Urban, R., Czegledi, E., Babusa, B., & Tury, F. (2013). Testing the tripartite influence model of body image and eating disturbance among Hungarian adolescents. *Body Image*, 10(2),

232-242. <https://doi.org/10.1016/j.bodyim.2012.12.006>

- Paterna, A., Alcaraz-Ibanez, M., Fuller-Tyszkiewicz, M., & Sicilia, A. (2021). Internalization of body shape ideals and body dissatisfaction: A systematic review and meta-analysis. *International Journal of Eating Disorders*. <https://doi.org/10.1002/eat.23568>
- Patton, G. C., Sawyer, S. M., Santelli, J. S., Ross, D. A., Afifi, R., Allen, N. B., Arora, M., Azzopardi, P., Baldwin, W., Bonell, C., Kakuma, R., Kennedy, E., Mahon, J., McGovern, T., Mokdad, A. H., Patel, V., Petroni, S., Reavley, N., Taiwo, K., Waldfogel, J., Wickremarathne, D., Barroso, C., Bhutta, Z., Fatusi, A. O., Mattoo, A., Diers, J., Fang, J., Ferguson, J., Ssewamala, F., & Viner, R. M. (2016). Our future: A Lancet commission on adolescent health and wellbeing. *The Lancet*, 387(10036), 2423-2478. [https://doi.org/10.1016/s0140-6736\(16\)00579-1](https://doi.org/10.1016/s0140-6736(16)00579-1)
- Paxton, S. J., Neumark-Sztainer, D., Hannan, P. J., & Eisenberg, M. E. (2006). Body dissatisfaction prospectively predicts depressive mood and low self-esteem in adolescent girls and boys. *Journal of Clinical Child and Adolescent Psychology*, 35(4), 539-549. [https://doi.org/10.1207/s15374424jccp3504\\_5](https://doi.org/10.1207/s15374424jccp3504_5)
- Pea, R., Nass, C., Meheula, L., Rance, M., Kumar, A., Bamford, H., Nass, M., Simha, A., Stillerman, B., Yang, S., & Zhou, M. (2012). Media use, face-to-face communication, media multitasking, and social well-being among 8- to 12-year-old girls. *Developmental Psychology*, 48(2), 327-336. <https://doi.org/10.1037/a0027030>
- Perkins, N. M., & Brausch, A. M. (2019). Body dissatisfaction and symptoms of bulimia nervosa prospectively predict suicide ideation in adolescents. *International Journal of Eating Disorders*, 52(8), 941-949. <https://doi.org/10.1002/eat.23116>
- Perloff, R. M. (2014). Social media effects on young women's body image concerns: Theoretical perspectives and an agenda for research. *Sex Roles*, 71(11-12), 363-377. <https://doi.org/10.1007/s11199-014-0384-6>
- Perugini, M. L. L., & Solano, A. C. (2021). Normal and maladaptive personality traits as predictors of motives for social media use and its effects on well-being. *Psychological Reports*, 124(3), 1070-1092. <https://doi.org/10.1177/0033294120922495>

- Prichard, I., O'Toole, S., Wu, Y., Harford, J., & Tiggemann, M. (2021). No likes, no problem? Users' reactions to the removal of Instagram number of likes on other people's posts and links to body image. *Body Image*, 38, 72-79. <https://doi.org/10.1016/j.bodyim.2021.03.007>
- Przybylski, A. K., Nguyen, T.-v. T., Law, W., & Weinstein, N. (2021). Does taking a short break from social media have a positive effect on well-being? Evidence from three preregistered field experiments. *Journal of Technology in Behavioral Science*, 1-8. <https://doi.org/10.1007/s41347-020-00189-w>
- Pulimeno, M., Piscitelli, P., Colazzo, S., Colao, A., & Miani, A. (2020). School as ideal setting to promote health and wellbeing among young people. *Health Promotion Perspectives*, 10(4), 316-324. <https://doi.org/10.34172/hpp.2020.50>
- Reer, F., Tang, W. Y., & Quandt, T. (2019). Psychosocial well-being and social media engagement: The mediating roles of social comparison orientation and fear of missing out. *New Media & Society*, 21(7), 1486-1505. <https://doi.org/10.1177/1461444818823719>
- Rees, G., & Main, G. (2016). Subjective well-being and mental health. In J. Bradshaw (Ed.), *The well-being of children in the UK* (4th ed., pp. 123-148). Policy Press.
- Ricciardelli, L. A., & Yager, Z. (2015). *Adolescence and body image: From development to preventing body dissatisfaction*. Routledge.
- Rideout, V., Foehr, U. G., & Roberts, D. F. (2010). *Generation M2: Media in the lives of 8- to 18-year olds*. The Henry J. Kaiser Family Foundation. <https://www.kff.org/other/event/generation-m2-media-in-the-lives-of/>
- Rideout, V., & Robb, M. B. (2018). *Social Media, Social Life: Teens Reveal Their Experiences*. Common Sense Media. <https://www.commonsensemedia.org/research/social-media-social-life-2018>
- Roberts, J. A., & David, M. E. (2019). The social media party: Fear of missing out (FoMO), social media intensity, connection, and well-being. *International Journal of Human-Computer Interaction*, 36(4), 386-392. <https://doi.org/10.1080/10447318.2019.1646517>

- Robinson, J., P., & Martin, S. (2008). What do happy people do? *Social Indicators Research*, 89(3), 565-571. <https://doi.org/10.1007/sl>
- Robinson, L., Prichard, I., Nikolaidis, A., Drummond, C., Drummond, M., & Tiggemann, M. (2017). Idealised media images: The effect of fitspiration imagery on body satisfaction and exercise behaviour. *Body Image*, 22, 65-71. <https://doi.org/10.1016/j.bodyim.2017.06.001>
- Rodgers, R., Chabrol, H., & Paxton, S. J. (2011). An exploration of the tripartite influence model of body dissatisfaction and disordered eating among Australian and French college women. *Body Image*, 8(3), 208-215. <https://doi.org/10.1016/j.bodyim.2011.04.009>
- Rodgers, R. F., Franko, D. L., Lovering, M. E., Luk, S., Pernal, W., & Matsumoto, A. (2018). Development and validation of the female muscularity scale. *Sex Roles*, 78(1-2), 18-26. <https://doi.org/10.1007/s11199-017-0775-6>
- Rodgers, R. F., Ganchou, C., Franko, D. L., & Chabrol, H. (2012). Drive for muscularity and disordered eating among French adolescent boys: A sociocultural model. *Body Image*, 9(3), 318-323. <https://doi.org/10.1016/j.bodyim.2012.03.002>
- Rodgers, R. F., McLean, S. A., & Paxton, S. J. (2015). Longitudinal relationships among internalization of the media ideal, peer social comparison, and body dissatisfaction: Implications for the tripartite influence model. *Developmental Psychology*, 51(5), 706-713. <https://doi.org/10.1037/dev0000013>
- Rodgers, R. F., & Melioli, T. (2016). The relationship between body image concerns, eating disorders and Internet use, Part I: A review of empirical support. *Adolescent Research Review*, 1(2), 95-119. <https://doi.org/10.1007/s40894-015-0016-6>
- Rodgers, R. F., Slater, A., Gordon, C. S., McLean, S. A., Jarman, H. K., & Paxton, S. J. (2020). A biopsychosocial model of social media use and body image concerns, disordered eating, and muscle-building behaviors among adolescent girls and boys. *Journal of Youth and Adolescence*, 49(2), 399-409. <https://doi.org/10.1007/s10964-019-01190-0>



- Ronen, T., Hamama, L., Rosenbaum, M., & Mishely-Yarlap, A. (2014). Subjective well-being in adolescence: The role of self-control, social support, age, gender, and familial crisis. *Journal of Happiness Studies*, 17(1), 81-104. <https://doi.org/10.1007/s10902-014-9585-5>
- Rousseau, A., & Eggermont, S. (2018). Media ideals and early adolescents' body image: Selective avoidance or selective exposure? *Body Image*, 26, 50-59. <https://doi.org/10.1016/j.bodyim.2018.06.001>
- Rousseau, A., Eggermont, S., & Frison, E. (2017). The reciprocal and indirect relationships between passive Facebook use, comparison on Facebook, and adolescents' body dissatisfaction. *Computers in Human Behavior*, 73, 336-344. <https://doi.org/10.1016/j.chb.2017.03.056>
- Rousseau, A., Rodgers, R. F., & Eggermont, S. (2020). A biopsychosocial model for understanding media internalization and appearance dissatisfaction among preadolescent boys and girls. *Communication Research*, 47(3), 346-372. <https://doi.org/10.1177/0093650217739996>
- Ryan, R. M., & Deci, E. L. (2001). On happiness and human potentials: A review of research on hedonic and eudaimonic well-being. *Annual Review of Psychology*, 52, 141-166. <https://doi.org/https://doi.org/10.1146/annurev.psych.52.1.141>
- Ryff, C. D., & Keyes, C. L. M. (1995). The structure of psychological well-being revisited. *Journal of Personality and Social Psychology*, 69(4), 719-727. <https://doi.org/https://psycnet.apa.org/doi/10.1037/0022-3514.69.4.719>
- Ryff, C. D., & Singer, B. (2000). Interpersonal flourishing: A positive health agenda for the new millennium. *Personality and social psychology review*, 4, 30-44. [https://doi.org/https://doi.org/10.1207%2FS15327957PSPR0401\\_4](https://doi.org/https://doi.org/10.1207%2FS15327957PSPR0401_4)
- Sagioglou, C., & Greitemeyer, T. (2014). Facebook's emotional consequences: Why Facebook causes a decrease in mood and why people still use it. *Computers in Human Behavior*, 35, 359-363. <https://doi.org/10.1016/j.chb.2014.03.003>

Saiphoo, A. N., & Vahedi, Z. (2019). A meta-analytic review of the relationship between social media use and body image disturbance. *Computers in Human Behavior*, 101, 259-275.

<https://doi.org/10.1016/j.chb.2019.07.028>

Saunders, J. F., & Eaton, A. A. (2018). Snaps, selfies, and shares: How three popular social media platforms contribute to the sociocultural model of disordered eating among young women. *Cyberpsychology, Behavior and Social Networking*, 21(6), 343-354.

<https://doi.org/10.1089/cyber.2017.0713>

Schemer, C., Masur, P. K., Geiß, S., Müller, P., & Schäfer, S. (2021). The impact of internet and social media use on well-being: A longitudinal analysis of adolescents across nine years. *Journal of Computer-Mediated Communication*, 26(1), 1-21. <https://doi.org/10.1093/jcmc/zmaa014>

Schønning, V., Hjetland, G. J., Aarø, L. E., & Skogen, J. C. (2020). Social media use and mental health and well-being among adolescents – A scoping review. *Frontiers in Psychology*, 11, Article 1949. <https://doi.org/10.3389/fpsyg.2020.01949>

Schooler, D. (2012). Early adolescent body image predicts subsequent condom use behavior among girls. *Sexuality Research and Social Policy*, 10(1), 52-61. <https://doi.org/10.1007/s13178-012-0099-9>

Scott, H., & Woods, H. C. (2018). Fear of missing out and sleep: Cognitive behavioural factors in adolescents' nighttime social media use. *Journal of Adolescence*, 68, 61-65.

<https://doi.org/10.1016/j.adolescence.2018.07.009>

Scully, M., Swords, L., & Nixon, E. (2020). Social comparisons on social media: Online appearance-related activity and body dissatisfaction in adolescent girls. *Irish Journal of Psychological Medicine*, 1-12. <https://doi.org/10.1017/ipm.2020.93>

Sewall, C. J. R., Bear, T. M., Merranko, J., & Rosen, D. (2020). How psychosocial well-being and usage amount predict inaccuracies in retrospective estimates of digital technology use. *Mobile Media & Communication*, 8(3), 379-399. <https://doi.org/10.1177/2050157920902830>

- Shapiro, L. A. S., & Margolin, G. (2014). Growing up wired: Social networking sites and adolescent psychosocial development. *Clinical Child and Family Psychology Review*, 17(1), 1-18.  
<https://doi.org/10.1007/s10567-013-0135-1>
- Sheldon, P., & Bryant, K. (2016). Instagram: Motives for its use and relationship to narcissism and contextual age. *Computers in Human Behavior*, 58, 89-97.  
<https://doi.org/10.1016/j.chb.2015.12.059>
- Sherlock, M., & Wagstaff, D. L. (2018). Exploring the relationship between frequency of Instagram use, exposure to idealized images, and psychological well-being in women. *Psychology of Popular Media Culture*, 8(4), 482-490. <https://doi.org/10.1037/ppm0000182>
- Shiau, W.-L., Dwivedi, Y. K., & Lai, H.-H. (2018). Examining the core knowledge on Facebook. *International Journal of Information Management*, 43, 52-63.  
<https://doi.org/10.1016/j.ijinfomgt.2018.06.006>
- Sigerson, L., & Cheng, C. (2018). Scales for measuring user engagement with social network sites: A systematic review of psychometric properties. *Computers in Human Behavior*, 83, 87-105.  
<https://doi.org/10.1016/j.chb.2018.01.023>
- Skemp, K. M., Elwood, R. L., & Reineke, D. M. (2019). Adolescent boys are at risk for body image dissatisfaction and muscle dysmorphia. *Californian Journal of Health Promotion*, 17(1), 61-70. <https://doi.org/https://doi.org/10.32398/cjhp.v17i1.2224>
- Slater, A., & Tiggemann, M. (2014). Media matters for boys too! The role of specific magazine types and television programs in the drive for thinness and muscularity in adolescent boys. *Eating Behaviors*, 15(4), 679-682. <https://doi.org/10.1016/j.eatbeh.2014.10.002>
- Smink, F. R., van Hoeken, D., & Hoek, H. W. (2012). Epidemiology of eating disorders: Incidence, prevalence and mortality rates. *Current Psychiatry Report*, 14(4), 406-414.  
<https://doi.org/10.1007/s11920-012-0282-y>

- Smock, A. D., Ellison, N. B., Lampe, C., & Wohn, D. Y. (2011). Facebook as a toolkit: A uses and gratification approach to unbundling feature use. *Computers in Human Behavior*, 27(6), 2322-2329. <https://doi.org/10.1016/j.chb.2011.07.011>
- Statista. (2018). *Use of social networking sites in Australia as of March 2018, by age*. <https://www.statista.com/statistics/729928/australia-social-media-usage-by-age/>
- Statista. (2019). *Number of monthly active Facebook users worldwide as of 3rd quarter 2019*. <https://www.statista.com/statistics/264810/number-of-monthly-active-facebook-users-worldwide/>
- Statista. (2021a). *Active social media users as percentage of the total population in Australia from 2015 to 2021*. <https://www.statista.com/statistics/680201/australia-social-media-penetration/>
- Statista. (2021b). *Most popular social networks of teenagers in the United States from fall 2012 to fall 2020*. <https://www.statista.com/statistics/250172/social-network-usage-of-us-teens-and-young-adults/>
- Stawski, R. S., MacDonald, S. W., & Sliwinski, M. J. (2015). Measurement burst design. In S. K. Whitbourne (Ed.), *The Encyclopedia of Adulthood and Aging*. (pp. 854–859). Wiley. <https://doi.org/10.1002/9781118521373.wbeaa313>
- Steinberg, L., & Silverberg, S. B. (1986). The vicissitudes of autonomy in early adolescence. *Child development*, 57, 841-851. <https://doi.org/https://doi.org/10.2307/1130361>
- Steinsbekk, S., Wichstrøm, L., Stenseng, F., Nesi, J., Hygen, B. W., & Skalická, V. (2021). The impact of social media use on appearance self-esteem from childhood to adolescence – A 3-wave community study. *Computers in Human Behavior*, 114, 106528. <https://doi.org/10.1016/j.chb.2020.106528>
- Stice, E., Marti, C. N., & Durant, S. (2011). Risk factors for onset of eating disorders: Evidence of multiple risk pathways from an 8-year prospective study. *Behaviour Research and Therapy*, 49(10), 622-627. <https://doi.org/10.1016/j.brat.2011.06.009>

- Stice, E., & Shaw, H. (2002). Role of body dissatisfaction in the onset and maintenance of eating pathology: A synthesis of research findings. *Journal of psychosomatic research*, 53(5), 985-993. [https://doi.org/10.1016/S0022-3999\(02\)00488-9](https://doi.org/10.1016/S0022-3999(02)00488-9)
- Stieger, S. (2019). Facebook usage and life satisfaction. *Frontiers in Psychology*, 10, Article 2711. <https://doi.org/10.3389/fpsyg.2019.02711>
- Strasburger, V. C., Jordan, A. B., & Donnerstein, E. (2010). Health effects of media on children and adolescents. *Pediatrics*, 125(4), 756-767. <https://doi.org/10.1542/peds.2009-2563>
- Tamplin, N. C., McLean, S. A., & Paxton, S. J. (2018). Social media literacy protects against the negative impact of exposure to appearance ideal social media images in young adult women but not men. *Body Image*, 26, 29-37. <https://doi.org/10.1016/j.bodyim.2018.05.003>
- Teppers, E., Luyckx, K., Klimstra, T. A., & Goossens, L. (2014). Loneliness and Facebook motives in adolescence: A longitudinal inquiry into directionality of effect. *Journal of Adolescence*, 37(5), 691-699. <https://doi.org/10.1016/j.adolescence.2013.11.003>
- Thompson, J. K., Heinberg, L. J., Altabe, M., & Tantleff-Dunn, S. (1999). *Exacting beauty: Theory, assessment, and treatment of body image disturbance*. American Psychological Association. <https://doi.org/10.1037/10312-000>
- Thompson, J. K., & Stice, E. (2001). Thin-ideal internalization: Mounting evidence for a new risk factor for body-image disturbance and eating pathology. *Current directions in psychological science*, 10(5), 181-183. <https://doi.org/10.1111%2F1467-8721.00144>
- Throuvala, M. A., Griffiths, M. D., Rennoldson, M., & Kuss, D. J. (2019). Motivational processes and dysfunctional mechanisms of social media use among adolescents: A qualitative focus group study. *Computers in Human Behavior*, 93, 164-175. <https://doi.org/10.1016/j.chb.2018.12.012>
- Tiggemann, M., & Slater, A. (2013). NetGirls: The Internet, Facebook, and body image concern in adolescent girls. *International Journal of Eating Disorders*, 46(6), 630-633. <https://doi.org/10.1002/eat.22141>

- Tiggemann, M., & Slater, A. (2014). NetTweens: The Internet and body image concerns in preteenage girls. *The Journal of Early Adolescence*, 34(5), 606-620.  
<https://doi.org/10.1177/0272431613501083>
- Tiggemann, M., & Slater, A. (2017). Facebook and body image concern in adolescent girls: A prospective study. *International Journal of Eating Disorders*, 50(1), 80-83.  
<https://doi.org/10.1002/eat.22640>
- Tiggemann, M., & Zaccardo, M. (2018). 'Strong is the new skinny': A content analysis of #fitspiration images on Instagram. *Journal of Health Psychology*, 23(8), 1003-1011.  
<https://doi.org/10.1177/1359105316639436>
- Tromholt, M. (2016). The Facebook experiment: Quitting Facebook leads to higher levels of well-being. *Cyberpsychology, Behavior and Social Networking*, 19(11), 661-666.  
<https://doi.org/10.1089/cyber.2016.0259>
- Trull, T. J., & Ebner-Priemer, U. W. (2009). Using experience sampling methods/ecological momentary assessment (ESM/EMA) in clinical assessment and clinical research: Introduction to the special section. *Psychological Assessment*, 21(4), 457-462.  
<https://doi.org/10.1037/a0017653>
- Tsitsika, A. K., Tzavela, E. C., Janikian, M., Olafsson, K., Iordache, A., Schoenmakers, T. M., Tzavara, C., & Richardson, C. (2014). Online social networking in adolescence: Patterns of use in six European countries and links with psychosocial functioning. *Journal of Adolescent Health*, 55(1), 141-147. <https://doi.org/10.1016/j.jadohealth.2013.11.010>
- Twenge, J. M., & Campbell, W. K. (2019). Media use is linked to lower psychological well-being: Evidence from three datasets. *Psychiatric Quarterly*, 90(2), 311-331.  
<https://doi.org/10.1007/s11126-019-09630-7>
- Twenge, J. M., Martin, G. N., & Campbell, W. K. (2018). Decreases in psychological well-being among American adolescents after 2012 and links to screen time during the rise of smartphone technology. *Emotion*, 18(6), 765-780. <https://doi.org/10.1037/emo0000403>

- Twenge, J. M., Martin, G. N., & Spitzberg, B. H. (2019). Trends in U.S. Adolescents' media use, 1976–2016: The rise of digital media, the decline of TV, and the (near) demise of print. *Psychology of Popular Media Culture*, 8(4), 329-345. <https://doi.org/10.1037/ppm0000203>
- Twigg, L., Duncan, C., & Weich, S. (2020). Is social media use associated with children's well-being? Results from the UK Household Longitudinal Study. *Journal of Adolescence*, 80, 73-83. <https://doi.org/10.1016/j.adolescence.2020.02.002>
- Tylka, T. L. (2011). Refinement of the tripartite influence model for men: Dual body image pathways to body change behaviors. *Body Image*, 8(3), 199-207. <https://doi.org/10.1016/j.bodyim.2011.04.008>
- Valenzuela, S., Park, N., & Kee, K. F. (2009). Is there social capital in a social network site?: Facebook use and college students' life satisfaction, trust, and participation. *Journal of Computer-Mediated Communication*, 14(4), 875-901. <https://doi.org/10.1111/j.1083-6101.2009.01474.x>
- Valkenburg, P. M., & Peter, J. (2007). Online communication and adolescent well-being: Testing the stimulation versus the displacement hypothesis. *Journal of Computer-Mediated Communication*, 12(4), 1169-1182. <https://doi.org/10.1111/j.1083-6101.2007.00368.x>
- Valkenburg, P. M., Peter, J., & Schouten, A. P. (2006). Friend networking sites and their relationship to adolescents' well-being and social self-esteem. *Cyberpsychology, Behavior and Social Networking*, 9(5), 584-590. <https://doi.org/10.1089/cpb.2006.9.584>
- Vandenbosch, L., & Eggermont, S. (2016). The interrelated roles of mass media and social media in adolescents' development of an objectified self-concept. *Communication Research*, 43(8), 1116-1140. <https://doi.org/10.1177/0093650215600488>
- Vannucci, A., & Ohannessian, C. M. (2019). Social media use subgroups differentially predict psychosocial well-being during early adolescence. *Journal of Youth and Adolescence*, 48(8), 1469-1493. <https://doi.org/10.1007/s10964-019-01060-9>

- Verbeij, T., Pouwels, J. L., Beyens, I., & Valkenburg, P. M. (2021). The accuracy and validity of self-reported social media use measures among adolescents. *Computers in Human Behavior Reports*, 3. <https://doi.org/10.1016/j.chbr.2021.100090>
- Verduyn, P., Gugushvili, N., Massar, K., Taht, K., & Kross, E. (2020). Social comparison on social networking sites. *Current Opinion in Psychology*, 36, 32-37. <https://doi.org/10.1016/j.copsyc.2020.04.002>
- Verduyn, P., Lee, D. S., Park, J., Shablack, H., Orvell, A., Bayer, J., Ybarra, O., Jonides, J., & Kross, E. (2015). Passive Facebook usage undermines affective well-being: Experimental and longitudinal evidence. *Journal of Experimental Psychology: General*, 144(2), 480-488. <https://doi.org/10.1037/xge0000057>
- Verduyn, P., Schulte-Strathaus, J. C. C., Kross, E., & Hülshager, U. R. (2021). When do smartphones displace face-to-face interactions and what to do about it? *Computers in Human Behavior*, 114, 106550. <https://doi.org/10.1016/j.chb.2020.106550>
- Verduyn, P., Ybarra, O., Resibois, N., 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. <https://doi.org/10.1111/sipr.12033>
- Verrastro, V., Fontanesi, L., Liga, F., Cuzzocrea, F., & Gugliandolo, M. C. (2020). Fear the Instagram: Beauty stereotypes, body image and Instagram use in a sample of male and female adolescents. *Qwerty-Open and Interdisciplinary Journal of Technology, Culture and Education*, 15(1), 31-49. <https://doi.org/10.30557/qw000021>
- Vigil, T. R., & Wu, H. D. (2015). Facebook users' engagement and perceived life satisfaction. *Media and Communication*, 3(1), 5-16. <https://doi.org/10.17645/mac.v3i1.199>
- Viner, R. M., Gireesh, A., Stiglic, N., Hudson, L. D., Goddings, A.-L., Ward, J. L., & Nicholls, D. E. (2019). Roles of cyberbullying, sleep, and physical activity in mediating the effects of social media use on mental health and wellbeing among young people in England: A secondary analysis of



- longitudinal data. *The Lancet Child & Adolescent Health*, 3(10), 685-696.  
[https://doi.org/10.1016/s2352-4642\(19\)30186-5](https://doi.org/10.1016/s2352-4642(19)30186-5)
- Vogel, E. A., Rose, J. P., Roberts, L. R., & Eckles, K. (2014). Social comparison, social media, and self-esteem. *Psychology of Popular Media Culture*, 3(4), 206-222.  
<https://doi.org/10.1037/ppm0000047>
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.
- Wang, J. L., Wang, H. Z., 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 networking site usage and subjective well-being. *Frontiers in Psychology*, 8, Article 771. <https://doi.org/10.3389/fpsyg.2017.00771>
- Wang, Y., Fardouly, J., Vartanian, L. R., & Lei, L. (2019). Selfie-viewing and facial dissatisfaction among Chinese adolescents: A moderated mediation model of general attractiveness internalization and body appreciation. *Body Image*, 30, 35-43.  
<https://doi.org/10.1016/j.bodyim.2019.05.001>
- Wang, Y., Xie, X., Fardouly, J., Vartanian, L. R., & Lei, L. (2019). The longitudinal and reciprocal relationships between selfie-related behaviors and self-objectification and appearance concerns among adolescents. *New Media & Society*, 23(1), 56-77.  
<https://doi.org/10.1177/1461444819894346>
- Webster, D., Dunne, L., & Hunter, R. (2020). Association between social networks and subjective well-being in adolescents: A systematic review. *Youth & Society*, 53(2), 175-210.  
<https://doi.org/10.1177/0044118x20919589>
- Wenninger, H., Krasnova, H., & Buxmann, P. (2014). *Activity Matters: Investigating the influence of Facebook on life satisfaction of teenage users*. Proceedings of the Twenty Second European Conference on Information Systems, Tel Aviv, Israel.

Whiting, A., & Williams, D. (2013). Why people use social media: A uses and gratifications approach.

*Qualitative Market Research: An International Journal*, 16(4), 362-369.

<https://doi.org/10.1108/qmr-06-2013-0041>

Wilksch, S. M., & Wade, T. D. (2009). Reduction of shape and weight concern in young adolescents: A

30-month controlled evaluation of a media literacy program. *Journal of the American*

*Academy of Child and Adolescent Psychiatry*, 48(6), 652-661.

<https://doi.org/10.1097/CHI.0b013e3181a1f559>

Wright, E. J., White, K. M., & Obst, P. L. (2018). Facebook false self-presentation behaviors and

negative mental health. *Cyberpsychology, Behavior and Social Networking*, 21(1), 40-49.

<https://doi.org/10.1089/cyber.2016.0647>

Yager, Z., Diedrichs, P. C., Ricciardelli, L. A., & Halliwell, E. (2013). What works in secondary schools?

A systematic review of classroom-based body image programs. *Body Image*, 10(3), 271-281.

<https://doi.org/10.1016/j.bodyim.2013.04.001>

Yau, J. C., & Reich, S. M. (2017). Are the qualities of adolescents' offline friendships present in digital

interactions? *Adolescent Research Review*, 3(3), 339-355. [https://doi.org/10.1007/s40894-](https://doi.org/10.1007/s40894-017-0059-y)

[017-0059-y](https://doi.org/10.1007/s40894-017-0059-y)

Yau, J. C., & Reich, S. M. (2018). "It's just a lot of work": Adolescents' self-presentation norms and

practices on Facebook and Instagram. *Journal of Research on Adolescence*, 29(1), 196-209.

<https://doi.org/10.1111/jora.12376>

Zhao, S., Grasmuck, S., & Martin, J. (2008). Identity construction on Facebook: Digital empowerment

in anchored relationships. *Computers in Human Behavior*, 24(5), 1816-1836.

<https://doi.org/10.1016/j.chb.2008.02.012>

## Appendices

### Appendix A: La Trobe University Human Ethics Approval



## LA TROBE RESEARCH

**To:** Mathew Marques

**From:** Human Research Ethics Committee (HREC)

**Date:** 8/01/2021

**Subject:** Notification of Ethics Review Outcome - Approved

**Ethics Application Number:** [HEC18424](#)

**Ethics Application Title:** Investigating the impact of social media on adolescents' body image and wellbeing.

**Approval Period:** 26/10/2018 to 26/10/2023

**Approved Documents:**

HEC18424 Modification request dated 15.07.2020 - Approved

I am pleased to advise you that the Human Research Ethics Committee (HREC) has granted ethical approval of the project listed above, subject to the following conditions being met:

**Conditions of Approval specific to this project**

None.

**Conditions of Approval – All projects**

- **The approval of this Application will be ratified by** the full Committee at its next available meeting.
- **Approval is limited** to the research project and associated documents as outlined in this ethics approval letter.
- **Governance:** Approval is contingent on any governance requirements relevant to the project that need to be met prior to the project starting. This may include but is not limited to any legal agreements, IBC/AEC approvals, research permits/licences, TGA

and Insurance.

- **The Principal Investigator** will immediately report anything that might warrant review of ethical approval of the project.
- **Modifications to an Approved Project:** Any changes to the project application, project description/protocol and/or other project documents must be submitted for review and approval in accordance with the instructions outlined on the Human Research Ethics website. Modifications can be implemented once written approval has been received.
- **Annual Report:** If your project continues for more than 12 months, you are required to submit an Annual Report by the due date outlined in the annual report reminder. The form is available on the Human Research Ethics website. Failure to submit a Progress Report will mean approval for this project will be suspended and no further research activities can be carried out until the annual report is received.
- **Final Report or Withdrawal of Project:** At the conclusion of your project you must submit a final report within 3 months via the process outlined on the Human Research Ethics website.
- **Safety Reporting:** If a significant safety issue arises from the conduct of the project, it must be reported via the process outlined on the Human Research Ethics website.
- **Monitoring:** All projects are subject to monitoring at any time and will be monitored in accordance with the University's Research Monitoring Policy.

The Human Research Ethics Committee (HREC) Terms of Reference, membership and standard forms are available from <http://www.latrobe.edu.au/researchers/research-office/ethics/human-ethics>.

Should you require any further information, please contact the Human Research Ethics Team on:  
T: +61 3 9479 1443 | E: [humanethics@latrobe.edu.au](mailto:humanethics@latrobe.edu.au).

Kind regards,

Chair, Human Research Ethics Committee (HREC)

## Appendix B: Catholic Education Melbourne Ethics Approval

Research Application 0839: Outcome (Approved) - Message (Plain Text)

File Message Tell me what you want to do...

Ignore Delete Reply Reply All Forward More Meeting SoMe Team Email Reply & Delete To Manager Done Create New Rules OneNote Move Actions Mark Unread Categorize Follow Up Translate Find Related Select Zoom Zoom

Wed 23/01/2019 12:06 PM

research@cem.edu.au

**Research Application 0839: Outcome (Approved)**

To Hannah Jarman; Sian Mdean; Susan Paxton

Cc research@cem.edu.au

*i* You forwarded this message on 23/01/2019 12:07 PM.

Dear Asst/Prof Paxton

Congratulations, your research application, 0839 - 'Investigating the impact of social media on adolescents' body image and wellbeing', has been approved by Catholic Education Melbourne.

I am pleased to advise that your research application is approved in principle subject to the eight standard conditions outlined below.

1. The decision as to whether or not research can proceed in a school rests with the school's principal, so you will need to obtain their approval directly before commencing any research activity. You should provide the principal with an outline of your research proposal and indicate what will be asked of the school. A copy of this email of approval, and a copy of notification of approval from your organisation's/university's Ethics Committee, should also be provided.
2. A copy of the approval notification from your institution's Ethics Committee must be forwarded to this Office (if not already provided), together with any modifications to your research protocol requested by the Committee. You may not start any research in Catholic schools until this step has been completed.
3. A Working with Children (WWC) check – or registration with the Victorian Institute of Teaching (VIT) – is necessary for all researchers visiting schools. Appropriate documentation must be shown to the principal before starting the research in the school.
4. No student is to participate in the research study unless s/he is willing to do so and consent is given by a parent/guardian.
5. Any substantial modifications to the research proposal, or additional research involving use of the data collected, will require a further research application to be submitted to Catholic Education Melbourne.
6. Data relating to individuals or the school are to remain confidential and protected in line with the Privacy Act 1988 (Commonwealth).
7. Since participating schools have an interest in research findings, you should consider ways in which the results of the study could be made available for the benefit of the school community.
8. At the conclusion of the study, a copy or summary of the research findings should be forwarded to Catholic Education Melbourne. It would be appreciated if you could submit this via email to [research@cem.edu.au](mailto:research@cem.edu.au).

I wish you well with your research study. The information provided in your proposal is now closed for further changes. If you have any queries concerning this matter or need to make amendments in the future, please contact [research@cem.edu.au](mailto:research@cem.edu.au).

Yours sincerely

Ms Anna Rados  
Acting Assistant Director  
Enterprise Services  
Catholic Education Melbourne

## Appendix C: Department of Education and Training Ethics Approval



Department of  
Education & Training

2 Treasury Place  
East Melbourne Victoria 3002  
Telephone: 03 9637 2000  
Fax: 03 9637 1000

2018\_003882

Miss Hannah Jarman  
Department of Psychology and Counselling  
Latrobe University  
Embodied Research Centre  
Room 456, George Singer Building  
BUNDOORA 3086

Dear Miss Jarman

Thank you for your application of 7 November 2018, in which you request permission to conduct research in Victorian government schools titled *Investigating the impact of social media on adolescents' body image and wellbeing*.

I am pleased to advise that, on the basis of the information you have provided, your research proposal is approved in principle subject to the conditions detailed below.

1. Department approved research projects currently undergoing a Human Research Ethics Committee (HREC) review are required to provide the Department with evidence of the HREC approval once complete.
2. The research is conducted in accordance with the final documentation you provided to the Department of Education and Training.
3. Separate approval for the research needs to be sought from school principals. This is to be supported by the Department of Education and Training approved documentation and, if applicable, the letter of approval from a relevant and formally constituted HREC.
4. The project is commenced within 12 months of this approval letter and any extensions or variations to your study, including those requested by an ethics committee, must be submitted to the Department of Education and Training for its consideration before you proceed.
5. As a matter of courtesy, you advise the relevant Regional Director of the schools that you intend to approach. An outline of your research and a copy of this letter should be provided to the Regional Director or governing body.
6. You acknowledge the support of the Department of Education Training in any publications arising from the research.

Your details will be dealt with in accordance with the Public Records Act 1973 and the Privacy and Data Protection Act 2014. Should you have any queries or wish to gain access to your personal information held by this department please contact our Privacy Officer at the above address.



7. The Research Agreement conditions, which include the reporting requirements at the conclusion of your study, are upheld. A reminder will be sent for reports not submitted by the study's indicative completion date.

I wish you well with your research. Should you have further questions on this matter, please contact Youla Michaels, Project Support Officer, Insights and Evidence Branch, by telephone on (03) 7022 0306 or by email at [michaels.youla.v@edumail.vic.gov.au](mailto:michaels.youla.v@edumail.vic.gov.au).

Yours sincerely \_\_\_\_\_

Zoran Endekov  
Senior Research Officer  
Insights and Evidence Branch

 01/2019



## **Appendix D: School Principal Information Statement**

Dear Mr Blair,

I am writing to invite your school to participate in a postgraduate research project being conducted by researchers at La Trobe University. The research is internally funded through the Department of Psychology and Counselling and investigates the impact of social media on adolescents' body image and wellbeing.

### **Purpose of the research**

Although adolescents are engaged with social media at high levels, little is known about the impact of use on their wellbeing. Therefore, the aim of this research is to understand how and why adolescents are using social media. Moreover, it aims to understand the impact that social media use is having on how adolescents feel about themselves, specifically their body image and wellbeing. This research is essential to inform future advice and policies for social media use in young people.

### **What does the research involve?**

Year 7, 8, 9 and 10 students who can read and write in English would be invited to complete an anonymous, online survey. It is entirely up to students and parents/guardians to decide to participate or not. Parents will be informed about the research and will need to notify the research team if they would like to remove their child from the research. The survey will take approximately 25-35 minutes to complete and questions will be focused on social media, body image and wellbeing. We will ask students to complete this survey on three separate occasions (baseline, 6-month follow-up, and 12-month follow-up). All data collections will be facilitated by a trained researcher, with a valid working with children check. There will be minimal demands on your staff time.

### **Further Information:**

Students will be reminded that the research is entirely voluntary, and they are free to withdraw without any consequence. Students will be asked to provide their student number in order to match up their questionnaires over time. However, students will be reminded that the research team will not obtain a list of student names and codes. Once all data has been collected and matched, the student numbers will be removed from the data set and destroyed. To track adolescents' development, students will be asked to report their height and weight at the end of the survey. Students will be reminded that they are free to either leave this section blank (with no penalty), provide an estimate of their measurements, or use the apparatus provided (stadiometer and scales) to take their own measurements. Teachers, researchers, and peers will not see the measurements taken or responses to the survey, only participants will see these.

### **What are the risks?**

We do not expect any risks from taking part. However, as some personal questions will be asked, it is possible that some students may feel uncomfortable. Students will be reminded that they do not have to answer any questions that make them feel uncomfortable. If any concerns are raised for students by being involved in the research, students will be provided with details about who to contact or what resources they can access outside the research team such as a teacher they feel comfortable talking to or their own GP. A list of other support services will also be provided.





### What are the benefits?

If your school chooses to take part, your school, students, and community will receive the following at study completion:

1. Your school will be provided with evidence-based social media literacy materials. These include 4 lesson plans and PowerPoint slides which aim to improve adolescents' ability to evaluate and critique media content. The lessons include interactive activities which critique advertising and social media posts and help students understand ways they may respond to social media in a positive way. These lessons could be implemented with classes following the research.
2. Your school will also be provided with a written report of the research findings. Our findings will advance currently limited advice and guidance on social media use among adolescents. This, alongside the lesson materials, will provide your school with some of the most up-to-date research in this area.
3. Students often report that they enjoy completing online surveys.

### Information storage and reports

Students will answer online surveys via a secure, password protected program. Data will be stored in password-protected computer files under an anonymous identifier and used on a confidential basis. The data can only be accessed by the project's researchers. Data will be kept for 5 years after completion. The research findings may be included in a thesis, published in peer-reviewed academic journals, or presented at academic conferences. But only group, not individual, results will be presented. Research findings will be made available to your school.

### Concerns and contacts

If you have any questions about this research, please feel free to contact the Project lead/PhD candidate, Miss Hannah Jarman ([h.jarman@latrobe.edu.au](mailto:h.jarman@latrobe.edu.au), 03 9479 3879). If you have any complaints or concerns that the researcher has not been able to answer to your satisfaction, you may contact the Senior Human Ethics Officer at La Trobe University (03 9479 1443, [humanethics@latrobe.edu.au](mailto:humanethics@latrobe.edu.au)).

Yours sincerely,

Hannah Jarman (MSc Health Psychology)

Investigators: Miss Hannah Jarman, Project Lead/PhD Candidate ([h.jarman@latrobe.edu.au](mailto:h.jarman@latrobe.edu.au), 03 9479 3879)  
Professor Susan Paxton, Chief Investigator ([susan.paxton@latrobe.edu.au](mailto:susan.paxton@latrobe.edu.au), 03 9479 1736)  
Dr Mathew Marques, Supervisor ([m.marques@latrobe.edu.au](mailto:m.marques@latrobe.edu.au), 03 9479 2024)  
Dr Siân McLean, Supervisor ([sian.mclean@vu.edu.au](mailto:sian.mclean@vu.edu.au))  
Dr Amy Slater, Supervisor ([amy.slater@uwe.ac.uk](mailto:amy.slater@uwe.ac.uk))



Please note the support services handout will also include the following contact details for students and parents/guardians:

Although unlikely, if taking part in this survey raises any concerns or distress, we recommend you talk to somebody. You can contact one of the research team (see below) or the following organisations for support:

- **Kids Help Line** (1800 55 1800 - free call)
- **Headspace** - offers phone (1800 650 890) and online support ([www.headspace.org.au](http://www.headspace.org.au)) for young people aged 12 to 25.
- **Youth beyondblue** - for information and support about depression and anxiety for young people visit [www.youthbeyondblue.com](http://www.youthbeyondblue.com) or ring their information line (1300 22 4636)

You can also discuss any concerns with a teacher that you feel comfortable talking to or your local GP.

#### **La Trobe Staff Contact**

Please feel free to contact Professor Susan Paxton – a clinical psychologist who specialising in body image and eating disorders – with any concerns or issues raised during the survey.

Professor Susan Paxton  
School of Psychology and Public Health  
La Trobe University  
Email: [susan.paxton@latrobe.edu.au](mailto:susan.paxton@latrobe.edu.au)  
Phone: 03 9479 1736

We also recommend the following services for information about adolescent mental health, body image and eating disorders for families:

**Beyondblue** <https://healthyfamilies.beyondblue.org.au/>

Healthy families resource which provides information and tools to support the young people in your life

**ReachOut Parents** <https://parents.au.reachout.com/>

Helping parents support teens through everyday issues they may face

**Butterfly Foundation** <https://thebutterflyfoundation.org.au/our-services/>

Services and programs for eating disorders

**Eating Disorders Foundation of Victoria** <https://www.eatingdisorders.org.au/our-services>

Help lines, support groups and referral database for eating disorder treatment.

**Feed Your Instinct** <http://www.feedyourinstinct.com.au/>

Early intervention resource for parents to identify young people who may be at risk of developing an eating disorder. Provides education about eating disorders and their warning signs and guidance on seeking the right support.

**Appendix E: School Principal Consent Form**

"I have read and understood the proposed research, and any questions I have asked have been answered to my satisfaction.

If I agree to provide consent for my school and students to take part in the research, I understand that:

- I consent to my school and students taking part in the research described to me in the information sheet.
- I agree that research data provided by students with my permission during the project may be included in a thesis, presented at conferences and published in journals on the condition that neither names nor any other identifying information is used."

**Please tick the appropriate box:**

- ☐ I agree for my school and students to take part in the research
- ☐ I do not agree for my school and students agree to take part in the research

**Please enter the name of your school**

Name (block letters) .....

**Please enter your full name and signature**

Name (block letters) .....

Signature .....

**Please enter today's date (dd/mm/yy)**

Date: .....

Investigators: Miss Hannah Jarman (MSc), Project Lead/PhD Candidate ([h.jarman@latrobe.edu.au](mailto:h.jarman@latrobe.edu.au), 03 9479 3879)

Professor Susan Paxton, Chief Investigator ([susan.paxton@latrobe.edu.au](mailto:susan.paxton@latrobe.edu.au), 03 9479 1736)

Dr Mathew Marques, Supervisor ([m.marques@latrobe.edu.au](mailto:m.marques@latrobe.edu.au), 03 9479 2024)

Dr Siân McLean, Supervisor ([sian.mclean@vu.edu.au](mailto:sian.mclean@vu.edu.au))

Dr Amy Slater, Supervisor ([amy.slater@uwe.ac.uk](mailto:amy.slater@uwe.ac.uk))



## Appendix F: Parent Information Statement

### St Kilda Road Parental Information Sheet

Dear Parent/Guardian,

Highlights of this letter:

- We will be conducting research at your child's school (*'Investigating the impact of social media on body image and wellbeing'*)
- Students will be invited to complete a confidential, online survey at three time-points (with six-month intervals)
- Students will be informed that the research is completely voluntary
- If you are happy for your child to take part, then you **do not** need to do anything. Alternatively, if you would like to remove your child from the research you **must** notify the research team before **Tuesday 4<sup>th</sup> June** – see below for more details.

Your child's school has agreed to take part in this research project being conducted by researchers at La Trobe University. The research is internally funded through the Department of Psychology and Counselling and investigates the impact of social media on adolescents' body image and wellbeing. Thank you for taking the time to read this information sheet.

#### What is the study about?

We are interested in understanding the impact that social media may have on how adolescents feel about themselves, specifically their body image and wellbeing. This research will inform future advice and policies for social media use in young people. Even if your child does not use social media, their involvement is helpful for us to compare those who do and do not use social media.

#### Does my child have to participate?

This research is voluntary. We ask that you discuss the study with your child when deciding if you want your child to take part. Students will be informed that this research is entirely voluntary, and they are free to decline or withdraw from the research, without any consequence.

#### Who is being asked to participate and what will my child be asked to do?

Your child's school has agreed to take part and is making class time available. All Year 7, 8 and 9 students in the school who can read and write in English are invited to complete a confidential, online survey. The survey will take approximately 25-35 minutes. Students will be asked to complete the survey on three different occasions, each 6-months apart. To track development, students will be asked to report their height and weight at the end of the survey. This is entirely voluntary and students will be reminded that they are free to either leave this section blank (with no penalty), provide an estimate of their measurements, or use the apparatus provided (stadiometer and scales) to take their own measurements. Students will also be reminded that their survey responses will not, and cannot, be seen by their teachers, parents, or peers.



### Survey items:

The survey will contain questions around social media use, body image, and wellbeing. For example, the main questions focus on:

- How and why adolescents are using social media (e.g., *"Social media is part of my everyday activity"* and *"I use social media to keep in touch with friends and family"*)
- How adolescents feel about their appearance (e.g., *"I feel good about my body"*, *"How satisfied are you with your face?"*, *"My looks upset me"*, *"Has your shape influenced how you think about (judge) yourself as a person?"*, and *"During the past month, have you lifted weights in order to gain muscle?"*)
- How adolescents feel about, and engage with, their lives more broadly (e.g., *"I am satisfied with my life"* and *"How often have worries about the way you look stopped you from trying out for a team/club"*).

If you would like to see a copy of the survey to help you decide on your child's participation, please contact the research team **before the opt-out deadline**.

### What are the risks?

We do not expect any risks from taking part. However, students will be reminded that they do not have to answer any questions that make them feel uncomfortable. Although some people may think that questions about social media and body image might trigger concerns, in over 25 years our research team has never had any report or suggestion of harm. Moreover, research suggests that there are positive effects of completing similar surveys including reductions in problematic behaviours and encouraging help seeking for existing problems. None-the-less, we appreciate this possibility and a list of support services will be provided to all students in case these may be needed (see below).

### What are the benefits?

The benefit of your child taking part is that they can contribute to important research. Moreover, students often report that they enjoy completing this type of online survey. Finally, your student's school will be provided with materials from an evidence-based, social media literacy program for use in the classroom which can be implemented by the teaching staff. A full report of the overall group findings will also be provided, including recommendations around social media use in young people.

### What will happen to information about my child?

Students will answer online surveys via a secure, password protected program. Your child will not be asked for their name anywhere in the survey. Data will be stored in password-protected computer files and used on a confidential basis. The data can only be accessed by the project's researchers. Data will be kept for 5 years after completion. The general research findings (not personal or individual responses) may be included in a thesis, published in peer-reviewed academic journals, or presented at academic conferences.

### Concerns and contacts:

If you have any questions about this research, please feel free to contact the project lead/PhD candidate, Miss Hannah Jarman ([h.jarman@latrobe.edu.au](mailto:h.jarman@latrobe.edu.au), 03 9479 3879). If you have any complaints or concerns that the researcher has not been able to answer to your satisfaction, you may contact the Senior Human Ethics Officer at La Trobe University (03 9479 1443, [humanethics@latrobe.edu.au](mailto:humanethics@latrobe.edu.au)).



### What next?

If you are happy for your child to participate, then you **do not** need to do anything. However, if you would like to exclude your child from the research you will **need to** notify the research team **before Tuesday 4<sup>th</sup> June**. To do this, you can either:

- Follow the URL link <https://bit.ly/ParentalOptOut> to remove your child
- Return the attached 'Opt-out form' to your child's school (to Ms Amy Sheehy – [Amy.Sheehy@wesleycollege.net](mailto:Amy.Sheehy@wesleycollege.net))
- Alternatively, you can contact the researcher team directly with the below contact email address and phone number.

Yours sincerely,

Hannah Jarman (MSc Health Psychology)

Project Lead/PhD Candidate

Investigators: Miss Hannah Jarman, Project Lead/PhD Candidate ([h.jarman@latrobe.edu.au](mailto:h.jarman@latrobe.edu.au), 03 9479 3879)  
Professor Susan Paxton, Chief Investigator ([susan.paxton@latrobe.edu.au](mailto:susan.paxton@latrobe.edu.au), 03 9479 1736)  
Dr Mathew Marques, Supervisor ([m.marques@latrobe.edu.au](mailto:m.marques@latrobe.edu.au), 03 9479 2024)  
Dr Siân McLean, Supervisor ([sian.mclean@vu.edu.au](mailto:sian.mclean@vu.edu.au))  
Dr Amy Slater, Supervisor ([amy.slater@uwe.ac.uk](mailto:amy.slater@uwe.ac.uk))



Please note the support services handout will also include the following contact details for students:

Although unlikely, if taking part in this survey raises any concerns or distress, we recommend you talk to somebody. You can contact one of the research team (see below) or the following organisations for support:

**Kids Help Line** (1800 55 1800 - free call)

**Headspace** - offers phone (1800 650 890) and online support ([www.headspace.org.au](http://www.headspace.org.au)) for young people aged 12 to 25.

**Youth beyondblue** - for information and support about depression and anxiety for young people visit [www.youthbeyondblue.com](http://www.youthbeyondblue.com) or ring their information line (1300 22 4636)

You can also discuss any concerns with a teacher that you feel comfortable talking to or your local GP.

#### **La Trobe Staff Contact**

Please feel free to contact Professor Susan Paxton – a clinical psychologist who specialising in body image and eating disorders – with any concerns or issues raised during the survey.

Professor Susan Paxton  
School of Psychology and Public Health  
La Trobe University  
Email: [susan.paxton@latrobe.edu.au](mailto:susan.paxton@latrobe.edu.au)  
Phone: 03 9479 1736

We also recommend the following services for information about adolescent mental health, body image and eating disorders for families:

**Beyondblue** <https://healthyfamilies.beyondblue.org.au/>

Healthy families resource which provides information and tools to support the young people in your life

**ReachOut Parents** <https://parents.au.reachout.com/>

Helping parents support teens through everyday issues they may face

**Butterfly Foundation** <https://thebutterflyfoundation.org.au/our-services/>

Services and programs for eating disorders

**Eating Disorders Foundation of Victoria** <https://www.eatingdisorders.org.au/our-services>

Help lines, support groups and referral database for eating disorder treatment.

**Feed Your Instinct** <http://www.feedyourinstinct.com.au/>

Early intervention resource for parents to identify young people who may be at risk of developing an eating disorder. Provides education about eating disorders and their warning signs and guidance on seeking the right support.



## Appendix G: Parent Consent Form

### PARENTAL OPT-OUT FORM

"I (the parent/guardian of the participant) **do not** give consent for my child \_\_\_\_\_  
(child's name) to complete surveys for the proposed research.

Student's School and Campus: .....

Student form/class name: .....

Name of Parent/Guardian (this will act as your electronic signature):

.....

Please enter today's date (dd/mm/yy)

Date: .....

To help the research team improve school-based research, it would be extremely helpful to understand the reasons why parents may wish to remove their child from research of this nature. If you are happy to share your reasons, please use the space provided below:

Thank you

Miss Hannah Jarman, Project Lead/PhD Candidate ([h.jarman@latrobe.edu.au](mailto:h.jarman@latrobe.edu.au), 03 9479 3879)

Professor Susan Paxton, Chief Investigator ([susan.paxton@latrobe.edu.au](mailto:susan.paxton@latrobe.edu.au), 03 9479 1736)

Dr Mathew Marques, Supervisor ([m.marques@latrobe.edu.au](mailto:m.marques@latrobe.edu.au), 03 9479 2024)

Dr Siân McLean, Supervisor ([sian.mclean@vu.edu.au](mailto:sian.mclean@vu.edu.au))

Dr Amy Slater, Supervisor ([amy.slater@uwe.ac.uk](mailto:amy.slater@uwe.ac.uk))





## **Appendix H: Participant Information Statement**

### **Participant Information Sheet**

#### **What is this study about?**

You are invited to take part in a study which your parents have been told about. This research looks at how and why young people use social media and the way it impacts how they feel. The research is funded through the Department of Psychology and Counselling at La Trobe University.

#### **How will the research be done and what will I have to do?**

If you agree to take part, you will be asked to fill out a 25-35 minute online survey during class that asks questions about social media and how you feel about yourself, including your body image. We will also ask you to complete the survey in 6- and 12-months so we can see how your thoughts and feelings may change or stay the same over time

The survey is voluntary and you can answer as many or as few questions as you like. At the end of the survey, you will be asked your height and weight. You can either leave this blank (with no consequence), provide an estimate, or use the equipment (stadiometer for height and scales for weight) to take your own measurements. It is important to remember that teachers, parents, and classmates will not, and cannot, see your responses to the survey - only you will. You are free to stop the research, without consequence, either now or up to one month after by letting your teacher/the researcher know. After this date we may have used the information.

#### **What will happen to information about me?**

We will ask you to use your student number so we can match up each survey you do, rather than use your name. We won't have a list of your student numbers next to your names and your teachers, parents, and peers will not see your responses, so the survey is confidential. All the information will be stored in password-protected computer files. The findings may be included in a thesis, published in journals, or presented at conferences. If you have questions or want to withdraw your data, please contact Hannah Jarman, the project lead/PhD candidate ([h.jarman@latrobe.edu.au](mailto:h.jarman@latrobe.edu.au), 03 9479 3879).

#### **What are the benefits?**

Students often enjoy completing these types of online surveys. It can also be interesting to take part in, and help with, research.

#### **What are the risks?**

Although unlikely, if completing the survey brings up any concerns or distress, we suggest you talk to somebody.

You can contact one of the research team (see below) or the following organisations for support:

- **Kids Help Line** (1800 55 1800 - free call)



- **Headspace** - offers phone (1800 650 890) and online support ([www.headspace.org.au](http://www.headspace.org.au)) for young people aged 12 to 25.
- **Youth beyondblue** - for information and support about depression and anxiety for young people visit [www.youthbeyondblue.com](http://www.youthbeyondblue.com) or ring their information line (1300 22 4636)

You can also discuss any concerns with a teacher that you feel comfortable talking to or your local GP.

#### **La Trobe Staff Contact**

Please feel free to contact Professor Susan Paxton – a clinical psychologist specialising in body image and eating disorders – with any concerns or issues that may come up during the survey.

Professor Susan Paxton  
School of Psychology and Public Health  
La Trobe University  
Email: [susan.paxton@latrobe.edu.au](mailto:susan.paxton@latrobe.edu.au)  
Phone: 03 9479 1736

#### **SOURCES OF SUPPORT**

##### **Sources of support**

Although unlikely, if taking part in this survey raises any concerns or distress, we recommend you talk to somebody. You can contact one of the research team (see below) or the following organisations for support:

- **Kids Help Line** (1800 55 1800 - free call)
- **Headspace** - offers phone (1800 650 890) and online support ([www.headspace.org.au](http://www.headspace.org.au)) for young people aged 12 to 25.
- **Youth beyondblue** - for information and support about depression and anxiety for young people visit [www.youthbeyondblue.com](http://www.youthbeyondblue.com) or ring their information line (1300 22 4636)

You can also discuss any concerns with a teacher that you feel comfortable talking to or your local GP.

#### **La Trobe Staff Contact**

Please feel free to contact Professor Susan Paxton – a clinical psychologist who specialising in body image and eating disorders – with any concerns or issues raised during the survey.

Professor Susan Paxton  
School of Psychology and Public Health  
La Trobe University  
Email: [susan.paxton@latrobe.edu.au](mailto:susan.paxton@latrobe.edu.au)  
Phone: 03 9479 1736

We also recommend the following services for information about adolescent mental health, body image and eating disorders for families:



**Beyondblue** <https://healthyfamilies.beyondblue.org.au/>

Healthy families' resource which provides information and tools to support the young people in your life

**ReachOut Parents** <https://parents.au.reachout.com/>

Helping parents support teens through everyday issues they may face

**Butterfly Foundation** <https://thebutterflyfoundation.org.au/our-services/>

Services and programs for eating disorders

**Eating Disorders Foundation of Victoria** <https://www.eatingdisorders.org.au/our-services>

Help lines, support groups and referral database for eating disorder treatment.

**Feed Your Instinct** <http://www.feedyourinstinct.com.au/>

Early intervention resource for parents to identify young people who may be at risk of developing an eating disorder. Provides education about eating disorders and their warning signs and guidance on seeking the right support.



## Appendix I: Participant Consent Form

Please tick box if you agree

1. I have read the **Participant Information Sheet**.  
I understand it and I have been able to ask questions. ☐
2. I know that it's OK to stop taking part in the study if I want to,  
without giving a reason. ☐
3. I know that all the information I give is private and confidential  
and it will only be used for research. ☐
4. I agree to take part in this study. ☐

If you are happy to take part, you must tick ALL of the boxes above. Once you have done this, you may start the questionnaire.

## Appendix J: Researcher Protocol for Data Collection

### PROTOCOL FOR RESEARCHERS

#### You have:

- Sources of support
- A white board marker

#### Prior to starting:

- Introduce yourself to the teacher and briefly explain:
  - We are researchers from LTU and will be asking students to complete an online questionnaire which should take approximately 25-30 minutes to complete.
  - We require students to complete the questionnaire in **silence (exam conditions)**.
  - Although likely unnecessary, provide the teacher with a 'sources of support' document.
- Make sure that students are spread out enough that they cannot see their peer's answers. Ask for the teacher's help with ensuring that students are seated with sufficient distance from one another.
- \_ have been **opted out** and should therefore NOT be participating – these students should go to the library.

#### Introduce yourself and explain the questionnaire to the students:

*Hi, my name is ..... I am from La Trobe University and we are here because we are really interested in finding out more about how young people, like yourselves, feel about some important issues in your life; for example, social media. We would like you to help us by filling in an online questionnaire today, another in 6-months' time, and a final questionnaire in 12-months' time. This is because we are interested in how your thoughts and feelings may change or stay the same over time. Each questionnaire will take approximately 25-30 minutes to complete. Your help with this study is really important and we appreciate that you are able to take part in the study.*

*Before we start, there are a few important things to explain (ensure students are silent).*

1. This is **NOT A TEST** so there are no right or wrong answers, but the questionnaire needs to be **COMPLETED UNDER EXAM CONDITIONS**. This means working silently and not talking or sharing your answers with anyone around you.
2. **ALL YOUR ANSWERS ARE COMPLETELY CONFIDENTIAL AND PRIVATE**. Your teachers, parents, and friends, won't see your answers so please answer honestly. Be respectful of those around you by not sharing or looking at your neighbours' answers.
3. You have the **WHOLE LESSON** to complete the questionnaire, so take your time and make sure you read each question carefully as some questions can sound similar.
4. The questionnaire will ask for your **STUDENT NUMBER**. This is so we can match the questionnaire you do now with the other one's you do over the next year, without having to record your name on the questionnaire. The researchers **will not** have a list of names against student numbers, and your teachers or peers won't see your responses. This means that the only information we will have is a random code which means nothing to us. We only ask for this so we can match your questionnaires up without using your names.
5. At the end of the questionnaire, you will be asked to **ENTER YOUR HEIGHT AND WEIGHT**. You can either leave this blank, write in an estimate, **OR** take your own height and weight measurements at the end in the classroom space provided (specify where this is for your class, e.g., back of the class, outside). Answers must either **BOTH** be left blank, **BOTH** estimated, or **BOTH** measured.
6. If you **DON'T FEEL COMFORTABLE ANSWERING A PARTICULAR QUESTION, JUST SKIP IT** and go on to the next question. It's up to you how much you share. **IF YOU FEEL UNCOMFORTABLE ABOUT ANY OF THE QUESTIONS** and want to speak to me, put your hand up and I will come over to you.

7. **RAISE YOUR HAND IF YOU HAVE ANY QUESTIONS OR CONCERNS** while you complete the questionnaire and someone will come and help you.

Before you start, ensure that any students whose parents have opted them out know that they **CANNOT COMPLETE THE QUESTIONNAIRE!** I will let you know of any students who've been opted-out prior to the data collection.

**Write the following URL link on the board: [bit.ly/ivanhoegrammar](https://bit.ly/ivanhoegrammar)**

1. Ensure all students are at the password screen before giving them the password.
2. The password is "media" - also write this on the board.
3. *The first page of the questionnaire has the information that I have just summarised for you, so if you don't want to read it all again, that's okay, you just need to tick each statement box at the bottom of the page to indicate that you are happy to participate.* Students will only be able to access the questionnaire once they have selected all four boxes.
4. Students can now complete the questionnaire at their own pace.

**During questionnaire administration:**

- Circulate the room and be prepared to explain to students what certain words mean, but do not help with answers. If you notice the same questions coming up multiple times, make a note and let Hannah know after the data collection (to help with refining future questionnaires).
- If necessary, approach any students who are talking and ask if they understand or if they have a question. Remind students they should complete the questionnaire in silence and should not discuss or share their answers with anyone.
- If necessary, you can ask teachers who are present to help enforce this.
- If a student's link freezes, get them to: (1) refresh the tab, (2) close and re-open the tab, (3) restart their laptop, (4) give them a paper copy of the survey (they will have to start at the beginning of the survey as it doesn't look like Qualtrics is saving their responses when it freezes. However, if a student has trouble after they have basically finished the survey, ask them to complete the student number page [page 3; student number, DOB, year] then continue on from where they got to)
- Please only send students who want their measurements taken **ONE AT A TIME**. This is really important so we don't have a large cue of students. If supervising height and weight measurements, ensure you are sensitive—measurements should be taken in cm (height) and kg (weight) by the student themselves. Please also ensure that students are not viewing other student's measurements – use of the apparatus must be taken in turns.

Once all students have finished the questionnaire, thank them for their time!

### Appendix K: Participant Survey

We will be using your student number to match each survey you do over time. Please note, your student number will **never** be matched with your name and no teachers, parents, or other students will see your survey responses.

Please enter your student number:

What is your date of birth? (dd/mm/yyyy)?

Day

Month

Year




What school do you go to?

Please circle which year level are you in?

Year 7

Year 8

Year 9

Year 10

What is your class name/form?

Please circle your gender:

Boy

Girl

I would prefer  
not to  
respond

Not listed/Other,  
please specify:

\_\_\_\_\_

What is your age (in years)?

Please indicate what country you and your parents were born.

	Australia	Other (please specify)	I don't know
What is your country of birth?	<input type="checkbox"/>	_____	<input type="checkbox"/>
What is your mothers' country of birth?	<input type="checkbox"/>	_____	<input type="checkbox"/>
What is your father's country of birth?	<input type="checkbox"/>	_____	<input type="checkbox"/>

What is your home postcode (if you do not know this, please feel free to leave it blank)?

We would like to ask you some questions about **social media** and particularly your use of social networking services. Social networking refers to the use of online services to create and share/communicate a profile to others.

### Question 1

Do you own a social media profile/account (e.g., Snapchat,

Instagram, Facebook, YouTube accounts etc)? Please circle one: **Yes**

**No**

**IF YOU ANSWERED YES TO USING SOCIAL MEDIA, PLEASE CONTINUE WITH THE QUESTIONS BELOW.**

**IF YOU ANSWERED NO TO USING SOCIAL MEDIA, PLEASE SKIP TO PAGE 11.**

(For online surveys, highlighted text was replaced with Qualtrics display logic)

### Question 2

This questionnaire will ask you about your social media use. Please indicate how often you use the following social networking services. For each service that you use please indicate how much time you spend on that service PER DAY. Please answer thinking about a TYPICAL day for you.

e.g., If you spend approximately half an hour on Snapchat a day, you enter 30. If you spent approximately 2 hours on Snapchat a day, you enter 120. If you never go on Snapchat, you enter 0.

1 hour = 60 mins

2 hours = 120 mins

3 hours = 180 mins

4 hours = 240 mins

5 hours = 300 mins

	I use this service...					Approx. time spent PER DAY in <u>MINUTES</u>
	Never	Rarely	Sometimes	Often	Always	(MINUTES)
Snapchat	1	2	3	4	5	_____
Instagram	1	2	3	4	5	_____
Facebook	1	2	3	4	5	_____
YouTube	1	2	3	4	5	_____
Other: _____ (feel free to add another social media site)	1	2	3	4	5	_____
Other: _____	1	2	3	4	5	_____
Other: _____	1	2	3	4	5	_____



### Question 3

Please indicate how much you agree with the following statements:

	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Neither agree nor disagree</b>	<b>Agree</b>	<b>Strongly Agree</b>
Social media is part of my everyday activity	1	2	3	4	5
I am proud to tell people I'm on social media	1	2	3	4	5
Social media has become part of my daily routine	1	2	3	4	5
I feel out of touch when I haven't logged onto social media for a while	1	2	3	4	5
I feel I am part of the social media community	1	2	3	4	5
I would be sorry if social media shut down	1	2	3	4	5

### Question 4

Please indicate how often you use social media in the following ways:

	<b>Never/hardly ever</b>	<b>Once a week</b>	<b>A few times a week</b>	<b>Once a day</b>	<b>2-3 times a day</b>	<b>4-6 times a day</b>	<b>More than 7 times a day</b>
How often do you look at content/things posted by others on social media?	1	2	3	4	5	6	7
How often do you post content/things on social media?	1	2	3	4	5	6	7
How often do you 'like' content/things posted by others on social media?	1	2	3	4	5	6	7
How often do you look at photos posted by others on social media?	1	2	3	4	5	6	7
How often do you post photos on social media?	1	2	3	4	5	6	7
How often do you 'like' on photos posted by others on social media?	1	2	3	4	5	6	7

## Question 5

How often do you do the following on social media:

Please read the options carefully.	<b>Almost never or never</b>	<b>A few times a year</b>	<b>Every few months</b>	<b>On average, about once a month</b>	<b>More often than once a month</b>
Create an event	1	2	3	4	5
Create a group	1	2	3	4	5
Create/share a Quiz	1	2	3	4	5
Create a photo album featuring artwork/photography (photos of subjects other than yourself, friends, or family)	1	2	3	4	5
Join groups	1	2	3	4	5
Update your profile interests (books, movies, TV, activities)	1	2	3	4	5
Create a photo album with photos of yourself and friends/family	1	2	3	4	5
Update your profile photo	1	2	3	4	5

Please note that the following options have now changed:	<b>Almost never or never</b>	<b>Rarely</b>	<b>Once in a while</b>	<b>Often</b>	<b>Nearly every time I log on</b>
Use Messengers/Chats	1	2	3	4	5
Play games (Farmville, etc.)	1	2	3	4	5
Send/receive private messages	1	2	3	4	5
Post a status update	1	2	3	4	5
Post a link to a news story, video, Website, etc.	1	2	3	4	5
View friends' status updates	1	2	3	4	5
View friends' links to news stories, videos, Websites, etc.	1	2	3	4	5
Comment on friends' status updates	1	2	3	4	5
Comment on friends' links to news stories, videos, Websites, etc.	1	2	3	4	5
Post a photo	1	2	3	4	5
View friends' photos that they've added of you	1	2	3	4	5
View friends' photos of themselves	1	2	3	4	5
Comment on friends' photos	1	2	3	4	5
Tag yourself in friends' photos	1	2	3	4	5
Untag yourself in friends' photos	1	2	3	4	5

### Question 6

How often do you follow the accounts mentioned below:

	Never	Rarely	Sometimes	Often	Very often
How often do you follow health and fitness accounts (e.g., fitness bloggers, diet plans)?	1	2	3	4	5
How often do you follow celebrity accounts (e.g., models, the Kardashians, Cristiano Ronaldo, Dustin Martin)?	1	2	3	4	5
How often do you follow sports accounts (e.g., AFL, netball, skateboarding)?	1	2	3	4	5
How often do you follow gaming accounts (e.g., Fortnite, Ninja)?	1	2	3	4	5

### Question 7

How frequently do you do the following to your pictures before posting them on social media:

	Never	Rarely	Sometimes	Often	Always
a) cropping or cutting parts of yourself out of pictures	1	2	3	4	5
b) using filters	1	2	3	4	5
c) using Photoshop or other picture editing apps or software	1	2	3	4	5

## Question 8

Please indicate how much you agree with each option by marking the appropriate response:

"I use social media..."	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Neither agree nor disagree</b>	<b>Agree</b>	<b>Strongly agree</b>
to keep in touch with friends and family	1	2	3	4	5
to communicate with distanced friends	1	2	3	4	5
so I can forget about school, work, or other things	1	2	3	4	5
so I can get away from the rest of my family or others	1	2	3	4	5
so I can get away from what I'm doing	1	2	3	4	5
to provide information	1	2	3	4	5
to present information about a special interest of mine	1	2	3	4	5
to share information that may be of use or interest to others	1	2	3	4	5
to provide personal information about myself	1	2	3	4	5
to tell others a little bit about myself	1	2	3	4	5
because I just like to play around on	1	2	3	4	5
because it is a habit, just something I do	1	2	3	4	5
when I have nothing better to do	1	2	3	4	5
because it passes the time away, particularly when I'm bored	1	2	3	4	5
because it gives me something to do to occupy my time	1	2	3	4	5

## Question 9

"I use social media..."	Never	Rarely	Sometimes	Often	Always
because I can edit my profile to look good	1	2	3	4	5
because I can make sure people see me looking my best	1	2	3	4	5
to know that other people like me	1	2	3	4	5
to impress people	1	2	3	4	5
because I feel relevant when people respond to my posts	1	2	3	4	5
to get likes	1	2	3	4	5
to see if I look as good as my friends	1	2	3	4	5
to seek reassurance about my appearance (to check that I look alright)	1	2	3	4	5
to know if my pictures look attractive	1	2	3	4	5
to compare how I look with how my friends look	1	2	3	4	5
to know whether I am as attractive as celebrities	1	2	3	4	5

## Question 10

How often do you do the following when you see content/things on social media?

	Never	Rarely	Sometimes	Often	Very often	Always
I think about the purpose behind the content/things I see on social media	1	2	3	4	5	6
I think about who created the content/things I see on social media	1	2	3	4	5	6
I think about what the people who made the social media post want me to believe	1	2	3	4	5	6
I think about the things the advertisers do on social media to get my attention	1	2	3	4	5	6
I think about whether the things that social media advertisers want me to do are good for me	1	2	3	4	5	6
I try and think about how true or false a social media advertisement is	1	2	3	4	5	6

### Question 11

Please indicate how much you agree or disagree with the following:

	<b>Completely disagree</b>	<b>Somewhat disagree</b>	<b>Neither agree nor disagree</b>	<b>Somewhat agree</b>	<b>Completely agree</b>
Normally men and women (in real life) look like models in social media ads	1	2	3	4	5
Normally men and women (in real life) are as thin as the models in social media ads	1	2	3	4	5
The models in social media advertisements look like everyday/normal people	1	2	3	4	5

### Question 12

	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Neutral</b>	<b>Agree</b>	<b>Strongly agree</b>
I think I often compare myself with others on social media	1	2	3	4	5
On social media, I often think that others are having a better life than me	1	2	3	4	5
On social media, I often think that others are doing better than me	1	2	3	4	5
On social media, I often think that I am isolated from others	1	2	3	4	5
On social media, I tend to compare myself to people I think look better than me	1	2	3	4	5
On social media, when I see a person with a great body, I tend to wonder how I 'match up' with them.	1	2	3	4	5
On social media, when I see good-looking people, I wonder how I compare to them.	1	2	3	4	5
On social media, I find myself comparing my appearance with people who are better looking than me.	1	2	3	4	5
On social media, I compare my body to people who have a better body than me.	1	2	3	4	5

**IF YOU ARE NOT ON SOCIAL MEDIA, PLEASE CONTINUE ON FROM HERE.**

**IF YOU ARE ON SOCIAL MEDIA, PLEASE SKIP THESE TWO SIDES - GO STRAIGHT TO PAGE 13  
(QUESTION 17)**

### Question 13

How often do you do the following when you see content/things in the media?

	Never	Rarely	Sometimes	Often	Very often	Always
I think about the purpose behind a message I see on TV	1	2	3	4	5	6
I think about who created the message I see on the ad	1	2	3	4	5	6
I think about what the people who made the media message want me to believe	1	2	3	4	5	6
I think about the things the advertisers do to get my attention	1	2	3	4	5	6
I think about whether the things that advertisers want me to do are good for me	1	2	3	4	5	6
I try and think about how true or false an advertisements is	1	2	3	4	5	6

### Question 14

Please indicate how much you agree or disagree with the following:

	Completely disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Completely agree
Normally men and women (in real life) look like models in ads	1	2	3	4	5
Normally men and women (in real life) are as thin as the models in ads	1	2	3	4	5
The models in advertisements look like everyday/normal people	1	2	3	4	5

## Question 15

	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Neutral</b>	<b>Agree</b>	<b>Strongly agree</b>
I think I often compare myself with others	1	2	3	4	5
I often think that others are having a better life than me	1	2	3	4	5
I often think that others are doing better than me	1	2	3	4	5
I often think that I am isolated from others	1	2	3	4	5

## Question 16

	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Neutral</b>	<b>Agree</b>	<b>Strongly agree</b>
I tend to compare myself to people I think look better than me	1	2	3	4	5
When I see a person with a great body, I tend to wonder how I 'match up' with them.	1	2	3	4	5
When I see good-looking people, I wonder how I compare to them.	1	2	3	4	5
I find myself comparing my appearance with people who are better looking than me.	1	2	3	4	5
I compare my body to people who have a better body than me.	1	2	3	4	5



**EVERYONE SHOULD NOW ANSWER ALL OF THESE QUESTIONS:**
**Question 17**

This set of questions asks what you think of your body. Please select which response shows how often you feel this way:

	Never	Rarely	Sometimes	Often	Always
I feel good about my body	1	2	3	4	5
I respect my body	1	2	3	4	5
I feel that my body has at least some good qualities	1	2	3	4	5
I take a positive attitude towards my body	1	2	3	4	5
I pay attention to what my body needs	1	2	3	4	5
I feel love for my body	1	2	3	4	5
I appreciate the different and unique things about my body	1	2	3	4	5
You can tell I feel good about my body by the way I behave	1	2	3	4	5
I am comfortable in my body	1	2	3	4	5
I feel like I am beautiful even if I am different from pictures and videos of attractive people (e.g. models/actresses/actors).	1	2	3	4	5

**Question 18**

How happy are you with each of your features listed below?

	Very dissatisfied	Mostly dissatisfied	Neither dissatisfied nor satisfied	Mostly satisfied	Very satisfied
Body shape	1	2	3	4	5
Waist	1	2	3	4	5
Hips	1	2	3	4	5
Thighs	1	2	3	4	5
Stomach	1	2	3	4	5
Face	1	2	3	4	5
Body build	1	2	3	4	5
Shoulders	1	2	3	4	5
Height	1	2	3	4	5
Weight	1	2	3	4	5
Muscles	1	2	3	4	5
Chest	1	2	3	4	5
Overall body fat	1	2	3	4	5
Hair	1	2	3	4	5

## Question 19

The following questions are referring to the PAST FOUR WEEKS (28 DAYS).

Please select the appropriate responses below.

Over the past 28 days...	Not at all		Slightly	Moderately		Markedly (a lot)	
Has your <b>weight</b> influenced how you think about (judge) yourself as a person?	1	2	3	4	5	6	7
Has your <b>shape</b> influenced how you think about (judge) yourself as a person?	1	2	3	4	5	6	7

## Question 20

Please select how often each of the following statements is true for you:

	Never	Rarely	Sometimes	Often	Always
I wish I looked like someone else.	1	2	3	4	5
There are lots of things I'd change about my looks if I could.	1	2	3	4	5
I wish I looked better.	1	2	3	4	5
My looks upset me.	1	2	3	4	5
I feel ashamed of how I look.	1	2	3	4	5
I worry about the way I look.	1	2	3	4	5
I like what I see when I look in the mirror.	1	2	3	4	5
I'm looking as nice as I'd like to.	1	2	3	4	5
I'm pretty happy about the way I look.	1	2	3	4	5
I like what I look like in pictures.	1	2	3	4	5

You are **almost** at the end of the survey! Just a few more questions to go – well done :)

### Question 21

The following questions are concerned with the PAST MONTH (28 DAYS).

Please select the appropriate responses below.

During the PAST MONTH, have you done any of the following things in order to lose weight or keep from gaining weight?

- |   |     |    |
|---|-----|----|
| a. Taken diet pills or laxatives                          | Yes | No |
| b. Used a food substitute (e.g., powder or special drink) | Yes | No |
| c. Exercised a lot  | Yes | No |

During the PAST MONTH, have you done any of the following things in order to gain muscle?

- |  |     |    |
|--|-----|----|
| a. Used a protein or energy supplement (e.g., powder drink or bar) | Yes | No |
| b. Lifted weights  | Yes | No |
| c. Eaten extra food to gain bulk                                   | Yes | No |

### Question 22

Please indicate how much you agree with the statements below:

	Strongly disagree	Disagree	Slightly disagree	Neither agree not disagree	Slightly agree	Agree	Strongly agree
I am satisfied with my life	1	2	3	4	5	6	7
In most ways my life is close to my ideal	1	2	3	4	5	6	7
The condition of my life is excellent	1	2	3	4	5	6	7
So far I have gotten the important things I want in life	1	2	3	4	5	6	7
If I could live my life over, I would change almost nothing	1	2	3	4	5	6	7

### Question 23

In the PAST 2 WEEKS, how much have worries or feeling bad about the way you look STOPPED you from doing any of the following things? (If you haven't done any of these things in the past 2 weeks, imagine how you THINK you would have felt.)

	Hasn't stopped me at all	Stopped me a little bit	Stopped me quite a bit	Stopped me all the time
Go to the beach or pool	1	2	3	4
Go to a social event, party, club	1	2	3	4
Go shopping for clothes	1	2	3	4
Do a physical activity/sport	1	2	3	4
Try out for team/club	1	2	3	4
Give an opinion or stand up for myself	1	2	3	4
Go to the doctor or school nurse	1	2	3	4
Go to school	1	2	3	4
Raise my hand in class	1	2	3	4
Spend time with friends and family	1	2	3	4

### Question 24

Please indicate how much you agree with the following statements:

Please note, fitspiration posts are Instagram posts of people who promote exercise, fitness, weight loss and/or muscle gain.

	Definitely disagree	Mostly disagree	Neither agree nor disagree	Mostly agree	Definitely agree
It is important for me to look muscular (e.g., like sports stars and fitspiration posts)	1	2	3	4	5
I think a lot about looking muscular (e.g., like sports stars and fitspiration posts)	1	2	3	4	5
I want my body to look muscular (e.g., like sports stars and fitspiration posts)	1	2	3	4	5
I would like to have a body that looks very muscular (e.g., like sports stars and fitspiration posts)	1	2	3	4	5

	<b>Definitely disagree</b>	<b>Mostly disagree</b>	<b>Neither agree nor disagree</b>	<b>Mostly agree</b>	<b>Definitely agree</b>
I want my body to look very thin (e.g., like celebrities and models)	1	2	3	4	5
I want my body to look like it has little fat (e.g., like celebrities and models)	1	2	3	4	5
I think a lot about looking thin (e.g., like celebrities and models)	1	2	3	4	5
I want my body to look very lean (e.g., like celebrities and models)	1	2	3	4	5
I think a lot about having very little body fat (e.g., like celebrities and models)	1	2	3	4	5

Before you finish, we would like to ask you some quick questions about how you felt about completing the survey:

1. I enjoyed completing this survey

**Strongly disagree**   **Disagree**   **Neither agree  
nor disagree**   **Agree**   **Strongly agree**

2. Did answering the questions in this survey make you feel differently about yourself (e.g., either better or worse)?

**Yes, I feel different now**

**No, I feel the same as I did before**

2a. If you feel different now, how did completing the survey make you feel?

**I feel much  
worse**

**I feel a little  
worse**

**I feel the same**

**I feel a little  
better**

**I feel much  
better**

Please enter your height and weight or choose if you don't want to respond. If you do not know your measurements, you are free to use the measuring apparatus. Please note, you will be the only person to see your measurements – your teachers and classmates won't see this.

What is your height (in centimetres)?

What is your weight (in kilograms)?

I would prefer not to say

☐

Did you use the measuring apparatus?

**Yes**

**No**

If this survey has made you think or feel negatively, and you wish to be contacted by a member of the research team for help and support, please tick the box below **and** write the word SUPPORT in the box. If you select this, the researchers will contact you within a week.

☐ Yes I would like some support

If you would like some support, please provide an email address or phone number for the researchers to contact you on:

**Thank you for completing this survey!**

## Appendix L: Sources of Support

### Sources of support

Although unlikely, if taking part in this survey raises any concerns or distress, we recommend you talk to somebody. You can contact one of the research team (see below) or the following organisations for support:

- **Kids Help Line** (1800 55 1800 - free call)
- **Headspace** - offers phone (1800 650 890) and online support ([www.headspace.org.au](http://www.headspace.org.au)) for young people aged 12 to 25.
- **Youth beyondblue** - for information and support about depression and anxiety for young people visit [www.youthbeyondblue.com](http://www.youthbeyondblue.com) or ring their information line (1300 22 4636)

You can also discuss any concerns with a teacher that you feel comfortable talking to or your local GP.

### La Trobe Staff Contact

Please feel free to contact Professor Susan Paxton – a clinical psychologist who specialising in body image and eating disorders – with any concerns or issues raised during the survey.

Professor Susan Paxton  
School of Psychology and Public Health  
La Trobe University  
Email: [susan.paxton@latrobe.edu.au](mailto:susan.paxton@latrobe.edu.au)  
Phone: 03 9479 1736

We also recommend the following services for information about adolescent mental health, body image and eating disorders for families:

**Beyondblue** <https://healthyfamilies.beyondblue.org.au/>

Healthy families' resource which provides information and tools to support the young people in your life

**ReachOut Parents** <https://parents.au.reachout.com/>

Helping parents support teens through everyday issues they may face

**Butterfly Foundation** <https://thebutterflyfoundation.org.au/our-services/>

Services and programs for eating disorders

**Eating Disorders Foundation of Victoria** <https://www.eatingdisorders.org.au/our-services>

Help lines, support groups and referral database for eating disorder treatment.

**Feed Your Instinct** <http://www.feedyourinstinct.com.au/>

Early intervention resource for parents to identify young people who may be at risk of developing an eating disorder. Provides education about eating disorders and their warning signs and guidance on seeking the right support.



## Appendix M: Report of Research Findings for Schools

# LA TROBE UNIVERSITY SOCIAL MEDIA SURVEY

With the introduction of handheld technology, we've seen the use of social media skyrocket. Social media is now an integral part of adolescent life and development. Despite adolescents' prevalent use of social media, researchers still have a very limited understanding of the impact of social media on adolescents.

### OUR RESEARCH

Researchers at La Trobe University were interested to explore the impact that social media use has on how adolescents think and feel about themselves, specifically their body satisfaction and well-being.







### OUR METHOD AND SAMPLE

Online questionnaires

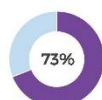
- first survey
- second survey (after 6-months)
- third survey (after 12-months)

**1,579** adolescents aged 11-17 years,  
of which **819** were from Wesley College

Of our sample, 147 students (9.3%) reported not using social media. Young people who didn't use social media had significantly higher body satisfaction and well-being than those who were using social media.

PLATFORMS USED....					
		YouTube	Instagram	Snapchat	Facebook
Use 'often' or always	Total	67.4%	70.4%	48.5%	2.5%
	Boys	77.5%	62.1%	43%	2.5%
	Girls	54.3%	75.2%	55.7%	2.4%
Average daily use (minutes)		77.3	56.7	48.8	5.2

Overall, students reported spending approximately 3 hours (171 minutes) on social media per day, which is consistent with Australian and global figures (1, 2).



agreed that social media is part of their everyday activity

Students engaged in the following social media activities daily:



'browsing' (87.2%)



'liking' (69.9%)



'posting' (10.8%)



Students were satisfied with their:	Boys	Girls
body shape	66.6%	54.6%
face	62.1%	52.4%
weight	60.1%	43.4%

Students reported they often or always:	Boys	Girls
'feel good about my body'	69%	49.2%
'respect my body'	79%	68.3%
'like what I see when I look in the mirror'	45.8%	38.1%

In summary, students generally had moderate body image and positive well-being, which is consistent with other research (3, 4).

## POORER BODY SATISFACTION AND WELL-BEING WAS RELATED TO...

More time spent on Instagram



Using social media passively  
(simply viewing/observing)



Editing pictures



## DIFFERENCES...



Girls spent significantly more time on social media and had poorer body satisfaction and well-being than boys.

Older students spent more time on social media and had poorer well-being than younger students. Interestingly, older students had poorer body satisfaction than younger students, until Year 10 when body satisfaction increased again slightly.



## WHAT ELSE MATTERS?

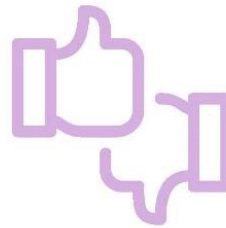
People often compare themselves to others, especially on social media. This can be particularly detrimental given that people typically present their best self on social media. In this research, students who compared themselves to others also had poorer body satisfaction and well-being.

### References:

1. Anderson, M., & Jiang, J. (2018). Teens, social media, and technology 2018. Retrieved from <https://www.pewresearch.org/internet/2018/05/31/teens-social-media-technology-2018/>
2. Mingoia, J., Hutchinson, A. D., Gleaves, D. H., & Wilson, C. (2019). The relationship between posting and photo manipulation activities on social networking sites and internalization of a tanned ideal among Australian adolescents and young adults. *Social Media + Society*, 5(1).
3. Carlisle, E., Fildes, J., Hall, S., Perrens, B., Perdriau, A., & Plummer, J. (2019). Youth survey report. Sydney, NSW. Retrieved from <https://www.missionaustralia.com.au/publications/youth-survey>
4. Proctor, C., Linley, P. A., & Maltby, J. (2017). Life Satisfaction. In *Encyclopedia of Adolescence* (pp. 1-12).

1.

Talk to your child about how they use social media and help them explore how it makes them feel. Support your child to make social media work for them – help them to reduce the things that make them feel bad (e.g., spending most of their time looking at sites that only show unrealistic appearance ideals, like celebrities, influencers, male and female models) and increase the things that make them feel good (e.g., funny cat videos, gaming).



2.

When engaging in discussions about social media with your child, try to reserve judgement. Telling your child that using social media is inherently bad is likely to result in them becoming defensive or shutting down. Instead, ensure you remain non-judgmental and respectful as this will likely encourage more honest and open discussions with your child.

3.

There is no magic number for the amount of time your child should (not) spend on social media. However, what appears especially important is how they're using it and what they're engaging in. Being mindful of how they are using social media and avoiding comparisons are two great places to start!



4.

We need to help our children to be digitally skilled and to make good judgements about what they see online. Help your child develop a critical eye – get them to consider the motivations for posts (e.g., to get likes, to make us buy things) and think about how realistic images on social media might be (people don't post when they fail an exam or are having a bad hair day – let's remember that).

5.

Remember, we are more than our appearance. Help your child explore aspects of themselves beyond how they look. Celebrate their character (e.g., being kind, hardworking, creative) or identify their values and interests.



## THANK YOU

The research team would like to thank all staff, parents and students for their continued support!

If you have any questions, please feel free to contact the project lead/PhD candidate, Ms Hannah Jarman at [h.jarman@latrobe.edu.au](mailto:h.jarman@latrobe.edu.au)