The Interrelationships between Social Networking Site Use, School Connectedness, Peer Connectedness and Social Competence, and their Influence on Early Adolescent Wellbeing: An Exploratory Study

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Thesis submitted to the University of Nottingham for the degree of Doctor of Applied Educational Psychology

May 2017

Acknowledgements

Acknowledgments

The author would like to acknowledge and thank everyone who has supported her during this research and throughout her doctorate, including:

The University of Nottingham School of Psychology tutor team, and in particular Anthea Gulliford for her dedicated mentoring, supervision, and encouragement. Thanks also go to Claire Lawrence for her support and guidance during the research process.

The Educational Psychology Service for providing the time and support with which to complete this study.

The team at the Educational Psychology Service, especially her supervisor for her guidance, support and positivity.

The Academy Trust, schools, staff and pupils who took part in this research, for their time and commitment.

The University of Nottingham Trainees, past and present, for their understanding, hilarity and support.

Her family and friends, particularly Paul, whose unfaltering belief, encouragement and support have been invaluable.

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Glossary

Glossary of Acronyms

BPS	British Psychological Society
CYP	Children and Young People
DoH	Department of Health
EP	Educational Psychologist
PHE	Public Health England
PSSM	Psychological Sense of School Membership (scale)
SCST	Social Competence Scale for Teenagers
SD	Standard Deviation
SEM	Structural Equation Modelling
SNS	Social Networking Site
SNSUI	Social Networking Site Usage Intensity (scale)
SWLS	Satisfaction With Life Scale
TEP	Trainee Educational Psychologist
UK	United Kingdom
UNICEF	United Nations International Children's Emergency Fund

Abstract

Abstract

Concerns for early adolescent mental health have increased, leading to consideration of how to optimise the psychological wellbeing of children and young people within secondary school contexts (HM Government, 2017). Parallel to this is growing recognition that online social networking sites (SNS) occupy a pivotal role in how early adolescents communicate and interact with each other (Olufadi, 2016). Understanding the implications of SNS use, and harnessing any potential to enhance wellbeing has been identified as a relevant aspect of future strategies aiming to support early adolescent development and social functioning (DoH, 2015).

This study responds to these research and governmental agendas, presenting an exploration into the potential influence of SNS use in promoting and protecting early adolescent wellbeing. Preliminary examination of the literature revealed three relevant positive wellbeing correlates: school connectedness; peer connectedness; and social competence. In order to enhance the extant research in this area, this study explored the interrelationships between SNS use, school connectedness, peer connectedness and social competence, and their influence on early adolescent wellbeing.

A non-experimental, cross-sectional correlational design employing questionnaire survey data collection was employed with young people aged 12-13 years (N = 532), drawn from four secondary schools within one Academy Trust. Data were analysed for effects of moderation and mediation using the computational tool PROCESS (Hayes, 2013).

Analyses revealed school as the primary domain for developing and maintaining all early adolescent interactions; positively contributing to wellbeing. Outside of the school context, SNS use was found to positively enhance the relationship between school connectedness and wellbeing. In contrast, engaging in SNS use was found to exert some negative influence on the relationship between

peer connectedness and wellbeing. An interpretation of these findings highlights the complexity of these relationships and the influence of degrees of friendship and perceptions of social competence in offline and online domains. Among the implications, is a potential influence of time spent online on ‘close friendships’; potentially reducing perceptions of peer connectedness. These differentiated findings, including implications of gender, are considered in relation to the needs of schools and young people. The validity and limitations of this study’s design are explored, and directions for the future research considered.

Introduction

Chapter 1 INTRODUCTION

1.1 Personal interest in the Research Area

Concern for the psychological wellbeing of children and young people (CYP) in the UK has become increasingly high profile (Ward, 2017). Government directives have continued to recognise the important role of schools in promoting and fostering wellbeing with greater attention being placed on secondary schools to develop staff awareness and whole school approaches exploring alternative ways of promoting adolescent wellbeing (HM Government, 2017). With acknowledgement that today's CYP are being raised as 'digital natives', understanding and harnessing the potential of social networking site (SNS) use to protect and improve wellbeing (Department of Health; DoH, 2015), has been identified as once such approach (YoungMinds & Ecorys, 2016).

The author's personal interest in supporting CYP's psychological wellbeing (referred to as 'wellbeing' herein) has developed from professional experiences. In a previous role as a teacher, the researcher was very aware of the importance of a positive social climate to CYP's sense of belonging and wellbeing within the school context, enabling issues related to behaviour such as bullying to be explored and addressed in a positive manner. The researcher's appreciation of the impact of CYP's social functioning on wellbeing has continued to develop in her role as a Trainee Educational Psychologist (TEP) extending beyond the school context to include exploration of CYP's SNS use.

In the first year of training, the researcher responded to requests for support from schools by undertaking a systematic review exploring the efficacy of school-based intervention programmes aimed at reducing CYP's intention to cyberbully. The findings from this research highlighted the important role of whole-school approaches in supporting CYP's social skills development and empathy, whilst challenging them to identify and reflect on the parallels between the social climate of SNS communities and the classroom.

This research experience also encouraged the researcher to move focus beyond exploring the adverse functions of social networking site use, towards understanding its potential positive influences. This shift in focus responded to Government directives and the recognised gap in the research base, as well as interest expressed by an academy of schools wanting to explore the utility of creating an online school SNS platform to help meet the wellbeing needs of their younger secondary school pupils. At a local authority level, the Educational Psychology Service where the researcher was employed as a TEP was also interested in developing their evidence-based understanding in this area; ensuring that any support offered to schools provided a holistic perspective of CYP's SNS use. Collectively these factors resulted in a decision to undertake this study.

This study presents an exploration of the potential positive influence of SNS use on early adolescent wellbeing; the structure of which is now outlined.

1.2 Structure of the Research Thesis

The research thesis is presented in five chapters, including this introduction.

Chapter 2 — The **literature review** outlines the background and provides explanation of the primary constructs which emerge and are defined as relevant to the current study, namely: early adolescent wellbeing; social networking site use; school connectedness; peer connectedness; and social competence. The study is then discussed in the context of best existing research evidence; presented within a systematic literature review. Finally, the implications of review are explored and the research question and hypotheses presented.

Chapter 3 — The **Methodology** begins by outlining the theoretical considerations pertinent to the current study. Design decisions are then explored and a rationale for the subsequent methodological approach presented. Focus is then given to the study procedure including considerations regarding reliability, validity and ethics, culminating in a summary of the data analysis methods adopted.

Chapter 4 — The **Results** chapter presents the results of the current study in reference to the research question and hypotheses being explored.

Chapter 4 — The **Discussion** chapter discusses and evaluates the key findings within the context of the research question and existing literature. The reliability and validity of the research method is then evaluated and the implications of the study explored. Finally, the chapter concludes with a summary of the overarching empirical findings of the research study.

Literature Review

Chapter 2 LITERATURE REVIEW

2.1 Aim and Structure of the Literature Review

Drawing on existing research and theories, the literature review aims to define, examine and critique the primary constructs relevant to the current study. This will begin by setting the national context for the research, providing a brief overview of the 'psychological wellbeing' and 'social networking site use' statistics for children and young people, and the importance of understanding and harnessing the positive potential of SNS use for promoting early adolescent wellbeing. Moving to an in-depth consideration of wellbeing, three emerging positive correlates of early adolescent wellbeing will be identified and explored in turn: school connectedness; peer connectedness; and social competence.

Parallel to this, the social networking site use research base will be considered in relation to the emergent correlates of wellbeing; recognising the methodological difficulties of measuring the influence of SNS use. A systematic review of the evidence base from an early adolescent perspective will then be undertaken, and findings, conclusions and implications explored. Finally, the chapter will end with a summary of the rationale of this study including unique contribution and outlining the research question and hypotheses this study aims to explore.

2.2 Psychological Wellbeing: the Current Context

Current evidence suggests that 75% of all mental ill health in the UK develops during adolescence with 50% of CYP experiencing symptoms before the age of 14 years (DoH, 2015); a trend similarly reflected worldwide (UNICEF, 2011). Further evidence estimates that approximately 10% of CYP aged 11-16 years in the UK suffer with a diagnosed mental health illness, the most common of which are related to conduct, anxiety and depression (Green, McGinnity, Meltzer, Ford, & Goodman, 2005).

It is suggested that for CYP experiencing psychological ill health, the trajectory towards positive life outcomes diminishes significantly (DoH, 2015). Specifically, the likelihood of substance misuse, committing a crime or developing a health related disability increases, whilst the life chances of educational and employment prospects, positive social relationships and even the length of life are significantly reduced (Public Health England; PHE, 2016). These findings have led to political and public agenda that have increasingly focused on promoting, protecting and improving CYP's wellbeing within the school context as a means of curtailing current trends towards negative life outcomes.

Schools have long been recognised as playing a central role in contributing to CYP's wellbeing (Vostanis, Humphrey, Fitzgerald, Deighton, & Wolpert, 2013). Recent Government directives have however responded to current mental health statistics and in particular the needs of early adolescents by explicitly highlighting the role of secondary schools in supporting wellbeing (Ward, 2017). In addition to school-wide preventative strategies aimed at enhancing belonging and creating a positive school climate (PHE, 2015), these Government directives encourage secondary school staff to develop a deeper awareness of the risks and protective factors associated with mental health and wellbeing. Developing whole-school approaches that explore alternative ways of promoting wellbeing form part of this (HM Government, 2017). One suggested approach includes exploring the potential for promoting and improving pupil access to peer support through specifically created online social networking platforms that bridge the school context (YoungMinds & Ecorys, 2016).

2.3 Social Networking Site Use: the Current Context

Online social networking sites (SNSs) have become a deeply ingrained part of daily life (Antheunis, Schouten, & Krahmer, 2014); occupying a pivotal role in how individuals communicate and interact with each other (Olufadi, 2016). For adolescents and young adults, the most prolific SNS users (Lenhart, 2015; Perrin, 2015), SNSs have arguably become an integral part of the social landscape (Wu, Outley, Matarrita-Cascante, & Murphrey, 2015), where

relationships are consolidated and maintained, and identity and social skills developed (Bannon, McGlynn, McKenzie, & Quayle, 2015).

Findings from the EU Kids Online Survey (Livingstone, Ólafsson, & Staksrud, 2011), a digital survey of 15,303, 9-16 year old internet users across 25 European countries, revealed that 38% of 9-12 year olds and 77% of 13-16 year olds in 2010 had their own SNS profile. In the UK, these figures were higher with prevalence rates of 43% and 88% respectively; rates which despite a minimum age restriction of 13 on some SNSs such as Facebook, appear reflective of the UK adolescent profile today (Ofcom, 2015). Contrary to public opinion, few gender differences appeared evident in terms of SNS profile presence (Livingstone, Ólafsson, & Staksrud, 2011).

The unprecedented rise in the popularity of SNSs amongst adolescents and young adults has been closely followed by a rapidly evolving research base, which more recently, has begun to move beyond focusing on the general practices of SNS use, to exploring its potential psychosocial correlates (Ziv & Kiasi, 2016). Much of this research has tended to focus on exploring potential risks associated with SNS use, such as increased loneliness, depression and anxiety (Tzavela & Mavromati, 2013). Conversely, research exploring potential positive correlates of SNS use such as enhanced social capital, connectedness and self esteem remain comparatively sparse (Best, Manktelow, & Taylor, 2014). With clear links to aspects of mental health and wellbeing, results from these studies do, however, remain mixed, with some revealing both increased risk as well as opportunity (Antheunis, Schouten, & Krahmer, 2014; Best, Manktelow, & Taylor, 2014).

From a research perspective, these mixed results and growing prevalence rates of SNS use among CYP have raised new questions regarding the potential of SNS use to positively contribute to CYP's wellbeing: prompting calls for greater research efforts in this under researched area (Livingstone, Mascheroni, & Staksrud, 2015). From a UK Government perspective, comes recognition that unlike previous generations, today's CYP are being raised as 'digital natives'

who differ in the way that they communicate and interact with others. As such, whilst acknowledging the risks associated with digital technologies such as SNSs, harnessing its potential to protect and improve CYP's wellbeing "has become of utmost importance" (DoH, 2015, p.38).

2.4 Wellbeing and SNS Use: an Early Adolescent Perspective

The previous sections considered the prevalence of mental ill health in the UK and explored why preventative approaches to protecting and fostering wellbeing in schools is a Government priority. Prevalence rates of SNS use have also been examined revealing it as an integral aspect of adolescent and young people's functioning, giving rise to research and Government recognition that more needs to be done to explore, understand and harness the positive potential of SNS use for promoting wellbeing; providing a clear reason for the focus of this study.

When examining the wellbeing and SNS use contexts in parallel, understanding these from a positive correlates perspective has emerged as a common theme. Adopting a positive correlates perspective will therefore form the direction of this study.

Finally when exploring the prevalence of mental ill health and SNS use in parallel, early adolescence (10-14 years; UNICEF, 2011) emerges a key temporal link between the two; providing this study's potential focal population.

Further evidence for focusing on an early adolescent population is provided by mental health statistics which suggests that issues related to anxiety, depression and self-harm in CYP appear to be more prevalent after the age of 10 years (Centre for Mental Health, 2015). From a research perspective, recent reviews of the literature suggest that despite increases in SNS use by early adolescents very little is known about this age group (Wu, Outley, Matarrita-Cascante, & Murphrey, 2015; Quinn & Oldmeadow, 2013), with a bulk of the extant research focusing on older rather than younger adolescent users (Best,

Manktelow, & Taylor, 2014). In addition to the research gap, when reflecting on emerging themes, questions are also raised regarding the potential for SNS use, to not only contribute positively to early adolescent wellbeing, but to also reconfigure existing early adolescent wellbeing pathways. Combined with current data, this final question adds an important facet to this study, suggesting that during early adolescence SNS use may have a moderating influence on wellbeing.

To better understand the positive potential of SNS use for promoting early adolescent wellbeing it is important to first consider how wellbeing is defined and measured.

2.5 Early Adolescent Wellbeing

2.5.1 Defining and Measuring Wellbeing

Despite a wealth of interest and research in wellbeing over recent decades, the term wellbeing remains in constant flux. Arguably, viewed as an intangible and wholly personal concept, the continuing debate of how wellbeing should be conceptualised and operationalised therefore remains unresolved (Best, Manktelow, & Taylor, 2014). Equally, this lack of consensus may in itself be seen as contributing to the often blurred and broadly construed definitions of wellbeing that have developed over time. Historically, attempts to define wellbeing have divided into two main paradigms, (1) hedonic, focusing on constructs including happiness, affect and satisfaction with life, and (2) eudaimonic, emphasising positive psychological functioning and development (Dodge, Daly, Huyton, & Sanders, 2012). These traditional approaches have led to the development of a range of measures aimed at capturing these multi-dimensional wellbeing constructs.

When focusing on the wellbeing of CYP, measures have tended to focus on assessing a global appraisal of life, and therefore life satisfaction. Aimed at measuring the positive indicators of wellbeing directly, measures such as the Satisfaction With Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985) are seen as a means of not only understanding wellbeing but for facilitating

higher levels of positive outcomes. Despite the presence of established measures such as the SWLS, the ongoing diversity of wellbeing definitions and measures continue to be reflected in a contradictory research base (Dodge, Daly, Huyton, & Sanders, 2012).

In an attempt to ameliorate the lack of consensus on how wellbeing is operationalised and conceptualised, negative and positive psychosocial correlates of wellbeing are often employed by research as indicators of wellbeing (Holopainen, Lappalainen, Junttila, & Savolainen, 2012). Although it is acknowledged that exploring wellbeing through a negative correlates lens has value for research, given this study's focus on understanding and promoting early adolescent wellbeing, attention now focuses on exploring wellbeing from a positive rather than negative correlates perspective.

2.5.2 Positive Correlates of Adolescent Wellbeing

Measuring wellbeing from a positive correlates perspective was employed in a recently published 32-year longitudinal study (Olsson, McGee, Nada-Raja, & Williams, 2013) which explored the academic and social developmental pathways of children and adolescents into adulthood. Involving 1,037 individuals born between 1972 and 1973 in New Zealand, data was drawn using a range of assessment measures over 15 data points starting at aged three and most recently aged 38. Attrition rates were low, with 93% of participants completing the latest phase of assessments, measuring wellbeing. Findings from the research revealed that as the strongest developmental pathway, adolescent social connectedness was the best predictor of wellbeing in later adulthood (0.62) with academic achievement demonstrating a weaker direct effect (0.12). Interestingly, although academic and social pathways were primarily independent of each other across development, analysis revealed an indirect pathway from adolescent academic achievement to adult wellbeing through social connectedness (0.29). This finding, the researchers suggest, points to an argument for a school curriculum focus shift towards enhancing adolescent social inclusion, competence and connection.

Through extensive research a number of other significant positive contributors and therefore predictors of adolescent wellbeing have been identified including self-esteem, peer attachment (e.g. Millings, Buck, Montgomery, Spears, & Stallard, 2012), and social competence (e.g. Holopainen, Lappalainen, Junttila, & Savolainen, 2005). Social connectedness does however continue to be perceived as the most significant predictor of adolescent (and adult) wellbeing (Haslam, Cruwys, Haslam, & Jetten, 2015).

It has been acknowledged that for this generation of CYP, SNSs have become an ingrained part of social functioning. Exploring the nature of early adolescents' social connectedness and the influence of this on wellbeing is therefore of particular importance to understanding the potential consequences of SNS use on aspects of early adolescent functioning and therefore wellbeing.

Social connectedness as a pathway to early adolescent wellbeing will now be considered in detail.

2.6 Social Connectedness a Pathway to Wellbeing

2.6.1 Defining Social Connectedness

Although social connectedness is defined, operationalised and researched from differing perspectives, general theoretical consensus across a diverse spectrum of research perceives social connectedness as an innate psychological need, that when fulfilled, engenders positive outcomes (Jose, Ryan, & Pryor, 2012). This sense of connectedness is captured by the work of Baumeister and Leary (1995) who describe the perceived sense of belonging or feelings of connection that are derived from the positive and meaningful interpersonal relationships developed and maintained with others within the social environment. In this definition, a distinction is made between belonging and affiliation with the latter being positioned as lacking the foundation of in-depth reciprocal social connections. Finally, it is suggested that the motivation to belong "can be almost as compelling a need as food and that human culture is significantly conditioned by the pressure to provide belongingness" (Baumeister & Leary, 1995; p. 498).

The importance of strong interpersonal bonds and its relationship to positive wellbeing is similarly captured by an array of theories including social capital (Putnam, 2000), and attachment (Bowlby, 1969).

2.6.2 Early Adolescent Social Connectedness

Early adolescence is recognised as a time of great developmental change with emphasis being focused on the development of identity, intimacy, and autonomy (e.g. Steinberg, 2011). During this time, research suggests that the drive for social connectedness becomes amplified, establishing it as a core feature of the developmental trajectory towards adulthood (Allen, Ryan, Gray, McInerney, & Waters, 2014). The impact of which not only contributes positively to wellbeing but also acts as a potential buffer against an array of risk factors associated with adolescence such as anxiety, stress, depression and engaging in risk behaviours (Mcgraw, Moore, Fuller, & Bates, 2008).

The nature and extent of the relationship between social connectedness and adolescent wellbeing was explored in a longitudinal study (Jose, Ryan, & Pryor, 2012), involving data collection from 1,774, 10 to 15-year-olds over a 3 year period in New Zealand. Supporting previous research, the outcomes of the study confirmed that the degree of social connectedness within different ecological environments fluctuate over the life course of an individual. During adolescence, connectedness with family, school, peer and community domains were identified by the researchers as most salient; collectively demonstrating a strong and positive, concurrent correlation with wellbeing (0.79-0.88). Individually however, the relative importance of these domains during adolescence was seen as contributing to wellbeing in distinct ways with connectedness to school demonstrating the strongest individual relationship with early adolescent wellbeing.

2.6.3 Early Adolescent Social Connectedness: Shifting Domains

The relationship between social connectedness and adolescent wellbeing at a domain level was similarly explored in a recent study by Oldfield, Humphrey and

Hebron (2016) with data collected from 203 adolescents (11-16 years) in the UK. In contrast to the previous study, wellbeing was measured in terms of conduct problems, emotional symptoms and prosocial behaviour rather than through a specific wellbeing scale. Results revealed that, at a domain level, school connectedness and peer attachment predicted positive wellbeing outcomes whereas parental attachment did not. Conversely, insecure parental attachment significantly predicted conduct problems and emotional difficulties with no relationships being demonstrated with either peer attachment or school connectedness, highlighting the relative importance and distinctiveness of the domains in terms of their positive or negative relationship with wellbeing. The researchers suggest that irrespective of the variables employed, these findings reflect current understanding regarding the positive and direct influence of school and peer interrelationships on adolescent wellbeing outcomes.

Evidence presented thus far has suggested that social connectedness in adolescence is the strongest predictor and contributor to wellbeing in adulthood. During early adolescence the innate need for connectedness becomes amplified with connectedness to school and peers identified as most salient. In order to gain a better understanding of social connectedness as a developmental pathway to wellbeing, focus will now turn to consider school connectedness and peer connectedness in turn.

2.7 School Connectedness: A Salient Early Adolescent Developmental Pathway to Wellbeing

2.7.1 Defining School Connectedness

Evolving from social connectedness theories, a frequently cited definition of school connectedness is offered by Goodenow and Grady (1993, p.80), as ‘‘the extent to which students feel personally accepted, respected, included, and supported by others in the school social environment’’; conceptualising an individual’s sense of belonging and connectedness to school. This definition has also been extensively operationalised with adolescent populations through the Psychological Sense of School Membership (PSSM; Goodenow, 1993) scale (Slaten, Ferguson, Brodrick, & Waters, 2016).

Employing a variety of terms such as school belonging, school attachment and school engagement, the concept of school connectedness has gained significant research attention; primarily exploring its relationship with academic and developmental variables that may influence early adolescent wellbeing such as identity, psychosocial adjustment and prosocial behaviours (Allen, Kern, Vella-Brodrick, Hattie, & Waters, 2016; Libbey, 2004). Responding to societal concerns and risks associated with adolescence, much of the research has however centred on exploring wellbeing from a negative rather than positive affective perspective (e.g. anxiety, depression and loneliness) and as such, consideration of both will be given in the following section.

2.7.2 Early Adolescent School Connectedness

An example of the relationship between school connectedness and wellbeing from a mental ill health perspective is provided by Shochet and colleagues (2006) who undertook a prospective study of 2,022 Australian early adolescents (aged 12-14), with data taken at baseline and a year later. Results revealed an extensive concurrent correlation between school connectedness and affective outcomes; depression range= -.62 to -.74, and -.30 to -.40 for anxiety. In addition, school connectedness was found to predict depression a year later, accounting for 33-40% of variance, with no bidirectional relationship evident. It was concluded that contrary to previous research, a stronger predictive relationship between school connectedness and depression existed.

Further exploration of the association between school connectedness and depression was undertaken in a later cross-sectional study (Millings, Buck, Montgomery, Spears, & Stallard, 2012) involving 5,022 adolescents (aged 11-16) in the UK. Consistent with the findings of the previous study, the researchers found that school connectedness negatively correlated with depression. The nature of the school connectedness-depression relationship was explored further though analysis of the potential moderating influence of self-esteem and peer attachment. Although no significant effect of moderation

was found, analysis did reveal peer attachment as the strongest predictor of depression in the study overall.

Although these studies maintain a primary focus on exploring school connectedness from a negative outcomes perspective, their findings clearly demonstrate school connectedness's influencing strength to protect and promote early adolescent wellbeing whilst buffering mental ill health; findings which continue to be supported by a wealth of research (Slaten, Ferguson, Brodrick, & Waters, 2016).

Reflection on the school connectedness and social connectedness definitions, alongside the research considered thus far raises an important point of consideration for this study. Namely, although connectedness at a domain level appears distinct, overlaps in the school connectedness and peer domains seem to exist. This point was raised by Millings and colleagues (2012) who identified a potential limitation with the scales used to measure these constructs in their study. Exploration of this potential overlap will be considered next, with further reflections related to construct validity in the discussion (see Section 5.7.3).

2.8 Peer Connectedness: A Salient Early Adolescent Developmental Pathway to Wellbeing

2.8.1 Defining Peer Connectedness

Although conceptual overlaps are evident between school and peer connectedness, research exploring these constructs have measured and defined these as distinct social connectedness domains (Law, Cuskelly, & Carroll, 2013). Mcgraw, Moore, Fuller and Bates (2008) argue that in contrast to school connectedness, peer connectedness may be perceived more broadly, focusing on interrelationships within a wider ecological context, and more narrowly, without reliance on teacher interactions or academic accomplishment.

2.8.2 Early Adolescent Peer Connectedness

Interchangeably used and operationalised with terms such as peer attachment (Bowlby, 1969), belonging (e.g. Quinn & Oldmeadow, 2013b), and friendship quality (e.g. Antheunis, Schouten, & Krahmer, 2014), extensive research exploring early adolescent peer connectedness has enabled the identification of a number of key findings in relation to early adolescent development and wellbeing:

- Peer relationships assume a new pivotal role for early adolescents; shifting away from parental reliance (Rubin, Bukowski, & Parker, 2007)
- Early adolescent identity is developed, calibrated and reinforced through the shared norms and values established during peer interactions; a process which strengthens belongingness and validation of identity (Brechwald & Prinstein, 2011)
- Intimate peer interactions provide adolescents the opportunity to engage in self-disclosure, a process whereby social skills such as active listening, giving and receiving feedback, perspective taking, empathy and reciprocity are practised and developed; supporting intimacy and strengthening bonds (Mcgraw, Moore, Fuller, & Bates, 2008)
- Intimacy through self-disclosure is typically attributed to female adolescent relationships; with boys engaging to a lesser extent, beginning in later adolescents (13/14 years compared to 11 years for girls; Brown & Larson, 2009)
- Early adolescent boys are characterised by lower levels of acceptance and peer connectedness than girls (Rose & Rudolph, 2006)

These findings support the notion that peer connectedness is a key determinant in early adolescent development and that gender differences exist (Buhrmester & Prager, 1995). The relationship between these processes and early adolescent wellbeing has also been demonstrated through this literature review thus far, revealing peer connectedness as a strong and positive predictor of early adolescent wellbeing (Jose, Ryan, & Pryor, 2012; Millings, Buck, Montgomery, Spears, & Stallard, 2012).

These findings are similarly supported in a recent systematic review (Rageliené, 2016) exploring the interrelationships between adolescent identity, peer relationships and wellbeing. The review concluded that although recent research in this area is surprisingly limited, belongingness to a peer group and connectedness to peers based on positive reciprocal relations are positively related to identity development and greater wellbeing.

Notably, when exploring the peer and school connectedness research in parallel, social competence skills that enable early adolescents to engage in positive reciprocal behaviours has emerged as an important underpinning theme. Within the positive correlates of wellbeing literature, social competence was also identified as a predictor of adolescent wellbeing. It therefore appears important to explore the role that social competence has to play in facilitating early adolescent social functioning in the face-to-face domain in order to better understand its potential value for online SNS functioning.

2.9 Social Competence: Underpinning Connectedness

2.9.1 Defining Social Competence

Although there is no universal definition of social competence, it is often described as an underlying mechanism of cognitive and social skills (Caplan, 1980; cited in Bannon, McGlynn, McKenzie, & Quayle, 2015) employed for effectively developing and maintaining positive relationships. Embedded within this definition is a notion of an individual's ability to organise and draw on personal and environmental resources (Ladd, 1999); demonstrated through skills of communication, cooperation, empathy, reciprocity and perspective taking (Holopainen, Lappalainen, Junttila, & Savolainen, 2012). From a developmental perspective, these underlying skills are seen as evolving through maturation within intimate peer relationships; a process of which is linked to adolescence.

2.9.2 Early Adolescent Social Competence

Despite the variability with which social competence is conceptualised and operationalised, general consensus has given recognition to the key

contribution of social competence in promoting successful and meaningful relationships and therefore wellbeing; as illustrated in the following two studies.

Firstly, the potential mediating role of interpersonal competence on friendship quality was examined in a longitudinal study (Chow, Ruhl, & Buhmester, 2013) of 146 dyadic relationships (72 male; mean age 15.9 years) between same-sex best friends. Investigating skills including empathy, intimacy competence and peer connectedness, results were seen to replicate previous research demonstrating a strong positive association between positive interpersonal competence and peer connectedness. When exploring potential gender differences, results revealed that girls' perceptions of social competence skills and peer closeness were significantly higher than boys. Significant gender difference between dyadic relationships was not however evident, indicating that adolescents gravitate towards friends of similar functioning.

Next, the relationship between social competence and adolescent wellbeing was directly explored in a 3-year longitudinal study (Holopainen, Lappalainen, Junttila, & Savolainen, 2012), undertaken within the secondary school context (*N* = 412; 50% girls; mean age 15.5 years). Results from the analysis found that wellbeing was related to prosocial competences such as cooperation skills and empathy, with decreases being seen in levels of impulsivity and disruptive behaviours. Further analysis of the relationship between wellbeing and cooperation skills identified a mediation effect with cooperation skills predicting wellbeing in year three when controlling for wellbeing in year one. These findings were found to hold true irrespective of any evident academic learning difficulties. In line with previous research recommendations, the researchers concluded that school focus should be given to social skills development, starting as early as possible and continuing throughout secondary schooling.

The importance of focusing on social skills development within the secondary school context is of particular importance when considering the significant developmental changes that occur during early adolescence. During this time

effective peer relationship skills such as intimacy and self-disclosure become the focus; the onset of which vary for early adolescent girls and boys.

2.10 Summary

Thus far, the literature review has considered the national context of early adolescent wellbeing and SNS use in the United Kingdom; positioning the rationale and direction for this study. Wellbeing was then defined and the evidence base for connectedness to school and peers as the most salient positive correlates of early adolescent wellbeing, explored. Finally, social competence was reviewed as the final emerging correlate of wellbeing relevant to this study.

The literature review will now move to consider this evidence base in relation to SNS use, exploring its potential influence on social functioning and wellbeing. A systematic review will then explore the existing best evidence base for SNS use in relation to these positive wellbeing correlates from an early adolescent perspective.

2.11 SNSs: a New Ecological Domain and Pathway to Wellbeing?

2.11.1 Defining SNS Use

Despite being a relatively new phenomenon, SNSs have proliferated and evolved at an unprecedented rate over the last decade (Olufadi, 2016). During this time, key characteristics that were once used to distinguish SNSs have faded in significance, whilst others have been adopted and embedded within other forms of online technologies. Defining what constitutes a SNS has therefore become decidedly more challenging. In an attempt to ameliorate some of the potential challenges of undertaking research in relation to SNSs (Ellison & boyd [sic], 2013), researchers have consistently gravitated towards the SNS definition[1] developed by boyd and Ellison (2007). In this definition (which will be

[1] Cited 11,892– as recorded by Google Scholar 10th April 2017

adopted by this study), SNSs are defined as online platforms which enable individuals to:

1. construct a public or semi-public profile within a bounded system;
2. articulate a list of other users with whom they share a connection; and
3. view and traverse their list of connections and those made by others within the system.

(boyd & Ellison, 2007; p.211)

Whilst Ellison and boyd (2013) acknowledge that the practices, expectations and social norms of SNS users have evolved alongside the shifting social and technological landscape of SNSs, research (Reich, Subrahmanyam, & Espinoza, 2012) suggests that the primary utility of SNSs remains focused on promoting and maintaining existing friendships and networks. Notably, although online technologies such as media-sharing websites and gaming websites may encourage participants to list 'Friends' and contacts, these forms of social media are not construed as SNSs (Ellison & boyd, 2013). It may, however, be inferred that given the rapid evolution of online technologies, the boundaries between SNSs and social media may become increasingly blurred.

2.11.2 Adolescent Trends in SNS Use

Prevalence rates already explored in this literature review have suggested that SNS use has become an integral part of social daily life for adolescents. When exploring the nature of SNS use, a recent United States survey (Lenhart, 2015), provides some helpful indication of the evolving SNS practices of adolescents. Results from this report revealed that 92% of adolescents between 13-17years report using a mobile phone to access SNSs on a daily basis, with Facebook, Instagram, Snapchat and Twitter being the four most preferred online platforms.

These preferences appear equally reflective of the UK and indicate a notable change in SNS use and technological practices since 2007(Ofcom, 2015). Despite these evolving practices, the key features and value of SNSs appear to remain consistent with those highlighted by boyd and Ellison (2007), for

example: profile making; friending; sharing and tagging pictures and videos; commenting, messaging and receiving feedback; and posting status updates.

2.11.3 Measuring the Influence of SNS Use on Adolescent Wellbeing

Research exploring the potential influence of SNS use on adolescent wellbeing continues to yield mixed results (Wu, et al., 2015; Best et al., 2014). It is suggested that part of the disparity in these results may be explained by the differing approaches employed for measuring SNS use. Specifically, it is argued that researchers exploring the potential risks of SNS use appear weighted towards measuring its excessive use and describing links accordingly (Olufadi, 2016). Researchers appear to have responded to this methodological issue by either adopting well-referenced measures directly (e.g. Steinfield, Ellison, & Lampe, 2008; boyd & Ellison, 2007; Valkenburg & Peter, 2007) or by creating composite measures of existing scales (e.g. Quinn & Oldmeadow, 2013), which attempt to capture the breadth and depth of SNS use (Olufadi, 2016). Please refer to the Methodology (see Section 3.7) for further discussion related to SNS use measures.

It is acknowledged that, given the variability in attention of existing research, combined with conceptual and operational challenges regarding SNS use, identifying the true potential of SNS to contribute positively to early adolescent wellbeing is not without its difficulties.

Attention now turns to exploring the SNS use evidence base in relation to school connectedness, peer connectedness and social competence in an attempt to understand the SNS-wellbeing relationship from a positive correlate perspective.

2.11.4 School Connectedness and SNS Use

Despite current trends in SNS use by adolescents, only a handful of studies have explored the potential influence of SNS use on school connectedness.

Evidence from existing systematic reviews (e.g. Wu, Outley, Matarrita-Cascante, & Murphrey, 2015; Best, Manktelow, & Taylor, 2014; Chesley & Johnson, 2014; Shapiro & Margolin, 2014), suggest that where research has taken place, attention has focused on exploring the influence of online technologies as a whole, rather than considering SNS use specifically. At this point, the findings from this research are therefore of minimal relevance to this study. The extent and nature of this apparent gap in the research will be explored further in the systematic review (See Section 2.12).

2.11.5 Peer Connectedness and SNS Use

In contrast to research within the 'SNS use-school connectedness' domain, research exploring peer connectedness from a SNS use perspective has gained greater attention, with evidence clearly demonstrating that SNSs have become integral to how adolescents experience their peer relationships.

For example, in a study of college students (Subrahmanyam, Reich, Waechter, & Espinoza, 2008), 49% of participants reported that their key offline peer relationships bridged into the SNS domain. Analysis exploring the nature of these SNS interactions revealed that communication was mainly focused on discussing everyday college events, mutual friends, and making plans. These results were similarly replicated with a younger population (13 to 19 years; *M*=16.3; Reich, Subrahmanyam, & Espinoza, 2012), with findings suggesting that only 17% of listed SNS friends did not bridge their offline peer networks.

When exploring the influence of SNS use on peer connectedness, a number of studies suggest that although exceptions exist, SNS use is associated with enhanced friendship quality and intimacy (Grieve, Indian, Witteveen, Tolan, & Marrinton, 2013; Reich, Subrahmanyam, & Espinoza, 2012; Steinfield, Ellison, & Lampe, 2008; Ellison, Steinfield, & Lampe, 2007).

The notion of SNS use enhancing peer connectedness is captured by the *stimulation* hypothesis. This hypothesis suggests that unlike face-to-face interactions, SNS interactions are less bound by visual and auditory social cues

thus encouraging and supporting less effortful intimate self-disclosure; stimulating social skills development and therefore connectedness to existing friends. In contrast, as captured by the *displacement* hypothesis, some research suggests that SNS use reduces the opportunities for offline relationships, focusing instead on superficial online affiliations; impacting on the quality of offline relationships and, subsequently, wellbeing (Valkenburg & Peter, 2011).

The validity of these opposing hypotheses was explored in a study by Valkenburg and Peter (2007a), with an adolescent sample (*n*=1,210; aged 10-17 years) in the Netherlands. Employing mediation analysis, evidence was found to support the stimulation but not displacement hypothesis. In addition, effects for moderation analysis found that time spent communicating online with existing friends rather than acquaintances/strangers positively predicted wellbeing via measures of peer connectedness. It is worth noting that due to the cultural and technological limitations of this research, 'online communication' was measured using a composite scale including 'Instant Messaging' and 'chatrooms', and as such the relevance of these results to this study need to be treated with caution.

Collectively these findings appear to suggest that SNS use amongst close friends has the potential to enhance perceptions of peer connectedness and in turn promote adolescent wellbeing. Integral to this, are apparent links to social competence skills which appear to mediate the link between online peer connectedness and wellbeing.

2.11.6 Social Competence and SNS Use

A review of current research would suggest that little, if any, research has been undertaken to specifically explore the relationship between SNS use and social competence in adolescence beyond exploring the online practices of adolescents, such as self-disclosure (e.g. Valkenburg, Peter, & Schouten, 2006). Conclusions drawn from a number of SNS studies have however indicated that SNSs may be used as a rehearsal space for developing social

skills, leading to enhanced peer connectedness and therefore wellbeing (Shapiro & Margolin, 2014).

Evidence regarding the relationship between social competence, online peer connectedness and wellbeing is provided in a qualitative study (Bannon, McGlynn, McKenzie, & Quayle, 2015) exploring the role of internet use for adolescents with additional needs. Involving 36 adolescents (29 males; aged 13-18 years) in England with a diagnosis of autism, data collected during six focus groups was transcribed and analysed. Analysis revealed that, although participants reported a range of internet activities, communicating with friends was identified as a key activity. Overall, the researchers identified 'identity and connectedness' as a key theme emerging from the transcription analysis, which encompassed a number of sub-themes including 'explicit belonging'. Specifically, it was found that communicating with existing friends online supported the development of group identity, competence and connectedness and that these aspects of 'explicit belonging' were the primary motivators for participants' active engagement online. When analysed collectively, the emerging themes were seen to indicate that online social networking served to enhance wellbeing for the study's participants.

These findings appear to support the *social compensation* hypothesis which suggests that SNSs may provide unique benefits for individuals who find interpersonal interactions within the face-to-face domain challenging (Shapiro & Margolin, 2014). Evolving from the *stimulation* hypothesis, the *social compensation* hypothesis proposes that, free from the bounds of certain visual and auditory cues, SNSs provide individuals who feel socially uncomfortable with an accessible platform for developing and maintaining social relationships as well as meeting social needs (McKenna, Green, & Gleason, 2002).

Interestingly, the extent to which the *social compensation* hypothesis may extend to less socially mature individuals such as boys during early adolescence does not appear to have been directly explored and may therefore become a point of interest for this study. Recognition is however given to the

role that SNS can play in supporting developmental aspects of early adolescent functioning which is of particular importance during this time of significant developmental change.

2.11.7 Summary

A review of the potential influence of SNS use on school connectedness, peer connectedness, social competence and early adolescent wellbeing revealed little or no research evidence in this area. Where research has been undertaken, this has tended to focus on older adolescents or through analysis of adolescent practises on SNSs. This evidence alongside prevalence data has, however, suggested that SNSs may be perceived as a new and salient ecological domain for peer connectedness with SNS use stimulating and enhancing existing friendships.

Equally, this evidence seems to imply that for early adolescents who may find social interaction in the face-to-face domain challenging, SNSs could provide them with an easily accessible platform in which to develop social competence skills and meet social needs. Although gender differences appear to exist in the online and offline environments, results exploring this aspect of early adolescent functioning remain mixed. Finally, when considering the existing evidence-base as a whole, research findings would appear to support the idea that SNS use has the potential to not only contribute positively to early adolescent wellbeing but to also influence developmental pathways.

Despite this promising evidence, the influence of SNS on school connectedness, peer connectedness, social competence and therefore wellbeing does not appear to have been explicitly measured from an early adolescent perspective. A systematic review is now undertaken to explore the nature and extent of the existing evidence base, informing this study's final research question and hypotheses.

2.12 Systematic Literature Review

2.12.1 Purpose of the Review

Systematic reviews are identified as a robust means of capturing a reliable picture of best existing evidence pertinent to a particular research question (Campbell Collaboration). Underpinned by methodological principles which support transparent and rigorous approaches to identifying, appraising and synthesising research evidence, systematic reviews enable researchers to extract and integrate large amounts of data into a collective form (Cohen, Manion, & Morrison, 2011). This methodical process provides researchers with a valuable opportunity to objectively explore the consistency of findings across studies and populations (Robson, 2011), and to identify areas where consensus may be conflicting or where gaps in research may exist (Petticrew & Roberts, 2006).

Typically, the systematic review process includes the following key stages:

1. Defining the research question and conceptual framework
2. Outlining the review methodology
3. Identifying the inclusion /exclusion criteria to be employed
4. Undertaking and describing the search strategy and screening process used to identify primary studies fulfilling the inclusion criteria
5. Undertaking and summarising the data extraction process
6. Describing and appraising the quality of evidence presented in the primary studies
7. Synthesising findings in order to illuminate the research question
8. Considering the wider implications of the review

(Petticrew & Roberts, 2006)

In spite of the methodological rigour afforded by the review process, systematic reviews are not without their limitations. Through screening, systematic reviews may selectively omit results that would otherwise influence the direction of

conclusions drawn. Equally, interpretations and discussions undertaken by the researcher may lack the scientific objectivity and critique championed by the methodical process; creating potential bias in presented conclusions (Boland, Cherry, & Dickson, 2014). Finally, the weighting given to the statistical significance of evidence may cause to overshadow the educational significance of findings, influencing the wider implications of the review outcomes. Collectively, although these limitations are not viewed as impeding the overall strengths and advantages of systematic reviews (Davies, 2000) they are nonetheless important points of reflection for researchers undertaking a systematic review.

2.12.2 Research Question and Conceptual Framework

The presented systematic literature review aimed to identify and evaluate research studies pertinent to the focus of the current study. That is, studies exploring the positive role of SNS use on early adolescent wellbeing. During the literature review, three positive correlates of early adolescent wellbeing emerged as prominent themes; school connectedness, peer connectedness and social competence. These emerging constructs contributed to decision making regarding the specific research question to be explored by the current systematic review, namely:

- Does SNS use influence self-perceptions of school connectedness, peer connectedness and social competence and therefore early adolescent wellbeing?

In addition to this research question, underlying questions were also considered through the review process:

- What is the quality of presented evidence?
- Is SNS use related to school connectedness, peer connectedness, social competence and therefore early adolescent wellbeing?

- What measures are used to assess SNS use, early adolescent wellbeing, school connectedness, peer connectedness and social competence?
- Are any gender or age differences evident in the study outcomes?

2.12.3 Review Methodology

2.12.3 (i) Eligibility Criteria

Studies fulfilling 'all' of the following criteria were included in the current review and as such were identified as pertinent to answering the systematic review question:

- Presented in a peer reviewed journal – indicating a level of methodological rigour and critical analysis
- Based on a non-experimental research design
- Measured and evaluated the influence of SNS use on wellbeing; specifically in terms of either school connectedness, peer connectedness or social competence or combinations thereof
- Provided quantitative data for statistical analysis; reflecting the approach being adopted by this study
- Focused on early adolescent participants (10-14 years; UNICEF, 2011)
- Articles were reported in English – resources for translation were not available

For the purposes of this review, studies measuring and evaluating the relationship between SNS use and early adolescent wellbeing in terms of a range of positive and/or negative correlates of wellbeing alongside the key variables being explored, were also included. This reflects the relative newness of the SNS use phenomena and the limited empirical research that has been conducted to explore its potential positive impact on CYP. Similarly, for this reason, an eligibility relating to the date of the studies was not applied.

Studies which were based on a theoretical review of the influence of SNS use on early adolescent wellbeing were not included in the review. Equally studies that did not provide a measure for social networking use independently of measures for instant messaging and/or email use were also omitted. This exclusion criterion reflects current consensus regarding how SNS use is defined (boyd & Ellison, 2007). Finally, in order to capture a reliable picture of the role of SNS use on early adolescent wellbeing, studies were not included in the review if the mean age of the participants was not within the defined 10 – 14 years age parameter.

2.12.3 (ii) Search Strategy

A systematic search was conducted in June 2016 via the following three databases: PsychINFO, Web of Science, and ERIC. Conceptually and logically, the initial search was narrowly construed and yielded no relevant results:

- Social network*
- AND: Adolescen*
- AND: School Connected* OR Peer Connected* OR Social Competence OR (Wellbeing/Well-being/Well Being)

This prompted the search terms being more broadly-construed and refined following a further scoping search of the subject area and through the support of thesaurus and mapping tools. Table 2.1 presents the generic search query created in response to this process.

Table 2.1 The generic search formula for the systematic search

Concept group	Search terms
Adolescent	(Adolescen* **OR** "Young People" **OR** Teen* **OR** Juvenile **OR** Pupil **OR** Child* **OR** Student)
	AND
Social networking site	("Social Network*" **OR** "Online Network*" **OR** "Online Technology" **OR** Facebook **OR** Twitter **OR** Snapchat **OR** "digital native*" **OR** "social media")
	AND
Psychological Wellbeing	(Wellbeing **OR** Well-being **OR** "Well Being" **OR** Connectedness **OR** Connect* **OR** Attach* **OR** Belong* **OR** Friend* **OR** "Life Satisfaction" **OR** "Social Competen*" **OR** "Social Skill*" **OR** "Social Litera*")

This more broadly-construed search strategy resulted in the location of 299 articles. Figure 2.1 represents the process employed for identifying relevant studies and the results achieved.

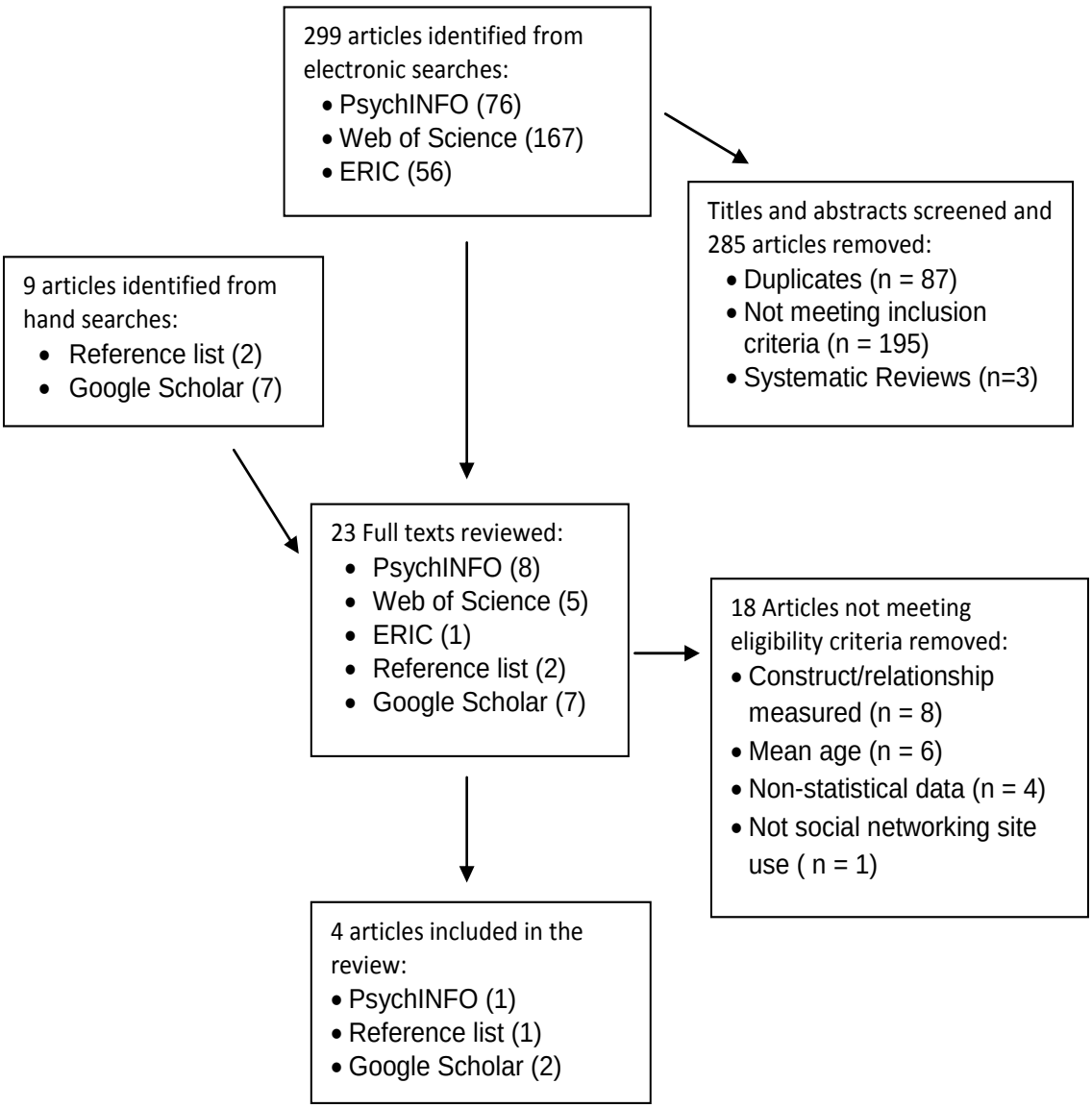


Figure 2.1 Flowchart of Systematic Search Screening Process and Search Results

2.12.3 (iii) Results of the Screening Process

In total 299 potentially relevant articles were identified. The titles, source data and publication type from these articles were screened in reference to the inclusion criteria. In instances where the relevance of the study to the research question was not clear from the title, consideration of the abstract was undertaken. At this stage, a total of 285 articles were removed as either duplications or for failing to meet the inclusion criteria. Of these, the majority of the studies screened explored the influence of social networking within the face-to-face domain rather than online. The remaining studies which did explore the influence of online social networking use, focused on older adolescent

populations such as those attending college or university or did so solely from a negative wellbeing perspective for example, anxiety and depression.

Full text copies of the remaining 14 studies were then obtained for consideration against the eligibility criteria. At this stage, a search of the reference lists from these studies as well as from the systematic reviews emerging from the database search (and later removed; n=3) were also checked against the inclusion criteria, resulting in a further 2 articles being identified and obtained. During this process, cross-referencing against the search engine Google Scholar was also undertaken resulting in 7 further studies being identified. Overall, this process increased the number of articles for full text review from 14 to 23.

The final 23 articles were considered as full text copies and a total of 19 articles removed as failing to meet the eligibility criteria. It is noted that although these excluded articles included a range of adolescent participants in terms of age, almost one third of the articles reported a mean age above 14 years. Another 4 articles were excluded for not reporting data for statistical analysis whilst one paper was excluded for not complying with the SNS use definition as identified within the eligibility criteria. The remaining 8 articles were excluded for not directly measuring the relationship between SNS use and wellbeing in terms of the outcome variables pertinent to the research question.

2.12.4 Data Extraction

In total, 4 studies were identified as relevant to the research question and included in the current systematic review accordingly. Figures 2.2 to 2.5, provide a systematic summary of the descriptive data extracted from each of these studies. Key information is presented in terms of:

- Study details (author(s), year of publication, title)
- Setting & Participants (number of, gender, age)
- Research design, data collection, analysis employed
- Outcome variables and measures
- Key results

Where studies explored multiple variables in addition to those relevant to the research question, only results pertaining to measures and outcomes relating to school connectedness, peer connectedness and social competence were reported. For clarity purposes, reference to all variables and measures were, however, noted.

Following the data extraction process, the quality of evidence presented by each of the primary studies was evaluated and key features from the studies compared; as described and discussed in the next section.

Study details	**Antheunis, Schouten & Krahmer (2014)** The Role of Social Networking Sites in Early Adolescents' Social Lives
Setting **Participants**	15x Secondary schools; Netherlands 3,068 pupils (53.7% girls) Aged 11-14yrs; mean age: 13.46yrs (SD = .56)
Research design **Data collection** **Analysis employed**	Non-experimental cross-sectional correlation design Questionnaire Hierarchical regression analysis
Variables & Measures	SNS use Intensity: 1 item identifying Hyves SNS and non-SNS users. For SNS users: composite scale developed by researchers measuring frequency, connectedness to SNS and number of friends; Cronbach's α = .70 Quality of Friendship: 6 item adapted scale (Buhrmester, 2002) measuring satisfaction with friends; Cronbach's α = .80 Bonding social capital: 4 item, adapted scale (William, 2006) measuring the social benefits derived from strong ties found in quality relationships; Cronbach's α = .76 Other variables: Bridging social capital, Control variables (social anxiety, offline interaction, Socio-economic status, age, gender)
Key results	Significant results: • 88.7% have a profile on the Dutch SNS Hyves • Girls report higher quality friendships and bonding capital. Girls and older adolescents use SNS more intensely • Positive correlations between all variables reported, with social anxiety negatively correlated • Before controlling for control variables, SNS intensity explained: o 20% of variance in friendship quality R^2=.197, F(7, 2621) = 91.64, p < .001 o 9% of variance in bonding capital R^2=.088, F(7, 2622) = 36.112, p < .001 • After controlling for control variables, SNS intensity explained: o 3.3% of variance in friendship quality R^2=.033, F(1, 2621) = 107.88, p < .001 o 1% of variance in bonding capital R^2=.009, F(1, 2622) = 25.29, p < .001 • ***Adolescent SNS users have a higher friendship quality***, F(1, 2993) = 17.91, p < .001, η2 = .006; ***and more bonding social capital***, F(1, 2993) = 12.04, p < .001, η2 = .004, ***than non-SNS users***

Figure 2.2 Systematic summary of descriptive data extracted from Antheunis, Schouten & Krahmer (2014) study

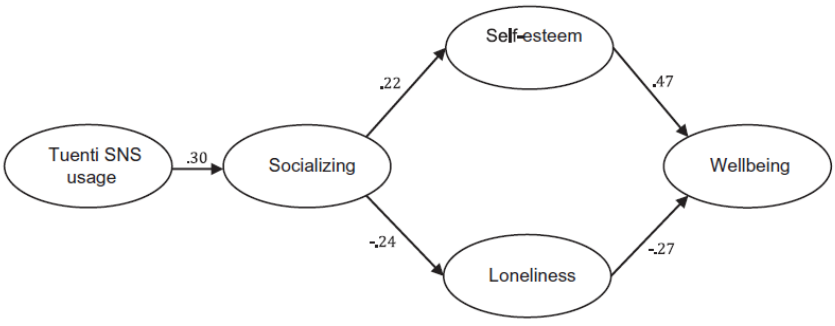
Study details	**Apaolaza, Hartmann, Medina, Barrutia, & Echebarria, (2013)** The relationship between socializing on the Spanish online networking site Tuenti and teenagers' subjective wellbeing: The roles of self-esteem and loneliness
Setting **Participants**	3 x Secondary schools; Spain 344 pupils (52% girls) with a profile on the Spanish SNS Tuenti Aged 12 -17yrs *(mean age of 14.5yrs assumed)*
Research design **Data collection** **Analysis employed**	Non-experimental cross-sectional correlation design Questionnaire Structural equation modelling
Variables & Measures	<u>SNS Tuenti use Intensity:</u> 1 item, scaled question: 'How much time do you spend daily using Tuenti?' adapted from Valkenburg and Peter (2007) <u>Degree of socialising:</u> 4 item,4-point scale developed by researchers intended to measure aspects of an individual's intention and skills for maintaining and strengthening friendships; Cronbach's α = .60 <u>Subjective wellbeing:</u> 3 item, shortened version of the Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, and Griffin ,1985) measuring self-perceptions of global life satisfaction; Cronbach's α = .75 <u>Other variables:</u> Loneliness, Self-esteem
Key results	<u>Significant results:</u> • Structural equation analysis revealed a positive influence of Tuenti on socialising (SRC = .30, p < .001) • Wellbeing indirectly enhanced by socialisation via loneliness (negative effect) and self-esteem (positive effect) as depicted in the researchers' diagram below  Researchers report that collectively, the results indicate that ***an indirect influence of Tuenti use on wellbeing is evident.*** <u>Non-significant results:</u> • Tuenti use was not directly correlated with wellbeing

Figure 2.3 *Systematic summary of descriptive data extracted from Apaolaza, Hartmann, Medina, Barrutia, and Echebarria, (2013) study*

Study details	**Quinn & Oldmeadow (2013)** Is the igeneration a 'we' generation? Social networking use among 9 to13-year-olds and belonging
Setting **Participants**	5x Primary & 2x Secondary schools; North of England 443 pupils (51% girls) Aged 9-13yrs; mean age: 11.83 yrs (SD = 1.23)
Research design **Data collection** **Analysis employed**	Non-experimental cross-sectional correlation design Questionnaire Hierarchical regression analysis
Variables & Measures	*CYP asked to think about friendship groups from school during completion of questionnaire.* <u>Belonging:</u> 10 item,5-point scale adapted from Anderson-Butcher and Conroy (2002) and Leary, Kelly, Cottrell and Schreindorfer (2007); Cronbach's α = .86 <u>SNS use vs. Non-SNS use:</u> Tick list indicating whether SNS used to contact friends; option of 10 (or other) SNSs given <u>SNS usage Intensity:</u> 6 item, composite scale developed by researchers exploring intensity of SNS use, including 3 items from Valkenburg and Peter (2007); Cronbach's α = .72
Key results	• 59.59% of participants use SNS to contact friends <u>Significant results:</u> • SNS users (M = 12.21 years, SD = 1.06) were older than non-users [M = 11.30 years, SD = 1.25, t(337.90) = 7.94, p < .001] with age related to intensity of usage (b = .30, p < .001) • ***SNS use was significantly associated with belonging for boys*** F(3, 212) = 4.98, p = .002, R^2 = .07, with a two-way interaction (b = .30, p = .003) depicting a positive linear relationship between usage and belonging. ○ ***Intensity of SNS use also positively associated with belonging for boys*** (b = .37, p < .001) <u>Non-significant results:</u> • No gender differences evident in relation to use nor intensity of use • ***SNS use was not associated with belonging for girls***

Figure 2.4 Systematic summary of descriptive data extracted from Quinn and Oldmeadow (2013) study

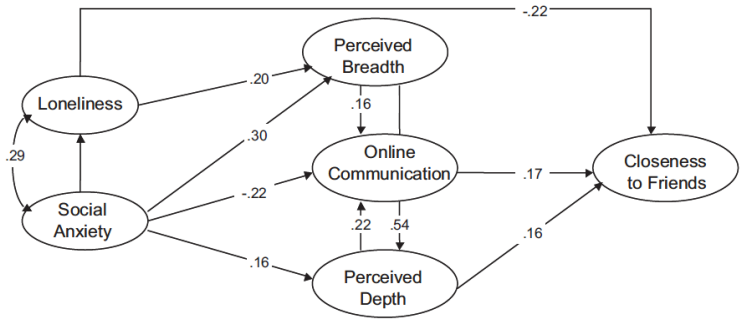
Study details	**Valkenburg & Peter (2007)** Preadolescents' and adolescents' online communication and their closeness to friends
Setting **Participants**	2x Elementary & 4 x Secondary schools; Netherlands 794 pupils (51% girls) Aged 9-13yrs; mean age: 13.31 yrs (SD = 1.50)
Research design **Data collection** **Analysis employed**	Non-experimental cross-sectional correlation design Questionnaire Structural equation modelling
Variables & Measures	Closeness to friends: 4 items measuring adolescents' closeness to friends, selected from an attachment inventory by Armsden and Greenberg (1987); Cronbach's α = .86 Online communication: 3 items developed by the researchers measuring the intensity of online use to communicate with existing friends; Cronbach's α = .64. 1 item identifying nature of online use • The researchers acknowledge that online social networking with friends was primarily (97%) undertaken via MSN Messenger (a site no longer in service); reflecting the cultural and technological profile of the Netherlands in 2004. Other variables: Loneliness, Social anxiety, Perceived breadth and depth of online communication, Online communication with strangers
Key results	• Results stable across gender and age Significant results: • Online communication positively predicted adolescents' closeness to their friends (β=.17, z = 3.13, p < .01) • ***Respondents who predominantly communicated with friends: online communication increased their closeness to friends (β= .29, z = 3.68,p<.001)*** • The final model (below) explained 10% of variance of closeness to friends  Non-significant results: • No impact on closeness to friends for those communicating predominantly with strangers.

Figure 2.5 *Systematic summary of descriptive data extracted from Valkenburg and Peter (2007) study*

2.12.5 Quality Appraisal of Included Studies

In total, four studies were identified as relevant to the current systematic review. In order to gain a better understanding of the extent to which the results from each of these studies contribute to the synthesis of the review, a weighting of quality and relevance was carried out using Gough's (2007) 'Weight of Evidence' framework. This framework supported the objective judgement of the value of each study in terms of its Quality of Methodology, Appropriateness of Methodology, Appropriateness of the evidence to the current review; resulting in an Overall Weight of Evidence (summarised in Table 2.2; detailed in Appendix A). Within this, a judgement regarding the methodological quality of each study was further supported by an adapted version of the APA Task Force's 'Coding Protocol' (Kratchowill, 2003). Table 2.3 presents the Weight of Evidence awarded to each of the four studies (detailed in Appendix A).

Table 2.2 Weight of Evidence framework (Adapted from Gough, 2007)

Weight of Evidence A	**Weight of Evidence B**	**Weight of Evidence C**	**Weight of Evidence D**
Quality of methodology:	**Appropriateness of methodology:**	**Appropriateness of the evidence to the current review:**	**Overall weight of evidence:**
Assessed using the Coding Protocol as outlined by the APA Task Force (Kratochwill, 2003). Refer to Appendices A1 – A4 for each study's coding protocol.	Appropriateness of the methodology to the review question.	The relevance of the focus / approaches of the study for addressing the review question.	The extent to which the study contributes evidence to addressing the review question.

Table 2.3 *Weight of Evidence awarded for each of the four studies in the systematic review*

Studies	A Quality of methodology	B Appropriateness of methodology	C Appropriateness of the evidence to the current review	D Overall weight of evidence
Antheunis, Schouten & Krahmer (2014)	High 2.5	High 3	High 3	**High 2.83**
Apaolaza, Hartmann, Medina, Barrutia, & Echebarria, (2013)	Low 1	High 3	Low 1	**Medium 1.67**
Quinn & Oldmeadow (2013)	High 2.5	High 3	High 3	**High 2.83**
Valkenburg & Peter (2007)	Medium 2	High 3	High 3	**High 2.67**

2.12.6 Critical Review of Primary Studies

The key features of the four selected studies will be discussed before the findings and recommendations are presented.

2.12.6 (i) Design

As per the inclusion criteria, all studies selected for the systematic review employed a non-experimental design; allowing for the complexity of relationships between two or more variables to the measured and described (Creswell, 2014). In each case, data collection was undertaken using a pencil-and-paper questionnaire within the classroom/school context supervised by

either the teacher or researcher. For the Apaolaza, et al., (2013) study, the use of a pencil-and-paper questionnaire was not directly reported but rather implied by the statement “we conducted self-administered surveys in three Spanish secondary education centers…” (p1284). With regards to treatment integrity, little or no reference was provided by any study, beyond the details mentioned above.

The cross-sectional survey approach utilised by all studies resulted in the collection of quantitative data that was analysed using correlational statistical tests. Two studies used a structural equation modelling approach to analysis (Apaolaza, et al., 2013; Valkenburg & Peter, 2007) whilst the remaining studies employed a hierarchical regression analysis approach (Antheunis, et al., 2014; Quinn & Oldmeadow, 2013). Collectively, these design considerations contributed to the weighing of evidence for ‘B – Relevance of Methodology’. An in-depth review of the analysis processes employed by the studies is discussed in the ‘analysis’ section; contributing to the weighing of evidence for ‘A – Quality of Methodology’.

2.12.6 (ii) Participants

All of the studies included in the current review were conducted within Europe: 2 in the Netherlands; 1 in Spain; and 1 in the UK. In each case, primary and secondary schools (or equivalents thereof) were invited to take part in the respective studies. The total number of participants across the four studies ranged from 344 pupils (Apaolaza, et al., 2013) to 3,068 pupils (Antheunis, et al., 2014) providing a sufficiently large N for statistical power consideration; contributing to the weighing of evidence for ‘A – Quality of Methodology’ . The reported age of participants ranged from 9 years to 17 years with a mean age of between 11.83 years (Quinn & Oldmeadow, 2013) and 13.46 years (Antheunis, et al., 2014). Only one study (Apaolaza, et al., 2013) did not provide data pertaining to the participants’ mean age. In this instance, an ‘assumed’ mean age of 14.5 years was calculated from the age range provided; subjecting the reliability of the results to potential bias. Directly related to the inclusion criteria

for studies selected for the review, data regarding participants' mean age contributed to the weighting of evidence for 'B – Relevance of Methodology'.

Demographic data regarding socio-economic background, ethnicity or education characteristics was not directly sought from participants in any study. A potential rationale for this is captured by Valkenburg and Peter (2007) who indicate that questions regarding the above variables were not included in the questionnaire due to ethical considerations around 'privacy-sensitive' data. General data regarding the education and ethnicity profile of schools in two studies (Antheunis, et al., 2014; Valkenburg & Peter, 2007) was however provided. As such, and notwithstanding the ethical considerations when undertaking data collection with early adolescents, these actions may be viewed as a potential threat to the external validity of the studies' results.

2.12.6 (iii) Measures

All studies in the review used well-referenced or standardised scales to measure early adolescents' self-perception of school connectedness, peer connectedness and social competence. With the exception of one study where peer connectedness and social competence were captured collectively as 'socialisation' (Apaolaza, et al., 2013), these constructs were measured independently of each other and analysed accordingly. With regards to SNS use, all studies measured and evaluated this construct in terms of its intensity of use, with one study (Quinn & Oldmeadow, 2013), also measuring and evaluating differences between SNS users and non-users. Notably the SNS intensity use scale developed and used in the Valkenburg and Peter (2007) study was adapted for use by two of the three remaining studies in the systematic review (Apaolaza, et al., 2013; Quinn & Oldmeadow, 2013). In contrast, the final study of Antheunis and colleagues (2014) drew from another well-referenced study and corresponding scale (Steinfield, Ellison & Lampe, 2008).

Reliability and validity data for the above measures were provided by the respective studies. Using the guidelines of the Coding Protocol (Kratchowill, 2003), three of the studies' measures were given a medium rating of reliability

(for a coefficient of > .70 on at least 75% of the primary measures; Antheunis, et al., 2014; Quinn & Oldmeadow, 2013; Valkenburg & Peter, 2007), whilst the remaining study was awarded a low rating (for a coefficient of at least 0.50 on at least 50% of the primary measures; Apaolaza, et al., 2013). Validity data for all of the measures were reported within the studies and accounted for within the Coding Protocol. Collectively, these findings and ratings contributed to the weighing of evidence for 'A- Quality of methodology' and 'C - Appropriateness of the evidence to the current review'.

2.12.6 (iv) Analysis and Outcomes

As captured in Figures 2.2 to 2.5 (Appendix A), all studies in the current review investigated the relationship between SNS use and adolescent wellbeing through the measurement of a range of wellbeing related variables including those relevant to the current review question. As previously noted, two studies in the current review used a structural equation modelling approach to analyse these relationships (Apaolaza, et al., 2013; Valkenburg & Peter, 2007) whilst the remaining studies employed a hierarchical regression analysis approach (Antheunis, et al., 2014; Quinn & Oldmeadow, 2013). Both approaches were utilised to explore the more complex relationships between SNS use and the variables under consideration (Creswell, 2014). Of the studies in the review, three studies evaluated the 'direct' influence of SNS on the wellbeing constructs relevant to the review question (Antheunis, et al., 2014; Quinn & Oldmeadow, 2013; Valkenburg & Peter, 2007). Although the study of Apaolaza and colleagues did explore the direct relationship between SNS use and 'socialisation' (combining constructs: peer connectedness and social competence), another measure specific to wellbeing was also explored but this was undertaken indirectly. This contributed to a 'low' rating being awarded for the weighting of 'C - Appropriateness of the evidence to the current review'; a rating a 'high' being achieved by the remaining studies.

All of the studies in the review were given an 'Overall Rating for Statistically Significant Outcomes' within the Coding Protocol. This rating reflected the rigour with which 'all' of the outcomes within the studies were analysed. Within this,

consideration was given to the percentage of primary outcomes which were significant and the presence of reported effect sizes or sufficient data for its calculation. Two studies were awarded the highest rating of 3 (Antheunis, et al., 2014; Quinn & Oldmeadow, 2013), one study was awarded a rating of 2 (Valkenburg & Peter, 2007), with the remaining study being awarded a rating of 1. These ratings contributed to the weighing of evidence for 'A - Quality of methodology'.

2.12.7 Synthesis of Findings

Two studies in the current review were awarded a 'high' for 'D - Overall weight of evidence' (Antheunis, et al., 2014; Quinn & Oldmeadow, 2013) with an average score of 2.83. The studies of Valkenburg and Peter (2007), and Apaolaza and colleagues (2013), both achieved a rating of 'medium', with the former receiving an average score of 2.67 whilst the latter achieved 1.67.

With a rating of 'high', the studies by Antheunis and colleagues (2014), and Quinn and Oldmeadow (2013) provide the current review with strong evidence regarding the potential influence that SNS use may have on early adolescents' self-perception of school connectedness, peer connectedness and social competence and therefore early adolescent wellbeing.

Exploring the relationship between SNS use and several aspects of early adolescents' social lives, Antheunis and colleagues (2014), found that early adolescent SNS users had higher friendship quality (i.e. satisfaction with friends), $F(1, 2993) = 17.91$, $p < .001$, $\eta 2 = .006$, and more bonding capital (i.e. benefits derived from strong ties between individuals in emotionally close and high quality relationships), than non-SNS users, $F(1, 2993) = 12.04$, $p < .001$, $\eta 2 = .004$. Furthermore, hierarchical regression analysis revealed that after controlling for a number of variables including age, gender, face-to-face interactions, education and social anxiety, the intensity of adolescents' SNS use explained 3.3% of variance in friendship quality R^2=.033, F(1, 2621) = 107.88, p < .001, and 1% of variance in social bonding capital. Despite these small effect sizes the moderating influence of SNS use on early adolescents' social lives

was nonetheless significant. Equally these effect sizes appear comparable to those yielded in the study Valkenburg and Peter (2007) who reported that SNS use in conjunction with a number of variables explained 10% of variance in closeness to friends (see Figure 2.5 for final structural equation model). Furthermore, further analysis of the model found that for adolescents who predominantly communicated with friends rather than strangers, online SNS use significantly increased their sense of closeness to their friends (β= .29, z = 3.68, p<.001).

In contrast to the study of Antheunis and colleagues (2014), Quinn and Oldmeadow (2013) explored the relationship between SNS use and a single variable, belonging; measuring early adolescents' feelings of connectedness to their friendship group. From their preliminary analyses, the researchers report that females scored significantly higher than males in respect to their sense of belonging. When exploring potential differences in SNS usage, results revealed no gender differences between SNS users and non-users, or intensity of use. SNS users were, however, found to be significantly older than non-users, and age was equally found to be significantly associated with use intensity (b = .30, p < .001). Collectively, these preliminary findings are reflective, in part, of the results in the Antheunis et al. (2014), study whereby females were found to have higher quality friendships and, along with older adolescents, use SNS more intensely.

The main analyses of the Quinn and Oldmeadow (2013) study focused on exploring the potential relationship between SNS use and belonging. The main findings of the study revealed that SNS users reported a stronger sense of belonging to their friendship group than non-users, but this held true for male adolescents only, $F(3, 212) = 4.98$, p = .002, R^2 = .07, with no significant relationship being yielded for females. Specifically, for male SNS users, belonging remained constant with age whereas for male non-users, belonging decreased over time (b = -.30, p=.004). These findings appear to be challenged by the results of the Antheunis et al (2014), and Valkenburg and Peter (2007) studies which suggest that closeness and satisfaction with friends remains stable for SNS users across age and gender. It is worth noting, however, that

the potential influence of SNS use on the relationships between gender / age and friendship, was not directly analysed by either study, which may account for the resultant disparity. Similarly, unlike the study by Quinn and Oldmeadow (2013) which measured SNS use in terms of a range of SNSs selected and offered by the participants, the remaining studies in the review focused on only one SNS, or as in the case of the study of Valkenburg and Peter (2007), employed a measure that was limited to the cultural and technological context of the Netherlands in 2004. Thus, the disparity in findings between the two studies and the Quinn and Oldmeadow (2013) study needs to be treated with caution accordingly.

Beyond research design differences, another key factor may be inferred as contributing to the disparity in the findings, namely, the mean age of participants using SNS within each study. When comparing the mean age of SNS users across the three discussed studies, it is noted that participants in the Quinn and Oldmeadow (2013) study were on average younger (M = 12.21 years, SD = 1.06), than those participating in the Antheunis et al (2014; M = 13.46 years, SD = 0.56), or Valkenburg and Peter (2007), study (M = 13.31 years, SD = 1.50). A clue to the potential importance of this difference is presented in the discussion section of the Quinn and Oldmeadow (2013), study. Here the researchers report current literature which suggests that characteristics associated with early adolescent friendship groups and therefore belonging, such as self-disclosure and intimacy, are lower for males, increasing at around 13/14 years in contrast to 11 years for females. From this, the researchers infer that interactions on SNSs may be used by younger males as a domain for practising social skills. Given the differences in the mean ages within the current systematic review this inference regarding the potential role of social competence may therefore hold true for the disparity in results found.

Evidence regarding the potential relationship between SNS use and social competence was provided by only one study in the current review (Apaolaza et al., 2013). Results from this study revealed the positive influence of SNS use on social competence as captured through the composite measure ‘socialising’ (SRC = .30, $p < .001$). It is noted, however, that given the mean age of

participants (assumed at 14.5 years) and an average score of 1.67 being awarded for 'D - Overall weight of evidence', inferences regarding the implications of this result to the research questions were treated with caution. These findings were nonetheless supported in part by the Valkenburg and Peter (2007), study, revealing that 30% of participants perceived online communication as a more effective domain for self-disclosure. It was therefore inferred that given the questions raised thus far and the obvious gap in the research literature, further exploration of the potential relationship between SNS use and social competence would prove a worthy endeavour.

2.13 Conclusions and Original Contribution of this Study

The current review aimed to answer the research question:

- Does SNS use influence self-perceptions of school connectedness, peer connectedness and social competence and therefore early adolescent wellbeing?

The studies within the current review provided some very promising evidence regarding the positive influence of SNS use on early adolescent wellbeing. Specifically, evidence suggests that SNS use can promote and enhance early adolescents' sense of connectedness to their friendship groups and that this influence may be mediated by the lower levels of social competence potentially experienced by early adolescent males of around 12 years of age. Evidence emerging from the systematic review has also highlighted a number of key points of consideration for the design of the current study, in particular, with regards to measures employed and approaches to analysis.

Evidence pertaining to the relationship between SNS use and early adolescents' self-perceptions of school connectedness did not, however, emerge as a result of the current systematic review. Given the wealth of evidence regarding the predictive relationship between school connectedness and early adolescent wellbeing, exploring the moderating influence of SNS use

would appear to be significant gap in the current research literature an as such, important to address.

Finally, it is important to note that in spite of the promising evidence, the current systematic review is not without limitations. Firstly, in addition to limitations already mentioned, it is acknowledged that the Weight of Evidence evaluation was undertaken independently by the researcher and as such, the reliability of the results may be subject to researcher bias. Moreover, as noted earlier, the breadth of the generic formula employed for the systematic search directly influenced the number of studies retrieved and selected. Finally, although undertaken within the methodological rigour afforded by the systematic review process, the search criteria selected for the review may equally be constrained by subjectivity.

2.14 Research Question

The evidence presented as a result of the systematic review has raised a number of questions regarding the direct and moderating influence of SNS use and specifically highlighted gaps in the research base in relation to early adolescent functioning and development. This has led to the refinement and development of the initial research question, forming the unique contribution of this study and resulting in the following overarching research question and subsequent hypotheses:

- What are the interrelationships between social networking site use, school connectedness, peer connectedness and social competence, and their influence on early adolescent wellbeing?

Specifically, it is hypothesised that for Year 7 and 8 pupils:

H1a: School connectedness, peer connectedness and social competence are positively associated with greater levels of perceived adolescent wellbeing.

H1b: Levels of wellbeing will vary depending on gender, with girls having higher levels of perceived wellbeing than boys.

H2: For boys, the influence of school and peer connectedness on perceived adolescent wellbeing is moderated by social networking site use, such that:

> **H2a:** The relationship between school connectedness and adolescent wellbeing will be strengthened by the intensity of social networking site use.
>
> **H2b:** The relationship between peer connectedness and adolescent wellbeing will be strengthened by the intensity of social networking site use.
>
> **H2c:** It is expected that for girls, the influence of school and peer connectedness on perceived adolescent wellbeing will be moderated by social networking site use but that this effect will be much smaller.

H3a: The influence of social networking site use on adolescent wellbeing is mediated by low social competence, such that adolescents with low social competence will use social networking sites to rehearse social skills that are conducive to the development and maintenance of connectedness to others, and in doing so will lead to improved perceptions of adolescent wellbeing.

H3b: Social competence will vary by gender, such that boys will score lower on perceived social competence.

Methodology

Chapter 3 METHODOLOGY

3.1 Aim and Structure of the Methodology

The methodology aims to describe and critique the overall approach to research adopted by the current study. This begins with a broad examination of the philosophical assumptions contributing to key research paradigms within educational psychology; identifying the theoretical position of this study. A detailed consideration of the post-positivist perspective assumed by this research is then explored. Design decisions are then examined and a rationale for the selected non-experimental correlational study design presented. Focus is then given to the characteristics, procedures and measures employed, including considerations regarding reliability, validity and ethics. Finally the chapter ends with a detailed description of the data analysis methods adopted.

3.2 Theoretical Considerations

Research is described as a systematic process of critical enquiry involving data collection, analysis and interpretation, undertaken in an attempt to understand, describe or predict reality. Within educational psychology, this research process is seen as a means for enhancing understanding of educational and psychological phenomena (Mertens, 2014) as well as, through evidence-based practice, a vehicle for empowering individuals within these contexts (MacKay, Boyle & Cole, 2016).

It is recognised that during the research process, decisions regarding methodological, design and analysis approaches are guided by the theoretical framework (paradigm) chosen by a study's researcher. It is suggested that a researcher's alignment to a particular paradigm not only influences the way in which knowledge is explored and interpreted but also clarifies their intent, motivation and expectations for the research (Mackenzie & Knipe, 2006). As such, selecting a paradigm which is closely aligned to the researcher's experiences and reasoning of the world (Cohen, Manion and Morrison, 2011), is recognised as a crucial first step in the research process (Mackenzie & Knipe,

2006). The more common paradigm choices within educational psychology research being: post-positivism, constructivism, transformative and pragmatic (Mertens, 2014; Mackenzie & Knipe, 2006).

According to Dillon and Wals (2006), underpinning each paradigm, and essential to the selection process, are four key philosophical assumptions relating to: ontology, epistemology, methodology, and axiology. They suggest that detailed consideration of the positioning and tensions between these assumptions enable researchers to examine and explore conceptions regarding the nature of reality (ontology), how knowledge is made (epistemology), and the influences these may have on the systematic enquiry procedures (methodology) and nature of ethical behaviour (axiology) to be adopted. Dillon and Wals reiterate however that beyond these paradigmatic considerations, decisions regarding approaches to research must ultimately be driven and calibrated against the research question(s) being explored. Table 3.1 illustrates the relationship of the key assumptions to the four main research paradigms (Mertens, 2014).

Table 3.1 Research paradigms in educational psychology (adapted from Mertens, 2014)

Key Assumptions	Post-positivism (stemming from positivism)	Constructivism	Transformative	Pragmatic
Ontology	• One true reality, knowable within a specified degree of probability	• Realities are multiple and socially constructed	• Rejects cultural relativism • Recognises influence of social position and privilege	• Individuals hold their unique interpretation of single reality
Epistemology	• Objectivity fundamental	• Interactive relationship between researcher and participants	• Interactive relationship between researcher and participants • power differential considered	• Relationship determined by what is deemed appropriate
Methodology	• Quantitative (primarily) • Interventionist • Quasi-experimental • Correlational	• Qualitative (primarily) • Contextual consideration • Narrative research	• Primarily Qualitative however Mixed Methods available • Context and history considered • Participatory	• Method matched to research question / purpose • Mixed Methods typically employed
Axiology	• Beneficence: minimise harm, maximise good outcomes • Respect privacy • Justice / Equality of opportunity • Informed consent • Researcher competence	• Balanced representation of viewpoints • Raises participant's awareness • Community rapport	• Respects cultural norms • Beneficence: promoting human rights, increased social justice • Reciprocity	• Knowledge influenced by researcher's values and politics

3.2.1 The Selected Paradigm: Post-Positivism

This study aimed to explore the overarching research question:

> *What are the interrelationships between social networking site use, school connectedness, peer connectedness and social competence and their influence on early adolescent wellbeing?*

Consideration of this research question alongside the ontological, epistemological, methodological and axiological implications of each paradigm led to a post-positivist perspective being adopted by this study.

Stemming from a positivist paradigm, post-positivism upholds the existence of a reality discoverable through scientific and systematic enquiry (Cohen, Manion, & Morrison, 2011). Differing from a positivist ontological perspective which believes in a single, external and objective reality, post-positivism acknowledges reality as a challengeable and changeable state of human experience and behaviour and as such, a one true reality that can only be known within a specified degree of probability (Reichardt & Rallis, 1994). Epistemologically, post-positivism is nonetheless committed to objectivity (Robson, 2011) whilst also recognising and embracing the differing experiences, cultures and constructs of researchers and those being observed (Lach, 2014).

Within post-positivism, it is noted that research is limited by bias and error. It is therefore viewed as essential that researchers strive for objectivity by managing potential bias from theories, hypotheses and knowledge, thus minimising any influence on how reality and research is interpreted (Mertens, 2014). Lach (2014) suggests that through careful, transparent, and replicable adherence to the operationalisation of research questions, sampling strategies, research design, and methodology for rigorous data collection and statistical analysis, researchers can contribute positively to the reliability and validity of the reality observed. Underpinning this is an axiological assumption of researcher competence highlighting the ethical obligation of researchers to undertake ‘good’ research that utilises valid research design; maximising good outcomes

at a global and individual participant level whilst minimising unnecessary risk or harm (Mertens, 2014; Dillons & Wals, 2006). For researchers working within a post-positivist paradigm, research designs that employ structured, often numerical data collection methods such as questionnaire surveys are typically employed (Creswell, 2014), revealing a reality that is reflective of the direct and collective perceptions of those being questioned (Pring, 2004).

3.3 Research Design

Research designs are viewed as a critical part of empirical enquiry, providing an interrelated and balanced framework linking purpose, theory, research questions, methods and sampling strategies. Often conceptualised as fixed, flexible, or mixed, the decision to adopt a particular design approach is informed by the paradigmatic standpoint adopted by the research (Wood & Welch, 2010). The post-positivist paradigm assumed by this study is closely aligned with fixed designs (Tavakol & Sandars, 2014) and will therefore be considered in detail.

3.3.1 Fixed Designs

Described as ‘theory driven’, fixed designs provide a structured framework for data collection and statistical analysis. Central to the quantitative methodology of fixed designs, is the concept of ‘variable’, whereby reality is conceptualised as consisting of properties of things, enabling social phenomenon and psychological constructs such as wellbeing to be measured and compared (Yilmaz, 2013). Supporting the methodological rigour of research, variables pertinent to research questions are identified and selected prior to the main stages of data collection, an approach undertaken in educational psychology research, enabling predictions relating to the interrelationships of constructs to be drawn, and likely outcomes of research identified (Robson, 2011).

The range within fixed designs, from highly controlled ‘true experimental’ designs such as randomised controlled trials to ‘non-experimental’ designs including correlational and comparative designs, explores varying degrees of causal inference (Shadish, Cook and Campbell, 2002). True experiments, involving the manipulation of independent variables, have been employed in

educational psychology research to measure the impact of interventions on dependent variables (Greene, 2014). In contrast, non-experimental designs explore variables that exist among individuals without purposeful intervention of the researcher; providing greater opportunity to reduce researcher bias and enhance objectivity (Coolican, 2014). The value of non-experimental designs and in particular correlational designs is found in relation to this study's aim of exploring multiple self-concepts of connectedness, social competence and SNS use, and the interrelationship and influence of these on perceptions of wellbeing; free from researcher intervention.

3.3.2 Non-Experimental Correlational Designs

Non-experimental correlational designs are generally employed where the phenomena under investigation are not amenable to change, that is:

- non-modifiable e.g. age, gender, self-perceptions
- not modifiable for ethical reasons e.g. medication
- not feasibly modifiable e.g. class placement

(Robson, 2011)

Applicable to a high proportion of variables typically explored within educational psychology, these constraints demonstrate the utility of correlational designs for researchers wishing to make inferences related to constructs such as attitudes and beliefs (Curtis, Comiskey, & Dempsey, 2016).

When selecting correlational designs, researchers are offered two design approaches to consider:

- Prediction studies
    - scores on one or more variables are used to predict the scores on one or more criterion variables
    - data collected at different data points over time

- Cross-sectional design
    - Measure taken at one point in time
    - Typically associated with questionnaire survey data collection methods
    - Focuses on relationships between and among variables in a single group

Although both approaches provide opportunity for describing population trends, opinions and behaviour through the study of a sample of that population (Creswell, 2014), decisions regarding the suitability of each approach is ultimately driven by the research question under investigation, thus enhancing the methodological rigour of the research (Tavakol & Sandars, 2014). In respect of the current study, the research question aimed to understand the underlying mechanisms of early adolescent wellbeing as perceived by a group of participants at a given point in time, a cross-sectional design utilising questionnaire survey data collection methods therefore provides the most suitable means of addressing this.

3.4 This Study's Research Design

The current study aimed to explore the interrelationships between social networking site use, school connectedness, peer connectedness and social competence and their influence on early adolescent wellbeing. Consideration of key assumptions relating to ontology, epistemology, methodology and axiology, led to a post-positivist position being assumed by this study. Aligned to a post-positivist perspective, a fixed design approach in the form of a non-experimental, cross-sectional correlational design employing questionnaire survey data collection was therefore adopted by this study.

3.4.1 Data Collection Methods: Questionnaires

Further evidence for adopting questionnaire data collection method is provided by the numerous advantages acknowledged in psychology research. Firstly, questionnaires are seen as offering a quick, simple and versatile method to collecting information about beliefs, attitudes and behaviour (Oppenheim,

2000). Due to the standardised nature of the questionnaire format alongside approaches to administration, large samples of data can also be obtained and statistically analysed whilst limiting threats to reliability. These administrative approaches can also contribute positively to the anonymity of participants which can support honesty in responses (Gillham, 2008).

Irrespective of these benefits, researchers are frequently polarised in their opinions of questionnaire methods for data collection. Some argue that the results from questionnaires may be skewed by participants providing socially desirable responses rather than responses which accurately reflect what they are thinking, feeling and doing. Others suggest that questionnaire data are affected by the characteristics of the respondent such as motivation, memory and personality (McDonald, 2008). Other limitations highlighted in relation to problems of data quality include the potential for the misinterpretation of questions, and difficulties motivating respondents to give thoughtful and considered responses (Gillham, 2008).

As a means of harnessing the benefits of questionnaire data collection methods whilst ameliorating its limitations, Cohen, Manion and Morrison (2011) recommend an 8-staged planning approach to questionnaire design as summarised in Figure 3.1. This approach was adopted by this study, the procedure of which is outlined in Section 3.6.1. During this process, careful consideration was given to the pilot phase of the design process. This phase of the design process is viewed as a particularly important contributor to the reliability and validity of the data collection process (Thabane et al, 2010).

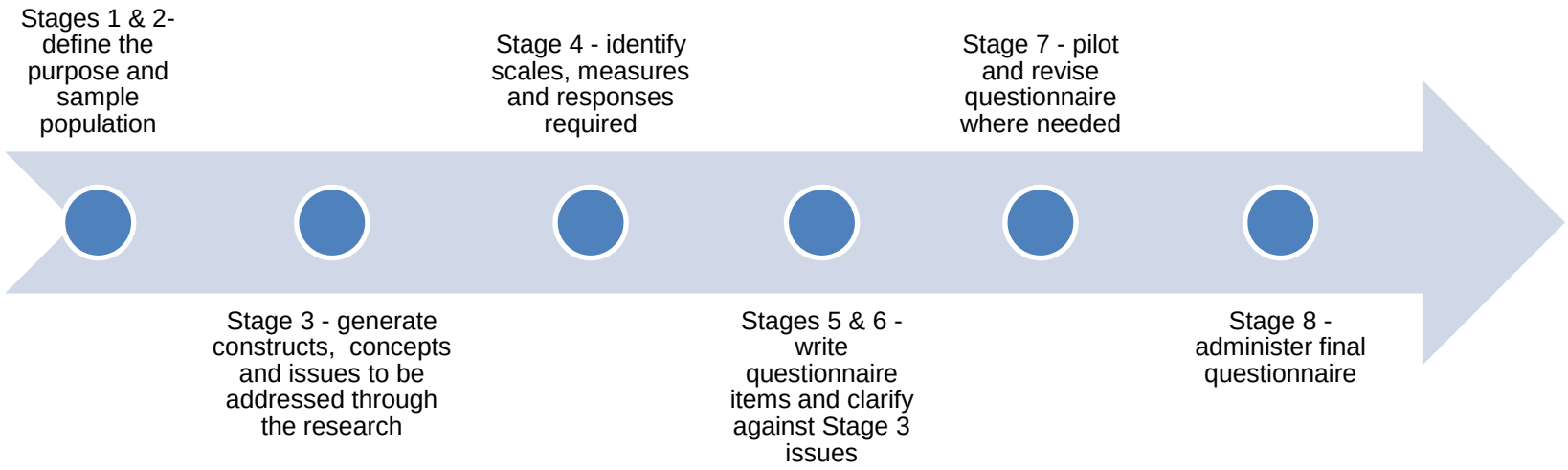


Figure 3.1 *The 8-staged planning process of questionnaire development (Cohen, Manion, & Morrison, 2011)*

3.4.2 This Study's Variables

The explanatory and response variables central to this study's research design and their corresponding constructs and measures are shown in Table 3.2 below. The characteristics of these measures are explored in detail in the methods Section 3.7

Table 3.2 Demonstrating the study's variables

Variable - function	Construct	Measure
output	wellbeing	SWLS
predictor	school connectedness	PSSM
predictor	peer connectedness	PCS
moderator	social networking site usage intensity	SNSUI
predictor & mediator	social competence	SCST
covariate	gender	---

3.4.3 Quality of Research: Reliability and Validity

The quality of the current research was evaluated and demonstrated through measures of reliability and validity. These measures were used to capture both the rigour of the research process and the trustworthiness of research findings (Roberts, Priest & Traynor, 2006).

For research employing quantitative design methods, focus for evaluation is generally centred on the concept of internal validity, denoting the extent to which the evidence points to an inference that provides the most plausible explanation of the research findings (Laher, 2016). Good inference is seen to be dependent on three key factors:

- The research findings establish a relationship between variables whilst demonstrating to a degree of certainty that this relationship did not occur by chance. Characteristically achieved through tests of statistical significance.
- The strength of the inference is supported by data analysis evidence demonstrating an equally strong effect size.

- Inferences are based on transparent and replicable judgements thus minimising threats of researcher bias and error.

(Teddlie & Tashakkori, 2009)

Supporting these key factors are reliability and validity measures typically used to judge the quality of non-experimental designs employing questionnaire data collection methods:

- **Reliability:** evidence signifying the inclusion of reliable measures. For questionnaire items, this is typically denoted by a measure of internal consistency employing statistical procedures such as Cronbach's alpha coefficient.

- **Construct validity:** evidence demonstrating that the constructs under investigation are being explored and measured without discrimination and to a degree of accuracy. Construct validity is based on actual results and is often demonstrated following data collection and analysis. It was therefore important for this study to consider how previous research had operationalised similar variables with a comparable sample and context.

- **External validity:** reflects the degree to which inferences can confidently be generalised to other people and contexts. Contextual and cultural factors as well as treatment validity contribute to the judgements being made.

(Nardi, 2015; Mertens, 2014)

The above considerations of reliability and validity and in particular internal validity were addressed during each stage of the research process for the current study. Reference to these considerations may be found throughout this chapter and in the results (Chapter 4). A detailed summary evaluating the quality of this study's research is then presented in the discussion (see Section 5.7).

3.5 Methods: Characteristics of the Current Study

3.5.1 Stakeholders

A number of stakeholders were influential in the proposal, implementation and completion of the current research. During this process, the needs and rights of the stakeholders were considered and maintained in line with the British Psychological Society's ethical codes of practice (2009; 2014). The main stakeholders are briefly considered below.

The Local Authority: The researcher was employed as a Trainee Educational Psychologist (TEP) within an East Midlands UK, local authority Educational Psychology Service (EPS) where the research was undertaken.

During the initial stages of the research proposal, the EPS had expressed an interest in developing their understanding of the potential positive influence of SNS use on CYP's wellbeing. Specifically, the EPS recognised a growing number of schools seeking support in relation to the use of SNSs by pupils and were interested in broadening the support they could offer to these schools. In particular, the EPS wanted to ensure that any support offered, moved beyond an understanding that focused solely on the risks associated with SNS use, to one that also encompassed its potential benefits. The current research was therefore important in supporting the EPS in developing its evidence-based understanding of this area. As a representative of the EPS, regular consultation with Senior EPs regarding the research was undertaken by the researcher.

The University of Nottingham: The current research was completed as a required part of the Doctorate in Applied Educational Psychology (DAEP; professional training). This is a three year full time course that prepares students for work as Educational Psychologists (EPs) in a professional capacity. Specifically, it is anticipated that as an outcome of the course and within its time limitations, TEPs will develop 'a range of research skills appropriate to investigations in education and other public sector services, including those carried out with other stakeholders' (DAEP Handbook 2014-15, p.7).

The participating Academy Trust of schools: The Academy Trust became involved with this research during the proposal stage having expressed an interest in exploring the utility of creating an online school SNS platform as an alternative approach for supporting their younger secondary school pupils. Ultimately, the Trust and schools dedicated time and resources implementing and supporting this research with the hope of improving overall school policy and practice in relation to pupil wellbeing and SNS use.

3.5.2 School Characteristics

Four schools within one Academy Trust participated in the research, three of which taught pupils from 11–18 years of age with one school that includes a primary department with pupils starting at aged 3 years. The researcher worked as a TEP in one of the schools and as such had a pre-existing relationship with the school and the Academy Trust. The Trust was informally made aware of the research during school visits in the Spring Term 2016. Further details of the recruitment process are presented in the procedure (Section 3.8). A summary of the key characteristics of each school sourced from most recent Ofsted reports is presented in Table 3.3.

Table 3.3 *Presenting the key characteristics of the four schools participating in the current research*

School	Size	Pupils from ethnic minority backgrounds	Pupils on SEN register	Proportion of Pupils Premium	Most recent Ofsted Grading	Most recent Ofsted inspection
W	Larger than average	Below average	Higher than average	Above average	Requires improvement	December 2014
X	Smaller than average	Below average	Average	Above average	Good	December 2015
Y	Average	Below average	Above average	Below average	Good	June 2014
Z	Larger than average	Below average	Below average	Below average	Outstanding	December 2010

3.5.3 Pupil Characteristics

From approximately 700 pupils, 594 pupils provided informed (opt-out) consent and participated in the research. This attrition rate was primarily due to school based factors such as school absence during data collection and non-completion of the questionnaire, with a minority of pupils formally opting out of the research. Of the remaining pupils, questionnaire data collected from 532 pupils (40.2% girls), ages 12-13 years (M = 12.58; SD = .31), was included in the study following data cleaning procedures (explored in detail in Section 3.10.1). The final sample represents approximately 76% of the target population and provides the basis for the subsequent analyses in the study.

3.5.4 Selection of Pupil Participants

All Year 8 pupils from the Trust ($N \approx 700$) were invited to participate in the research and were advised that participation was voluntary. The rationale for recruiting Year 8 pupils (12 – 13 year olds) is linked to a number of key points. Firstly, as discussed in Chapter 2, issues pertaining to later wellbeing are shown to be linked to self-perceptions of connectedness and social competence

developed during early adolescence (10-14 years). Some gender differences are however evident, suggesting that characteristics associated with early adolescent friendship groups and belonging are lower for males, increasing at around 13/14 years, in contrast to 11 years for females. In examining and critiquing the current research within the face-to-face and SNS domains, 12-13 year olds were subsequently chosen as a suitable age to survey. Finally, in order to avoid potential influences related to transition (i.e. transition from primary to secondary school) such as changes in attitude, behaviour and connectedness to school (Lester, Waters & Cross, 2013), a decision was made to restrict data collection to the final term of Year 7 or the first term of Year 8. Following procedural issues related to consent, data collection took place during Year 8.

3.5.5 Sample Size – Statistical Power

Statistical power refers to the probability of research detecting significant effects where these exist. Where research lacks adequate statistical power (<.80), there is a risk of a Type I error (falsely accepting the research hypothesis) or Type II error (failure to detect significance where this exist; falsely accepting the null hypothesis) being made. Sample size is viewed as a critical component of the statistical power calculation.

To ensure that an assumption of power is not violated, Tabachnick and Fidell (2007), recommend that the following calculation is undertaken during the planning stages of research in order to establish the minimum sample size required:

$$N > 50 + 8m \text{ (where } m = \text{number of independent variables)}$$

With 5 variables in addition to a measure of wellbeing, the minimum sample size required for this study was therefore 90:

$$N > \mathbf{90} = 50 + (8 \times 5)$$

This minimum requirement was exceeded by the 532 cases included in the research's eventual data analysis.

3.6 Research Procedure

3.6.1 Questionnaire Design and Pilot Study

The 8-staged planning approach to questionnaire design explored in Section 3.4.1 was adopted by the current study and is briefly outlined below.

Stages 1 – 3: The first stages of the questionnaire design were directly influenced by the in-depth analysis and critique of the early adolescent wellbeing and SNS literature explored in Chapter 2. The resultant rationale for this study provided the defining purpose for the questionnaire and led to decisions regarding the target sample population. Consideration was also given to the constructs, concepts and issues to be addressed and data necessary to meet the objectives of this study.

Stage 4: A number of well established self-report scales previously utilised within the early adolescent wellbeing discourse, as identified in Chapter 2, were included in the questionnaire. The selected scales were chosen for their consideration of the positive rather than negative correlates of the constructs being explored. Consideration was also given to maintaining the brevity of the final questionnaire. As such, only scales with 10-items or less were considered. These scales are explored in greater detail in the measures (Section 3.7).

Stages 5 and 6: Careful consideration was given to ensure that the questionnaire's layout, accessibility and general presentation were in keeping with the needs of a Year 7/8 population. This included the use of a font type typically used in schools, bold type to highlight key aspects of a question and colour to indicate a decision point and the SNS icons. With regards to the wording of the questions, these were kept short and simple with leading questions being avoided; minimising issues of response bias. Where questions were potentially open to interpretation, clarification was provided in the form of an example e.g.:

- Q3. **How often to you use** social networking sites to contact your friends? For example, for chatting, sharing photos, commenting on your friend's photos etc. Please tick one.

The face validity of the final draft version of the questionnaire was additionally reviewed by an Associate Professor at the University of Nottingham's School of Psychology. The feedback was very positive with no changes being suggested.

Stage 7 – Pilot Study: Forming an intrinsic part of the questionnaire design process, a pilot phase of the data collection procedure and questionnaire was undertaken with the aim of enhancing reliability and validity. This phase was undertaken with a subgroup of the Year 8 sample. From the 30 pupils approached, 16 pupils provided signed consent and attended a meeting with the researcher during which they completed the questionnaire and participated in a feedback discussion. During the introduction to the pilot study, the participants were reminded about the overall purpose of the research and given an explanation of the pilot process. A key aspect of this introduction was to encourage the participants to note and share their experiences of the questionnaire process and answering of the questions. Key points for consideration included:

- How was the introduction, the pace? Was it easier having the questionnaire read out or would an alternative approach be preferable?
- Questions: clarity of questions? Were any questions or particular words unclear / confusing? Leading questions?
- Accessibility: layout, instructions, format of items including fonts?
- Response items: are these clear? Are there any missing items e.g. for question 9?
- Anything else?

The questionnaire was administered using the procedure outlined in Section 3.8.1. As a result of the pilot study the following changes were made to the questionnaire:

- Q5 – the scale was extended to include '0' number of days
- Following a lengthy discussion around how SNSs are defined, a more refined verbal explanatory script was created by the researcher to use during the questionnaire administration. The basis of this definition

remained focused on boyd and Ellison's (2007) definition as highlighted in Chapter 2.

Stage 8: Commercial printers were employed to produce the final questionnaire booklets. It was hoped that the professional finish would enhance the 'face value' of the questionnaire and thus contribute to the participants' motivation to complete it with care and consideration.

See Appendix B for the template questionnaire.

3.7 Measures

3.7.1 Demographic Information

Pupils were asked to provide information regarding, age (date of birth) and gender.

3.7.2 Social Networking Site Usage Intensity (SNSUI)

In Chapter 2 (Section 2.2.3), it was noted that much of the research exploring the potential influence of SNS use on adolescent wellbeing continues to yield mixed results. One suggestion for this disparity is focused on the tendency of researchers to concentrate on the risks associated with SNS use and thus employ measures which appear weighted towards measuring its excessive use alone. Equally, there is a recognised tendency for studies to focus on estimating time spent on one SNS platform rather than offering participants the opportunity to demonstrate the range of SNSs being used. These different approaches to measuring SNS use were explored in a recent study (Olufadi, 2016) aimed at developing a broad and uniform index for measuring adult SNS use. The findings from the study highlighted the advantages of researchers developing a SNS use composite scale that not only harnesses and calibrates the strengths and limitations of existing well reported measures but also responds to the evolving nature of SNS use and definition. This was the approach adopted by this study. Table 3.4 outlines the SNS use measure developed by the researcher including contributing research and data.

The final measure asked participants to think about their main friendship groups from school and outside of school whilst completing 7 questions regarding their SNS use on varying response scales. Responses for each participant were then standardised and a mean score calculated; contributing to the analysis of the measure's internal consistency. Higher scores indicated a greater intensity of SNS use.

Table 3.4 Summaries the SNS use composite measures developed by the researcher

Question	Rating scale	Adapted from:	Notes
How often do you use social networking sites to contact your friends? For example, for chatting, sharing photos, commenting on your friend's photos etc.	6-point scale, ranging from '*never* 'to '*everyday or almost everyday*'.	Quinn and Oldfield (2013)	Participants ticking 'never' did not complete the remainder of the SNS scale.
How long have you been using social networking sites to contact your friends?	5-point scale, ranging from '*less than a month*' to '*more than 2 years*'.		Scale adapted in line with data suggesting that CYP start to use SNSs at aged 9 years (Childwise, 2015).
How many days in the last 7 days have you been on a social networking site to contact your friends?	Number of days ranging from '*0*' to '*7*'.	Valkenburg and Peter (2007)	Extended to include '*0*' after the pilot phase and in response to lower frequency of use.
On the last day that you were on one of your social networking sites, how many times did you contact your friends?	Please write the number _____		
On the last week day (Monday – Friday) that you were on a social networking site, how long did you spend making contact with your friends?	6-point scale ranging from '*less than 15 minutes*' to '*3 hours or more*'.	Steinfield, Ellison and Lampe (2008)	Questions accounted for variations in SNS use that may exist due to attendance at school etc.
On the last weekend day (Saturday or Sunday) that you were on a social networking site, how long did you spend making contact with your friends?			
Which social networking site(s) do you use to contact your friends?	Please tick all that apply: Facebook, twitter, Instagram, WhatsApp, Instagram, kik, Skype Other(s) Please list_____	Developed by researcher	Consideration was given to the SNS criteria adopted by this study (boyd & Ellison, 2007). SNSs were listed in line with early adolescent data regarding SNS use habits (Hutchinson, 2015). The 'other(s)' option ensures that the question provides a true reflection of SNS use.

3.7.3 Wellbeing (SWLS)

Subjective wellbeing was measured using the Satisfaction With Life Scale (SWLS; age range: general population; Diener, Emmons, Larsen, & Griffin, 1985). Comprising five items (e.g., “In most ways my life is close to my ideal.”) along a 7-point rating scale, ranging from ‘*strongly disagree’* to ‘*strongly agree’*, this scale aims to measure self-perceptions of global life satisfaction. With a reliability coefficient ranging from 0.79 – 0.89 across six studies, as well as good convergent and discriminate reliability, and degree of temporal stability, this measure is identified for its sound psychometric properties (Pavot & Diener, 1993). The reliability and validity of the SWLS has also been demonstrated with adolescent samples (Neto, 1993).

3.7.4 School Connectedness (PSSM)

Developed by Goodenow (1993) and adapted by Shochet (2006), school connectedness was measured using the short version of the Psychological Sense of School Membership scale (PSSM; age range 10-14 years). This scale comprises of 6 positively worded (e.g. “The teachers here respect me.”) and 2 negatively worded (e.g. “Sometimes I don’t feel as if I belong here.”) statements rated on a 5-point scale aimed at assessing the extent to which CYP feel connected to, and valued in their school. Once negatively worded items are reverse-coded, a total score is generated as a sum of all items. Highly correlated to the full scale (0.94), the short version of the PSSM is viewed for its sound psychometric properties with Cronbach’s alpha of 0.86.

3.7.5 Peer Connectedness (PCS)

Peer connectedness was measured using the Peer Connectedness Scale (PCS; age range 10-18 years; Jose, Ryan & Pryor, 2012). This scale was developed as part of a longitudinal study exploring the predictive relationship between social connectedness and adolescent wellbeing undertaken with a sample of 1,774, 10-15 year olds. Comprising of 7 items rated on two, 5-point scales, the measure aims to assess the extent to which adolescents feel supported and happy in their relationships and interactions with peers inside

and outside of the school context. Cronbach's alpha ranged from 0.78 – 0.81 over a three year period.

3.7.6 Social Competence (SCST)

Due to the lack of clarity surrounding a clear conceptual framework for social competence, the availability of appropriate social competence measures involving 10-items or less is limited. A suitable measure was however found in the Social Competence Scale for Teenagers (SCST; age range 11-18 years; Child Trends, 2014) developed for the Flourishing Children Project, as part of a programme of research aimed at developing short, robust and usable scales for positive child wellbeing constructs. Specifically, the 9-item, 4-point SCST aims to measure a number of prosocial skills identified as essential to functioning in dyadic and group situations including respecting and expressing appreciation for others and resolving conflict. Tested on a representative sample of 12-17 year olds in the United States, this measure is shown to have high reliability (Cronbach's alpha of 0.79) and concurrent validity.

3.8 Recruitment and Implementation Procedure

Following ethical approval from the University of Nottingham Ethics Committee (see Section 3.9), the Academy Trust of schools were contacted and formally invited to take part in the research. The main stages of the recruitment process and questionnaire implementation are briefly outlined below.

1. Initial meeting (May 2016): After obtaining verbal interest from the Academy Trust, the researcher met with the trust's Head of Teaching and Learning and shared the rationale and potential implications of the research. As a result of this process, consent was received for the pilot study phase of the research to be undertaken in one of the academy schools. Contact was made directly with the school (Appendix C) and a class identified for the pilot study. Information letters and consent forms were given to invited participants (Appendix D).

2. Pilot Study (16th May 2016)

3. Meeting two (June 2016): A second meeting with the Head of Teaching and Learning considered the outcomes of the pilot study and the subsequent implications of undertaking the main stage of data collection. As an outcome of the meeting, consent was gained for all Year 7 pupils across the four academy schools to be invited to take part in the study.

4. Discussions with schools (June – July 2016): Arrangements for the main stage of data collection was made with each school. Data collection was, however, put on hold due to low return rates (~4%) of participant consent.

5. Further discussions with schools (September): After obtaining ethical approval from the University of Nottingham Ethics Committee to move to an 'opt-out' consent procedure, arrangements were made with each school for data collection to take place (see Appendix E for information letter and 'opt-out' consent form).

6. Questionnaire data collection: (September – October 2016)

7. Debriefing meetings: (Scheduled for July 2017)

3.8.1 Implementation of the Questionnaire

Data collection sessions were undertaken within school in classes of approximately 30 pupils or in double class groups of up to 50 pupils in the school hall. To ensure the consistency of data collection across participants, the implementation of the questionnaires was undertaken by the researcher; minimising threats to treatment integrity. School staff were present during the sessions as part of school safeguarding policy and to support with general classroom management. Within each school, the data collection sessions were preceded by a 10-15 minute introductory talk attended by all participants with the researcher outlining the purpose of the research and clarifying the procedure.

All pupils were given up to 30 minutes to complete the pencil-and-paper questionnaire. Key points of considerations during the questionnaire implementation included:

- Steps for ensuring anonymity of completed questionnaires

- Reminder about informed consent and right to withdraw without prejudice
- Researcher supported participants' rights for informed consent; being vigilant of non-verbal cues that may indicate that a participant may wish to withdraw and therefore facilitating this
- Researcher facilitated understanding by reading out the questionnaire and providing additional explanation or examples where appropriate
- Researcher provided guidance on the nature of response required e.g. one '✓' and how to correct / change a response
- Pupils were encouraged to ask questions to clarify understanding

3.9 Ethical Considerations

The current study adhered to the BPS Code of Human Research Ethics (BPS, 2014), and the ethical guidance outlined by the University of Nottingham Ethics Committee. In respect to the latter, ethical approval was gained from the committee in April 2016 (Appendix F) after which, the pilot phase of the study was undertaken. In response to low return rates (~4%) of participant consent for the main stage of data collection, an application for Chair Approval for amendments to the study was made. Specifically approval was sought to move from an 'opt-in' to an 'opt-out' consent procedure, on the grounds that data collection did not constitute an intervention, or depart from a range of typical practices within schools. Ethical approval for this amendment was received in August 2016 (Appendix G). The main ethical considerations undertaken in the study are briefly outlined below.

Informed consent: Verbal consent from schools was gained following receipt of an information letter (Appendix C), and after discussions with Senior Management. Participating pupils and their parents/carers were provided with information letters to read, consent was then gained in writing (Appendix D) or following an 'opt-out' procedure (Appendix E). In all cases, the accessibility of the information letters and consent forms were in keeping with the receiving audience. The right to withdraw, at any point and without explanation, was made clear to all participants and actively supported by the researcher.

Confidentiality: Each participant was assigned a unique identification number generated from class lists or consent forms held and securely stored by the researcher. The assigned number was recorded onto the questionnaire and only accessed in the event of a participant withdrawing from the study. All data, including completed questionnaires were kept secure in a locked cabinet and/or encrypted memory stick. It was made clear to all stakeholders and participants that any collected data would only be used for the specified research purposes.

Deception: The purpose and procedure for the study were clearly communicated through the information letters and during the school discussions and introductions to the data gathering procedure. Opportunities to ask questions and explore any arising concerns were consistently provided.

Debriefing: The researcher will meet with the Academy Trust to discuss the outcomes and potential implications of the research for school policy and practice.

3.10 Method of Data Analysis

3.10.1 Data Cleaning

In total, 594 pupils provided informed consent and participated in the research. During the questionnaire procedure, 4 participants opted to withdraw from the research and their questionnaires removed. At this stage, an initial scan of questionnaires resulted in a further 7 questionnaires being removed as incomplete. Response data from the remaining 583 questionnaires were entered into the statistical computer programme SPSS v.23. Each data case was then screened for incomplete or incorrect responses. For those participants who reported using SNSs, particular attention was given to responses made to question 9 (Figure 3.2). Specifically, it was anticipated that participants would tick at least one of the suggested SNSs, as well as possibly ticking ‘other’. For those participants only ticking ‘other’, their questionnaire data was subsequently removed from the dataset if the SNSs listed did not fall within the parameters of the SNS definition selected for this study. Overall, data from 532 participants were included in the final dataset following data cleaning procedures.

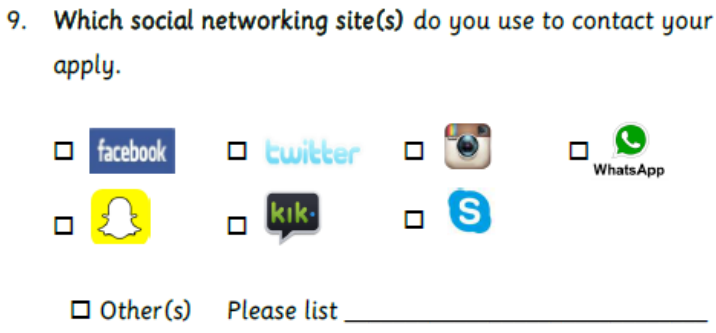


Figure 3.2 Presenting Question 9 of this study's questionnaire

3.10.2 Data Preparation

Preparation of the research data and subsequent analysis was conducted within SPSS. Firstly, reverse coded items (PSSM) were recoded, and summed total scores calculated for the variables, wellbeing (SWLS), school connectedness (PSSM), peer connectedness (PCS), and social competence (SCST). A composite variable for SNS usage intensity (SNSUI) was created by converting raw scores into z-scores and combining to create a mean average score using the 'compute' function in SPSS. The resultant total SNSUI z-scores representing the number of standard deviations (SD) a given score is from the mean (represented by 0).

3.10.3 Approach to Data Analysis

3.10.3 (i) Assumption Testing

Decisions regarding approaches to analysis were made in response to the hypotheses being explored and following preliminary checks for violations of assumptions for parametric testing i.e.:

- that the data is **normally distributed**;
- the data is measured at least at **interval level**; and
- there is **homogeneity of variance**.

(Field, 2009)

These assumptions were tested and proven for this study's data allowing for a parametric, rather than a non-parametric test equivalent to be conducted. A brief outline of these assumptions is presented below.

Normal distribution: considers whether the sample data is normally distributed as would be presumed in the general population. Normality is observed either visually as a symmetrical 'bell-shaped' curve whereby the mean exists at the peak, or assessed through statistical analysis. In this study both approaches were used and are presented accordingly in the results (Chapter 4).

Interval level: all data emerging from the questionnaire scales were treated as interval level data. Despite being the subject of debate, treating Likert scales as interval rather than ordinal level data is an approach widely adopted throughout research communities studying human behaviour and attitudes (Willits, Theodori & Luloff, 2016). It is suggested that whilst it cannot be theoretically guaranteed that the distances between statements on each Likert scale have the same true distance, it is argued that by virtue of the numerical representation given to each statement any analysis undertaken within SPSS are treated as such. Thus the distance between 'None of the time' = 1 and 'A little of the time' = 2 are treated the same as 'A lot of the time' = 4 and 'All of the time' = 5 (Norman, 2010).

Homogeneity of variance: or assumption of equal variance is the extent to which variability of scores is equal within, and across, all distributions. Dependent on the statistical test used, variance may be assessed through examination of a scatterplot or through numerically presented data such as 'Levene's test for equality of variance' in the case of analysis employing t-tests.

In addition to the above core assumptions, violations of assumptions specific to each statistical test conducted within the current study were also addressed. In line with current research practice (Howell, 2013) statistical significance for this study was established at $p < .05$; indicating a probability of the result being obtained by chance at less than 5%. Effects sizes were similarly analysed using online calculation tools (Soper, 2017) and presented at each stage of testing.

3.10.3 (ii) Analysis Procedure

In the first stage of data analysis, descriptive statistics and basic inferential statistics (bivariate correlations) were examined providing the means and standard deviations of this study's variables including demographics. At this stage, the internal consistency of the scales in relation to the study's sample population was also measured. A t-test was then used to compare the wellbeing scores of females versus males. Finally, regression analysis was undertaken to explore the amount of the variance in wellbeing that could be significantly accounted for by the explanatory variables.

During the next stages of analysis, regression analysis using the PROCESS macro for SPSS (Hayes, 2013) was employed to examine potential effects of moderation and mediation within this study. Detailed explanations of these approaches are outlined below. Finally, a t-test was once again used to compare scores of social competence by gender. A detailed account of the analysis procedure and how these are linked to this study's research question and hypotheses are presented in the results (Chapter 4).

3.10.4 Moderation

Conceptually, a test for moderation analyses whether the predicted influence of an independent variable (X), on a dependent variable (Y), varies across levels of a third 'moderator' (M) variable (Fairchild & MacKinnon, 2009). Typically, moderators are identified as relatively stable variables such as an attribute, disposition or enduring process (Wu & Zumbo, 2008), the influence of which significantly modifies the strength and/or direction of a 'causal' relationship (Rose, Holmbeck, Coakley, & Franks, 2004). Notably, a moderator is often hypothesised where a hidden or weak relationship with a dependent variable exists resulting in moderation effects which may be statistically difficult to detect (Bennett, 2000). Figure 3.3 demonstrates this conceptual model.

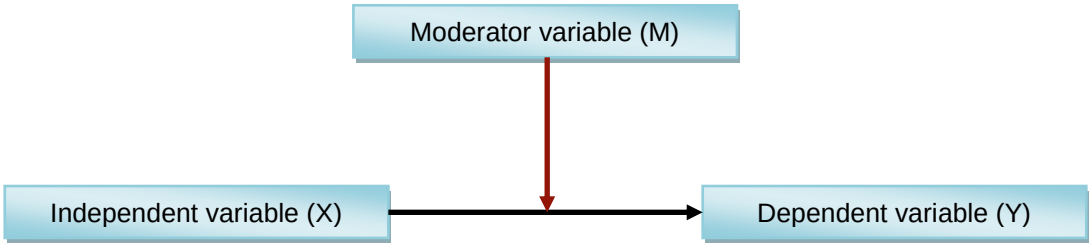


Figure 3.3 Theoretical model of moderation (adapted from Aiken & West, 1991)

In terms of statistical analysis, moderation effects are tested within a multiple regression framework whereby an interaction term, representing the product of the predictor and moderator variables (i.e. XM), is entered in conjunction with the variables as predictors (Fairchild & MacKinnon, 2009). Prior to model estimation, the values of X and M and their interaction term are centred to their means, reducing issues of multicollinearity (Aiken & West, 1991) and enabling easier interpretation of beta coefficients (Frazier, Tix, & Barron, 2004). As such, a beta value for an interaction term (XM) is indicative of a change in Y resulting from a change in M, corresponding to one unit of change in X. Where a positive beta coefficient is reported, this illustrates an increase in the X-Y relationship as M strengthens; a negative beta value indicating a reduction in the (positive) relationship. Figure 3.4 provides an illustrative representation of a moderation analysis as a statistical model within the context of this study.

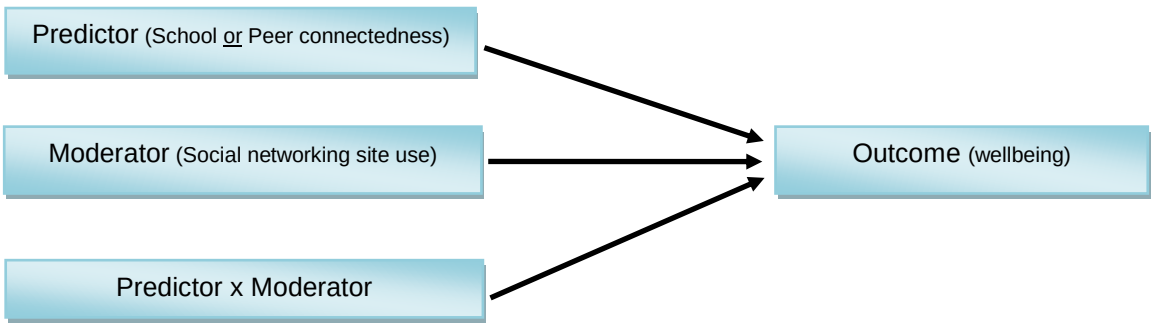


Figure 3.4 Statistical model of moderation analysis (adapted from Hayes, 2013)

3.10.5 Mediation

In contrast to moderation, a test for mediation attempts to explain why or how a relationship between two variables exists whereby a mediator variable (M) is thought to act as a mediating mechanism in the relationship between a predictor variable (X), and outcome variable (Y; Fairchild & MacKinnon, 2009). Mediators are recognised as responsive variables that change with an individual (e.g. cognitive or psychological states/processes), thus leading to changes in the outcome (Wu & Zumbo, 2008). Figure 3.5 illustrates this model conceptually.

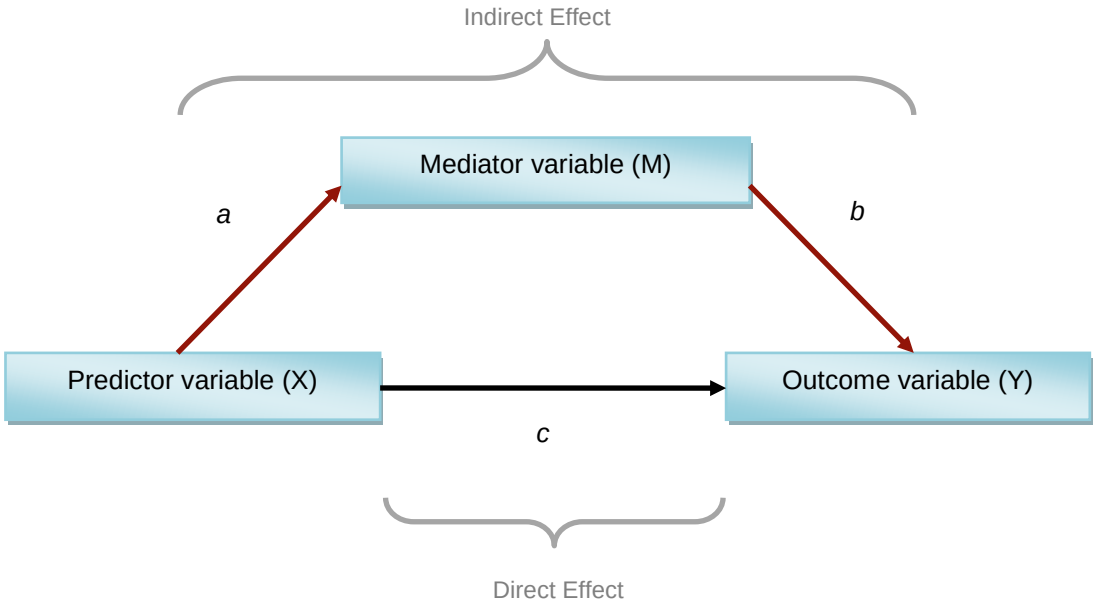


Figure 3.5 Theoretical model of mediation (adapted from Field, 2013)

Similar to moderation analysis, effects of mediation are statistical analysed within a multiple regression framework. Performed with three regression equations, the analysis process follows a series of four sequential steps (as outlined below in reference to Figure 3.5); the assumptions of which need to be met in order for an effect of mediation to exist (Baron & Kenny, 1986). During each step the effect of the relationship is measured in terms an unstandardised beta value indicating the amount of variance explained (Bennett, 2000).

1. Establishes that a significant relationship exists between the predictor and outcome (Path c).

2. The predictor is associated with the mediator (Path a)
3. The mediator is related to the outcome (Path b)
4. In the final step a mediation effect is quantified through the significant combined pathways of ***a*** and ***b*** (indirect effect) which is seen to be significantly larger than pathway ***c***, the direct effect.

3.11 Summary of the Methodology

This chapter provided the rationale for the methodological approach undertaken by this study. The methodology employed is a non-experimental cross-sectional correlational design, employing questionnaire survey data collection methods informed by a post-positivist perspective. Chapter 4 presents the results of the research.

Results

Chapter 4 RESULTS

4.1 Aims and Structure of the Results

Addressing the research question and hypotheses specified in Chapter 2, the results aims to present the findings of the current study. These findings are presented systematically in response to each hypothesis, detailing the analysis procedure employed. Table 4.1 presents the overarching research question and hypotheses, and where these are addressed in Chapter 4.

Table 4.1 Research question and hypotheses

Research question:

What are the interrelationships between social networking site use, school connectedness, peer connectedness and social competence, and their influence on early adolescent wellbeing?

Section	Hypotheses
4.3.1 & 4.3.3	**H1a:** School connectedness, peer connectedness and social competence are positively associated with greater levels of perceived adolescent wellbeing.
4.3.2	**H1b:** Levels of wellbeing will vary depending on gender, with girls having higher levels of perceived wellbeing than boys.
H2: For boys, the influence of school and peer connectedness on perceived adolescent wellbeing is moderated by social networking site use, such that:	
4.4.3	**H2a:** the relationship between school connectedness and adolescent wellbeing will be strengthened by the intensity of social networking site use.
4.4.4	**H2b:** the relationship between peer connectedness and adolescent wellbeing will be strengthened by the intensity of social networking site use.
4.4.3 & 4.4.4	**H2c:** It is expected that for girls, the influence of school and peer connectedness on perceived adolescent wellbeing will be moderated by social networking site use but that this effect will be much smaller.
4.5.2	**H3a:** The influence of social networking site use on adolescent wellbeing is mediated by low social competence, such that adolescents with low social competence will use social networking sites to rehearse social skills that are conducive to the development and maintenance of connectedness to others, and in doing so will lead to improved perceptions of adolescent wellbeing.
4.5.3	**H3b:** Social competence will vary by gender, such that boys will score lower on perceived social competence.

4.2 Descriptive Statistics

Descriptive statistics for each of the variables are presented in Table 4.2.

Table 4.2 Descriptive statistics

Study variables	N	Mean	Std. Deviation	Range		Reliability Cronbach's α
				Min	Max	
Wellbeing	532	24.93	6.167	5	35	.825
School Connectedness	532	30.56	6.093	8	40	.847
Peer Connectedness	532	27.93	4.653	7	35	.825
Social Competence	532	33.60	5.933	11	45	.801
Social Networking Site use (z-score)	509	.00	4.879	-12	12	.824

As demonstrated in the above table, 23 participants were reported as being non-SNS users, representing ~4% of the sample population. With regards to the reported means for the study's variables employing previously established scales (SWLS, PSSM, PCS, SCST), these all scored within the 'average' to 'high' range with no participants reporting a minimum (9-10) perceived social competence score.

4.2.1 Assessing Assumptions

Normality of the variables was assessed through visual examination of histograms, Q-Q Plots and boxplots and consideration of skewness and kurtosis indices (Field, 2009). On examination, all variables were shown to be negatively skewed with the majority demonstrating positive kurtosis (Appendix H). School connectedness and peer connectedness were however more negatively skewed than the remaining variables; data transformation (Lg10) as recommended by Tabachnick and Fidell (2014), was therefore undertaken in an attempt to normalise the data as a precautionary measure. There was however, no notable effect of this transformation in terms of the visual or statistical output; resulting in the original data being retained.

Overall, given the study's large sample size (>200) and the sensitivity of the standard errors for skewness and kurtosis (Ghasemi & Zahediasl, 2012), all distributions were interpreted as not deviating enough from normality to substantively affect the analysis. As such, the assumptions for normality were assessed as being met.

Further visual examination of histograms and boxplots suggested that the majority of variables had a very small number of outliers associated with them, although these were not classed as extreme (indicated by an asterisk in the boxplot). In order to determine how problematic these outlying cases were likely to be, a comparison between the 5% Trimmed Mean values and corresponding mean values (Appendix H) for each variable was undertaken (Pallant, 2013). In all instances, the similarity between the means was deemed close enough to conclude that the corresponding outlying cases would not unduly affect the analysis, and as such did not violate homogeneity of variance and could remain.

4.2.2 Reliability

The internal consistency of the variables in relation to the study's sample population was assessed using Cronbach's alpha. As demonstrated in Table 4.2, with reliability coefficients ranging from .801 – .847 across all variables, these measures were shown to have good reliability (>.8; Gliem & Gliem, 2003).

4.3 Hypothesis 1

4.3.1 Correlation Analysis

Pearson product-moment correlation coefficient was used to test the first hypothesis and determine assumptions of correlation for later mediation analysis. No violations of assumptions of normality, linearity or homoscedasticity were identified or issues relating to multicollinearity (r < 0.7; Steele, Andrews & Upton, 2012). The bivariate correlations are presented in Table 4.3. Following recommendation by Field (2009), the strength of these relationships were interpreted as small (± 0.1), medium (± 0.3) or large (± 0.5) accordingly.

Hypothesis 1a: Consistent with the first hypothesis, school connectedness, peer connectedness and social competence scores were positively correlated with participants' perceived levels of wellbeing. The strength of these relationships ranged from medium to large, with the largest positive relationship being reported between school connectedness and wellbeing, r = .534, p < .001. Perceptions of wellbeing were not significantly associated with SNS use, or age.

In preparation for later analyses including examination of the potential effects of mediation, consideration of the relationships between SNS use and the remaining variables was also explored. These results suggest that significant negative relationships exist between SNS use and school connectedness (r = -.145, p = .001), and between SNS use and social competence (r = -.211, p = <.001). Although the association between these relationships are small, they do suggest that as the intensity of SNS use increases, participants' perceptions of connectedness to school and social competence reduce. Only the relationship between SNS use and age (r = .097, p = .29), was identified as positive, suggesting that SNS use increases with age.

Table 4.3 Pearson product-moment correlation matrix for key variables

Variables	1	2	3	4	5	6
1. Wellbeing	-					
2. School connectedness	.534**	-				
3. Peer connectedness	.467**	.647**	-			
4. Social competence	.357**	.469**	.474**	-		
5. Social networking site use	-.064	-.145**	.052	-.211**	-	
6. Age	-.022	-.014	-.024	-.077	.097*	-

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

4.3.2 T-test: Exploring Gender Differences in Scores of Wellbeing

Hypothesis 1b: An independent-samples t-test was used to explore the potential differences in perceptions of wellbeing across gender. Results indicate that scores for males (M = 24.83, SD = 6.05) and females (M = 25.08, SD = 6.34) did not differ significantly on levels of wellbeing, $t(530) = .465$, $p = .64$. Hypothesis 1b was therefore not supported.

4.3.3 Regression Analysis

A hierarchical regression analysis was undertaken to explore the outcomes of **Hypothesis 1a** in greater detail and specifically, to examine the relative impact of participants' social networking site use, connectedness and social competence on wellbeing, controlling for any effects of gender and age.

Checks for violation of assumptions following guidance by Pallant (2013) detected one outlying case within the dataset that went beyond the Mahalanobis distance critical value (22.46) for the current regression model. Given the sensitivity of multiple regression to extreme outliers (Tabachnick & Fidell, 2014), this case was removed from the analysis. A further inspection of the remaining cases using Cook's Distance as the second recommended analysis of potential outliers, revealed no further issues. As a result, assumptions of normality, linearity, homoscedasticity and independence of residuals were assessed as being met. The results of the regression analysis are presented in Table 4.4.

Table 4.4 *Hierarchical regression model assessing the effects of the study's variables on perceptions of wellbeing*

	Predictor variables	ΔR^2	β
Step 1		.000	
	Gender		.015
	Age		-.014
Step 2		.306***	
	School connectedness		.367***
	Peer connectedness		.170***
	Social competence		.110*
	Social networking site use		.013

*p <.05; **p <.01; ***p <.001

As demonstrated above (Table 4.4), the second step of the regression model (controlling for age and gender) was significant, with scores on the three measures of connectedness and competence, predicting 31% of the variability in perceptions of wellbeing, F (6, 501) = 36.82, p < .001. The effect of this variance (f^2 = .44), surpassed Cohen's (1988) standard for a large effect (f^2 = .35). School and peer connectedness and social competence each significantly predicted perceived wellbeing, with school connectedness predicting the largest amount of the variance. SNS was not a significant contributor.

4.4 Hypothesis 2

4.4.1 Moderation Analysis

The second stage of analysis focused on exploring the potential moderating effect of SNS use within the current study and specifically, on addressing Hypotheses 2. As such, two overall models of moderation were explored using SNS use as the moderator examining: (i) whether SNS use moderates the relationship between school connectedness and wellbeing; and (ii) whether SNS use moderates the relationship between peer connectedness and wellbeing. Effects for moderation were tested using PROCESS (Hayes, 2013).

4.4.2 Assessing Assumptions

Checks for assumptions were conducted in relation to each overall model of moderation analysis undertaken within the current study (graphical outputs: Appendix I). Visual examination of the histograms for both models indicated no issues relating to normality, with the P-P Plots illustrating that assumptions for linearity were met.

An examination of the scatterplots did, however, highlight a small number of potentially problematic outliers within both moderation models. Further investigation of the dataset in relation to each model identified two cases (different for each model) which violated the critical values for all three outlier tests suggested during moderation analysis (Hayes, 2013); Mahalanobis distance (13.82), Cook's Distance (0.00756), and Centered Leverage Value (0.011). These cases were removed from the corresponding analysis enabling assumptions for homogeneity and homoscedasticity to be met. Integral to PROCESS, bootstrapping techniques were also adopted during analysis as a means of managing any undetected threats to normality, re-sampling the data 1000 times and using a 95% confidence interval to establish statistical significance (Tabachnick & Fidell, 2014).

4.4.3 Moderation Model Analysis: the Effect of SNS Use on the School Connectedness-Wellbeing Relationship

The moderating impact of SNS use on the school connectedness – wellbeing relationship was examined separately for boys and girls. Table 4.5 presents the results of these analyses.

Table 4.5 *SNS use moderation of the School Connectedness-Wellbeing relationship for boys (panel 1) and girls (panel 2)*

Predictors	*b*	*SE*	R^2	ΔR^2
Panel 1: Model (Boys)			.242***	
SNS use	.035	.059	-	
School connectedness	.471***	.052	-	
SNS use x School connectedness	.016	.010	-	.007
Panel 2: Model (Girls)			.280***	
SNS use	-.004	.086		
School connectedness	.523***	.064		
SNS use x School connectedness	.015	.013		.005

Each model illustrates the main effect of the overall model in the first step with the increase due to the interaction in the second step, reported regression coefficients are unstandardised values.

*p <.05; **p <.01; ***p <.001

Hypothesis 2a: When exploring the moderation model in relation to boys only, the addition of the SNS use-school connectedness interaction did not account for a significant change to the overall model ΔR^2 = .007, $F(1, 294) = 2.623$, p =.106. As such, SNS use was not identified as having a moderating effect on the relationship between school connectedness and wellbeing in a male only data sample and Hypothesis 2a was therefore not supported.

Hypothesis 2c: reflecting the situation with Hypothesis 2a, the R-square increase due to the interaction term (SNS use x school connectedness) within a female only data sample, was found to be non-significant ΔR^2 = .005, $F(1, 205) = 1.356$, p =.246. Hypothesis 2c was therefore not supported.

Collectively, the above findings suggest that SNS use does not have a moderating influence on the relationship between school connectedness and wellbeing. However, given the results of the earlier correlation and t-test analyses which suggest that a significant negative relationship between SNS use and school connectedness exists (r = -.145, p = .001), and that there is a lack of hypothesised difference in perceptions of wellbeing between boys and

girls ($t(530) = .465$, $p = .64$), it seems reasonable to suggest that SNS use may moderate the relationship between school connectedness and wellbeing when data from males and females are analysed as a whole (Wu & Zumbo, 2008). It was therefore decided that an analysis of the moderation model would be conducted using the dataset as a whole.

4.4.3 (i) Moderation Model Analysis for the Whole Dataset

A regression analysis was conducted to examine the moderating impact of SNS use on the school connectedness – wellbeing relationship for the whole dataset. School connectedness and SNS use explained 26% of the variance in wellbeing scores, $F(3, 503) = 58.533$, $p < .001$ ($R^2 = .259$). Within this regression model there was a main effect for school connectedness ($b = .493$, $t(503) = 12.292$, $p < .001$), but no significant main effect for SNS use, $b = .021$, $t(503) = .442$, $p = .66$. There was however a significant interaction between school connectedness and SNS use predicting wellbeing, $\Delta R^2 = .006$, $b = .016$, $t(503) = 2.100$, $p = .036$. Although a seemingly small effect ($f^2 = .008$; Kenny, 2015), the effect of the interaction is nonetheless average ($f^2 = .009$; Aguinis, Beaty, Boik, & Pierce, 2005) in tests for moderation. This finding supports the suggestion that SNS use moderates the school connectedness-wellbeing relationship.

Post-hoc simple slopes analysis at ±1 standard deviation around the mean of SNS use (moderator; Holmbeck, 2002) as well as the Johnson-Newman technique (Guerra & White, 2017) was used to explore the interaction effect in further detail. This analysis indicated that at all levels of SNS use (low, $b = .414$, $p < .001$; medium, $b = .493$, $p < .001$; high, $b = .571$, $p < .001$), there was a significant conditional effect on perceptions of school connectedness and its predictive relationship with wellbeing. Figure 4.1 illustrates the slopes.

In summary, examination of the slopes shows a significant increase between school connectedness and wellbeing at each level of SNS use; the strength of which is greatest when SNS use is high.

Further visual examination of the slopes (Figure 4.1) in relation to high levels of SNS use appears to suggest that when connectedness to school is high, high SNS use serves to increase perceptions of wellbeing the most. However, when school connectedness is low, the impact of high SNS use appears reduced; such that lower levels of SNS use appear to have a greater impact on enhancing perceptions of wellbeing. The transition point for high SNS use having the greatest influence on the school connectedness-wellbeing relationship compared to medium and low levels of SNS use appears to occur for those participants reaching average levels of school connectedness.

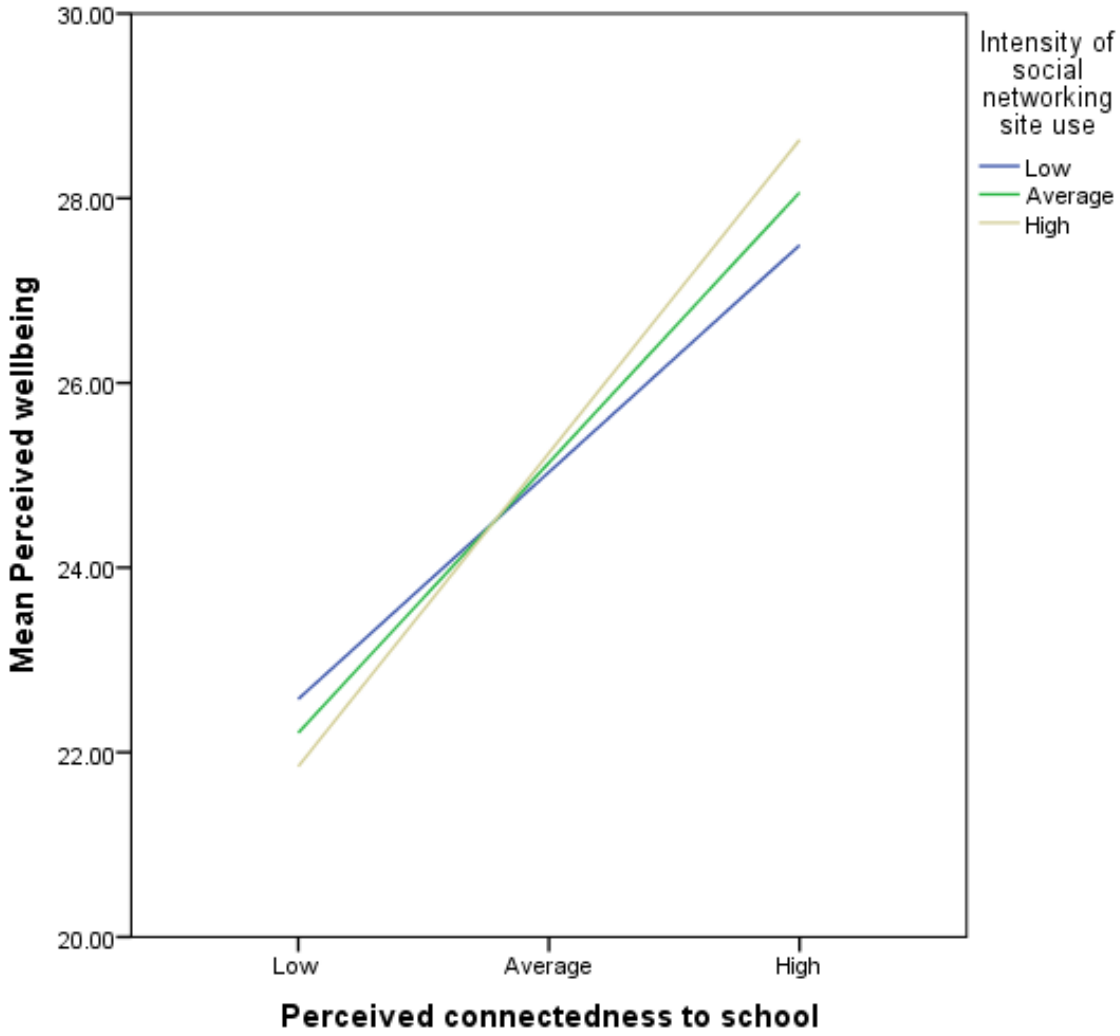


Figure 4.1 *The conditional effect of SNS use on school connectedness and its predictive relationship with wellbeing*

4.4.4 Moderation Model Analysis: the Effect of SNS Use on the Peer Connectedness-Wellbeing Relationship

The moderating influence of SNS use on the peer connectedness – wellbeing relationship was explored for boy and girls separately. Table 4.6 demonstrates the results of these analyses.

Table 4.6 *SNS moderation of the Peer Connectedness-Wellbeing relationship for boys (panel 1) and girls (panel 2)*

Predictors	*b*	*SE b*	R^2	ΔR^2
Panel 1: Model (Boys)			.188***	
SNS use	-.045	.061	-	
Peer connectedness	.587***	.072	-	
SNS use x Peer connectedness	.021	.014	-	.006
Panel 2: Model (Girls)			.282***	
SNS use	-.226*	.086		
Peer connectedness	.749***	.085		
SNS use x Peer connectedness	.021	.015		.007

Each model illustrates the main effect of the overall model in the first step with the increase due to the interaction in the second step, reported regression coefficients are unstandardised values.

*p <.05; **p <.01; ***p <.001

Hypothesis 2b: Although the overall regression model using male only data explained 19% of the variance in wellbeing (F(3, 294) = 22.713, p <.001, R^2 = .188), there was no significant effect of the interaction between peer connectedness and SNS use, b = .021, t(294) = 1.533, p =.126. The hypothesis that SNS use moderates the peer connectedness-wellbeing relationship in a male only data sample was therefore not supported.

Hypothesis 2c: when exploring the moderation model in relation to a female only dataset, main effects for peer connectedness and SNS use (negative) were identified. The addition of the SNS use-peer connectedness interaction term (b = .021, t(205) = 1.375, p =.171), did not however significantly effect the

moderation model as a whole $F(3, 205) = 26.90$, $p < .001$, $R^2 = .282$. As such, Hypothesis 2c was not supported.

Viewed together, the results from both analyses suggest that SNS use does not moderate the relationship between peer connectedness and wellbeing. However, when considering the results from the earlier analysis exploring the moderating effect of SNS use on the school connectedness-wellbeing relationship for the dataset as a whole, it seems reasonable to suggest that this situation may also exist for the current model of moderation. The beta values for peer connectedness and SNS use (Table 4.6) appear to also indicate notable differences in scores reported by males and females, which may be an influencing factor in the gender specific approach to analysis undertaken thus far (Frazier, Tix & Barron, 2004). In deciding whether to analyse the current model of moderation for the dataset as a whole, a decision was made to explore potential gender differences in peer connectedness and SNS use first.

4.4.5 T-test: Exploring Gender Differences in Scores of Peer Connectedness and SNS Use

An independent-sample t-test was used to investigate whether perceptions of connectedness to peers differ across gender. Results demonstrated that girls ($M = 28.47$, $SD = 4.60$) have significantly higher levels of connectedness to their peers than boys ($M = 27.69$, $SD = 4.44$), $t(528) = 1.967$, $p = .05$. The effect of this difference ($d = .17$) falling just below Cohen's (1988) indices for a small effect size ($d = .20$).

Another t-test analysis examined potential differences in SNS use across gender. Levene's Test for Equality of Variance was significant indicating that equal variance across groups was not met. Results however indicate that intensity of SNS use was significantly higher for girls ($M = .69$, $SD = 4.48$) than boys ($M = -.53$, $SD = 5.06$), $t(505) = 2.865$, $p = .004$, with a small effect size, $d = .26$.

In light of the potential influence that these gender differences may have on identifying a weak or hidden moderation effect (Wu & Zumbo, 2008), it was decided that an analysis of the current model of moderation would be undertaken for the whole dataset.

4.4.5 (i)Moderation Model Analysis for the Whole Dataset

A regression analysis was undertaken to investigate the moderating influence of SNS use on the peer connectedness – wellbeing relationship for the dataset as a whole. Peer connectedness and SNS use explained 22% of the variance in wellbeing scores, $F(3, 503) = 48.186$, $p < .001$ ($R^2 = .223$). Using SNS use as the moderator, there were significant main effects for peer connectedness ($b = .647$, $t(503) = 11.916$, $p < .001$), and for SNS use (negative), $b = -.107$, $t(503) = -2.162$, $p = .031$. The SNS use result indicating that for every 1 unit increase in SNS use, there was a predicted .107 unit reduction in perceived wellbeing. The interaction between peer connectedness and SNS use was also found to be significant, effecting the variance in wellbeing as a whole, $\Delta R^2 = .007$, $b = .021$, $t(503) = 2.112$, $p = .035$. The effect of the interaction was shown to be small, yet average ($f^2 = .009$; Kenny, 2015) for moderation analysis. This finding supports the suggestion that SNS use moderates the relationship between peer connectedness and wellbeing.

Post-hoc simple slopes analysis and Johnson-Newman technique revealed that there was a significant conditional effect of peer connectedness on wellbeing at all levels of SNS use: low, $b = .543$, $p < .001$; medium, $b = .647$, $p < .001$; high, $b = .750$, $p < .001$, with no additional significant transition points. Figure 4.2 illustrates the slopes.

In summary, examination of the slopes demonstrates that at each level of SNS use, using SNSs significantly reduces the relationship between peer connectedness and wellbeing; the impact of which is strongest when SNS use is high.

Further visual examination of the slopes (Figure 4.2) in regards to high SNS use appears to indicate that high SNS use serves to reduce levels of perceived wellbeing at all levels of peer connectedness. The relative strength of the influence of high SNS use in comparison to lower SNS use does however appear to weaken as connectedness to peers increases.

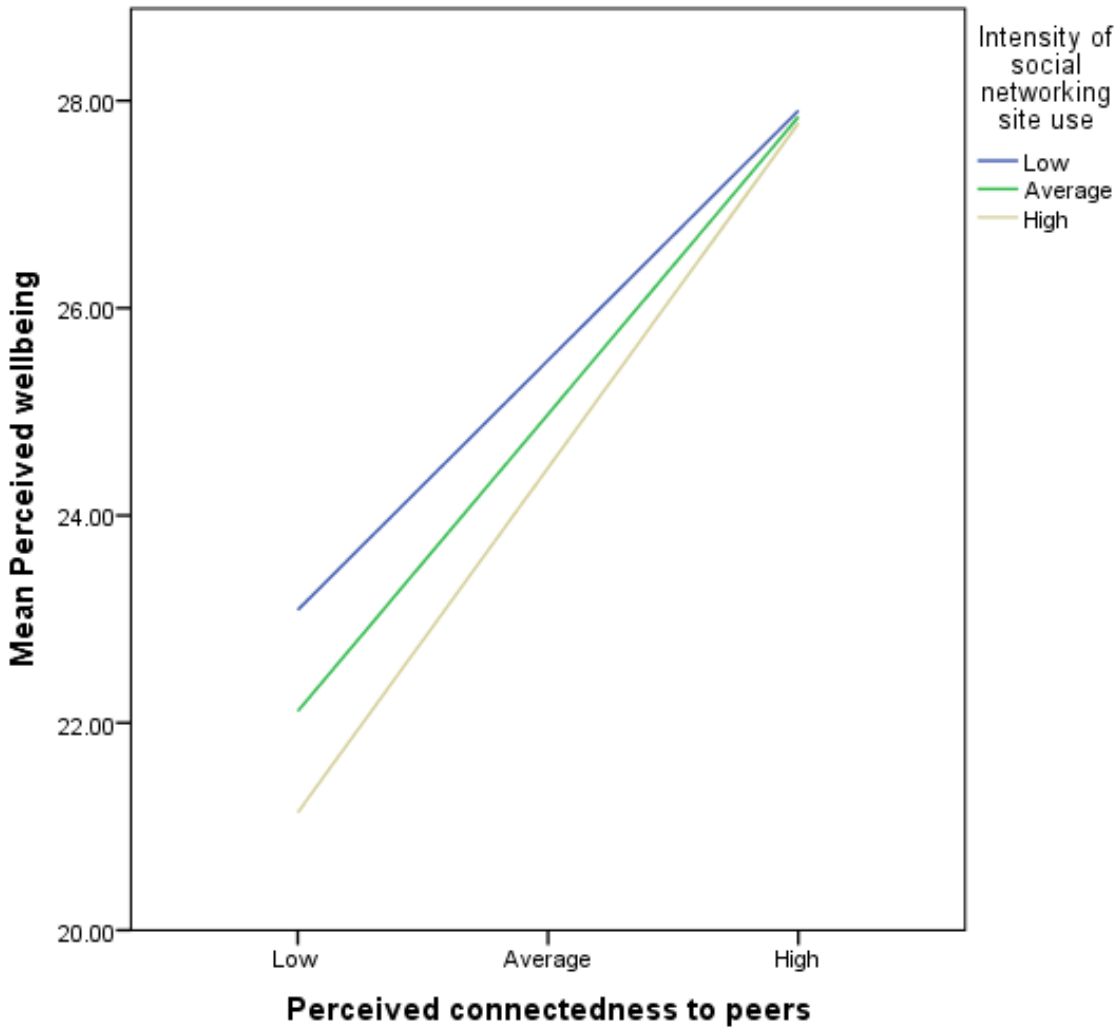


Figure 4.2 *The conditional effect of SNS use on peer connectedness and its predictive relationship with wellbeing*

4.5 Hypothesis 3

4.5.1 Mediation Analysis

The final stage of analysis within the current study began by examining whether social competence mediated the link between SNS use and wellbeing. This was examined separately for boys and girls.

4.5.2 Assessing Assumptions

Results from the correlation analysis (Section 4.3.1) revealed that although a negative relationship between SNS use and wellbeing exists, this was found to be non-significant (r = -.06). Within the context of a mediation analysis, this result violated the first assumption of analysis whereby Path c (see Figure 4.3) of the mediation model did not indicate a direct significant relation between the predictor and outcome. This violation contradicted the hypothesis that social competence mediates the influence of SNS use on wellbeing. As such **Hypothesis 4a** was not supported.

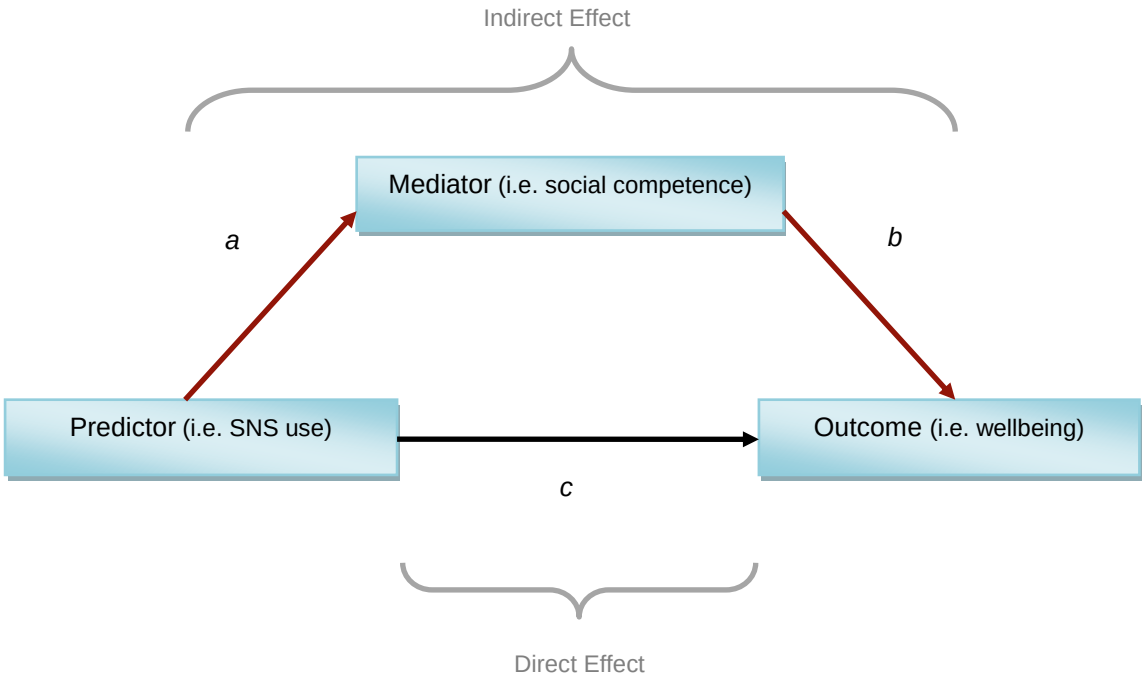


Figure 4.3 Theoretical model of mediation within the current study

4.5.3 T-test: Exploring Gender Differences in Scores of Social Competence

An independent-samples t-test was used to explore whether boys and girls differ in terms of their perceived social competence. Results from the analysis suggest that a significant difference exists ($t(530) = 5.445$, $p < .001$), with girls ($M = 35.27$, $SD = 5.44$) reporting higher levels of social competence than boys, $M = 32.48$, $SD = 5.99$. The effect ($d = .49$) of the difference was a medium effect size ($d = .5$; Cohen, 1988). **Hypothesis 3b** was therefore supported.

4.6 The Research Question

Given the gender differences identified in scores of peer connectedness, SNS use and social competence, it was decided that a final analysis would be undertaken to explore potential differences in relation to school connectedness; contributing to the researcher's understanding of the overall research question.

4.6.1 T-test: Exploring Gender Differences in Scores of School Connectedness

An independent-samples t-test was used as the final analysis within the current study exploring differences in perceptions of school connectedness across gender. Results indicate that scores for girls ($M = 30.78$, $SD = 6.15$) and boys ($M = 30.42$, $SD = 6.10$) did not differ significantly on scores of school connectedness, $t(530) = .657$, $p = .51$. This result adds to the research question overall.

4.7 Summary of the Results

This chapter presented the findings of the current study. Table 4.7 provides a summary of these results in relation to each research hypothesis, including key additional questions explored during the analysis procedure. Chapter 5 reflects on these findings in reference to the literature review (Chapter 2) and methodology (Chapter 3).

Table 4.7 *A table summarising the results of the hypotheses and extended questions explored in this study*

Research question:

What are the interrelationships between social networking site use, school connectedness, peer connectedness and social competence, and their influence on early adolescent wellbeing?

Hypothesis and Extended Questions	Supported?
H1a: School connectedness, peer connectedness and social competence are positively associated with greater levels of perceived adolescent wellbeing.	✓
H1b: Levels of wellbeing will vary depending on gender, with girls having higher levels of perceived wellbeing than boys.	**X**
H2: For boys, the influence of school and peer connectedness on perceived adolescent wellbeing is moderated by social networking site use, such that:	
H2a: the relationship between school connectedness and adolescent wellbeing will be strengthened by the intensity of social networking site use.	**X**
H2b: the relationship between peer connectedness and adolescent wellbeing will be strengthened by the intensity of social networking site use.	**X**
H2c: It is expected that for girls, the influence of school and peer connectedness on perceived adolescent wellbeing will be moderated by social networking site use but that this effect will be much smaller.	**X**
Extended question - H2a & H2c (Whole dataset): the relationship between school connectedness and adolescent wellbeing will be moderated by the intensity of social networking site use.	✓
Extended question - H2b & H2c (Whole dataset): the relationship between peer connectedness and adolescent wellbeing will be moderated by the intensity of social networking site use.	✓
H3a: The influence of social networking site use on adolescent wellbeing is mediated by low social competence, such that adolescents with low social competence will use social networking sites to rehearse social skills that are conducive to the development and maintenance of connectedness to others, and in doing so will lead to improved perceptions of adolescent wellbeing.	**X**
H3b: Social competence will vary by gender, such that boys will score lower on perceived social competence.	✓

Discussion

Chapter 5 DISCUSSION

5.1 Aims and Structure of the Discussion

The purpose of the current study was to explore the interrelationships between SNS use, school connectedness, peer connectedness and social competence, and their influence on early adolescent wellbeing. By investigating these relationships, it was hoped that this research would contribute to existing literature and provide a better understanding of the positive potential of SNS use for promoting and protecting early adolescent wellbeing in the UK.

This chapter begins by summarising and critically reflecting on the findings of the current study within the context of existing theory and research. Consideration of the results in relation to the design and procedure outlined in the methodology (Chapter 3) is then explored. Attention is then given to the implication of the findings for the direction of future research, education policy and provision, and EP practice. Finally, the chapter concludes by summarising the outcomes of the current study, drawing on personal reflections.

5.2 Initial findings

Descriptive statistics showed that the overall response rate for the current study was good with approximately 76% of the target population being included in the analyses. Contrasting with previously reported SNS use trends in the UK (88% of 13-16 year olds; Livingstone, Ólafsson, & Staksrud, 2011), almost 96% of the study's participants reported having an active SNS profile presence. Although measurably higher, this finding does not seem unsurprising given documented changes in SNS use in the UK over the last decade (Ofcom, 2015), and the unprecedented rise in the popularity of SNSs amongst adolescents identified across research (Wang & Edwards, 2016). The results also highlight that, irrespective of a typical minimum age requirement of 13, many of the study's participants have been using SNSs for an extended period of time with SNS use increasing significantly with age. These results imply that for most of this study's participants, SNSs have become an embedded part of the social landscape;

establishing it as a pivotal ecological domain where they communicate and interact with each other (Olufadi, 2016; Wu, Outley, Matarrita-Cascante, & Murphrey, 2015). The implications of this rapid shift in SNS use in relation to the results of the current study are an important point of consideration and one that will be reflected on throughout this chapter.

An interpretation of the key findings relating to each research hypotheses is now presented followed by a synthesis of these in relation to this study's overarch research question:

> What are the interrelationships between social networking site use, school connectedness, peer connectedness and social competence, and their influence on early adolescent wellbeing?

5.3 Findings: Influence of School Connectedness, Peer Connectedness and Social Competence on Early Adolescent Wellbeing

The first hypothesis of the study explored the nature and extent of the relationships between early adolescent wellbeing and the key positive correlates identified as relevant to the current study, specifically:

H1a: School connectedness, peer connectedness and social competence are positively associated with greater levels of perceived adolescent wellbeing.

H1b: Levels of wellbeing will vary depending on gender, with girls having higher levels of perceived wellbeing than boys.

The results for **H1a** revealed that directly proportional relationships existed between these variables and wellbeing. The direction and nature of these relationships were explored further, revealing that school connectedness, peer connectedness and social competence predicted 31% of the variance in wellbeing, with a large effect size. With regards to their unique contribution, school connectedness was found to predict the most variance in wellbeing; over

double the contribution of peer connectedness, with social competence predicting the least amount of variance.

In relation to **H1b**, it was found that for this study's participants, girls and boys did not differ in terms of their wellbeing; reporting high levels of perceived wellbeing, as outlined in the descriptive statistics.

5.3.1 Possible Interpretation of Findings: Links to Existing Research

H1a: Consistent with the studies explored in Chapter 2, school connectedness, peer connectedness and social competence were identified as positive correlates of wellbeing by this study. Of these, school connectedness was found to provide the greatest predictive variance in wellbeing when compared to participants' perceived connectedness to peers and levels of social competence. Although this appears to replicate existing research (e.g. Jose, Ryan, & Pryor, 2012), it is important to note that some debate (Oldfield, Humphrey, & Hebron, 2016) regarding the relative predictive strength of school connectedness compared to peer connectedness appears to exist, and may limit the conclusions that can be drawn from this study's results.

5.3.1 (i) Accounting for differences in reported variance: Potential impact of measures used

A potential explanation for this disparity is described by Millings and colleagues (Millings, Buck, Montgomery, Spears, & Stallard, 2012) who identified peer connectedness rather than school connectedness as a stronger predictor of wellbeing. They suggest that although connectedness at a domain level appears distinct, how these constructs were defined and measured in their study may have affected the relative strength of reported variance. Tozer, Khawaja and Schweitzer (2017) extend this possible explanation further by suggesting that exploring the conditions that contribute to psychological wellbeing against direct wellbeing measures rather than exploring these from a negative affective perspective alone (as adopted by Millings and colleagues), may provide a more reliable indication of the relative strength of these positive

correlates in promoting wellbeing. In considering these suggestions in the context of the current study, this study's approach of using robust, empirically sound measures that have been evidenced in peer reviewed studies involving early adolescents, and include a direct measure of subjective wellbeing, may make this study's findings more reliable and offer an explanation as to why the results for this hypothesis (**H1a**) differ from some existing research.

H1b: In contrast to the evidence base explored in Chapter 2, no predicted gender differences in wellbeing were identified for this study's participants. Given the explanations offered in relation to Hypothesis 1a, a possible reason for this disparity may be found in the approach used to measure wellbeing by this study.

5.3.1 (ii) Impact of using a direct measure of wellbeing

As evidenced in research (Holopainen, Lappalainen, Junttila, & Savolainen, 2012), much of the existing evidence base in relation to adolescent wellbeing has tended to focus on exploring wellbeing through measures associated with positive and negative wellbeing correlates. In these circumstances, gender differences in relation to correlates such as peer connectedness may therefore form the basis for conclusions suggesting gender differences in wellbeing exist (Best, Manktelow, & Taylor, 2014); forming the basis for future research including the hypotheses of this study. Although gender differences were not identified in relation to school connectedness within the current study, given this study's findings of girls having higher perceived connectedness to their peers and higher levels of social competence, it may still have been reasonable to expect that wellbeing would be similarly different. This was not the case. The current study does however differ from typical research in that wellbeing was measured directly through the self-reported measure, the SWLS (Diener, Emmons, Larsen, & Griffin, 1985), rather than measuring this from a correlates perspective alone (Tozer, Khawaja & Schweitzer, 2017).

From an analysis perspective, this study's approach of adopting a direct measure of wellbeing allowed for any variance in wellbeing not explained by

school connectedness, peer connectedness and social competence alone to be accounted for. The relevance of this approach is captured by recent studies (González-Carrasco, Casas, Malo, Viñas, & Dinisman, 2017; Ronen, Hamama, Rosenbaum, & Mishely-Yarlap, 2016) exploring adolescent wellbeing through global self-report measures of subjective wellbeing. Similar to the current study, these studies hypothesised gender differences based on findings from existing research but found no evidence to support these predictions for early adolescents at a global wellbeing level. In both cases, evidence did, however, suggest that gender differences were present at a domain level, indicating differences in positive and negative affect. Mirroring the general picture of the current study, these findings highlight the value of employing both direct and indirect measures of wellbeing; enabling this study's overall picture of wellbeing to emerge, whilst providing an opportunity for the researcher to unpick and explore potential nuances in the wellbeing story.

It is worth noting that although self-report measures are acknowledged as having inherent issues of reliability, recent research examining the convergent reliability of self-report, and nonself-report measures of life satisfaction scales, found these to be highly correlated (Diener, Inglehart, & Tay, 2013). In light of the above points, it may be hypothesised once again, that using a direct, and 'indirect' measures of wellbeing may make this study's findings more reliable whilst offering a potential reason why the results for Hypothesis **1b** differ from existing research. Given the wealth of research suggesting that gender differences in adolescent wellbeing do, however, exist, further comparative research to explore this further would be worthwhile.

5.3.2 Summary

A consideration of the findings in relation to existing research provides a persuasive explanation for the outcomes of Hypothesis **1a** and **1b**. In light of remaining threats to reliability and validity that may exist from using self-reported measures, interpretation of the findings in relation to this study's research question and the remaining hypotheses will be treated with caution.

5.4 Findings: The Moderating Influence of SNS use

Hypothesis 2 of the study explored the potential moderating influence of SNS use on the relationships between: (i) school connectedness and wellbeing, and (ii) peer connectedness and wellbeing. Responding to the literature identified in Chapter 2, the moderating impact of SNS use on these relationships was examined separately for boys and girls, specifically:

> ***H2:*** *for boys, the influence of school and peer connectedness on perceived adolescent wellbeing is moderated by social networking site use, such that:*

H2a: the relationship between school connectedness and adolescent wellbeing will be strengthened by the intensity of social networking site use.

H2b: the relationship between peer connectedness and adolescent wellbeing will be strengthened by the intensity of social networking site use.

H2c: It is expected that for girls, the influence of school and peer connectedness on perceived adolescent wellbeing will be moderated by social networking site use but that this effect will be much smaller.

Analysis of the moderating influence of SNS use on the 'school connectedness-wellbeing' relationship: found that, when data from male (**H2a**) and female (**H2c**) participants were examined separately, no effect of moderation was identified. Further exploration of this moderation model did, however, identify an effect of moderation when the dataset was analysed as a whole. Specifically it was found that at all levels of SNS use, engaging in SNSs significantly increased the positive relationship between school connectedness and wellbeing; the strength of which was greatest for those participants engaging in high levels of SNS use.

A visual analysis of the slopes in relation to high SNS use suggested that for participants with high levels of school connectedness, engaging in high SNS use had the greatest positive influence on perceived wellbeing. The relative impact of this did, however, appear to reduce for those participants with low connectedness to school, suggesting that for these participants engaging in

lower levels of SNS use may be more beneficial. Finally when considering a potential transition point at which high SNS use has the greatest enhancing influence on the school connectedness-wellbeing relationship compared to low and medium levels of SNS use, visual analysis of the slope suggests that this may exist where participants are reaching average levels of wellbeing.

Examination of the moderating influence of SNS use on the 'peer connectedness-wellbeing' relationship: found no effect of moderation existed when the dataset was examined separately for boys (**H2b**) and girls (**H2c**). Potential gender differences were, however, highlighted during the analyses and explored further through t-tests. The results of this exploration found significant gender differences between the study's participants with girls reporting higher connectedness to peers and engaging in higher levels of SNS use than boys. As described in the methodology (see Section 3.10.4) and results (Section 4.4.5), these findings contributed to the idea that differences in relation to gender may have masked a potential effect of moderation, prompting an exploration of the moderating influence of SNS use on the dataset as a whole.

Analysis of the whole dataset found that at all levels of SNS use (high, medium and low), using SNSs significantly reduced the relationship between peer connectedness and wellbeing. Further exploration of this moderating effect found that engaging in high SNS use had the strongest influence on the 'peer connectedness-wellbeing' relationship, acting to reduce levels of perceived wellbeing at all levels of connectedness to peers. The relative strength of the influence of high SNS use in comparison to low SNS use did, however, appear to weaken as connectedness to peers increased.

5.4.1 Possible Interpretation of Findings: Examining the moderating effect of SNS use for boys and girls separately

In light of the results from Hypothesis 1b, it is not surprising that examination of the moderating effect of SNS use on the relationships between: (i) school

connectedness and wellbeing, and (ii) peer connectedness and wellbeing, found no significant results of moderation when these were explored separately for boys (**H2a** & **H2b**) and girls (**H2c**). Although these findings were not predicted given the research evidence explored in Chapter 2 and in particular this study's systematic review (Antheunis, Schouten, & Krahmer, 2014; Quinn & Oldmeadow, 2013), they are consistent with the Valkenburg and Peter study (2007), where results were found to be stable across gender. Notably unlike the previous studies which explored the direct predictive relationship between SNS use and aspects of connectedness, Valkenburg and Peter undertook a structural equation modelling (SEM) approach to explore potential effects of mediation and moderation.

5.4.1 (i) Impact of the data analysis procedure employed

Although the above SEM approach to data analysis differs from the one employed by the current study, it similarly uses regression-style equations to capture complex relationships within observable and unobservable variables (Gunzler, Chen, Wu, & Zhang, 2013) allowing for comparisons between these studies to be drawn. When comparing results, it appears that both approaches allowed for hidden or weak interrelationships between variables to be explored (Bennett, 2000), providing a more nuanced understanding of how individual differences of gender may lead (or not) to changes in wellbeing (Wu & Zumbo, 2008). This seems particularly important when considering the complexities of early adolescent functioning within the digital landscape which research suggests is best explained through analysis of mediation and, or moderation (Wood, Bukowski, & Lis, 2016). In summary, when applied to this study's results, the above points may partially explain the lack of predicted gender differences identified during the moderation analysis. When added to the explanations already explored in relation to this study's measures (Section 5.3.1), the approach to analysis employed by the current study may be viewed as adding to the reliability of this study's findings.

5.4.2 Possible Interpretation of Findings: Effect of SNS use on the School Connectedness–Wellbeing relationship

For clarity purposes, the interpretation of findings will begin by focusing on the results from the numerical outputs of the moderation analysis. Attention is then given to the visual analysis of the slopes.

5.4.2 (i) Stimulation hypothesis

Findings from the moderation analysis: exploring the dataset as a whole found that SNS use strengthens the relationship between school connectedness and wellbeing and that this is greatest for participants engaging in high SNS use. This finding appears to be best explained by the *stimulation hypothesis*. According to this hypothesis, SNSs are seen as providing a less threatening and easier domain for intimate self-disclosure in comparison to face-to-face interactions. With self-disclosure supporting and encouraging connectedness to others, engaging in SNS use is therefore seen as leading to higher quality relationships among existing friends (McKenna, Green & Gleason, 2002). This hypothesis is supported by a number of studies exploring SNS use and its relationship with adolescent social connectedness, demonstrating that in general, SNS use is positively associated with intimacy, self-disclosure and enhanced connectedness to others (Shapiro & Margolin, 2014).

5.4.2 (ii) Stimulation hypothesis: Parallels with early adolescent development

Of importance to this study are the apparent parallels between the stimulation hypothesis and early adolescent development. Specifically, early adolescence is recognised as a time of significant developmental change where the drive for connectedness to others and the development of intimacy through self-disclosure become amplified (Rose & Rudolph, 2006). Although no direct reference to school is made in connection to the stimulation hypothesis, as a primary domain for connectedness during early adolescent development (Allen, Kern, Vella-Brodrick, Hattie, & Waters, 2016) and strong predictor of wellbeing,

as evidenced in this study, this hypothesis provides a persuasive explanation for the moderation analysis so far.

5.4.2 (iii) Online and offline self disclosure: Explaining gender similarities in effects of SNS moderation

Exploring the parallels between the stimulation hypothesis and early adolescent development may also provide an additional explanation for why an effect of SNS use moderation was not found when this was explored for this study's male and female participants separately. In a study exploring gender differences in the developmental trajectory of online and offline self-disclosure, Valkenburg, Sumter and Peter (2011) found that the drive for offline and online self-disclosure increased sharply during early adolescents and that although the onset was different for boys and girls, an overlap occurred during the ages of 12 to 13 years. This age range mirrors the profile of this study's participants indicating that similar levels of increased online self-disclosure may have been experienced by both male and female participants; thus influencing similar effects of moderation on the school connectedness and wellbeing relationship. When compared to existing developmental research exploring adolescent offline functioning (e.g. refer to Steinberg, 2011), this may also provide an indication of a potential shift in early adolescent functioning in a digital age (Lomanowska & Guitton, 2016) whilst explaining a core motivation for this age group's engagement in high SNS use (Davis, 2012). In respect to this study, these findings add to existing explanations regarding the lack of predicted gender differences identified during the moderation analyses. They also raise some important questions regarding the differential contribution of online and offline self-disclosure to early adolescent connectedness and wellbeing, and how these underlying mechanisms compare and differ; questions that will be explored in further detail in relation to Hypothesis 3 (see Section 5.5.1).

In summary, the numerical findings from the moderation analysis may be explained by the stimulation hypothesis suggesting that for this study's participants engaging in all levels of SNS use, but particularly high SNS use, extend their opportunities to develop and enhance existing relationships from

school; promoting increased perceptions of wellbeing. Although providing a persuasive explanation, consideration of the findings from the visual analysis of the slopes would appear to suggest that a slightly different version of the stimulation hypothesis may provide a better explanation of the illustrated outcomes for some of this study's participants.

5.4.2 (iv) Rich-get-richer hypothesis: A stratified version of the stimulation hypothesis

A visual analysis of the slopes: undertaken by the researcher found that high SNS use appeared to benefit those participants with average to high levels of connectedness to school the most; having the greatest positive impact on perceived wellbeing. For participants experiencing low school connectedness, engaging in lower levels of SNS use appeared more beneficial; although engaging in high SNS use continued to enhance wellbeing. A possible explanation for this interpretation of the slopes may be found in a stratified version of the stimulation hypothesis; the *rich-get-richer hypothesis* (Shapiro & Margolin, 2014).

Within the context of this study, the rich-get-richer hypothesis suggests that SNS use primarily benefits those participants already socially successful in the face-to-face domain (Kraut, Kiesler, Boneva, Cummings, Helgeson, & Crawford, 2002). Already comfortable with social situations, these sociable early adolescents are described as using SNSs to seek out additional opportunities to socialise with existing friends (Gross, Juvonen, & Gable, 2002). For these participants, the effects of using SNSs may be viewed as cyclical, whereby increased SNS use is associated with enhanced social relationships overall, encouraging further SNS engagement (Lee, 2009). Given this description, the rich-get-richer hypothesis appears to fit those participants reporting average to high levels of connectedness to school. It also appears to provide a reasonable explanation for the relative strengthening of the high SNS use slope as connectedness to school increases (See Figure 4.1).

Evidence supporting the rich-get-richer hypothesis in relation to educational settings including schools, is provided by a number of studies (e.g. Ellison, Steinfield, & Lampe, 2007; Valkenburg & Peter, 2007; Gross, Juvonen, & Gable, 2002). These studies describe the strong overlaps that exist in online and offline friendships, suggesting that for socially 'rich' adolescents, SNSs provide a salient domain for communicating with others; enhancing already strong social ties to peers and school by providing group and emotional support. In terms of potential gender differences, evidence has highlighted that even though girls are consistently identified as engaging in higher levels of SNS use (Quinn & Oldmeadow, 2013; Reich, Subrahmanyam, & Espinoza, 2012), and experiencing higher levels of connectedness to peers and school than boys, the impact of online communication on perceptions of connectedness remain constant across gender (Lee, 2009). Replicating aspects of the current study, evidence from the above research illustrate the applicability of the rich-get-richer hypothesis to this study's findings, whilst offering additional evidence of the reliability of the overall results of the study.

5.4.2 (v) Poor-get-poorer hypothesis: a better fit for some participants?

Contrasting with the rich-get-richer hypothesis is the *poor-get-poorer hypothesis* which may provide an explanation for this study's participants reporting lower than average perceived connectedness to school. The poor-get-poorer hypothesis describes socially 'poor' adolescents who are driven to engage in high SNS use with limited success of strengthening existing social bonds (Reich, 2016). Mirroring the rich-get-richer hypothesis, this process of high SNS use is seen to be cyclical, weakening already low perceptions regarding offline social support (Khan, Gagné, Yang, & Shapka, 2016), thus impacting on wellbeing. When considering this hypothesis in relation to the visual interpretation of the moderation slopes, it is noted that although participants with low school connectedness may benefit from lower SNS use, high SNS use continues to enhance the relationship between school connectedness and wellbeing, meaning that the poor-get-poorer hypothesis has to be ruled out as a possible explanation. The stimulation hypothesis on the other hand, does provide an explanation which accounts for the differential influence of SNS use for participants experiencing low school connectedness.

5.4.2 (vi) Summary

A critique of existing research has identified two well researched hypotheses which support insight into the moderating effect of SNS use on the school connectedness-wellbeing relationship; the *stimulation hypothesis* and the *rich-get-richer hypothesis*. The relevance of these potential explanations in relation to this study's research question will be explored in the synthesis when potential issues of reliability related to the researcher's visual interpretation of the slopes will also be addressed.

5.4.3 Possible Interpretation of Findings: Effect of SNS use on the Peer Connectedness–Wellbeing relationship

The results from the moderation analysis exploring the dataset as a whole found that irrespective of the intensity of SNS use, engaging in SNSs serves to decrease the positive relationship between peer connectedness and wellbeing. This finding illustrates a very different picture to the one emerging from the 'school connectedness-wellbeing' model and as such, is quite surprising. In the interests of clarity, direct parallels between the outcomes of the two models will not be made until the synthesis (see Section 5.6) allowing for the results from this model to be interpreted objectively, limiting bias.

5.4.3 (i) Displacement hypothesis

When considered in isolation, the outcomes of the regression analysis exploring the moderating influence of SNS use on the peer connectedness-wellbeing relationship appear to be best explained by the *displacement hypothesis*. Contrasting with the stimulation hypothesis, the displacement hypothesis suggests that time spent engaging on SNSs occurs at the expense of time spent with existing friends offline; substituting stronger face-to-face relationships with poorer online ones (Khan, Gagné, Yang, & Shapka, 2016). This view of SNS use is based on a zero-sum phenomenon of time whereby all activities are limited to a 24-hour day thus time spent on one activity leads to less time on another (Nie & Hillygus, 2002). Whilst not all activities have been found to be displaced by SNS use, research exploring SNS practices have evidenced its negative influence on social interactions (Lee, 2009).

5.4.3 (ii) Displacement hypothesis: Evidence versus best fit

It is, however, important to note that the efficacy of the displacement hypothesis has been the subject of recent debate suggesting that its findings should be treated with caution. In particular, focus has centred on the hypothesis's key assumption that the quality of relationships can be reliably measured through observation between the 'quantity of time' spent on SNSs and social problems alone. The extent of this debate was explored in a recent review by Tokunaga (2016). Replicating the outcomes from previous meta-analyses testing the displacement hypothesis, the author found that on average, weak effects of online use on psychosocial wellbeing were found to exist. Although this finding brings into question the empirical robustness of the displacement hypothesis, it still appears to be the only explanation offered by research that broadly explains the negative influence of SNS use illustrated by this study's results. As such, the displacement hypothesis cannot be ignored. An important point of interest emerging from the above review does, however, provide some potential insight regarding the nature of this study's findings in relation to the displacement hypothesis and an avenue for further consideration. Namely, it is noted that whom individuals chose to interact with online, and the motivation for this interaction, may be seen to influence how being online affects them.

5.4.3 (iii) Who adolescents interact with online

A number of studies have demonstrated that time spent online with existing friends increases, rather than decreases, perceptions of connectedness to others (e.g. Lenhart, A, 2015; Bannon, McGlynn, McKenzie, & Quayle, 2015; Grieve, Indian, Witteveen, Tolan, & Marrinton, 2013). When interaction online is primarily focused on meeting new people and communicating with strangers however, a negative impact of SNS use on existing friendships has been shown to exist, demonstrating a moderating effect of the type of online communication on adolescent wellbeing (Valkenburg & Peter, 2007a). Notably, much of the research which attempts to directly support or challenge the displacement hypothesis originates from early online technologies when opportunities to connect with known others were limited (Tokunaga, 2016). Since then, the social online landscape has evolved dramatically which may suggest that the

differential impact of who individuals interact with on SNSs may have changed as well. If this hypothesis is to be believed, then a shift away from a simplified distinction between existing friends versus communicating with strangers might be a helpful avenue for this study to explore.

5.4.3 (iv) Levels of early adolescent friendship: Defining 'close' friends

The extent and nature of early adolescent social functioning on SNSs was explored in a recent study by Wang and Edwards (2016), and provides some helpful insights for the current study. Using data collected from online surveys from 543 adolescents (range 11-16 years old), the authors analysed the associations between eight relationship categories including close friends, new people, and friends (not close), with six different behavioural categories (e.g. relationship: building, welcoming, and maintaining). The outcomes of the study replicated previous research demonstrating that managing and developing friendships already established offline were the primary function for SNS engagement. Changes in behaviour in relation to the 'level' of a relationship were, however, identified. Specifically, the authors found that although adolescents were most willing to use SNSs to 'welcome', 'build', and 'explore' existing relationships and connectedness with 'close friends' they were notably less motivated to use SNSs to 'maintain' these relationships. Interestingly, when examining how 'maintaining' is defined in the study compared to the above behavioural descriptors, statements such as 'free expression', 'open and relaxed' and 'immediate gestures' would appear to indicate a level of intimacy and self-disclosure that may be characterised by very close and intimate relationships (Lomanowska & Guitton, 2016). On the basis of this interpretation, it could be suggested that the study may benefit from extending the relationship category to include a 'closest friend' variable. If this were the case, it could be hypothesised from the study's findings that although SNSs have become an embedded part of adolescents' social landscape, it is not a preferred domain for the 'closest' of peer relationships, suggesting that offline interactions are key to their maintenance.

5.4.3 (v) *Defining 'close(st)' versus 'everyday' friends: Blurred lines*

Support for this researcher hypothesis is offered by results from a Pew survey (Lenhart, Smith, Anderson, Duggan, & Perrin, 2015) exploring the role of social media and mobile phones in adolescents' interactions. Using data gathered from online surveys and focus groups involving 1,060 adolescents (aged 13-17 years), results from this study provide a clear distinction between adolescents' interactions with their 'closest' friends versus those interactions involving 'everyday' friends. Specifically, the study identified school as the primary domain for interactions between 'close friends' followed by time spent at each other's house. Although online communication was identified as the third domain for these close daily interactions, direct messaging (via texts and messaging apps) was used significantly more than SNSs. The relative importance of SNSs for social interactions outside of school, did, however, increase for adolescent relationships between 'everyday friends'. In these instances, 25% of adolescents reported spending time daily with friends in person, whilst 23% used SNSs to stay in touch.

The implications of the above study are that school is the primary domain for all adolescent interactions. Beyond this, how time is spent outside of school appears to relate to the level of closeness between friends, with close friends spending more time together in person, or when this is not available, engaging in private conversations online. For everyday relationships, having more public communication and interaction on SNSs appears to be a more acceptable and interchangeable option when face-to-face opportunities are less available. Arguably, the mixed methods approach to data collection employed by the above study adds to the reliability of how the different levels of peer relationships were conceptualised and measured; capturing the voice of adolescents on how these constructs are distinguished.

5.4.3 (vi) *Close friends: Conceptual differences*

Collectively, the results from the above studies make an important distinction between 'close(st) friendships' and other degrees of existing relationships between adolescents. How the term 'close friend' is conceptualised across

research and how this differs for early adolescents today remain less clear. The above studies do however appear to suggest that for early adolescents, maintaining meaningful and intimate relationships with close friends is a dyadic process underpinned by regular offline interactions (Chow, Ruhl, & Buhmester, 2013), and supplemented by direct and private online interactions. For these individuals it could be suggested that spending time communicating and interacting publically on SNSs may be viewed as displacing time that could be spent with close others. This raises the question as to whether the displacement hypothesis may be better applied to close rather everyday relationships. Before exploring the potential importance of the relationship between the displacement hypothesis and different levels of friendship to this study's results, it may be helpful to first revisit this study's peer connectedness scale (PCS; Jose, Ryan & Pryor, 2012) to try and identify whether constructs of friendship may have been open to interpretation.

5.4.3 (vii) Peer connectedness scale: Open to interpretation?

Consisting of seven items, the PCS used by the current study attempted to measure the extent to which participants felt supported and happy in their relationships and interactions with the peers inside and outside of the school context. It was intended by the researcher that this scale would explore existing 'everyday' friendships rather than focusing on 'close' friendships. However, on re-examination of the scale, it is noted that five of the seven items make either direct reference to close friends, or intimate this through constructs of trust, acceptance and reciprocal support. This contrasts with the remaining measures in the questionnaire, where relationships with others appear more directed towards everyday relationships with peers and adults. It could therefore be rationalised that when completing the PCS, participants may have, for the most part, reflected on their closest relationships with others rather than considering everyday friendships. Beyond the clues presented through a critique of existing research, it is difficult to provide any reliable evidence for this hypothesis within the scope of the analysis undertaken by the current study. Nonetheless, if accepted, this interpretation does provide an interesting perspective of the displacement hypothesis.

5.4.3 (viii) Displacement hypothesis: Linked to close friendships?

As evidenced thus far, SNSs are not a preferred domain for maintaining close friendships between early adolescents. With up to 59% of early adolescents being in touch with their best friend outside of school on at least a daily basis, the relative importance of these relationships to the daily lives and functioning of early adolescents is high. For boys and girls, spending time in person or engaging in private online interactions with their closest friends are key; SNSs being reserved for less close friendships (Lenhart, Smith, Anderson, Duggan, & Perrin, 2015). It seems reasonable to suggest then, that the displacement hypothesis may be applied to these close relationships. Although, research has evidenced that high quality relationships are not affected by SNS use (Wood, Bukowski, & Lis, 2016), and that engaging in SNSs may be seen to stimulate, or enrich established offline friendships, it could be hypothesised that these outcomes may be dependent on the degree of relationships, with very close friendships being the potential exception to the rule.

5.4.3 (ix) Summary

The outcomes of the moderations analysis, demonstrate to a degree of certainty that SNS use reduces the relationship between peer connectedness and wellbeing. When exploring existing research one hypothesis appears to best explain these results, the *displacement hypothesis*. Questions regarding the empirical robustness of this hypothesis are, however, difficult to ignore. Further exploration of this study's findings in relation to the evidence base as well as the measures used by this study raises an interesting perspective on the results, namely that the reduction in the peer connectedness-wellbeing relationship may be more reflective of the impact of SNS use on 'close friend' relationships. This hypothesis is, however, liable to strong researcher bias and will be treated with caution in the synthesis.

5.5 Findings: SNS use Mediated by Social Competence

The study's final research hypothesis explored the potential influence of social competence on early adolescents' use of SNSs and the impact of this on wellbeing. Specifically it was hypothesised that:

H3a: The influence of social networking site use on adolescent wellbeing is mediated by low social competence, such that adolescents with low social competence will use social networking sites to rehearse social skills that are conducive to the development and maintenance of connectedness to others, and in doing so will lead to improved perceptions of adolescent wellbeing.

H3b: Social competence will vary by gender, such that boys will score lower on perceived social competence.

As highlighted in the correlation analysis, a significant relationship between SNS use and wellbeing was not identified, violating assumptions for mediation analysis. As such, the hypothesis (**H3a**) that social competence mediates how or why SNS use predicts wellbeing could not be supported.

The results for **H3b** found significant gender differences between the study's participants with boys reporting lower levels of perceived social competence than girls.

5.5.1 Possible Interpretation of Findings: Links to Existing Research

A review of the existing literature in relation to Hypotheses 1 and 2 have clearly highlighted the integral role that social competence plays in early adolescent social functioning. Given the wealth of existing research and the direction that the findings of the current study have taken thus far, it seems very reasonable to continue to hypothesise that social competence influences how and why early adolescent use SNSs.

5.5.1 (i) *Impact of the data analysis procedure employed*

Unfortunately, the approach to data analysis adopted by the current study did not provide opportunity for the potential mediating influence of social competence to be explored (Hypothesis **3a**). When reflecting on the analysis approach used by research in the systematic review (e.g. Apaolaza, Hartmann, Medina, Barrutia, & Echebarria, 2013; Valkenburg & Peter, 2007) and recommendations that have arisen regarding approaches to exploring the complexities of psychosocial constructs within a digital landscape (Wood, Bukowski, & Lis, 2016) a SEM data analysis approach may have provided greater opportunity for analysis to take place. Specifically, within the context of this study, unlike PROCESS, which assumes that a direct proportional relationship between SNS use and wellbeing must exist, SEM allows for this relationship to be non-significant and a 'full mediation' effect of social competence to be potentially revealed (Gunzler, Chen, Wu, & Zhang, 2013). It is not, however, within the scope of this study to undertake further exploration of the data using SEM at this point, but it is acknowledged as a potential for future research (see Section 5.7.5 (ii) for further discussion relating to this study's data analysis procedure).

5.5.1 (ii) *Social competence in a digital age: potential insights gained from existing research*

A critique of the literature thus far has clearly demonstrated the pivotal role that social competence skills such as self-disclosure, giving and receiving feedback, and reciprocity, play in early adolescent social development both in the face-to-face domain (Mcgraw, Moore, Fuller, & Bates, 2008), and the online domain (Bannon, McGlynn, McKenzie, & Quayle, 2015; Shapiro & Margolin, 2014). Existing research has, however, highlighted that despite SNSs becoming an embedded part of the adolescent social landscape (Lenhart, A, 2015), little research effort has been made to directly explore how the constructs of offline social competence may apply to online SNS interactions (Reich, 2016). Where research has taken place, this has tended to focus on comparisons between offline and online adolescent social practices with conclusions attempting to explain how these may serve to develop social interactions and therefore

enhance connectedness to others (Best, Manktelow, & Taylor, 2014). Although this evidence base does not explain how the underlying mechanisms of offline and online social competence may compare or differ, or the potential directionality of any influence between the two, they may provide some helpful insights for the current study. As such, a study explored earlier on in the discussion (see Section 5.4.2 (ii)) is examined in further detail below.

Exploring the developmental trajectory of online and offline self-disclosure, results from the study by Valkenburg, Sumter and Peter (2011), identified a sharp increase in self-disclosure practices during early adolescence. Although the onset for this increase was different for boys and girls, an overlap during the ages of 12 to 13 years was, however, evident. Of interest to Hypothesis **3b**, are the results from the study's exploration of gender differences in offline versus online self-disclosure. Mirroring the results from the current study and from previous research (Rose & Rudolph, 2006), the authors found that for this age group, girls reported significantly more offline self-disclosure than boys. Interestingly though, when comparing differences between online and offline self-disclosure, this was found to be significantly smaller for boys than girls. Further analysis highlighted boys aged 12-13 years, as having the strongest tendency to disclose online.

Collectively the results from the above study appear to suggest that why, and how, SNSs are used, differ for early adolescent boys and girls. Although it is acknowledged that self-disclosure is only one component of social competence (Chow, Ruhl, & Buhmester, 2013), it is equally noted that the relative importance of self-disclosure to aspects of early adolescent development and functioning, such as identity development and group membership (Davis, 2012), is high. Within the context of the current study, whilst providing clear evidence in support of Hypothesis **3b**, these findings also raise a couple of important points of consideration for this study. Firstly, when considering this study's findings of girls reporting higher SNS use than boys, it is noted that if the results of the above study were to be applied to the current study, then it could be hypothesised that although boys use SNSs less, the relative importance of SNSs as a domain for the rehearsal of social skills conducive to the

development and maintenance of connectedness to others, is higher for boys than for girls. Equally, it could also be hypothesised that offline social competence may be construed as a qualitatively different skills to online social competence (Reich, 2016), and as such may be seen as contributing to perceptions of connectedness in distinctive ways.

If the above interpretations are believed, the implications of this when applied to Hypothesis **3a** would suggest that for participants experiencing low perceptions of social competence in the 'face-to-face domain', SNSs may be seen as providing a less effortful domain for 'online social skills rehearsal', encouraging and supporting connectedness to others; an interpretation which is explained by the stimulation hypothesis (McKenna, Green, & Gleason, 2002), as described in Section 5.4.2.

The interpretations of the Valkenburg, Sumter and Peter study (2011) in the context of the research reviewed thus far would also appear to indicate that a small change in the wording of Hypothesis **3a** might be more appropriate during future research. Specifically, these interpretations would appear to suggest that the *influence of SNS use on wellbeing is mediated by low 'offline' social competence*. Although this wording reflects the original purpose of Hypothesis **3a**, this newer version makes a qualitative distinction between offline and online social competence. Exploring the exact nature and differential contribution of offline and online social competence to early adolescent functioning and wellbeing may support further insight into the above researcher interpretations.

5.5.2 Summary

Irrespective of the potential limitations presented by this study's analysis procedure, an interpretation of the findings in relation to Hypothesis **3b** in the context of existing literature has provided a fairly persuasive explanation for the hypothesised outcome of Hypothesis **3a**. When applied to the direction that this study's discussion has taken thus far, a clear link between offline and online social competence and the stimulation hypothesis has been identified.

5.6 Synthesis of Findings

The synthesis aims to bring together the key findings and interpretations emerging from the discussion thus far in order to answer this study's overall research question:

> What are the interrelationships between social networking site use, school connectedness, peer connectedness and social competence, and their influence on early adolescent wellbeing?

5.6.1 (i) School connectedness: the primary developmental pathway to wellbeing

For this study's participants, school has emerged as the primary domain for developing and maintaining 'all' early adolescent interactions. The impact of this on perceptions of wellbeing is high, with school connectedness offering the strongest unique contribution to early adolescent wellbeing; double that of peer connectedness. Supported by a large effect size (see Section 4.3.3), and existing research (Lenhart, Smith, Anderson, Duggan, & Perrin, 2015), the importance of school to early adolescent functioning and development is considerable (Allen, Ryan, Gray, McInerney, & Waters, 2014).

5.6.1 (ii) SNSs: an embedded part of the social landscape

Outside of school context, SNSs are an integral part of the social landscape. The influence of this on perceptions of connectedness and wellbeing is complex, with degrees of friendship (Wang & Edwards, 2016), and perceptions of social competence in the offline and online domains (Reich, 2016), appearing to play a pivotal role.

A critique of existing research, identified three well researched hypotheses which support insight into the moderating influence of SNS use on the relationships between connectedness and wellbeing: the *stimulation hypothesis*; *rich-get-richer hypothesis*; and *displacement hypothesis*. The contrast and similarities between these hypotheses offer an interesting and persuasive perspective on the interrelationships between early adolescents' use of SNSs,

their perceptions of connectedness and social competence, and how these affect wellbeing.

5.6.1 (iii) Developing and maintaining existing 'everyday' relationships from school on SNSs,

An interpretation of this study's results indicate that SNSs offer a salient domain where relationships with existing 'everyday' friends from school are nurtured and developed (Wu, Outley, Matarrita-Cascante, & Murphrey, 2015). Although, the online experiences between boys and girls appear to differ (Valkenburg, Sumter, & Peter, 2011), the impact on wellbeing appears constant.

For early adolescents with 'average to high' levels of connectedness to school, the moderating influence of SNS use and therefore its relationship with early adolescent wellbeing, appears to be explained by the *rich-get-richer hypothesis* (Kraut, Kiesler, Boneva, Cummings, Helgeson, & Crawford, 2002). For these participants, SNS use is seen to stimulate and enhance already strong offline ties with everyday friends and school; encouraging further SNS use when opportunities outside of school arise. When considering the interpretations from Hypotheses 2 and 3, it may be inferred that these socially rich early adolescents experience a level of offline social competence that enables them to effectively navigate and utilise the social and emotional support that being part of an extended school online community has to offer them (Reich, Subrahmanyam, & Espinoza, 2012). By harnessing the opportunities available on SNSs, these participants are therefore seen as strengthening their school group identity; heightening perceptions of offline social competence, school connectedness, and in turn, wellbeing.

In contrast to the socially rich early adolescents described above, are a group of participants who experience lower levels of connectedness to school. For these early adolescents, the moderating influence of SNS use is captured by the *stimulation hypothesis*. Within this context, SNSs are seen as offering a less effortful domain for social skills rehearsal; stimulating and encouraging social interaction and communication with known others from school (Chesley &

Johnson, 2014). Although these online social skills may not translate directly into the face-to-face school context (Reich, 2016), perceptions of connectedness to others and a sense of belonging to school are increased. These positive gains serve to encourage further SNS use, thus stimulating the iterative process of SNS engagement and online social competence rehearsal, the impact of which on wellbeing, is positive (Shapiro & Margolin, 2014).

5.6.1 (iv) Developing and maintaining 'close friendships' on SNSs

Contrasting with the above interpretations is the explanation offered in response of this study's results suggesting that time spent on SNSs reduces the extent to which early adolescents feel connected to their peers; the *displacement hypothesis*. At first glance, the displacement hypothesis seems surprising given the evidence supporting this study's interpretations which, appear to be best explained by the stimulation and rich-get-richer hypotheses. A further critique of the literature does, however, indicate that time spent on SNSs communicating with 'everyday friends' may indeed displace time that might otherwise be spent interacting with 'close friends,' either face-to-face, or via directing messaging.

For all early adolescents, maintaining and developing relationships with their closest friends is of primary importance, with a large proportion of time being spent together inside and outside of the school context. From the perspective of these close relationships, SNSs are viewed as a public domain reserved for communication and interaction with existing 'everyday friends', most of which are typically developed at school (Lenhart, Smith, Anderson, Duggan, & Perrin, 2015). Although SNS use cannot conceivably be seen as displacing time during the actual school day (and as such cannot be directly applied to school connectedness) it does appear to reflect how time is spent out of school hours. In these instances, time spent on less intimate and less permanent SNS interactions may displace time that could be spent with close friends; reducing perception of connectedness and therefore wellbeing (Best, Taylor, & Manktelow, 2015).

When examining the relative importance of close peer relationships compared to perceptions of connectedness to school, it is important to note that for this study's participants, school connectedness was the strongest predictor of wellbeing. As such, although the displacement hypothesis provides an important and holistic perspective, its relative weighting to this study's overall wellbeing story needs to be interpreted accordingly.

Finally, when considering the weighting of evidence emerging from this study's results, it is also important to recognise that although SNSs may provide additional and valuable opportunities for social interaction and rehearsal of online social skills, the results of the study indicate that relationships and social skills developed in the real-life context and in particular school, are an essential foundation; enabling early adolescents to harness SNSs in a beneficial way (Wu, Outley, Matarrita-Cascante, & Murphrey, 2015).

5.6.2 Summary

The interpretation of the results in relation to this study's overarching research question provides valuable insights regarding the interrelationships between SNS use, school connectedness, peer connectedness and social competence, and their influence on early adolescent wellbeing. Emerging from this, is a complex story describing how and when SNSs can be positively harnessed to promote and protect early adolescent wellbeing; indicating a shift in early adolescent social functioning and development that is responding to the rapidly changing digital landscape.

The discussion will now focus on evaluating the quality of this study's research. The strengths and limitations of the methods adopted by the current study (see Chapter 3) are discussed, with specific reference made to issues of reliability and validity that were identified as impacting on the reliability of this study's findings but have not been raised through the discussion thus far.

5.7 Methodological Review: Evaluating the Quality of Research

The quality of this study's research design and procedure, and the trustworthiness of the research findings were critically evaluated through consideration of: internal reliability; reliability of measures; construct validity; and external validity (Teddlie & Tashakkori, 2009; Roberts, Priest, & Traynor, 2006). Reflections on these criteria are now discussed in detail.

5.7.1 Internal validity

As described in Section 3.4.3, the concept of internal validity, denotes the extent to which this study's results point to an interpretation that provides the most plausible explanation of the study's findings (Laher, 2016). The quality of these interpretations were examined through three key factors (Teddlie & Tashakkori, 2009), as presented below.

5.7.1 (i) Inferences are based on statistical significance

Following transparent and replicable data analysis procedure, statistical significance was established at p=<.001, for the majority of this study's results. An important exception to this, were the results from the interactions of the moderation analyses (see Sections 4.4.3(i), and 4.4.5(i)), with lower '*p*' values (e.g. p=.035), being reported. Although it is suggested that these significance values may not be uncommon for effects of moderation (Kenny, 2015), it is recognised by the researcher that they limit the conclusions that can be drawn about the moderating influence of SNS use on the relationships between: (i) school connectedness and wellbeing, and (ii) peer connectedness and wellbeing.

5.7.1 (ii) The strength of effects sizes

As noted in this study's synthesis, the relative weighting of the researcher's interpretations were informed by the effect sizes reported in relation to each of the study's results. Of particular relevance to this study's research question are the weak effect sizes reported as a result of the moderation analyses. Similar to

issues raised in the previous section, these effect sizes (e.g. f^2 = .009), although seemingly small, are nonetheless seen as average in tests for moderation (Aguinis, Beaty, Boik, & Pierce, 2005). A review of the literature does, however, acknowledge that this interpretation of the relative weighting of effect sizes in moderation analysis is still debated (Kenny, 2015), and as such, must be acknowledged as limiting the reliability of this study's findings accordingly.

5.7.1 (iii) Researcher bias

The researcher took care in presenting a clear rationale and evidence base for the interpretations of this study, offering a variety of explanations in an attempt to provide a balanced perspective. It is noted, however, that the researcher's visual interpretations of the slopes from the moderation analyses (see Figures 4.1 & 4.2) may have been more open to interpretation (Holmbeck, 2002). In an attempt to reduce this researcher bias, the slopes were additionally reviewed by an Associate Professor at the University of Nottingham's School of Psychology. Following discussion, consensus on the most appropriate interpretations was reached. Although this approach strengthened the reliability of the interpretations, the researcher acknowledges that any visual analysis of graphical data continues to be limited by bias (Cohen, Manion, & Morrison, 2011).

5.7.2 Reliability of measures

5.7.2 (i) Internal consistency

A particular strength the current study has been the inclusion of reliable measures. In relation to this study's participants, the internal consistency of all measures were shown to have good reliability (>8; Gliem & Gliem, 2003). This is of particular importance in relation to this study's SNS use scale (SNSUI) which was developed by the researcher. It is recognised by the researcher that the reliability of the measures are not, however, related to internal consistency alone, as described on the following page.

5.7.2 (ii) SNS use scale (SNSUI)

The SNS use scale developed by the researcher aimed to capture the breadth and depth of early adolescent SNS use (Olufadi, 2016). Although attempts were made to account for the rapidly changing face of SNS use (e.g. by providing an 'others' option within the scale; see Table 3.4) it was noted during the questionnaire implementation that a number of male participants wished to include video gaming within the definition of SNS use. Following discussion with participants and cross referencing against the SNS definition adopted by the current study (boyd & Ellison, 2007), it was agreed that video gaming could not be included. Despite this agreement, it was noted by the researcher that a number of participants listed video gaming in the 'others' section of the SNSUI scale. Although these items were removed during data cleaning procedures (see Section 3.10.1), it is nonetheless likely that these influenced the reported intensity of SNS use.

Given the rapidly evolving nature of SNSs it needs to be acknowledged that the SNSUI scale and the findings presented in this study are liable to become 'out of date' before too long. Comparative research undertaken at a later date with a similar sample population would provide some valuable insight regarding the evolving nature and influence of SNS use on early adolescent social functioning and development. By which time, it is likely that video gaming will fall within the parameters of a SNS use definition (Lenhart, Smith, Anderson, Duggan, & Perrin, 2015; Ellison & boyd, 2013).

5.7.2 (iii) Self-report measures

In exploring the findings for Hypothesis 1, it was acknowledged by the researcher that self-report measures are related to inherent issues of reliability. Evidence supporting the convergent reliability of the direct wellbeing measure used by the current study was also presented, highlighting potential strengths.

A potential threat noted during the questionnaire implementation was one of social desirability (Nardi, 2015). In addition to the steps taken within the research design to minimise this response bias, the researcher took additional

steps by: having participants sit at individual tables where they could not be overlooked; highlighting that there was no right or wrong answer; and collecting all questionnaires when these were completed. Despite these collective steps, it is noted that participants may have presented their beliefs, attitudes and behaviour in a more favourable light (Ronen, Hamama, Rosenbaum, & Mishely-Yarlap, 2016; McDonald, 2008).

5.7.3 Construct validity

Threats to validity in defining and measuring internal constructs are of particular relevance to this study's findings. Attempts to ameliorate some of the issues explored during the literature review (Chapter 2) were considered in this study's research design (e.g. the use of direct and indirect measures of wellbeing: see Section 5.3.1). Earlier in this chapter, threats to validity in respect to how peer connectedness was operationalised by the researcher were examined and how this may have differed to perceptions held by this study's participants. The potential impact of this on the study's findings and the interpretations made by the researcher were also highlighted (see Section 5.4.3 (vii)).

5.7.4 External validity

5.7.4 (i) Pupil participants

A notable strength of the current study lies in this study's sample. Approximately 76% (*N* = 532) of the target population took part in the final analysis. In respect to the age range of the sample, this reflected the top end of early adolescent secondary aged pupils (*M* = 12.58; *SD* = .31). It is acknowledged that similar to this study's Year 8 participants, Year 9 pupils (13-14 year olds) were not subject to potential influences related to transition (Lester, Waters, & Cross, 2013) and could therefore have been invited to take part in the study. Interpretations of this study's results in relation to existing research (e.g. Valkenburg, Sumter, & Peter, 2011; Rose & Rudolph, 2006), appears to suggest, however, that the 12-13 years age focus adopted by the current study was particularly relevant to answering this study's research question.

In relation to expected trends (DoH, 2013), the proportion of male participants (59.8%) in the sample was higher than expected, providing a potential limitation on the generalisability of this study's findings. Another potential limitation that needs recognition is the very low proportion of participants from ethnic minority backgrounds taking part in the study (see Table 3.3). Although reflective of the early adolescent population in some parts of the UK, it does not adequately account for the UK as a whole (Shadish, Cook, & Campbell, 2002).

Having reflected on issues related to internal reliability, reliability of measures, construct validity, and external validity, attention will now turn to this study's research design and procedure in order to identify any additional issues of reliability and validity that may impact on the trustworthiness of this study's findings.

5.7.5 Research design

5.7.5 (i) Cross-sectional designs

This study employed a cross-sectional research design in order to explore current trends, behaviours and constructs related to attitudes and beliefs. The strength of this approach has enabled inferences regarding changing properties at an individual level and social systems level to be analysed as a whole (Curtis, Comiskey, & Dempsey, 2016; Cohen, Manion, & Morrison, 2011). Caution needs to be taken however with respect to interferences of causality (Oppenheim, 2000). For example whilst it may be tempting to infer causality based on the significant inverse relationship between SNS use and school connectedness, it is evident that the effect of SNS use on perceptions of connectedness to school is interrelated and responsive to a number of changeable factors that have not been measured over time. This study's approach of using regression analysis procedures to explore predicted variance in wellbeing, and the moderating influence of SNS use, does however, improve the reliability for inferences of directionality (Tabachnick & Fidell, 2007). Future research may wish to use a longitudinal design approach as a means of addressing this limitation further.

5.7.5 (ii) Approach to data analysis

As noted in the results (4.5.1) and discussion (Section 5.5.1 (i)), a test for mediation was not possible using the computational tool, PROCESS, as a direct proportional relationship between SNS use and social competence was not evident. As such, inferences made in relation to the hypothesised outcome of Hypothesis 3a must be treated as theoretical.

Rationale for choosing PROCESS: When deciding on the most appropriate analysis procedure for the current study, PROCESS was seen to offer a well referenced regression analysis tool enabling predicted models of mediation and moderation to be explored (Hayes, 2013). A regression analysis could have been undertaken manually, but this approach was not within the researcher's scope of expertise. An alternative and evidenced based approach to regression analysis available to the researcher was SEM.

Using systems of linked regression-style equations and path diagrams, SEM is seen to allow for complex effects of moderation and mediation to be explored. Unlike PROCESS, SEM is not reliant on a direct relationship between the predictor and outcome variables being evident which would have been useful in relation to Hypothesis 3a. Notably, however, SEM is typically used where theoretical constructs are under exploration, and as such, seemed less appropriate to the current research design (Gunzler, Chen, Wu, & Zhang, 2013). Despite this, and with the benefits of hindsight, a SEM approach may have offered the researcher a more flexible approach to data analysis.

5.7.6 Summary

The quality of this study's research has been evaluated and the impact that this may have had on the trustworthiness of this study's findings, explored. Attention is now given to the implications of this study's findings for future research, education policy and provision, and EP practice.

5.8 Implication of Study

5.8.1 Implications for Directions of Future Research

A number of questions have emerged from the current study that may benefit from further research. This section considers some of these areas in greater detail.

To begin with, this is a unique and ground-breaking study. It is the first study of its kind to explore the interrelationships between SNS use, school connectedness, peer connectedness and social competence, and their influence on early adolescent wellbeing from a positive affective perspective. This study has highlighted the positive potential and possible caveat of harnessing SNSs to promote and protect early adolescent wellbeing. Replication and adaptation of the current study in order to address the limitation arising from this study's data analysis procedure and the small effect sizes revealed following moderation analyses would be worthwhile. Specifically, future research would benefit from a adopting a SEM data analysis approach to explore the mediating influence of social competence on how and why SNS use may influence early adolescent wellbeing.

This study's findings have clearly highlighted the importance of school connectedness to early adolescent wellbeing. As an integral part of the social landscape, SNS use has been shown to enhance perceptions of connectedness and wellbeing further. It is acknowledged however, that this research was undertaken with data collected from early adolescents attending mainstream secondary schools. Further research using data gathered from young people in other contexts e.g. who are attending alternative educational provision following school exclusion, may provide an alternative perspective on perceptions of group connectedness and how this may be enhanced (or not) by SNS use.

Results from this study indicate that CYP are engaging in SNS use from a younger age, with the intensity of its use increasing with age. This highlights the need to explore the positive potential of SNS use for CYP during the earlier stages of adolescence. Exploration into the influence of SNS use during the last

year of primary school (10 – 11 years of age), and comparing this to data taken immediately after transition to secondary school would be particularly worth while.

Earlier in this chapter it was noted that the construct of social competence may be qualitatively different in the face-to-face domain compared to online. Exploring how these may differ and their differential contribution to wellbeing across age and gender is noted as an important direction for future research. Understanding the directionality of any potential influence between online and offline social skills development would form an integral part of this exploration.

It is acknowledged by the researcher that a degree of caution should be exercised when attempting to apply the findings of this study to interventions. Further research exploring what these associations might look like in practical terms, would however, be worthwhile. For example, it is noted from previous work undertaken by the researcher, that whole-school approaches targeted at developing the social culture of the school environment including supporting social skills development for all members of the school community has led to reductions in intentions to engage in bullying both in the face-to-face and SNS domains (Garinger, Yanagida, Strohmeier, & Spiel, 2015; Williford, Elledge, Boultan, DePaolis, Little, & Salmivalli, 2013). Exploring how systemic approaches aimed at promoting the social school climate and how this may be reflected in the social climate of SNSs would be worthy of future research.

5.8.2 Implications for Educational Policy and Provision

In Chapter 2, the importance of the secondary school context as a primary place for promoting early adolescent mental health was identified as a priority for Government policy (Ward, 2017). In parallel to this is the recognition that this generation of early adolescents have grown up in the digital age and as such are identified as ‘digital natives’. To date, much of the focus for Government policy has focused on understanding and addressing the potential risks associated with SNS use such as cyberbullying. There is however recent recognition that understanding the potential benefits of SNS use for promoting

and protecting CYP's wellbeing needs to be explored and harnessed (DoH, 2015). The findings from the current study support this. In particular, this study highlights the importance of educational policy and provision targeted at supporting and improving the social climate of school as a critical starting point. Within this, the findings from this study suggest that understanding and supporting pupils to develop meaningful connections and support networks at different 'levels' of friendship is also important. Steps can then be taken to promote and improve CYP's access to these support networks by bridging these connections into the SNS site domain (YoungMinds & Ecorys, 2016).

5.8.3 Implications for EP Practice

In their role as scientist-practitioners, EPs aim to utilise their knowledge and understanding of the interacting systems which influence CYP's development and social functioning in order to promote and foster positive change and outcomes (Bronfenbrenner, 1979). The potential implications of this study at a systems level are discussed below.

EPS level: An initial starting point for this study was an interest expressed by the EPS where the researcher was employed, in developing their evidence-based understanding of the potential positive influence of SNS use on CYP's wellbeing. Specifically the EPS recognised a growing number of schools seeking support in relation to the use of SNSs by pupils. It is anticipated that the findings from this study will contribute to a range of materials and support offered by the EPS, ensuring that a holistic perspective of the potential benefits as well as risks associated with SNS use are explored.

Whole school level: The findings support the importance of schools fostering and prompting connectedness to school. With their unique working knowledge of school systems, EPs are well placed to work with schools to support and guide positive practice and policy ensuring the inclusion and support of all members of the school community whether this is within the immediate school context or via online SNS platforms. As noted in the previous section (5.8.1), providing guidance and support that highlights the bridge between everyday

school friendships developed in the school context and SNSs is an important vehicle for also addressing issues related to cyberbully; a concern held by a growing number of schools.

Group and individual child level: EPs often work with socially vulnerable CYP. Understanding the potential motivations and experiences that SNS use may have for these CYP is an important avenue for exploration. With this insight steps can then be taken to help support these CYP navigate the complexities of the social environment in a positive way, both online and in the face-to-face contexts. By focusing on developing social skills within both domains, EPs can support CYP in developing a sense of connection to others through which ever means is most effective for them.

5.9 Conclusions

This study aimed to explore the interrelationships between SNS use, school connectedness, peer connectedness and social competence, and their influence on early adolescent wellbeing. Through this exploration it was hoped that this research would provide greater insight regarding the positive potential of SNS use to promote and protect early adolescent wellbeing.

From this study, school has emerged as the primary domain for developing and maintaining all early adolescent interactions; positively contributing to perceptions of wellbeing. Outside of the school context, SNS use has been found to positively enhance the relationship between school connectedness and wellbeing. The influence of SNS use on perceptions of connectedness and wellbeing is, however, complex, with degrees of friendship and perceptions of social competence in the offline and online domains playing a pivotal role.

A caveat to the positive potential of SNS use has arisen in relation to early adolescent relationships between close friends. In these circumstances, SNS use reduces levels of peer connectedness and its predictive influence on wellbeing. The relative weighting of this finding in relation to the findings

suggests that SNS use enhances perceptions of connectedness to everyday friends, is however, comparatively weaker.

Overall the implication of this study's findings point towards a picture of early adolescent social functioning and development that appears to be shifting in response to the rapidly changing digital landscape; influencing how early adolescents communicate and interact with each other and as such, their perceptions of wellbeing.

When considering the outcomes of the current study, issues relating to the quality of this study's research must be considered. Particularly relevant are issues relating to internal validity and the small effect sizes resulting from the moderation analyses. In terms of construct validity, potential differences in how peer connectedness may have been construed are an important point of consideration. Finally, due to the study's research design, interpretations regarding the potential mediating influence of social competence remain theoretical.

Irrespective of these limitation, this study clearly demonstrates the positive potential of SNS use to promote and protect early adolescent wellbeing. Further exploration of the interrelationships between different levels of early adolescent friendship and the differential contribution of online and offline social competence may provide further insight regarding the underlying mechanisms that support how SNSs can be positively harnessed.

Finally, this study provides a unique insight of early adolescent development and social functioning in a digital age; contributing to, and extending existing research. Designing, implementing, analysing and interpreting the research has been a challenging yet highly rewarding journey for the researcher. Engaging effectively with stakeholders has been an integral learning point during this real world research process. The skills and learning developed through the doctoral research have been invaluable and will remain with the researcher as she continues on her applied professional journey as a scientist-practitioner.

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Appendices

APPENDICES

Appendix A: Weight of Evidence of studies in the Systematic Review

The four studies were assessed using Gough's (2007) 'Weight of Evidence' framework.

Weight of Evidence A: Quality of Methodology

The methodological quality of each study was weighted on their 'Measures' and 'Analysis' using an adapted version of the APA Task Force's 'Coding Protocol' (Kratochwill, 2003).

Measures

Weighting	Description
High	• Used measures that produce an internal reliability coefficient score of at least 0.85 for the majority of primary outcomes under investigation, and for the current population under study. • Validity reported for all measures used and/or a well-referenced, standardised or norm-referenced measure is used. Consideration given to population under study. • In the event that multiple primary outcome measures are used, the above criteria must be met for all primary outcome measures.
Medium	• Used measures that produce an internal reliability coefficient score of at least 0.70 for the primary outcomes under investigation, and for the current population under study. • Validity reported for some measures used and/or a well- referenced, standardised or norm-referenced measure is used. Consideration given to population under study. • In the event that multiple primary outcome measures are used, the above criteria must be met for at least 75% of the primary outcome measures.
Low	• Used measures that produce internal reliability coefficient score of at least 0.50 for the primary outcomes under investigation, and for the current population under study. • A case for validity does not need to be presented. • In the event that multiple primary outcome measures are used, the above criteria must be met for at least 50% of the primary outcome measures.

Analysis

Weighting	Description
High	○ Conducted using appropriate units of analysis with no obvious violations of assumptions ○ Sufficiently large N - statistical power considerations taken into account ○ At least 75% of primary outcomes must demonstrate a statistically significant correlation with SNS use. ○ Effect sizes are reported or sufficient data is provided for the effect size to be calculated for all the primary outcomes. ○ Non-significant outcomes associated with SNS use are reported.
Medium	• Demonstrated at least 3 of the following criteria: ○ appropriate units of analysis with no obvious violations of assumptions ○ Sufficiently large N - statistical power considerations taken into account ○ At least 50% to 74% of primary outcomes must demonstrate a statistically significant correlation with SNS use ○ Effect sizes are reported or sufficient data is provided for the effect size to be calculated for some of the primary outcomes
Low	• Demonstrated at least 2 of the following criteria: ○ appropriate units of analysis with no obvious violations of assumptions ○ Sufficiently large N - statistical power considerations taken into account ○ At least 25% to 49% of primary outcomes must demonstrate a statistically significant correlation with SNS use ○ Effect sizes are reported or sufficient data is provided for the effect size to be calculated for some of the primary outcomes.

The overall quality of methodology of the four studies was calculated by assigning a corresponding score to each weighting and then averaging the score:

- 'High' weighting: 3
- 'Medium' weighting: 2
- 'Low' weighting: 1
- Studies not meeting the criteria for a 'Low' weighting: 0

Overall Quality of Methodology	Average score
High	At least 2.5
Medium	Between 1.5 and 2.4
Low	Less than 1.4

The overall Quality of Methodology of the four studies

Studies	Measures	Analysis	Overall Quality of Methodology
Antheunis, Schouten & Krahmer (2014)	Medium 2	High 3	**High** 2.5
Apaolaza, Hartmann, Medina, Barrutia, & Echebarria, (2013)	Low 1	Low 1	**Low** 1
Quinn & Oldmeadow (2013)	Medium 2	High 3	**High** 2.5
Valkenburg & Peter (2007)	Medium 2	Medium 2	**Medium** 2

Weight of Evidence B: Appropriateness of Methodology

This weighting assessed the appropriateness of the methodology to the review question: *"Does SNS use influence self-perceptions of school connectedness, peer connectedness and social competence and therefore early adolescent wellbeing?"*

In meeting this criterion, study designs needed to be based on a non-experimental research design; providing quantitative data suitable for a statistical analysis of correlation. Equally, the mean age of participants taking part in the study needed to fall within the defined 10-14 years age parameter. In light of the inclusion criteria established during the Search Strategy stage of the systematic review process, **all four studies included in the review were awarded a weighting of 'high (3)'** in relation to the appropriateness of the methodology to the review question.

Weight of Evidence C: Appropriateness of the evidence to the current review

This weighting provided a review-specific judgement regarding the appropriateness of the focus of the reported evidence to the review question.

Weighting	Description
High	• Measured SNS intensity of use • Evaluated the direct influence of SNS use and/or intensity of use on the wellbeing; specifically in terms of either school connectedness, peer connectedness or social competence or combinations thereof, whereby ○ scores for school connectedness, peer connectedness and social competence were provided independently of each other, with subsequent analysis of these
Medium	• Measured SNS intensity of use • Evaluated the direct influence of SNS use and/or intensity of use on the wellbeing; specifically in terms of either school connectedness, peer connectedness or social competence or combinations thereof, whereby ○ scores for school connectedness, peer connectedness and social competence were provided as a part of a composite score in conjunction with one or more of the aforementioned variables, with subsequent analysis of this
Low	• Measured SNS use • Evaluated the indirect influence of SNS use and/or intensity of use on wellbeing only; specifically in terms of either school connectedness, peer connectedness or social competence or combinations thereof

Weight of Evidence D: Overall weight of evidence

This weighting provides an overall assessment of the extent to which each of the four studies contributed evidence to addressing the review question. The scores were calculated by assigning a corresponding score to each weighting and then averaging the score:

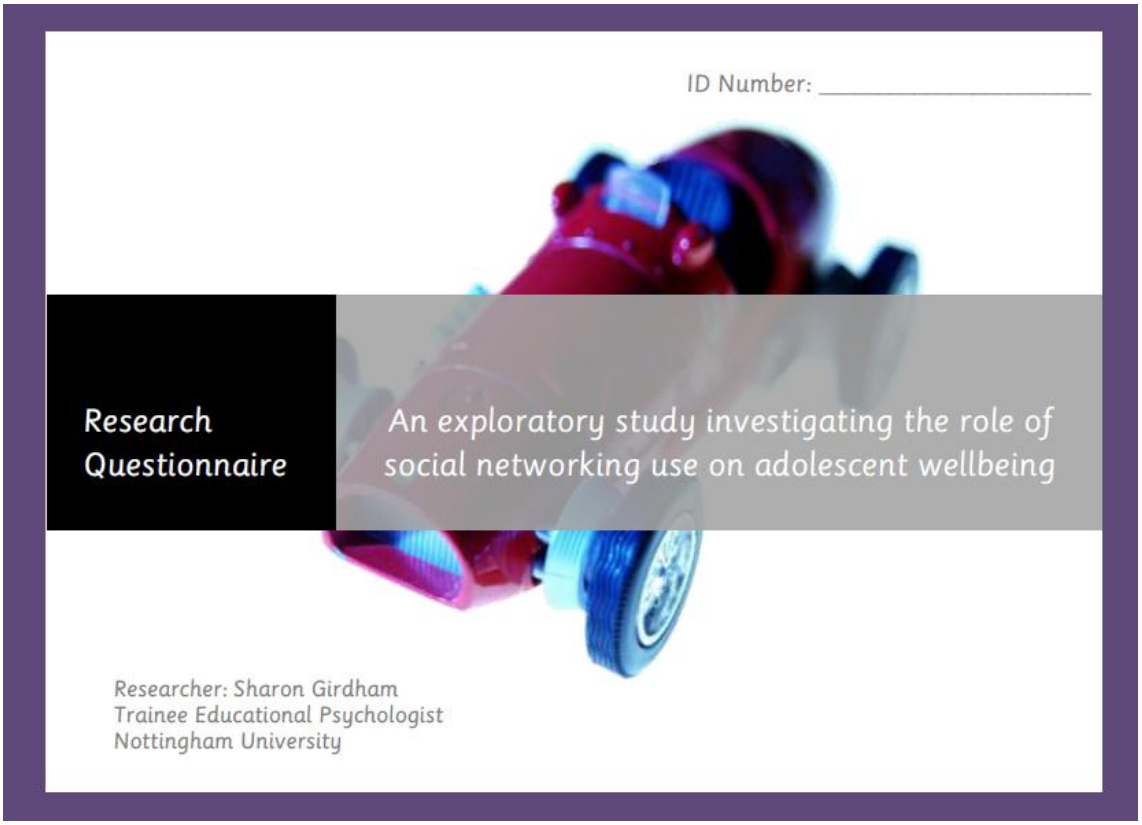
- 'High' weighting: 3
- 'Medium' weighting: 2
- 'Low' weighting: 1

Studies not meeting the criteria for a 'Low' weighting: 0

Overall Weight of Evidence	Average score
High	At least 2.5
Medium	Between 1.5 and 2.4
Low	Less than 1.4

It is acknowledged that the Weight of Evidence evaluation was undertaken independently by the researcher and as such, the reliability of the results may be subject to researcher bias.

Appendix B: Questionnaire template



The University of Nottingham
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Questionnaire

Thank you for taking part in this study

Please take your time completing the questionnaire. This questionnaire is not a test and there are no right or wrong answers.

Your answers are important and will be valuable to the findings of the study.

All information that you provide will be kept anonymous and remain strictly confidential, meaning that nobody will be able to trace the answers you give in this questionnaire back to you.

There are thirteen sets of questions which should take you about 30 minutes to complete. If for any reason you decide you do not want to continue, you can stop and withdraw at any point without having to explain why.

First, I would like to ask a couple of questions about you.

1. What is your date of birth? _____

2. What is your gender? Please circle.
   Male Female

The next questions ask you about your use of online social networking sites.

Please think about your main friendship groups from school and outside of school while completing the following questions.

3. **How often do you use** social networking sites to contact your friends? For example, for chatting, sharing photos, commenting on your friend's photos etc. Please tick one.

○ Never	○ Rarely	○ Occasionally	○ Once a week	○ Every two to three days	○ Everyday or almost everyday

Please go straight to question 10 if you ticked 'Never', otherwise continue to question 4.

4. **How long have you been using** social networking sites to contact your friends? Please tick one.

○ Less than a month	○ 1 to 6 months	○ 6 months to 1 year	○ 1 to 2 years	○ More than 2 years

5. **How many days in the last 7 days** have you been on a social networking site to contact your friends? Please indicate by circling the most appropriate number.

Number of days	0	1	2	3	4	5	6	7

6. **On the last day** that you were on one of your social networking sites, how many times did you contact your friends? Please write the number _____

7. **On the last week day (Monday – Friday)** that you were on a social networking site, how long did you spend making contact with your friends? Please tick one.

	Less than 15 minutes	15 to 30 minutes	30 minutes to 1 hour	1 to 2 hours	2 and 3 hours	3 hours or more
Total time spent	○	○	○	○	○	○

8. **On the last weekend day (Saturday or Sunday)** that you were on a social networking site, how long did you spend making contact with your friends? Please tick one.

	Less than 15 minutes	15 to 30 minutes	30 minutes to 1 hour	1 to 2 hours	2 and 3 hours	3 hours or more
Total time spent	○	○	○	○	○	○

9. **Which social networking site(s)** do you use to contact your friends? Please tick all that apply.

☐ facebook ☐ twitter ☐  ☐ WhatsApp

☐  ☐ kik ☐ 

☐ Other(s) Please list _____

The following questions ask about your satisfaction with life.

10. Below are five statements that you may agree or disagree with. Please indicate your agreement by ticking the most suitable circle.

	Strongly disagree	Disagree	Slightly disagree	Neither agree or disagree	Slightly agree	Agree	Strongly agree
In most ways my life is close to my ideal.	○	○	○	○	○	○	○
The conditions of my life are excellent.	○	○	○	○	○	○	○
I am satisfied with my life.	○	○	○	○	○	○	○
So far I have gotten the important things I want in life.	○	○	○	○	○	○	○
If I could live my life over, I would change almost nothing.	○	○	○	○	○	○	○

The following scale asks questions about your sense of belonging to school.

11. Below are eight statements. Please indicate your agreement by circling the most suitabl place (number) on the scale.

	Not true at all ←				→ Completely true
I feel like a real part of my school.	1	2	3	4	5
Sometimes I don't feel as if I belong here.	1	2	3	4	5
People at this school are friendly to me.	1	2	3	4	5
I am treated with as much respect as other students.	1	2	3	4	5
I can really be myself at this school.	1	2	3	4	5
The teachers here respect me.	1	2	3	4	5
I wish I were in a different school.	1	2	3	4	5
I feel proud of belonging to this school.	1	2	3	4	5

The next questions ask about how you are likely to behave in particular situations. There are nine statements in total.

12. Below are three statements. Please indicate how much these statements best describe you.

	Not at all like me	A little like me	Somewhat like me	A lot like me	Exactly like me
I avoid making other kids look bad.	○	○	○	○	○
If two of my friends are fighting, I find a way to work things out.	○	○	○	○	○
When I work in school groups, I do my fair share.	○	○	○	○	○

Below are six more statements. Please indicate how often this happens. How often…

	None of the time	A little of the time	Some of the time	Most of the time	All of the time
Do you get along well with people of different races, cultures, and religions?	○	○	○	○	○
Do you listen to other students' ideas?	○	○	○	○	○
Do you control your anger when you have a disagreement with a friend?	○	○	○	○	○
Can you discuss a problem with a friend without making things worse?	○	○	○	○	○
Do you follow the rules at a park, theatre or sports event?	○	○	○	○	○
Do you respect other points of view, even if you disagree?	○	○	○	○	○

Finally, these questions ask about your relationships with your friends. There are seven questions in total.

13. Below are four statements. Please indicate your agreement by circling the most suitable statement.

How well do you get on with your classmates?	Not at all well	Not really well	Neutral	Quite well	Really well
How well do you get on with other pupils in your school?	Not at all well	Not really well	Neutral	Quite well	Really well
How happy are you with the number of close friends you have outside of school (not school mates)?	Very unhappy	unhappy	Neither happy or unhappy	happy	Very happy
How happy are you with the number of close friends you have in school?	Very unhappy	unhappy	Neither happy or unhappy	happy	Very happy

Below are three more statements. Please indicate your agreement by circling the most suitable place (number) on the scale.

	Not true at all				Completely true
I can trust my friends with personal problems.	1	2	3	4	5
My friends understand and accept me for who I am.	1	2	3	4	5
My friends and I help each other out.	1	2	3	4	5

Please now check that you have completed all the questions.

Once you have checked the questions, close the questionnaire booklet ready for collection.

Thank you very much for your participation.

Appendix C: Information letter sent to schools

The University of Nottingham
UNITED KINGDOM · CHINA · MALAYSIA

[redacted]

Contact address:
X
X
X

Date:

Dear Sir/Madam,

Re: Investigating the role of social networking use on adolescent wellbeing

My name is Sharon Girdham, and I am a Trainee Educational Psychologist from the University of Nottingham, currently employed by [redacted]. I am contacting you today to outline an opportunity for your school to participate in a research study exploring the positive correlates of early adolescent wellbeing.

Extensive research indicates that during early adolescence, a young person's sense of connectedness to their school and peers as well as their sense of social competence contribute significantly to their feelings of emotional and social wellbeing. More recent research suggests that these feelings of connectedness, competence and therefore early adolescent wellbeing may be enhanced through the use of online social networking. As yet, despite the high prevalence of early adolescents using online social networking, very little research has been undertaken to explore the nature and extent of these potentially influencing interrelationships. Given current statistics which suggest that 50% of all mental ill health in adulthood begins during early adolescence, identifying positive correlates of wellbeing that are salient to today's generation of early adolescents is of particular importance. As such, the aim of this study is to explore the interrelationships between social networking use, school connectedness, peer connectedness and social competence and their influence on adolescent wellbeing.

The data collection for this research will involve the distribution of questionnaires to all Year 7 pupils at participating schools, once parental consent has been obtained. Schools will be asked to send out the consent information as developed by the researcher, to parents (see attached sample letter).

The pencil-and-paper questionnaire will contain 13 sets of questions, estimated to take no longer than 30 minutes to complete and will be supervised and administered by myself. The questionnaire will include questions regarding demographic information and social networking use as well as a number of scales assessing levels of perceived school and peer connectedness, social competence and wellbeing.

The data from this study will be anonymised, kept confidential and used for research purposes only. It will be stored in compliance with the Data Protection Act. Once I have received written permission to proceed with this research in your school, I will contact and liaise with appropriate school staff to discuss the implementation of the questionnaire.

Upon completion of this research, I will arrange a follow-up consultation to discuss the outcomes of the study and the implications these may have for your school and your students. It is anticipated that the study will develop current understanding of early adolescent wellbeing and provide insights that can inform the further development of targeted preventative school strategies that foster and promote positive wellbeing.
I would welcome the opportunity to discuss this in greater detail at your earliest convenience. I will contact you again within the next two weeks to gain any feedback, in the interim, please feel free to contact me on the email address or telephone number as detailed below.

Yours faithfully,

Sharon Girdham
Trainee Educational Psychologist
Tel: [redacted]
Email: sharon.girdham[redacted]

Placement Supervisor:
[redacted]

Research Supervisor:
Anthea Gulliford

Appendix D: Pilot phase - Information letter and consent form sent to participants and their parents/carers

School of Psychology
Information Sheet

The University of Nottingham
UNITED KINGDOM · CHINA · MALAYSIA

An exploratory study to investigate whether social networking use moderates the effect of social connectedness, peer connectedness and social competence on adolescent wellbeing

Ethics Approval Number: 831

Researcher: Sharon Girdham (Trainee Educational Psychologist)
Contact details: sharon.girdham[redacted]

University supervisor: Anthea Gulliford
Contact Details: anthea.gulliford[redacted]

This is an invitation to take part in a research study that aims to explore Year 7 pupils' social networking site use, sense of connectedness and social competence, and the relationship of these to early adolescent wellbeing. Before you decide if you want to take part, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully with your parent/carer. ***If you agree to take part, please fill in the attached form and send it back to ..... by .....***

Adolescent wellbeing can be described as the sense of emotional and social satisfaction and happiness that adolescents feel in their life. Research says that an adolescent's sense of wellbeing is linked to their sense of connectedness to their school and to their peers, and to their feelings of social competence. As yet, very little research has been undertaken to explore the potential positive impact that online social networking (e.g. via Facebook, Instagram and Snapchat) may have on adolescents' feelings of connectedness, competence and therefore on their overall wellbeing. This study aims to understand this better.

If you agree to take part in the research, you will be asked to complete a short questionnaire that will ask questions about your online social networking use, and about your sense of connectedness and social competence, and your level of wellbeing. The questionnaire will take approximately 30 minutes to complete. It is hoped that findings from the questionnaire will help schools to develop ways of helping to develop wellbeing in school students your age; therefore you will be contributing important information.

Participation in this study is totally voluntary and you are under no obligation to take part. You are free to withdraw at any point before or during the study. All data collected will be anonymised and kept confidential and used for research purposes only. It will be stored in compliance with the Data Protection Act.

If you have any questions or concerns please don't hesitate to ask now. We can also be contacted after your participation at the above address.

If you have any complaints about the study, please contact:
Stephen Jackson (Chair of Ethics Committee)
stephen.jackson@nottingham.ac.uk

School of Psychology
Consent Form

The University of Nottingham
UNITED KINGDOM · CHINA · MALAYSIA

An exploratory study to investigate whether social networking use moderates the effect of social connectedness, peer connectedness and social competence on adolescent wellbeing

Ethics Approval Number: 831

Researcher: Sharon Girdham (Trainee Educational Psychologist)
Contact details: sharon.girdham[redacted]

University supervisor: Anthea Gulliford
Contact Details: anthea.gulliford[redacted]

The participants should answer these questions independently with the consent of their parents/carers:

- Have you read and understood the Information Sheet? YES/NO
- Have you had the opportunity to ask questions about the study? YES/NO
- Have all your questions been answered satisfactorily? YES/NO
- Do you understand that you are free to withdraw from the study? (at any time and without giving a reason) YES/NO
- I give permission for my data from this study to be shared with other researchers provided that my anonymity is completely protected. YES/NO
- Do you agree to take part in the study? YES/NO

"This study has been explained to me to my satisfaction, and I agree to take part. I understand that I am free to withdraw at any time."

Signature of the Participant (pupil): _____ Date: _____

Name (in block capitals): _____

Signature of the Parent/Carer: _____ Date: _____

Name (in block capitals): _____

I have explained the study to the above participant and he/she has agreed to take part.

Signature of researcher: _____ Date: _____

Appendix E: Main stage of data collection – Information letter and 'opt-out' consent form sent to participants and their parents/carers

School of Psychology
Information Sheet

The University of Nottingham
UNITED KINGDOM · CHINA · MALAYSIA

An exploratory study to investigate whether social networking use moderates the effect of social connectedness, peer connectedness and social competence on adolescent wellbeing

Ethics Approval Number: 881

Researcher: Sharon Girdham (Trainee Educational Psychologist)
Contact details: sharon.girdham@[redacted]

University supervisor: Anthea Gulliford
Contact Details: anthea.gulliford@[redacted]

This is an invitation to take part in a research study that aims to explore Year 8 pupils' social networking site use, sense of connectedness and social competence, and the relationship of these to early adolescent wellbeing. Before you decide if you want to take part, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully with your parent/carer. ***If you prefer NOT to take part, please fill in the attached 'opt-out' consent form and send it back to your tutor by ....***

Adolescent wellbeing can be described as the sense of emotional and social satisfaction and happiness that adolescents feel in their life. Research says that an adolescent's sense of wellbeing is linked to their sense of connectedness to their school and to their peers, and to their feelings of social competence. As yet, very little research has been undertaken to explore the potential positive impact that online social networking (e.g. via Facebook, Instagram and Snapchat) may have on adolescents' feelings of connectedness, competence and therefore on their overall wellbeing. This study aims to understand this better.

If you agree to take part in the research, you will be asked to complete a short questionnaire that will ask questions about your online social networking use, and about your sense of connectedness and social competence, and your level of wellbeing. The questionnaire will take approximately 30 minutes to complete. It is hoped that findings from the questionnaire will help schools to develop ways of helping to develop wellbeing in school students your age; therefore you will be contributing important information.

Participation in this study is totally voluntary and you are under no obligation to take part. You are free to withdraw at any point before or during the study. All data collected will be anonymised and kept confidential and used for research purposes only. It will be stored in compliance with the Data Protection Act.

If you have any questions or concerns please don't hesitate to ask now. We can also be contacted after your participation at the above address.

If you have any complaints about the study, please contact:
Stephen Jackson (Chair of Ethics Committee)
stephen.jackson@nottingham.ac.uk

School of Psychology
Consent Form

The University of Nottingham
UNITED KINGDOM · CHINA · MALAYSIA

An exploratory study to investigate whether social networking use moderates the effect of social connectedness, peer connectedness and social competence on adolescent wellbeing

Ethics Approval Number: 881

Researcher: Sharon Gindham (Trainee Educational Psychologist)
Contact details: sharon.gindham@[redacted]

University supervisor: Anthea Gulliford
Contact Details: anthea.gulliford@[redacted]

"This study has been explained to me to my satisfaction, and I prefer NOT to take part."

Signature of the Participant (pupil): _____ Date: _____

Name (in block capitals): _____

Signature of the Parent/Carer: _____ Date: _____

Name (in block capitals): _____

I have explained the study to the above participant and he/she wishes to NOT take part.

Signature of researcher: _____ Date: _____

Appendix F: Ethics approval letter

The University of Nottingham
UNITED KINGDOM · CHINA · MALAYSIA

School of Psychology
The University of Nottingham
University Park
Nottingham
NG7 2RD

T: +44 (0)115 8467403 or (0)115 9514344

SJ/wb
Ref: 831

Wednesday, 04 December 2013

Dear Sharon Girdham & Anthea Gulliford,

Ethics Committee Review

Thank you for submitting an account of your proposed research 'The role of school and peer connectedness and social competence in predicting adolescent wellbeing in a digital landscape: An exploratory study'.

That proposal has now been reviewed by the Ethics Committee and I am pleased to tell you that your submission has met with the committee's approval.

Final responsibility for ethical conduct of your research rests with you or your supervisor. The Codes of Practice setting out these responsibilities have been published by the British Psychological Society and the University Research Ethics Committee. If you have any concerns whatever during the conduct of your research then you should consult those Codes of Practice. The Committee should be informed immediately should any participant complaints or adverse events arise during the study.

Independently of the Ethics Committee procedures, supervisors also have responsibilities for the risk assessment of projects as detailed in the safety pages of the University web site. Ethics Committee approval does not alter, replace, or remove those responsibilities, nor does it certify that they have been met.

Yours sincerely



Professor Stephen Jackson
Chair, Ethics Committee

Appendix G: Ethics approval amendment – 'opt-out' consent

The University of Nottingham
UNITED KINGDOM · CHINA · MALAYSIA

School of Psychology
The University of Nottingham
University Park
Nottingham
NG7 2RD

tel: +44 (0)115 846 7403 or (0)115 951 4344

SJ/wb
Ref: 881

Friday, 26 August 2016

Dear Sharon Girdham,

Title of the new project: ***The role of school and peer connectedness and social competence in predicting adolescent wellbeing in a digital landscape: An exploratory study***
Applicants: Sharon Girdham

Further to your request for Chair Approval for amendments to the project:-

Details of the previous study:

Applicant: Sharon Girdham
Title: **Trainee Educational Psychologist**
Date of approval: 28.04.2016
Reference number (if known):831

As Chair of the Ethics Committee I have considered your request and I am happy to grant approval for the following changes:

1. Change to consent procedure i.e. moving from 'opt-in' to 'opt-out' consent for the main stage of data collection (the pilot stage was completed following 'opt-in' consent).
2. The study will now seek to recruit students in Year 8.

Brief explanation regarding the rationale for this request:
Re Point 2: minor change.
Re Point 1: The researcher recognises that this might be considered a significant change, and one that departs from the usual position of the School of Psychology's Ethics Committee. However, the argument here is that this method would reflect wider practice in educational research: please see below.
This is a school-based study, located in secondary schools. In the pilot stage, 53 % of participants invited to take part in the data collection have already returned 'opt-in' consent forms agreeing to participate. The feedback from this stage of data collection indicated that the pupils found the experience enjoyable and the research area, interesting. Based on this no notable changes were required for the implementation or content of the questionnaire. Following further face-to-face discussions with Senior Management across the four Academy Schools taking part in the study, it was agreed that all Year 7 pupils would be invited to take part in the main part of the study which would hopefully yield a return rate of approximately

The University of Nottingham
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Nottingham
NG7 2RD

tel: +44 (0)115 846 7400 or (0)115 951 4344

371 pupils (out of 700). Unfortunately despite meeting with pupils myself, and the valiant efforts of staff across all schools, less than 30 consent forms were returned (~4%); falling significantly below the 150 participants needed for data analysis. Data collection was therefore put on hold.
Subsequent conversations with Senior Management highlighted that these poor consent form return rates are not untypical for schools. It was therefore agreed that an 'opt-out' consent procedure would be a reasonable next step, one that follows current school procedure used in cases where consent is required for essential school related activities. The Academy Schools have provided their consent for the researcher to pursue this change [if it is agreed by school Ethics] and have agreed to support with data collection early in September. The School Managers are already fully informed regarding this study – as per the original Ethics clearance. It is hoped by the schools that the findings from this study will support current school policy regarding the general wellbeing of pupils.
A move to 'opt-out' consent would reflect practice in wider educational research, where studies employ opt-out consent from parents more routinely. Other HEIs involved in research around children and young people employ opt-out procedures e.g. University of Sussex Research Governance Standard Operating Procedure, University of Sheffield, etc etc. [Available on application to supervisor A. Guilliford]. Studies employing 'opt-out' are those that involve:

- *passive classroom observations*
- *no disruption to normal classroom activity*
- *there are no sensitive topics involved*
- *no intervention1.*

It is the view of the researcher and supervisor that this study meets such criteria.

Final responsibility for ethical conduct of your research rests with you or your supervisor. The Codes of Practice setting out these responsibilities have been published by the British Psychological Society and the University Research Ethics Committee. If you have any concerns whatever during the conduct of your research then you should consult those Codes of Practice.

Independently of the Ethics Committee procedures, supervisors also have responsibilities for the risk assessment of projects as detailed in the safety pages of the University web site. Ethics Committee approval does not alter, replace, or remove those responsibilities, nor does it certify that they have been met.

Yours sincerely



Professor Stephen Jackson
Chair, Ethics Committee

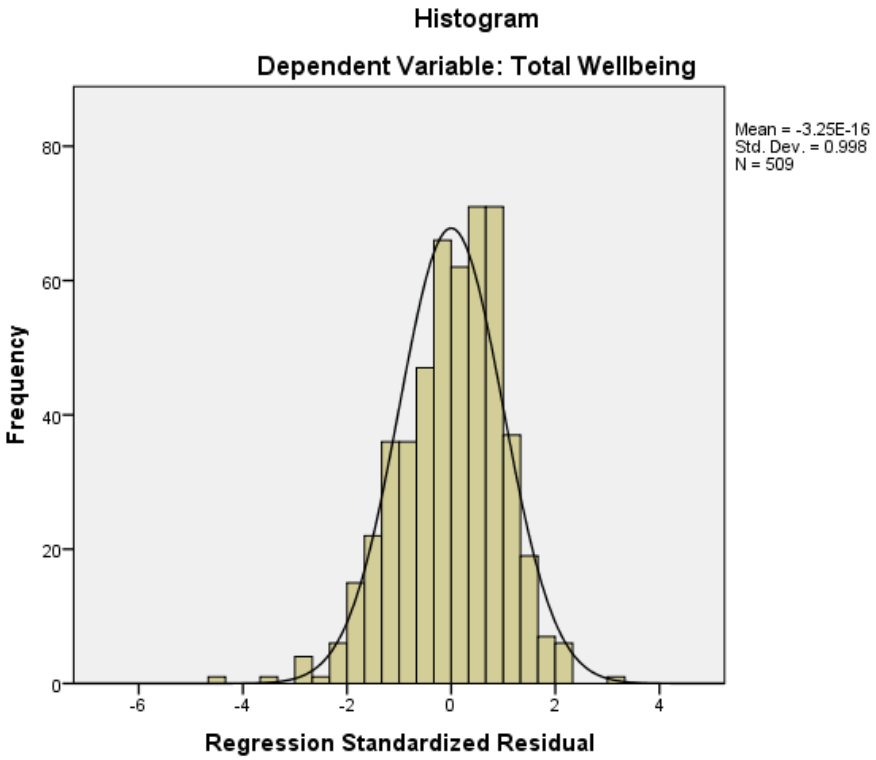
Appendix H: Descriptives table generated in SPSS from initial assumption testing

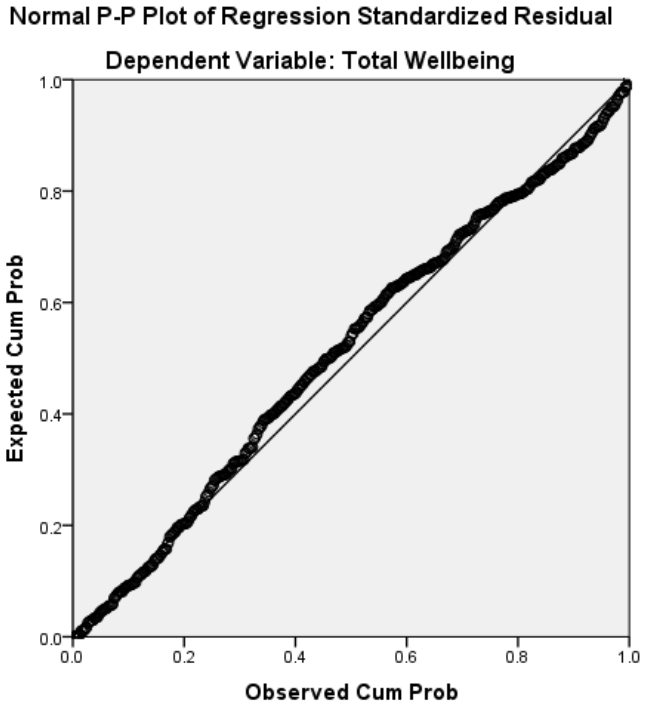
Descriptives

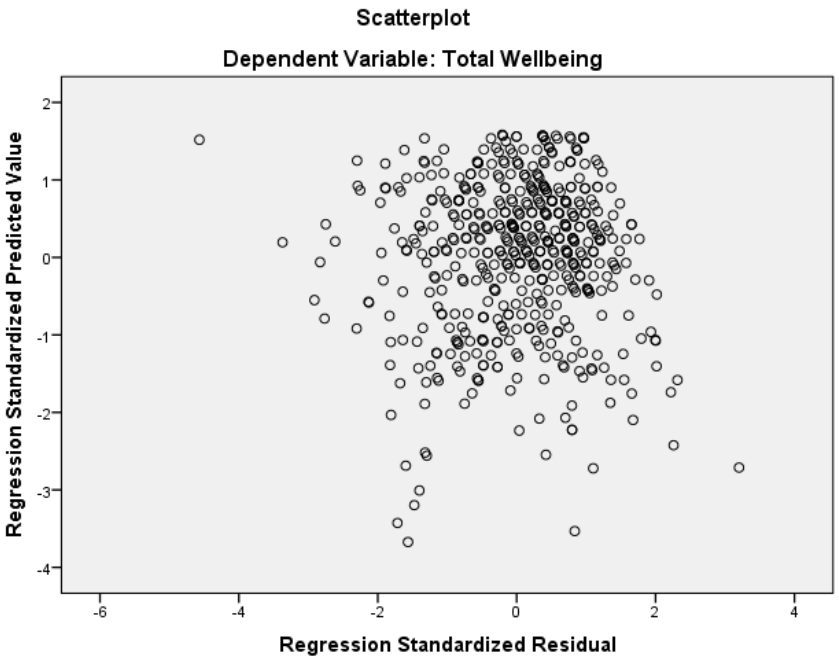
			Statistic	Std. Error
Total Wellbeing	Mean		24.93	.267
	95% Confidence Interval for Mean	Lower Bound	24.41	
		Upper Bound	25.46	
	5% Trimmed Mean		25.24	
	Median		26.00	
	Variance		38.029	
	Std. Deviation		6.167	
	Minimum		5	
	Maximum		35	
	Range		30	
	Interquartile Range		9	
	Skewness		-.703	.106
	Kurtosis		.156	.211
Total School Connectedness	Mean		30.56	.264
	95% Confidence Interval for Mean	Lower Bound	30.04	
		Upper Bound	31.08	
	5% Trimmed Mean		30.86	
	Median		32.00	
	Variance		37.124	
	Std. Deviation		6.093	
	Minimum		8	
	Maximum		40	
	Range		32	
	Interquartile Range		9	
	Skewness		-.723	.106
	Kurtosis		.377	.211
Total Peer Connectedness	Mean		27.93	.202
	95% Confidence Interval for Mean	Lower Bound	27.54	
		Upper Bound	28.33	
	5% Trimmed Mean		28.25	
	Median		29.00	
	Variance		21.649	
	Std. Deviation		4.653	
	Minimum		7	
	Maximum		35	
	Range		28	
	Interquartile Range		6	
	Skewness		-1.053	.106
	Kurtosis		1.540	.211
Total Social Competence	Mean		33.60	.257
	95% Confidence Interval for Mean	Lower Bound	33.10	
		Upper Bound	34.11	
	5% Trimmed Mean		33.84	
	Median		34.00	
	Variance		35.200	
	Std. Deviation		5.933	
	Minimum		11	
	Maximum		45	
	Range		34	
	Interquartile Range		8	
	Skewness		-.618	.106
	Kurtosis		.333	.211
Total ZSNS score	Mean		.00	.216
	95% Confidence Interval for Mean	Lower Bound	-.42	
		Upper Bound	.42	
	5% Trimmed Mean		.08	
	Median		.82	
	Variance		23.803	
	Std. Deviation		4.879	
	Minimum		-12	
	Maximum		12	
	Range		24	
	Interquartile Range		7	
	Skewness		-.361	.108
	Kurtosis		-.455	.216

Appendix I: Graphical outputs generated from assumption testing of moderation models

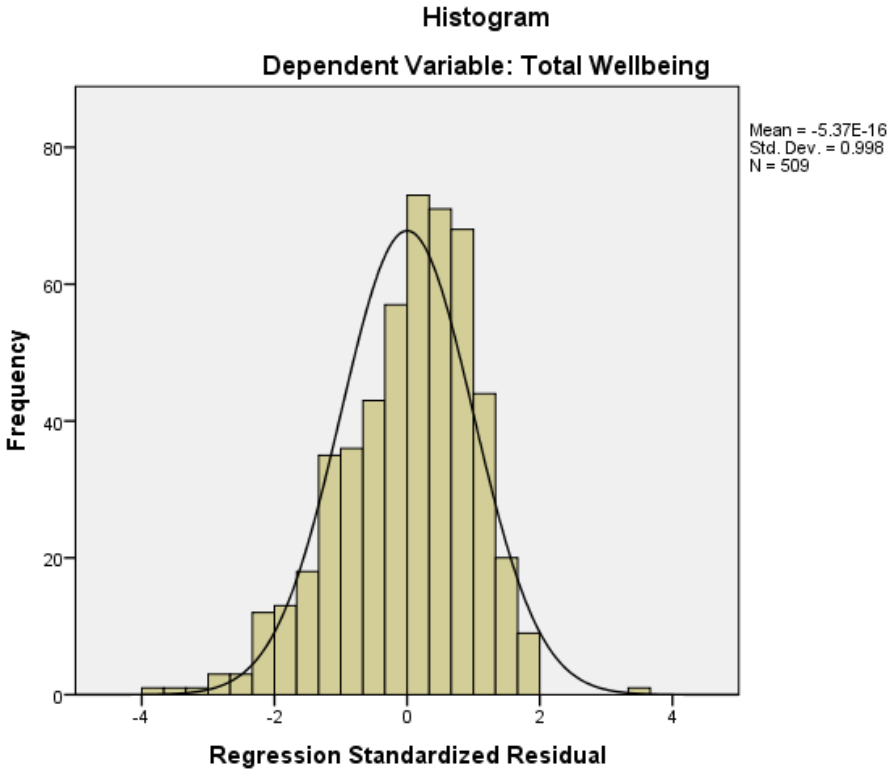
Model: SNS use (Moderator), School Connectedness, and Wellbeing

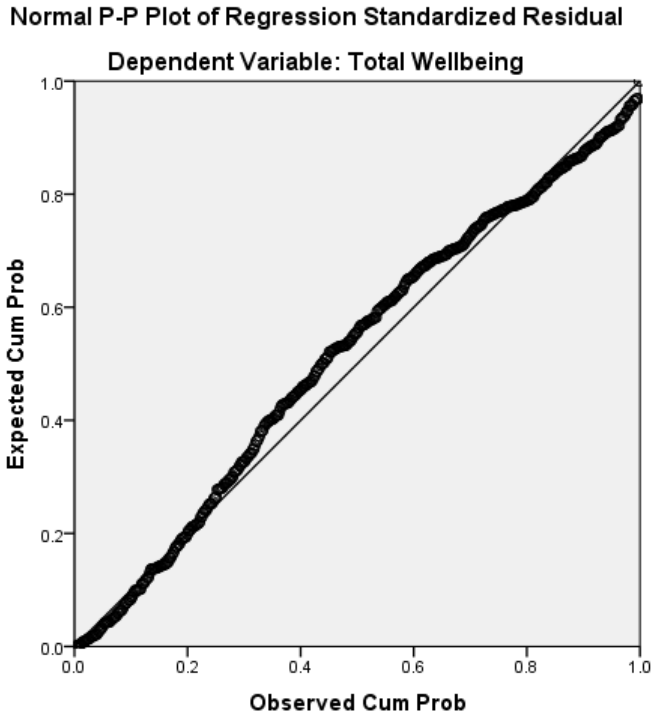


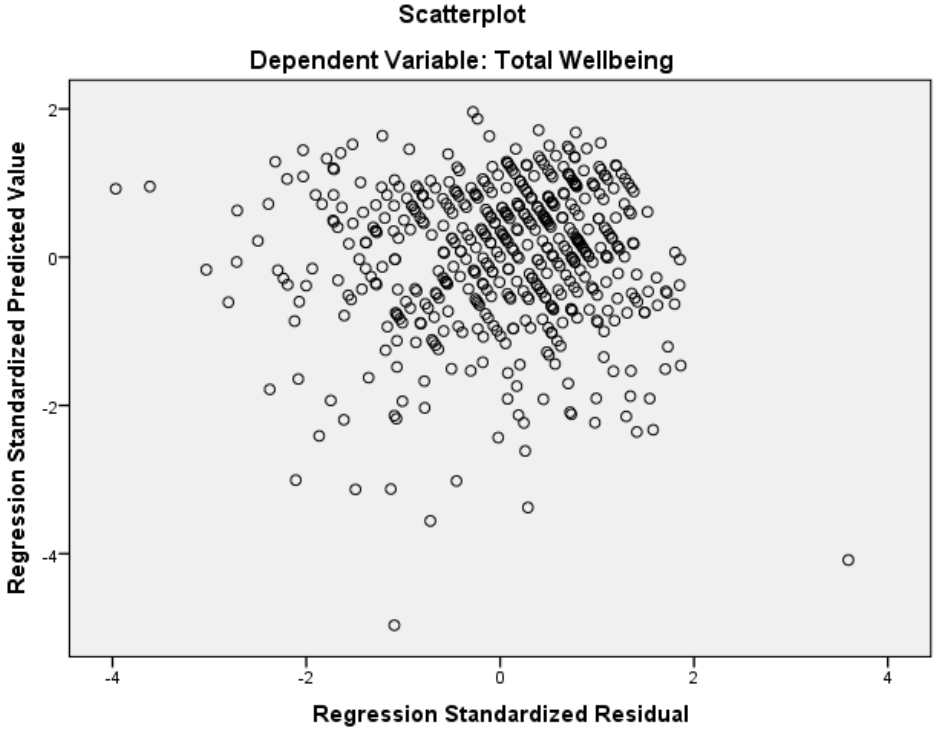




Model: SNS use (Moderator), Peer Connectedness, and Wellbeing




Normal P-P Plot of Regression Standardized Residual
Dependent Variable: Total Wellbeing
Expected Cum Prob
Observed Cum Prob
0.0
0.2
0.4
0.6
0.8
1.0


Scatterplot
Dependent Variable: Total Wellbeing
Regression Standardized Predicted Value
Regression Standardized Residual
2
0
-2
-4
-4
-2
0
2
4