SOCIAL MEDIA ENGAGEMENT AMONG EARLY ADOLESCENTS:
MOTIVATIONAL AND ADJUSTMENT CORRELATES

A Dissertation
Submitted to
The Temple University Graduate Board

In Partial Fulfillment
of the Requirements for the Degree of
DOCTOR OF PHILOSOPHY IN
DEVELOPMENTAL PSYCHOLOGY

---

by:
Jill M. Swirsky
December, 2019

Examining Committee members:

Dr. Hongling Xie, Advisory Chair, Department of Psychology
Dr. Kathryn Hirsh-Pasek, Department of Psychology
Dr. Ronald Taylor, Department of Psychology
Dr. Deborah Drabick, Department of Psychology
Dr. Thomas Olino, Department of Psychology
Dr. Johanna Jarcho, Department of Psychology

ABSTRACT

Social media engagement has become a critical part of adolescent social interactions, making it important to examine individual differences in motivations for social media engagement as well as associated adjustment outcomes. Additionally, much of the extant research focuses on how much time adolescents spend on social media; researchers have only recently begun to differentiate specific social media behaviors and their varied role in adolescent development (e.g., Valkenberg & Peter, 2011). Based on recent research, I investigated four social media behaviors: self-disclosure, self-presentation, lurking, and social monitoring, along with social media engagement in terms of time and frequency. Based on hormonal activation theory (Forbes & Dahl, 2010), I focused on pubertal and social goal correlates of individual differences in social media engagement among adolescents. I also examined positive (prosocial support) and negative (peer victimization, internalizing problems) adjustment associated with social media engagement.

Participants were 426 public school students (54.2% female, 73.6% Caucasian, mean age = 12.91, SD = .92) from sixth (N = 152), seventh (N = 142), and eighth (N = 132) grades who completed self-reported survey measures during their Health classes. Adolescents used more passive (lurking, social monitoring) than active social media (self-disclosure, self-presentation) behaviors. Girls reported more social media engagement than boys, and older adolescents reported more social media engagement than younger adolescents. Pubertal timing was not associated with social media engagement; instead, social goals (i.e., popularity goals and preference goals) were strongly associated with adolescents' social media use.

Social media engagement was reliably associated with adolescent adjustment. Self-presentation may function as a double-edged sword, promoting peer prosocial support but also increasing the risk for peer victimization and internalizing problems. Self-disclosure was uniquely associated with an increased risk of peer victimization, and lurking was uniquely associated with internalizing problems. Social monitoring was not uniquely associated with any of the adjustment outcomes. Contrary to previous literature (e.g., Kross et al., 2013), the amount of time spent on social media was not uniquely associated with any adjustment outcomes after social media behaviors were controlled, suggesting the importance of examining what adolescents are doing with that time. Unexpectedly, the frequency of social media use (a measure less often considered in the literature) appeared to be uniquely associated with more adaptive adjustment. The association between social media engagement and adjustment was stronger for girls than for boys (particularly for peer victimization).

Findings extend previous research demonstrating the importance of considering specific social media behaviors in adolescent development. Future research should longitudinally examine the role of social media engagement on adolescent adjustment. Additionally, multi-method approaches (e.g., observational data collection, peer nominations) should be utilized to better understand the role of social media engagement on adolescent development. Finally, future research should examine different social media platforms (e.g., Twitter, Fortnite, Snapchat) and adolescent adjustment.

DEDICATION

I dedicate my dissertation to the people who comprise what I affectionally think of as my essential trio of support: my parents (Ted and Ellen Swirsky), best friend (Jessica Hiller), and husband (Michael Srolovitz).

Mom and Dad - thank you for encouraging me to pursue my dreams no matter how challenging the terrain, for never letting me give up, and for supporting me in every possible way.

Jess - thank you for always being exactly what I needed whenever I needed it. This took many forms; including (but not limited to) a welcome distraction, an encouraging pep talk, the occasional tough love, Disney movie marathons, and a brownie/chips and dip delivery system.

Mike - thank you for everything you've done for me, big and small, that allowed me to pursue my graduate degree. Thank you for cooking dinner and taking care of the house when I was too busy working. Thank you for listening to me talk through problems even when you had no idea what I was talking about. And most importantly, thank you for loving me and supporting me and allowing me the freedom to be exactly who I am.

ACKNOWLEDGEMENTS

There are several people to whom I owe immense gratitude for supporting me through graduate school and the dissertation process. First, I would also like to acknowledge the developmental faculty members in the Temple University Psychology department for creating a thought-provoking and engaging program, as well as the incredible administrative staff (especially Michelle Bonilla, Laura Dean, and Vanessa Allen-Smith) for patiently answering my million questions. The camaraderie, support, encouragement from my fellow graduate students in the developmental area were invaluable – both academically and personally. I extend my gratitude to Kathy Hirsh-Pasek and Ron Taylor for their involvement on my core committee, and for providing me with helpful feedback throughout the prelim, proposal, and dissertation process. I would also like to acknowledge Johanna Jarcho, Deborah Drabick, and Tom Olino for taking the time to participate on my dissertation committee. I have learned a great deal from each of them and am immensely grateful for their thoughtful feedback and helpful conversations. I would also like to thank my graduate advisor, Hongling Xie, for her guidance during my time at Temple.

This project would not have been possible without the support from the generous funding provided by a Grant-in-Aid Award from Temple University, and a Faculty Research Award from the College of Liberal Arts (both granted to Hongling Xie, PI), as well as the Fall 2019 Dissertation Completion Grant from Temple's Graduate School. I also extend my deepest gratitude to the administrators, teachers, and students who were involved with Project PREP – particularly Mrs. Dana Mericle (principal) and Mrs. Amy McCarthy (head Physical Education instructor) who truly went above and beyond to help

make this project a success. I would also like to thank the members of the Peer Social Networks Lab, both past and present, for their assistance with data collection, entry, cleaning, and all the other various and sundry tasks that pop up along the way.

I would not be where I am today without the support of several mentors who have guided and propelled me through my academic career. Special thanks to Jill Cermele at Drew University for introducing me to research, and to DJ Angelone at Rowan University for taking a chance on me and giving me the opportunity to join, and ultimately run, his lab. I can unequivocally say that I would not have made it through graduate school without the support of my fellow lab member and friend Michelle Rosie. The value of her presence in my life to bounce around ideas, read drafts, offer encouragement, and occasionally hand me tissues cannot be overstated. I also thank all my friends and family for being supportive and understanding when I was too busy or stressed (or both!) to hang out or visit.

Finally, I must acknowledge my husband, Michael Srolovitz; parents, Ted and Ellen Swirsky; and best friend, Jessica Hiller. There are not enough words in the English language (or any other language, for that matter) to express what their support has meant to me during this process, so suffice it to say I am grateful to them for being there for me and putting up with me no matter what.

TABLE OF CONTENTS

LIST OF TABLES

Research Question 3

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

Social media engagement is a crucial component of adolescent development and identity. A 2018 PEW research study found that 95% of teens ages 13-17 own or have consistent access to a smart phone, and 45% of teems reported being online on an almost-constant basis (Anderson & Jiang, 2018). Researchers have begun to examine outcomes of adolescent social media use including both positive (e.g., social support) and negative (e.g., depression, cybervictimization; Reid & Weigle, 2014). However, much of the extant literature focuses on time spent on social media; far less has focused on *how* adolescents are using this time and how engaging in different behaviors may differentially impact adolescent adjustment. Additionally, there is a dearth of literature on individual differences in specific social media behaviors.

To address this gap, I will review five types of social media engagement: 1) time spent on social media, 2) self-disclosure, 3) self-presentation, 4) lurking, and 5) social monitoring. First, I will seek to better understand individual (pubertal status, social goals) differences who is using what form of social media. Then, I will consider whether these different behaviors are associated with different consequences (internalizing problems, prosocial support, peer victimization). Finally, I will consider the role of pubertal status as a potential moderating factor in these relationships.

Social Media Engagement During Adolescence

Much of the research on social media engagement has focused on teens ages 12 and above (e.g., Lenhart, Duggan, Perrin, Stepler, Rainie, & Parker, 2015; Madden et al., 2013); however, the use of technology and the internet begins long before the teenage

years. In fact, some research suggests that children as young as two-years-old can naturally interact with devices (e.g., a tablet) without instruction (Geist, 2012) and a series of large-scale surveys conducted in the United Kingdom found that 31% of children under the age of 5 have access to their own tablet within their home (Kucirkova, Littleton, & Kyparissiadis, 2018). Although young children may be utilizing technology, they are primarily using the internet for educational or non-social entertainment purposes. For example, some of the most common online activities among children were games (e.g. Angry Birds, Minecraft), watching videos on YouTube, listening to music, or learning software; few elementary school children are using social media (Chaudron et al., 2015; Hutchison, Woodward, & Colwell, 2016; Livingstone, Mascheroni, Dreier, Chaudron, & Lagae, 2015).

However, during early adolescence, social media use begins to skyrocket. Ninety-five percent of teens ages 13-17 have access to a smart phone, and almost half of the teens surveyed said they are online "almost constantly" (Anderson & Jiang, 2018). Lauricella and colleagues (2014) showed a similarly increasing age pattern in device ownership, daily texts sent/received, and overall internet use. Just over three-quarters (76%) of adolescents aged 13-17 use social media (Lenhart et al., 2015), while 13-18-year-olds used social media 7 days a week for an average of 1 hour and 7 minutes per day (Uhls, Ellison, & Subrahmanyam, 2017). Overall, social media use becomes highly prevalent after the transition from childhood to adolescence.

Increasing Prominence of Social Relationships Among Adolescents

Adolescents' development of social goals may reflect changes in their interpersonal needs as they shift from childhood to adolescence. Sullivan's interpersonal

theory (1953) suggests that as individuals enter adolescence, their priorities shift from parents to peers as the source of meeting their needs. As these interpersonal needs (and who can meet them) change, the individual will begin to prioritize different goals. For example, after the shift from childhood to adolescence, there is an increased salience of social goals (e.g., friendship, social status, acceptance) related to peer relationships (LaFontana & Cillessen, 2010; Sullivan, 1953). One explanation for this shift, or social reorientation, is the hormonal changes that occur during adolescence (puberty). According to hormone activation theory (Forbes & Dahl, 2010), during adolescence, there is a rise in the reproductive hormones associated with puberty which activate motivational tendencies towards social goals. In other words, the rise in reproductive hormones associated with pubertal maturation during adolescence contributes to the increased motivations towards social goals and rewards (Forbes & Dahl, 2010).

Social Media can Aid in the Developmental Tasks of Adolescence

Because of the shift from parent to peers in meeting interpersonal needs and the increased salience of social goals, adolescents desire more peer interaction to fulfill their developmental goals. One way to increase peer interaction is through the connectedness afforded to them by social media. In fact, social media engagement can be one strategy through which adolescents can work towards meeting the three major goals of their developmental stage: 1) increasing peer acceptance and intimacy in relationships, 2) development of self/identity, and 3) exploring sexuality (Erikson, 1950, 1968; Borca, Bina, Keller, Gilbert, & Begotti 2015; Sullivan, 1953; Valkenburg & Peter; 2011).

Social media engagement aids with deepening peer intimacy in two primary ways. First, interactions on social media lack face-to-face contact and social cues, which may

lead adolescents to perceive online forums as less threatening environments in which to share information compared to offline ones, leading to deeper and more intimate disclosure (Parks & Floyd, 1996; McKenna & Bargh, 1998). Second, adolescents most often use social media to interact with peers already in their social network (Subrahmanam & Greenfield, 2008), so social media engagement may be a strategy through which to reinforce and strengthen existing peer connections. Social media engagement also assists the development of identity by allowing for anonymous exploration, via strategies such as screen names or online avatars. Adolescents can also hone their autonomy by choosing the image they want to present to their peers, as well as selectivity in whom to share with (Moreno & Kota, 2013).

The third task of adolescence is exploring sexuality, both through experimentation (e.g., recognition and exploration of same-sex relationships, Troiden, 1988) and understanding the physical changes of puberty (Forbes & Dahl, 2010). Adolescents are often confused by these changes but may feel embarrassed or uncomfortable discussing them with adults (Daneback, Mansson, Ross, & Markham, 2012; Suzuki & Calvo, 2004). Therefore, adolescents often turn to other sources, such as the internet, to seek information (e.g., websites, chatrooms, listservs; Hsiung, 2000; Sharp, 2000) or consult peers on topics surrounding sexual health and development (Andrew, Patel, & Ramakrishna, 2003; Di Iorio, Kelley, & Hockenberry-Eaton, 1999). In summary, social media engagement functions as a strategy through which adolescents can work towards the three primary goals of adolescence.

Types of Social Media Use Among Adolescents

All social media use is not the same. Much of the extant literature has focused on the amount of time an adolescent spends on social media; however, it may be important to examine what they are actually *doing* with that time (or the specific behaviors they are engaging in), as some research suggests that specific social media behaviors may be more relevant in adolescents' adjustment outcomes (e.g., Valkenberg & Peter, 2011).

Previous literature differentiates between two forms of social media engagement: active and passive (Burke, Marlow, & Lento, 2010, Frison & Eggermont, 2016; Underwood & Ehrenreich, 2017). Active social media use involves engaging with the site (e.g., posting to a timeline, sharing information on a friend's wall or page) and encompasses self-disclosure and self-presentation. Passive social media use involves viewing content without engaging (e.g., browsing or viewing other people's social media pages without commenting). Passive social media use can be further broken down in terms of the motivation: whether it is done with (social monitoring) or without (lurking) a specific purpose. Self-disclosure and self-presentation can be done either publicly (e.g., posting on a Facebook wall) or privately (e.g., sending a direct message). However, given the public nature of lurking and social monitoring, I will only consider public forms of social media behaviors. In the following sections, I will identify and define four types of social media behaviors that adolescents are using 1) self-disclosure, 2) self-presentation, 3) lurking, and 4) social monitoring.

Self-Disclosure

Self-disclosure is defined as "the sharing of personal thoughts, feelings, and experiences" (Valkenberg, Sumter, & Peter, 2011, p. 253, Berndt, 2002). This may take

the form of posts (e.g., status updates) or comments (e.g., posting on a peers' page or picture). Self-disclosure can occur both online (e.g., via social media) or offline (e.g., via face-to-face interactions with peers).

Self-Presentation

Another social media behavior is online self-presentation. Valkenberg and Peter (2011) define *self-presentation* as "selectively presenting aspects of one's self to others" (p. 122), and it involves the careful selection and curation of content put forth for others to view. In other words, self-presentation refers to the image an individual chooses to present to others. As with self-disclosure, self-presentation can occur both online (e.g., choosing what images/content to post) or offline (e.g., choosing of clothes to wear). Researchers have suggested that there are different aspects of self-presentation (Bareket-Bojmel, Moran, & Shahar, 2016; Ellison, Heino, & Gibbs, 2006., 2006; Gibbs, Ellison, & Heino, 2006; Kim & Lee, 2011). For example, valence refers to the positivity or negativity of the comment, while curation refers to the amount of editing an individual does. As defined by Valkenberg and Peter (2011), self-presentation reflects the selectivity of what an individual chooses to present. Therefore, I will focus on the construct of curation, or how actively the adolescent updates or tweaks their social media presence to reflect a desired image (e.g., removing posts that did not receive enough positive feedback).

Lurking

In 2017, Underwood and Ehrenreich introduced the term "lurking", which involves scrolling through, reading, or browsing newsfeeds without posting or engaging. More specifically, lurking is done without a specific goal or purpose. To date, there

remains little published literature on lurking (see Underwood & Ehrenrich, 2017, Underwood & Faris, 2015).

Social Monitoring

Social monitoring refers to checking one's own social media pages for peer attention or monitoring what others have posted with a specific purpose. For example, checking a friend's page to see if you were excluded from an event or checking your own page to monitor the number of positive peer responses are both forms of social monitoring. Although similar to lurking, monitoring is done with a specific purpose (e.g., checking for likes, checking if you were excluded) while lurking is vague and done without purpose (e.g., randomly scrolling through the news feed).

Correlates of Adolescent Social Media Engagement

Past research has shown substantial variation in social media engagement (e.g., Burke et al., 2010, Frison & Eggermont, 2016). Social media usage increases during adolescence (e.g., Lenhart et al., 2015), which is also when puberty begins. According to the hormone activation theory, as adolescents enters puberty, they experience an increase in reproductive hormones which activate motivational tendencies towards social goals (e.g., peer relationships, popularity), making these goals particularly appealing (Forbes & Dahl, 2010). Social media engagement could be a way for adolescents to work towards these social goals; however individual differences such as pubertal status and social goals are likely relevant in understanding the variation in adolescents' social media behaviors (Forbes & Dahl, 2010).

Pubertal Development and Social Media Engagement

Hormone activation theory suggests that the increase in reproductive hormones associated with the onset of puberty activates motivational tendencies towards social goals (Forbes & Dahl, 2010). An activation effect suggests that the onset of puberty will "kick off" motivational tendencies towards social goals, so the effect should be most visible in lower grade levels (e.g., sixth grade) when individual differences in pubertal onset are still prominent. As adolescents grow older and begin to enter puberty, more and more adolescents will have experienced the activating effect of pubertal hormones, creating a leveling out effect of motivational tendencies towards social goals. Although there are still individual differences in pubertal onset among older adolescents, overall it follows that more adolescents in higher grade-levels (e.g., eighth grade) will have experienced the activating effect of hormones compared to adolescents in lower grade-levels (e.g., sixth grade).

Social media engagement may be one such goal-driven behavior adolescents use to achieve social goals. Consistent with Sullivan's interpersonal theory (1953), there is a reorientation of social goals that occurs as individuals shift from childhood to adolescence. During adolescence, there is an increase in the salience of goals (e.g., friendship, social status, acceptance) related to peer relationships (LaFontana & Cillessen, 2010; Sullivan, 1953). Taken together, there are more adolescents in higher grade-levels who have experienced the activating effect of pubertal hormones, therefore older adolescents should experience stronger motivations towards social goals, subsequently increasing goal-driven behaviors – such as social media (Forbes & Dahl, 2010). Previous research supports this idea, finding that social media use increases with

age (Lauricella et al., 2014, Uhls et al., 2017). Therefore, in line with both hormone activation theory (Forbes & Dahl, 2010) and Sullivan's interpersonal theory (Sullivan, 1953), I predict that older adolescents (eighth graders) will report more social media engagement than younger adolescents (sixth graders; hypothesis 1a).

Similarly, there are gender differences in when puberty begins: girls enter puberty around age 10-11 (sixth grade), while boys begin puberty around age 12-13 (eighth grade; Valkenberg et al., 2011). These differences in the onset of puberty mean that girls' activation towards social goals begins in sixth grade while most boys do not experience activation until eighth grade. At any given point, girls will have experienced more reproductive hormones than boys, suggesting that girls' motivational tendencies towards social goals should be greater than boys. Therefore, it follows that the greater activation of motivational tendencies among girls should lead to girls having greater social media engagement than boys as a strategy to achieve social goals. Past research supports this idea, finding that girls use more social media than boys: half of girls, compared to 39% of boys, reported near-constant online activity (Anderson & Jiang, 2018), and adolescent girls were more engaged with, and spent more time on, social media compared to boys (Rideout, Foehr, & Roberts, 2010). Therefore, I predict that girls will engage in more social media use than boys (hypothesis 1b).

Hormone activation theory suggests that adolescents who are under the influence of reproductive hormones once puberty begins will experience increased motivations towards social goals and rewards (Forbes & Dahl, 2010). However, not all adolescents enter puberty at the same: there are individual differences in pubertal development and the subsequent exposure to reproductive hormones. At any given age, some adolescents

will have entered puberty while others will have not. This also means that at any given age, early-maturing adolescents who have entered puberty would have experienced the activation of reproductive hormones whereas later-maturing adolescents have not. These individual difference in pubertal status, and exposure to reproductive hormones, may subsequently influence adolescents' goal-driven behaviors.

Once again, social media engagement may function as a goal-driven behavior to help adolescents achieve their social goals. One prominent goal of adolescence is increasing peer relationships (Sullivan, 1953), and social media engagement provides myriad opportunities for peer connections (Subrahmanam & Greenfield, 2008). Individual differences in pubertal timing may therefore influence adolescents' social media behaviors as early developers who have been under the influence of reproductive hormones longer may be more motivated to use social media to connect with peers.

Some research has considered the role of pubertal timing in social media engagement, finding that more physically mature girls may attempt to fulfill their social goals by seeking out mature or unconventional peers (Skoog, Sorbring, & Bohlin, 2015). According to the peer socialization hypothesis, early developing girls may feel disconnected from same-age peers, instead seeking out developmentally equivalent peer networks (Magnusson, Stattin, & Allen, 1985; Skoog & Stattin, 2014). Research supports this, finding the social networks of early developing girls to contain peers who are chronologically older, male, and deviant compared to the networks of on-time or later developing girls (e.g., Haynie, 2003; Magnusson et al., 1985; Skoog & Stattin, 2014). Together, hormone activation theory (Forbes & Dahl, 2010) and the peer socialization hypothesis (Skoog & Stattin, 2014) suggest that early developing girls may have

heightened motivations towards social goals, which may manifest through association with more unconventional peer networks. Social media engagement may provide access to unconventional peer networks, which may be particularly appealing to early developers as a strategy for working towards social goals. Therefore, it follows that early maturing girls would report more social media engagement than their on-time or late developing peers.

Only one study to date has considered the role of pubertal timing in adolescent online self-disclosure. Skoog and colleagues (2015) found that early developing seventh grade girls were more likely than on-time developers to have a larger social media network and to disclose personal or private information online. However, those differences disappeared in eighth grade. This is consistent with hormone activation theory – once the rest of the peers enter puberty, everyone's rewards systems are activated, thus wiping out individual differences in motivations towards social goals. These findings are consistent with other work showing that online self-disclosure increased around the onset of puberty for both boys and girls, suggesting the effects of pubertal timing on self-disclosure (Valkenberg et al., 2011). Taken together, the conceptual framework and limited empirical evidence suggests that early maturing girls will engage in more self-disclosure compared to their on-time or late maturing peers.

The published literature on pubertal timing and social media use only involves adolescent girls. However, hormone activation theory suggests that the activation of social goals associated with the hormones released upon entering puberty should similarly influence boys' social media engagement, but not until boys begin puberty around ages 12-13. Valkenberg and colleagues (2011) found that patterns of online

disclosure on social media looked similar for boys and girls. However, the age at which disclosure began to increase corresponded with the beginning of puberty: for girls, the increase occurred at ages 10-11, for boys it occurred at ages 12-13. Therefore, I predict that adolescents who enter puberty early compared to their peers will report more social media engagement and that these patterns will be visible at times which correspond with pubertal onset (eighth grade for boys; sixth grade for girls; hypothesis 1c).

Social Goals and Social Media Engagement

Rodkin and colleagues define goals as "cognitive representations of things individuals want to accomplish" (2013, p. 1140). Goals provide a "roadmap" for behavior, allowing individuals a clear idea of what they are working towards or striving for. There are many different types of goals, such as social goals (Rodkin et al., 2013), career goals (Tynkkynen, Nurmi, & Salmela-Aro, 2009), academic goals (Levy-Tossman, Kaplan, & Assor, 2007). For adolescents whose developmental tasks center around developing intimacy and autonomy in peer relationships, social goals surrounding peers are of paramount importance (Rodkin et al., 2013).

Social goals are goals we set towards achieving specific social interactions or outcomes (Horst, Finney, & Barron, 2007; Wentzel, 2002), and can be either communal (stressing interpersonal closeness, e.g., friendship goals) or agentic (prioritizing power and dominance; e.g., popularity goals; Rodkin et al., 2013). LaFontanna and Cillessen (2010) found that both male and female adolescents prioritized agentic goals (popularity) over the other, more communal goals (friendship). While there are individual differences in the amount and type of social goals an adolescent has, popularity goals may have a particularly salient impact on behavior.

In line with hormonal activation theory (Forbes & Dahl, 2010), popularity goals begin to rise during the time where adolescents begin to enter puberty. Empirical research supports this idea, finding that popularity goals increase during the transition from elementary school (fifth grade) to middle school (sixth grade; Kiefer, Matthews, Montesino, Arango, & Preece, 2013), after which they decline (Dawes & Xie, 2017). LaFontana and Cillessen (2010) also found that the priority for having high status (popularity) increased from childhood to adolescence, peaking during early adolescence (coinciding with pubertal maturation). Therefore, the increased motivation towards social goals that occurs during early adolescence may have a particular impact on increasing adolescents' popularity goals. As motivation towards social goals increases during puberty, goal-driven behaviors aimed at meeting those goals should also increase. Social media engagement may be one such goal-driven behavior; however, the type of social media behavior utilized by the adolescent will likely depend on individual differences in social goals. For example, adolescents with higher popularity goals may utilize self-presentation or social monitoring to adjust their image as a way to increase their social status; whereas those with higher acceptance goals may utilize self-disclosure as a strategy for seeking social support.

While there is a dearth of literature on specific social media behaviors (e.g., self-disclosure, self-presentation) and social goals, some research has examined similar constructs. Christofides and colleagues (2009, 2012) found that the "need for popularity" significantly predicted what the authors called "disclosing information on Facebook". However, need for popularity was measured through items such as "I've bought things, because they were the "in" things to have" and "at times, I've ignored some people in

order to be more popular with others" (Santor, Messervey, & Kusumakar, 2000),

suggesting that their construct more closely resembles a popularity driven behavior than a

popularity goal. Additionally, the measure of self-disclosure used by Christofides and

colleagues (2009) contains some aspects of self-presentation as well (e.g., types of

pictures they are likely to post), suggesting that the need for popularity (or popularity

goal) may also be related to self-presentation.

There is also some support for acceptance goals being associated with self-

disclosure. Adolescents with high friendship goals (e.g., desire to be liked by peers, wish

to make new friends) disclosed more private information on Facebook (Christofides et

al., 2012; Hollenbaugh & Ferris, 2014; Walgrave, Vanwesenbeeck, & Heirman, 2012).

Additionally, Hollenbaugh and Ferris (2014) found that relationship maintenance (e.g.,

communicating/staying in touch with friends) positively predicted self-disclosure on

Facebook. While these are more reminiscent of friendship behaviors rather than

friendship goals, they still suggest that online self-disclosure may be a strategy utilized by

adolescents with high acceptance goals. Taken together, I predict that adolescents with

high acceptance goals will engage in more self-disclosure and those with high popularity

goals will engage in more self-presentation and social monitoring (1d).

Social Goal Mediating the Relationship Between Pubertal Status and Social Media

Engagement

Hormone activation theory suggests that the reproductive hormones associated

with puberty result in an increase in motivations towards social goals (Forbes & Dahl,

2010). As social goals increase during puberty, goal-driven behaviors aimed at achieving

these goals (e.g., social media use) should also increase. As such, social goals may

mediate the relationship between pubertal status and social media engagement. There is some evidence for a link between pubertal status and social media engagement (self-disclosure) among seventh grade girls (Skoog et al., 2015), between popularity goals and social media behaviors (Christofides et al., 2009, 2012), and between pubertal status and goals (e.g., Forbes & Dahl, 2010). However, research has yet to consider the full picture of the potential mediating role of social goals in the association between pubertal status and social media engagement.

The increase of reproductive hormones brought on by the onset of puberty should increase the motivation towards specific social goals relevant to adolescents (e.g., popularity, acceptance; Forbes & Dahl, 2010; Sullivan, 1953). These goals should, in turn, result in an increase in social media engagement as goal-driven behavior. However, the type of social media behavior utilized by the adolescent may depend on individual differences in social goals. Having a high popularity goal may encourage social media behaviors aimed at increasing social status (e.g., self-presentation, social monitoring). In addition to popularity goal, the activation of reproductive hormones may also increase the value of acceptance goals. Although adolescents prioritize popularity over other domains (LaFontana & Cillessen, 2010), friendship and peer relationships are still important. Therefore, adolescents with high acceptance goals may utilize social media behaviors aimed at deepening friendships (e.g., self-disclosure). In summary, social goals (popularity, acceptance) may mediate the relationship between pubertal status and social media; however, this potential mediating role remains untested. I predict that popularity goal will mediate the relationship between pubertal status and self-presentation and social

monitoring, and acceptance goal will mediate the relationship between pubertal status and self-disclosure (1e).

Outcomes of Social Media Engagement Among Adolescents

Along with understanding individual differences in who uses social media, the outcomes of social media engagement among adolescents has received a lot of empirical attention. Researchers have documented both benefits (e.g., increased friend support) and risks (e.g., cyberbullying) associated with time spent on social media (see Reid & Weigle, 2014 for a helpful review). However, all social media engagement is not the same and how adolescents use social media may be more relevant to understanding outcomes than simply the amount of time spent online. In other words, whether social media engagement confers risks, benefits, or both may depend on the type of behavior the adolescent engages in.

In this proposal, I will consider three specific outcomes of social media use among adolescents that are rooted in both theoretical and empirical literature (Best, Manktelow, & Taylor, 2014; Reid & Weigle, 2014; Sullivan, 1953). I will examine two outcomes directly related to the developmental task of deepening peer relationships: peer social support and internalizing (loneliness and depression). Receiving peer social support demonstrates intimacy and acceptance from peers, while not receiving enough support may lead to internalizing problems. Additionally, posting content on social media may leave the adolescent vulnerable to negative peer feedback, such as victimization. Therefore, I will also consider online peer victimization (also referred to in the literature as cybervictimization, e.g., Peluchette, Karl, Wood, & Williams, 2015) as an outcome.

Below, I first review the literature on time spent on social media and its associated consequences for early adolescents. I then link specific social media behaviors identified in the literature (self-disclosure, self-presentation, lurking, and social monitoring) to the risks (victimization, internalizing) and benefits (social support) they may confer on adolescents (Best et al., 2014; Underwood & Ehrenreich, 2017).

Time Spent on Social Media

Much of the extant literature has examined the outcomes associated with "general social media usage", or the amount of time adolescents spend on social media. Cross-sectional research on social media usage and subjective well-being (e.g., life satisfaction, happiness) has had mixed findings: some studies show a positive relationship (e.g., Valenzuela, Park, & Kee, 2009; Pittman & Reich, 2016), while others reported a negative relationship (e.g., Labrague, 2014; Lin et al., 2016; Pantic et al., 2012; Sampasa-Kanyinga & Lewis, 2015). Longitudinal and experimental research has shown more consistently negative relationships between time spent on social media and subjective well-being (e.g., Kross et al., 2013; Sagioglou & Greitemeyer, 2014).

Other studies have considered the impact of time spent on social media on other aspects of adolescent well-being. For example, high rates of internet use were positively associated with depression, loneliness, and low self-esteem, cyberbullying; and sexting (Ybarra, Mitchell, Wolak, & Finkelhor 2006; Mishna, Cook, Saini, Wu, & MacFadden, 2011; 2009 PEW report on teens & sexting). Underwood and Ehrenreich (2017) suggest that time spent on social media may detract from other important and constructive activities such as self-reflection, day-dreaming, problem-solving, and reading. In fact, Vernon and colleagues (2015) found that the amount of time spent on social media

impacted adolescents' sleep, which in turn was related to less school satisfaction. Consistent with previous literature, I expect time spent on social media to be positively associated with victimization, social support, and internalizing problems (loneliness and depression; 2a).

However, as described above, there are several specific social media behaviors adolescents can use. Examining the outcomes associated with the amount of time spent on social media does not inform us about the consequences of specific social media behaviors. Therefore, it is likely that once the specific behaviors are taken into account, the total time spent on social media may be less associated with adjustment outcomes.

Self-Disclosure

Self-disclosure involves sharing personal information with others and may confer benefits by allowing for emotional peer support through sharing fears and worries with friends. By disclosing to peers, the adolescent can receive validation that their fears and worries matter (Buhrmester & Prager, 1995; Tichon & Shapiro, 2003; Valkenburg et al., 2011). Self-disclosure is associated with a variety of positive relationship outcomes such as friendship initiation skills (Buhrmester, Furman, Wittenberg, & Reis, 1988), emotional closeness (Camarena, Sarigiani, & Petersen, 1990; McNelles & Connolly, 1999; Rose, 2002), emotional support (Simpkins, Parke, Flyr, & Wild, 2006), friendship satisfaction (Reisman, 1990), and friendship quality (Rose, 2002). Therefore, I predict that self-disclosure on social media will be positively associated with peer support (2b).

Self-disclosure has also been associated with lower levels of internalizing problems (e.g., loneliness, anxiety, depression; Deters & Mehl, 2012; Grieve, Indian, Witteveen, Tolan, & Marrington, 2013). The reduction in loneliness was found to be

independent of actual friend interaction or support, leading the authors to suggest that the feelings of connectedness brought about by self-disclosure may be more powerful than actual friend interaction. Therefore, I predict that self-disclosure will be negatively associated with internalizing problems (2b).

Online self-disclosure may also leave adolescents vulnerable to negative feedback such as cybervictimization. In a study of content posted on social media, self-disclosing "indiscreet content" (e.g., comments or photos about intoxication, sexually suggestive comments or photos) was the strongest predictor of peer cybervictimization (Peluchette et al., 2015). Another study analyzing Facebook wall content found that wall posts with negative content were associated with more negative reactions such as cybervictimization (Dredge et al., 2014). Therefore, I expect self-disclosure to be positively associated with online peer victimization (2b).

Self-Presentation

Self-presentation involves selecting what image to portray to one's peers, and may confer benefits by increasing peer acceptance through allowing the adolescent to present themselves in ways that fit in with the existing peer group (Valkenberg et al., 2006; 2011). However, similar to self-disclosure, self-presentation may also increase the risk of cybervictimization or rejection from peers. Although the literature has yet to consider the role of social media curation on associated outcomes, the curation of one's image may have a curvilinear effect on adjustment outcomes. Too much curation may lead to being perceived as "fake", which may be viewed negatively by peers. Too little curation may result in an adolescent leaving content posted that makes them vulnerable to

victimization. In both scenarios, the adolescent is vulnerable to perceptions of victimization (e.g., rejection), loneliness, and less support for friends.

On the other hand, a moderate amount of self-presentation may promote the best adjustment outcomes by allowing the adolescent to quickly remove content that places them at risk for victimization, and feelings of rejection (internalizing), while still being perceived by peers as genuine (thus increasing social support). I predict a curvilinear relationship such that high and low levels of self-presentation will be associated with less support, and more internalizing and victimization. Moderate levels of self-presentation will be associated with more support, and less victimization and internalizing (2c).

Lurking

Lurking refers to passively viewing the social media content of people in one's social network. Although lurking is an established term in the literature (Underwood & Ehrenreich, 2017), there are few empirical studies on its' outcomes. One study found that lurking was positively related to emotional distress (e.g., felt left out, felt lonely; Underwood & Faris, 2015). Lurking may result in social comparison or feeling "not good enough" (Underwood & Ehrenreich, 2017), thus resulting in internalizing problems such as depression. The passive and non-interactive nature of lurking should preclude its association with either positive (e.g., peer support) or negative (e.g., victimization) peer responses. I predict that lurking will not be associated with peer support or victimization but will be positively associated with internalizing problems (2d).

Social Monitoring

Social monitoring refers to checking one's own social media pages for peer attention or monitoring others' posts with the intention of checking their social activities (e.g., to see if they were left out). Although there are no published studies on social monitoring, the literature on passive social media use represents a similar construct. The body of literature on outcomes of passive social media use remains small, but it is also remarkably consistent. In fact, longitudinal (Wenninger, Krasnova, & Buxmann, 2014), cross-sectional (e.g., Krasnova, Widjaja, Buxmann, Wenninger, & Benbasat, 2015; Shaw, Timpano, Tran, & Joormann, 2015; Tandoc, Ferrucci, & Duffy, 2015), and experimental (Fardouly, Diedrichs, Vartanian, & Halliwell, 2015; Verduyn et al., 2015) research findings all suggest passive social media use to be positively associated with internalizing problems (e.g., anxiety, depression). However, Frison and Eggermont (2016) found passive Facebook use to be associated with depressive symptoms in girls only, suggesting a need to examine potential moderating factors (e.g., gender).

Social monitoring may also lead to feelings of exclusion, resulting in internalizing (e.g., depression) or perceptions of victimization. Just over half of social media users reported learning that they were not invited to a social event by viewing social media posts or pictures (Lenhart et al., 2015). Another 21% reported feeling badly about themselves because of something they saw a friend post on social media (Lenhart et al., 2015). Learning that they have been left out from activities through social monitoring may foster feelings of exclusion and rejection. Therefore, I predict that social monitoring will be positively associated with perceived peer victimization and internalizing problems and negatively associated with peer social support (2e).

Pubertal Status Moderating the Association Between Social Media Engagement and

Adjustment Outcomes

Whether social media confer risks or benefits may depend on individual differences in social media engagement. The following section describe the potential for pubertal status to moderate the association between social media use and consequences.

According to dual systems theory, there is a discrepancy between the development of two critical brain systems: the "hot" affective system and the "cold" deliberative control system". In other words, the systems susceptible to sensation and reward develop faster than the systems which allow for moderation and resisting impulses (Steinberg, 2010). Taken together, since early maturing adolescents reach puberty at an earlier age than late or on-time maturing peers, they must confront the challenges of puberty with fewer social, cognitive, and emotional resources. Coupled with underdeveloped cognitive control systems, early development may increase the risk for experiencing negative outcomes.

Most likely, a combination of these approaches is at play: early developers experience the activation of motivational tendencies (hormone activation theory) before their self-control and self-regulation abilities are sufficiently developed (dual systems theory) to help them act on these new desires in socially appropriate ways. Taken together, early maturing adolescents who engage in high rates of social media behaviors may be at risk for negative outcomes (e.g., cybervictimization, internalizing)

Consistent with hormonal activation theory, entering puberty is associated with an increased motivation towards social goals (Forbes & Dahl, 2010), which may lead to an increase in goal-driven behaviors such as social media use. Together with dual systems

theory, it follows that early developers may be using social media at higher rates, but given underdeveloped cognitive control systems, they may also be using social media in imprudent ways. For example, early developers may be more likely to post indiscreet or highly personal content, which has been associated with experiencing greater cybervictimization (Peluchette et al., 2015)

There is no empirical research on the specific role of social media in conferring risks for problem outcomes among early maturers; however, some researchers have speculated as to why early maturing adolescents are at heightened risk for negative outcomes. For example, Skoog and colleagues (2015) found that pubertal timing was not related to the amount of time adolescents spend on social media; rather, early maturers disclosed more information online than their on-time or late developing peers. In other words, there was no difference in the amount of time spent on social media based on pubertal status – the difference was in how social media was being used.

In summary, both hormone activation theory (Forbes & Dahl, 2010) and dual systems theory (Steinberg, 2010), suggest that early developers may be highly motivated towards social rewards, but lack the ability to inhibit impulses and modulate their behavior. Consequently, early pubertal timing may place the adolescent at heightened risk for negative outcomes from engaging in social media behaviors. However, I expect that this would only be the case for overt social media behaviors (self-disclosure, self-presentation) where the adolescents' underdeveloped cognitive control system may result in posting indiscreet or unwise content. Therefore, I predict that pubertal status will moderate the relationship between overt social media behaviors and adjustment outcomes, such that early developers who engage in more self-disclosure and self-

presentation will experience more peer victimization and internalizing problems and less social support. I do not expect this moderating effect for the covert social media behaviors (lurking and social monitoring; hypothesis 3).

Research Questions and Hypotheses

The goal of this study was to expand the literature on adolescent social media use to include specific behaviors adolescents are engaging in. This research seeks to examine correlates (popularity goal, acceptance goal, pubertal status), and consequences (internalizing problems, prosocial support, and peer victimization) associated with five forms of social media engagement: time spent on social media, self-disclosure, self-presentation, social-monitoring, and lurking. My hypotheses are as follows:

Question 1: What individual factors are associated with adolescents' social media use?

Hypothesis 1a: Older adolescents will use more social media than younger adolescents.

Hypothesis 1b: Girls will engage in more social media use than boys

Hypothesis 1c: Adolescents who entered puberty early compared to their peers will use more social media (sixth grade for girls, eighth grade for boys).

Hypothesis 1d: Adolescents with high acceptance goals will engage in more self-disclosure, those with high popularity goals will engage in more self-presentation and social monitoring.

Hypothesis 1e: Popularity goal will mediate the relationship between pubertal status and self-presentation and social monitoring. Acceptance goal will mediate the relationship between pubertal status and self-disclosure.

Question 2: Are different social media behaviors uniquely associated with positive (social support) and negative (victimization and internalizing) outcomes for adolescents?

Hypothesis 2a: Time spent online will be positively associated with peer victimization, social support, and internalizing problems.

*Hypothesis 2b: S*elf-disclosure will be positively associated with peer victimization and social support and negatively associated with internalizing problems.

Hypothesis 2c: There will be a curvilinear relationship between self-presentation and adjustment outcomes. Very high and very low levels of self-presentation will be associated with less support, and more victimization and internalizing. Moderate levels of self-presentation will be associated with more support, and less victimization and internalizing.

Hypothesis 2d: Lurking will be positively associated with internalizing problems and will not be associated with social support or peer victimization.

*Hypothesis 2e: S*ocial monitoring will be positively associated with peer victimization and internalizing problems, and will be negatively related to peer social support.

Question 3: Does pubertal status moderate the relationship between social media behaviors and adjustment outcomes?

Hypothesis 3: Pubertal status will moderate the relationship between overt social media behaviors and adjustment outcomes, such that early developers who engage in more self-disclosure and self-presentation will experience more victimization and internalizing problems and less social support. There will not be a moderating effect of puberty on outcomes for lurking and social monitoring.

CHAPTER 2

METHOD

To test these research questions, I utilized data from sixth, seventh, and eighth graders from the Peer Relations and Perceptions Project (PI: Hongling Xie). IRB approval was obtained through Temple University prior to beginning data collection. Data were collected from a public, suburban middle school in southern New Jersey in October-November 2018 (Wave 1) and March-April 2019 (Wave 2).

Participants

Parental consent forms were distributed via back-to-school mailer packets sent by the district, at Back to School night, and via students' Health/Physical Education teachers. Only students with signed parental consent forms were included in the study, and participants were also required to assent for themselves. The final sample consisted of 426 students (54.2% female, 73.6% Caucasian, mean age = 12.91, SD = .92, range: 11.16 - 15.29) from sixth (N = 152), seventh (N = 142), and eighth (N = 132) grades with a participation rate of 29.56%. Approximately one quarter of the sample (23.7%, N = 101) qualified for free or reduced-price lunch. Participants were more likely than nonparticipants to be White $\chi2 = 12.18$, $p = .016$ and female $\chi2 = 15.26$, $p <.001$.

Procedure

Surveys were administered in group sessions on two consecutive school days during the students' Health class where students completed a series of paper and pencil measures. Before beginning the survey, participants were given blank paper to cover their answers and were assured of confidentiality. A lead administrator read the instructions

and questions aloud, while trained research assistants were on hand to answer questions and provide support. Students were asked not to discuss their responses with other students, but encouraged to speak to parents, teachers, or research staff if they had questions. Participants were told they could skip any question(s) they wished, and that they could end their participation at any time without any repercussion.

Measures

Demographic Measures

Data on gender, ethnicity (Hispanic, Black, Asian, White, Native American, Other), and grade (sixth, seventh, or eighth) were provided by school administrators. Given low ethnic variability, ethnicity was collapsed into four categories (Hispanic, Black, White, and Other) for analysis.

Social Media Engagement

Time Spent on Social Media was measured in two different ways. First, we measured the frequency of adolescents' social media use with one item on a 1 (never) to 9 (almost constantly) point Likert scale: "when you are not at school, how often do you use social media?" We also measured the amount of time adolescents spend on social media by asking participants to write in the number of hours they spend on social media on a 1) typical weekend day and 2) a typical day after school. These were then averaged together to create a measure of the number of self-reported hours participants spend on social media each day ($r = .70$)

The frequency of engagement in social media constructs were measured on a self-reported 1 (never) – 7 (several times a day) point Likert scale.

Self-Disclosure was measured with 4 items: "posted about personal thoughts or feelings", "Posted about a romantic partner or having a crush", "Posted about an event or experience in your life", and "posted a secret publicly online" (α = .70).

Self-Presentation was measured with four items: "posted about something to make you or your life seem happy or perfect", "posted about something sad or negative to get support", "hid or untagged something someone posted on your profile", and "deleted pictures or posts that didn't get enough likes or feedback" (α = .64).

Lurking was measured with 3 items: "visited a friend's social media profile", "visited the profile of someone that you don't personally know in real life", and "scrolled through your newsfeed" (α = .72).

Social Monitoring was measured with 4 items: "checked how fast people responded to your post", "checked to see if you were excluded from something with your friends", "checked how many friends/followers you have", "checked to see if you've been included/tagged in a post or picture" (α = .79).

<div align="center">

Correlates of Adolescent Social Media Engagement

</div>

Social Goal. There were two forms of social goals: popularity goal and acceptance goal. Both were assessed on a 1 (*strongly disagree*) to 5 (*strongly agree*) self-reported Likert scale (higher scores indicate greater goal). *Popularity goal* had 4 items: "it's important that people think that I'm popular," "I want a lot of people in my school to know me", "It matters to me that I belong to the "in" group", and "I want people to think I'm cool" (α = .80). A*cceptance goal* had 4 items: "I try to get along with everyone", "I want others to enjoy spending time with me", "I like it when others feel they can trust me", and "It matters to me that a lot of people think of me as a close friend" (α = .68).

Pubertal Status. Self-reported pubertal status was assessed using the Pubertal Development Scale (PDS; Petersen, Crockett, Richards, & Boxer, 1998), a widely used and well-validated measure. Participants responded to four items about perceived changes in their maturation: breast development (girls) or voice changes (boys), skin changes (e.g., pimples), growth in height, and body hair growth on a 1 (*has not yet started*) through 4 (*seems completed*) Likert scale. Boys had an additional item asking about their facial hair growth. Ratings were averaged to create one continuous measure of pubertal maturation where higher scores indicate earlier development (α girls = .71, α boys = .72). Scores on the PDS have been found to be significantly correlated with Tanner staging methodologies derived from physician examination (Schmitz et al., 2004).

<center>*Adjustment Outcomes*</center>

Internalizing problems. There were two indices of internalizing: loneliness and depression. *Depression* was measured by assessing the self-reported frequency of depressive feelings in the past week on a 1 (*never*) to 5 (*always*) Likert scale. There were 8 items (e.g., "I felt worthless", "I felt like a failure", and "I felt depressed"; α = .94). *Loneliness* was measured by assessing the self-reported frequency of feelings in the past 3 months on a 1 (*never true*) to 5 (*always true*) Likert scale. There were 5 items (e.g., "I feel lonely", "There are no kids I can go to when I need help", and "I don't have anyone to spend time with"; α = .81). Loneliness and depression were combined into one variable measuring internalizing problems (α = .93).

Prosocial Support. Frequency of self-reported prosocial support received from peers was assessed on a 0 (*never*) – 4 (*5+ times*) Likert scale response to the question "How often did other students your age do each of the following to you during the past 3

months?" There were 2 items: "included you in their group or invited you to hang out with them" and "stood up for you or gave you help when you needed it" ($r = .60$). Both online and in-person support were assessed for each item; only online items were used.

Peer Victimization. Frequency of self-reported victimization was assessed on a 0 (*never*) – 4 (*5+ times*) Likert scale to the question "*How often did other students your age do each of the following to you during the past 3 months?*" Both online and in-person victimization were assessed for each item; only online items were used. Overt victimization (OV) was assessed with 2 items: "called you names or made fun of you" and "threatened to fight you" ($r = .52$). Social victimization (SV) was assessed with 3 items: "turned people against you", "excluded you from a group, event, activity, or chat", and "spread rumors or posted mean or rude things about you" ($\alpha = .78$). OV and SV were combined into one composite measure of online peer victimization ($\alpha = .83$).

Analytic plan

SPSS version 26 was used for all analyses. Categorical variables were dummy coded for regression analyses. Reference groups were as follows: female (gender), sixth grade (grade), White (ethnicity), Wave 1 (wave of participation). Significant interaction effects were probed with simple slopes at +/- 1 standard deviation of the moderator.

Research Question 1: What individual factors are associated with adolescents' social media engagement?

Hypothesis 1a: Older adolescents will use more social media than younger adolescents.

Hypothesis 1b: Girls will engage in more social media use than boys

Hypotheses 1a and 1b were tested using six linear regression models (one for each form of social media engagement: frequency of social media use, number of hours on

social media, self-disclosure, self-presentation, social monitoring, lurking). All models

contained grade-level and gender, and controlled for ethnicity and wave of participation.

Hypothesis 1a examined the main effect of seventh and eighth grade (using sixth grade as

the reference group) on each form of social media engagement, while Hypothesis 1b

considered the main effect of gender on each form of social media engagement.

Hypothesis 1c: Adolescents who entered puberty early compared to their peers will use

more social media (sixth grade for girls, eighth grade for boys).

In Hypothesis 1c we tested the effect of pubertal status on social media

engagement. Given gender differences in the onset of puberty (Mendle et al., 2007,

2012), boys and girls were tested separately. A series of linear regression models were

run using each form of social media engagement as the outcome variable, controlling for

ethnicity and wave of participation with pubertal status, grade, and the interaction effect

of puberty X grade (sixth for girls, eighth for boys) as predictors.

Hypothesis 1d: Adolescents with high acceptance goals will engage in more self-

disclosure, those with high popularity goals will engage in more self-presentation and

social monitoring.

Hypothesis 1d was tested using a series of linear regression models. For each

model, gender, grade, wave of participation, and ethnicity were entered as control

variables. Popularity goal and acceptance goal were entered as the predictors, with the

hypothesized social media behavior as the outcome. In order to explore if social goals

were unique to each specific social media behavior, and to examine gender differences on

associations between goals and social media behaviors, I conducted two additional sets of models (one for each goal). Each set controlled for ethnicity, grade-level, wave of participation, and all the other social media engagement indices, and contained the gender X goal interaction (gender X popularity goal, gender X acceptance goal).

Hypothesis 1e: Popularity goal will mediate the relationship between pubertal status and self-presentation and social monitoring. Acceptance goal will mediate the relationship between pubertal status and self-disclosure.

The link between pubertal status and each social media behavior was tested in hypothesis 1c, and the link between goal (popularity and acceptance) and social media behavior was tested in hypothesis 1d. Therefore, hypothesis 1e, will be tested by rerunning the relevant models from 1c with the addition of popularity goal (self-presentation, social monitoring) or acceptance goal (self-disclosure). As with 1c, the models were tested separately by gender (eighth grade for girls, eighth grade for boys), controlling for ethnicity and wave of participation.

Research Question 2: Are different forms of social media engagement uniquely associated with positive (social support) and negative (victimization & internalizing) outcomes for adolescents?

Hypothesis 2a: Time spent online will be positively associated with internalizing problems, social support, and victimization.

Hypothesis 2b: Self-disclosure will be negatively associated with internalizing problems and will be positively associated with social support and peer victimization.

Hypothesis 2c: There will be a curvilinear relationship between self-presentation and adjustment outcomes. Very high and very low levels of self-presentation will be associated with less support, and more victimization and internalizing. Moderate levels of self-presentation will be associated with more support, and less victimization and internalizing.

Hypothesis 2d: Lurking will be positively associated with internalizing problems and will not be associated with social support or peer victimization.

Hypothesis 2e: Social monitoring will be positively associated with internalizing problems and peer victimization, and will be negatively related to social support.

Hypotheses 2a-2e were tested with linear regression models, all controlling for gender, ethnicity, wave of participation, and grade-level. The main effect of each form of social media engagement (frequency of social media use, hours on social media, self-disclosure, self-presentation, social monitoring, and lurking) on each outcome variable (internalizing problems, social support, and peer victimization) were examined in separate models. Additionally, to test hypothesis 2c, I also entered the quadric term for self-presentation (self-presentation squared). To examine the simultaneous association of all social media engagement indices on each outcome variable, I also ran three additional models (one for each outcome variable) controlling for gender, ethnicity, wave of participation, and all forms of social media engagement. Finally, exploratory analyses were conducted to examine the moderating role of gender on the association between each social media engagement indices and each adjustment outcomes. All models controlled for gender, ethnicity, and wave of participation.

Research Question 3: Does pubertal status moderate the relationship between social media engagement and adjustment outcomes?

Hypothesis 3: Pubertal status will moderate the relationship between overt social media behaviors and adjustment outcomes, such that early developers who engage in more self-disclosure and self-presentation will experience more peer victimization and internalizing problems and less social support. No moderating effect of puberty on outcomes is expected for lurking and social monitoring.

Hypothesis 3 was tested with three linear regression models (one for each outcome variable) for each form of social media engagement, conducted separately by gender. In each model, grade-level, wave of participation, and ethnicity were entered as control variables, along with the form of social media engagement, pubertal status, and the interaction effect of the form of social media engagement X pubertal status.

CHAPTER 3: RESULTS

Descriptive Statistics

Means, standard-deviations, and zero-order correlations for all study variables are presented in Table 1. Adolescents reported spending an average of 3.97 hours ($SD =$ 6.29) on social media per day when not at school. Consistent with previous literature (Underwood & Faris, 2015), lurking was the most prevalent social media behavior ($M =$ 3.35, $SD = 1.63$), followed by social monitoring ($M = 2.23$, $SD = 1.25$), self-disclosure ($M = 1.85$, $SD = 0.91$), and self-presentation ($M = 1.47$, $SD = 0.69$). All social media engagement indices were significantly, positively correlated with each other ($r's$ between .112 - .593, all $p's < .05$) with the exception that the number of hours spent on social media was not associated with social monitoring or lurking ($r's = .094$).

Social media frequency was positively associated with pubertal timing for boys ($r = .185$, $p < .05$) and girls ($r = .175$, $p < .05$); entering puberty early was associated with more social media use for boys and girls. Social media frequency was also positively associated with acceptance goal ($r = .102$, $p < .05$), popularity goal ($r = .198$, $p <.01$), , prosocial support ($r = .268$, $p < .01$), and peer victimization ($r = .199$, $p <.01$). The frequency of time on social media was not associated with internalizing problems ($r =$ .062). The number of hours adolescents reported spending on social media was not associated with pubertal timing for boys ($r = .122$) or girls ($r = -.088$), acceptance goal ($r = .049$), popularity goal ($r = .097$), internalizing ($r = .064$), prosocial support ($r = .001$), or peer victimization ($r = .076$).

Self-disclosure was not associated with pubertal timing for boys ($r = .124$) but was positively associated with girls' pubertal timing ($r = .51$, $p < .01$), suggesting

entering puberty early was associated with more self-disclosure among girls. Self-disclosure was also positively associated with acceptance goal ($r = .139$, $p < .01$), popularity goal ($r = .202$, $p < .01$), internalizing ($r = .271$, $p < .01$), prosocial support ($r = .25$, $p < .01$), and peer victimization ($r = .368$, $p < .01$). Self-presentation was not associated with pubertal timing for boys ($r = .095$) or girls ($r = .116$), or with acceptance goal ($r = .006$). Self-presentation was positively associate with popularity goal ($r = .273$, $p < .01$), internalizing ($r = .324$, $p < .01$), prosocial support ($r = .113$, $p < .05$), and peer victimization ($r = .430$, $p < .01$).

Lurking was positively associated with pubertal timing for boys ($r = .179$, $p < .05$) and girls ($r = .308$, $p < .01$), suggesting that entering puberty early was associated with more lurking for both boys and girls. Lurking was also positively associated with acceptance goal ($r = .142$, $p < .01$), popularity goal ($r = .249$, $p < .01$), internalizing ($r = .268$, $p < .01$), prosocial support ($r = .130$, $p < .05$), and peer victimization ($r = .260$, $p < .01$). Social monitoring was not associated with pubertal timing for boys ($r = .049$) but was positively associated with girls' pubertal timing ($r = .151$, $p < .05$), suggesting entering puberty early was associated with more social monitoring among girls. Social monitoring was also positively associated with acceptance goal ($r = .2$, $p < .01$), popularity goal ($r = .395$, $p < .01$), internalizing ($r = .258$, $p < .01$), prosocial support ($r = .122$, $p < .05$), and peer victimization ($r = .299$, $p < .01$).

Acceptance goal and popularity goal were positively correlated with one another ($r = .211$, $p < .01$). Internalizing was negatively associated with prosocial support ($r = .113$, $p < .05$) and positively associated with peer victimization ($r = .395$, $p < .01$). Prosocial support was positively associated with peer victimization ($r = .160$, $p < .01$).

Table 1

Means, Standard Deviations, and Correlations Among Study Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. SM frequency	1	.29**	.39**	.30**	.45**	.35**	.19*	.18*	.10*	.20**	.06	.27**	.20**	-.24**	.00	.15**
2. SM hours		1	.11*	.13*	.09	.09	.12	-.09	.05	.10	.06	.00	.08	-.09	-.05	.10*
3. Self-disclosure			1	.57**	.49**	.44**	.12	.25**	.14**	.20**	.27**	.25**	.37**	-.26**	.00	.10*
4. Self-presentation				1	.38**	.51**	.10	.12	.01	.27**	.32**	.11*	.43**	-.27**	-.04	.04
5. Lurking					1	.59**	.18*	.31**	.14**	.25**	.27**	.13*	.26**	-.27**	.07	.11*
6. Social mon.						1	.05	.15*	.20**	.40**	.26**	.12*	.30**	-.27**	.02	.02
7. Boys puberty							1	---	.02	.11	-.08	.04	.12	---	.00	.41**
8. Girls puberty								1	-.05	.17*	.19**	-.03	.12	---	.07	.35**
9. Acceptance goal									1	.21**	.07	.15**	.04	-.15**	.01	-.02
10. Popularity goal										1	.10	.13*	.07	.08	.01	.03
11. Internalizing											1	-.11*	.40**	-.24**	-.02	-.04
12. Peer support												1	.16**	-.09	.06	-.05
13. Peer vic.													1	-.15**	-.02	.01
14. Gender														1	-.05	-.02
15. 7th grade															1	-.47**
16. 8th grade																1
M	5.59	3.97	1.85	1.47	3.35	2.22	2.35	2.84	4.37	2.37	1.77	2.31	0.54	---	---	---
SD	2.51	6.29	0.91	0.69	1.63	1.25	0.55	0.63	0.64	0.96	0.78	1.42	0.77	---	---	---

$** p < .01, * p < .05$

Testing Research Question 1

Hypothesis 1a: Older adolescents will use more social media than younger adolescents.

A series of linear regression models were conducted to examine the main effect of grade on social media engagement. A separate model was run using each form of social media engagement as the outcome variable, all models controlled for ethnicity and wave of participation. Hypothesis 1a was partially supported, grade-level differences were found for three of the six social media engagement measures. Eighth graders engaged in significantly more self-disclosure than sixth graders ($B = .267$, $t = 2.410$, $p = .016$), seventh graders did not differ from sixth graders in the amount of self-disclosure ($B = .159$, $t = 1.443$, $p = .15$). Both seventh ($B = .503$, $t = 2.551$, $p = .011$) and eighth graders ($B = .64$, $t = 3.211$, $p < .001$) engaged in more lurking than sixth graders. Eighth graders reported more social media frequency compared to sixth graders ($B = 1.083$, $t = 3.579$, $p < .001$), there was no difference in the frequency of time on social media between sixth and seventh graders ($B = .456$, $t = 1.542$, $p = .124$). There were no significant main effects of grade for self-presentation, social monitoring, or the number of hours spent on social media (Table 2).

Hypothesis 1b: Girls will engage in more social media use than boys

Hypothesis 1b was tested using the same models as hypothesis 1a, this time examining the main effects of gender on social media engagement. There were significant, negative main effects of gender on all forms of social media engagement (all $B's > .366$, all $p's < .05$) except number of hours on social media (which trended in the same direction but failed to reach full significance; $B = -.697$, $p = .097$); girls reported more social media engagement than boys (Table 2)

Table 2: Main Effects of Grade-Level and Gender on Social Media Engagement

	SM frequency		SM hours		Self-disclosure		Self-presentation		Lurking		Social monitoring	
	B	**S.E.**	**B**	**S.E.**	**B**	**S.E.**	**B**	**S.E.**	**B**	**S.E.**	**B**	**S.E.**
Constant	5.462**	0.290	3.679**	0.494	1.863**	0.106	1.651**	0.078	3.268**	0.191	2.677**	0.147
Black	0.350	0.381	1.260^	0.643	-0.233	0.138	-0.100	0.101	0.189	0.250	-0.056	0.191
Hispanic	0.758	0.561	2.027*	0.945	-0.269	0.203	-0.198	0.149	0.045	0.363	-0.857**	0.280
Other	-0.008	0.417	0.464	0.712	0.132	0.155	0.066	0.113	0.025	0.277	-0.085	0.213
Wave	0.175	0.246	-0.220	0.416	0.172^	0.091	-0.037	0.066	0.113	0.163	-0.218^	0.125
Gender	-1.166**	0.247	-0.694^	0.417	-0.476**	0.092	-0.366**	0.067	-0.855**	0.164	-0.696**	0.126
7th Grade	0.456	0.296	-0.045	0.502	0.159	0.110	-0.019	0.081	0.503*	0.197	0.057	0.152
8th Grade	1.083**	0.302	0.667	0.511	0.267*	0.111	0.046	0.081	0.640**	0.199	0.046	0.153

** $p < .01$, * $p < .05$, ^ $p < .10$. *Note*: gender X grade-level interaction effects were also tested, none were significant.

Hypothesis 1c: Adolescents who entered puberty early compared to their peers will report more social media engagement (sixth grade girls, eighth grade boys).

To test hypothesis 1c, a series of linear regression models were conducted to examine the effect of pubertal status on social media behaviors. Given gender differences in the onset of puberty (Mendle et al., 2007, 2012), boys and girls were tested separately (sixth grade girls, eighth grade boys). All models were run using each social media behavior as the outcome variable, controlling for ethnicity and wave of participation. In each model, pubertal status, grade, and the interaction effect of puberty X grade (seventh and eighth for girls, sixth and seventh for boys) were entered, along with the control variables (ethnicity and wave of participation).

For sixth grade girls, there were no main effects of pubertal status on any of the social media behaviors (all B's $< .78$, all p's $> .083$). There were also no significant interaction effects for pubertal status X grade on any of the social media behaviors (all B's $< .005$, all p's $> .073$; Table 3). Inconsistent with hypothesis 1c, these findings suggest that pubertal timing may not be related to girls' social media engagement.

For eighth grade boys there were no significant main effects of pubertal status on any of the social media behaviors (all B's < 1.120, all p's $> .05$). There was a significant interaction effect of pubertal status X sixth grade on lurking ($B = 1.482$, $t = 2.476$, $p = .014$), such that for sixth grade boys, entering puberty late compared to their peers was positively associated lurking (simple slopes: $B = 1.18$, $p = .003$, Figure 1). There was no association between pubertal status and lurking for eighth grade boys ($B = -.302$, $p = .50$). There were no other significant interaction effects of pubertal status X grade on any social media behaviors (all B's $< .1.087$, all p's $> .05$, Table 4).

Table 3: Girls' Pubertal Status on Social Media Engagement

	SM frequency		SM hours		Self-disclosure		Self-presentation		Lurking		Social monitoring	
	B	S.E.	B	S.E.	B	S.E.	B	S.E.	B	S.E.	B	S.E.
Constant	5.157**	1.089	5.746**	2.001	1.245**	0.464	1.421**	0.371	1.807*	0.807	1.893**	0.646
Black	-0.281	0.457	1.947*	0.827	-0.332^	0.196	-0.031	0.157	-0.058	0.336	-0.061	0.273
Hispanic	-0.189	0.750	3.196*	1.357	-0.684*	0.32	-0.574*	0.256	-0.372	0.549	-1.505**	0.445
Other	-1.027^	0.608	-0.506	1.146	-0.104	0.269	-0.037	0.215	-0.638	0.460	-0.380	0.374
Wave	0.313	0.313	0.079	0.574	0.183	0.136	-0.038	0.109	0.310	0.233	-0.227	0.189
7th Grade	-0.779	1.749	-5.566^	3.185	-0.506	0.751	-0.220	0.600	-0.268	1.292	-0.155	1.045
8th Grade	-0.442	2.114	-2.825	3.835	-1.113	0.901	-1.166	0.720	-0.532	1.549	-2.021	1.254
Puberty	0.136	0.429	-1.027	0.788	0.286	0.183	0.116	0.146	0.558^	0.320	0.372	0.254
Puberty X 7th	0.387	0.634	2.075^	1.153	0.158	0.272	0.005	0.218	0.230	0.470	-0.035	0.379
Puberty X 8th	0.485	0.707	1.522	1.283	0.353	0.301	0.344	0.241	0.244	0.520	0.514	0.419

Table 4: Boys' Pubertal Status on Social Media Engagement

	SM frequency		SM hours		Self-disclosure		Self-presentation		Lurking		Social monitoring	
	B	S.E.	B	S.E.	B	S.E.	B	S.E.	B	S.E.	B	S.E.
Constant	4.996*	2.270	0.814	3.668	1.978**	0.684	1.564**	0.413	4.300**	1.269	2.360*	0.939
Black	1.005	0.682	0.045	1.105	-0.304	0.200	-0.204^	0.121	0.003	0.373	-0.245	0.275
Hispanic	1.297	0.936	1.395	1.516	-0.160	0.273	-0.021	0.165	0.222	0.500	-0.549	0.375
Other	0.515	0.622	0.999	1.007	0.336^	0.186	0.149	0.112	0.456	0.339	0.139	0.255
Wave	-0.074	0.439	-0.671	0.709	0.039	0.131	-0.050	0.079	-0.363	0.240	-0.372*	0.180
6th Grade	-1.569	2.684	0.053	4.351	-1.367^	0.811	-0.495	0.490	-4.12**	1.502	-0.684	1.115
7th Grade	-3.018	2.792	1.002	4.548	-0.091	0.845	-0.481	0.510	-0.776	1.558	0.188	1.161
Puberty	0.125	0.809	1.119	1.305	-0.083	0.241	-0.076	0.145	-0.302	0.450	-0.031	0.331
Puberty X 6th	0.318	1.077	0.155	1.739	0.454	0.323	0.152	0.195	1.482*	0.599	0.148	0.444
Puberty X 7th	1.086	1.065	-0.437	1.734	-0.041	0.320	0.176	0.193	0.064	0.591	-0.148	0.440

$** \, p < .01, * \, p < .05, \char94 \, p < .10$
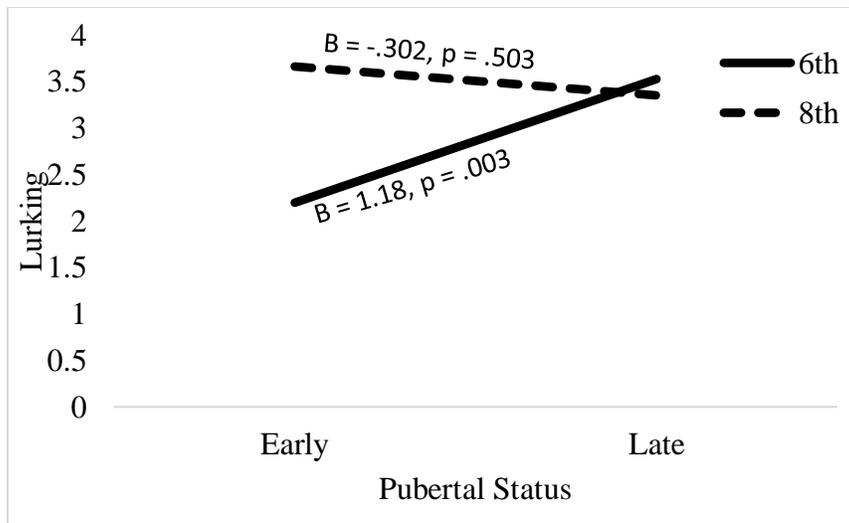
Figure 1. Interaction Effect of Pubertal Status and Grade-Level on Boys' Lurking

Hypothesis 1d: Adolescents with high acceptance goals will engage in more self-disclosure, those with high popularity goals will engage in more self-presentation and social monitoring.

To test Hypothesis 1d, I ran a series of linear regression models all using gender, grade, wave of participation, and ethnicity as control variables. First, I tested the effect of popularity goal on self-presentation and social monitoring, then I examined acceptance goal on self-disclosure. Consistent with hypothesis 1d, there was a significant, positive main effect of popularity goal on self-presentation ($B = .215$, $t = 6.393$, $p > .001$) and social monitoring ($B = .541$, $t = 8.931$, $p > .001$), suggesting that adolescents with higher popularity goals engage in more self-presentation and social monitoring (Table 5). Also consistent with hypothesis 1d, acceptance goal was significantly, positively associated with self-disclosure ($B = .175$, $t = 2.335$, $p = .02$). In other words, prioritizing acceptance goals was associated with engaging in more self-disclosure.

Table 5: Social Goals and Social Media Engagement

	Self-presentation		Social monitoring		Self-disclosure	
	B	**S.E.**	**B**	**S.E.**	**B**	**S.E.**
Constant	1.133**	0.110	1.391**	0.198	1.062**	0.358
Black	-0.094	0.097	-0.060	0.174	-0.228	0.138
Hispanic	-0.142	0.146	-0.637*	0.263	-0.35^	0.208
Other ethnicity	0.100	0.110	-0.019	0.198	0.110	0.157
Wave of participation	0.003	0.064	-0.147	0.116	0.188*	0.092
Gender	-0.398**	0.065	-0.774**	0.117	-0.423**	0.094
7th Grade	-0.045	0.078	0.029	0.141	0.153	0.112
8th Grade	0.033	0.078	0.008	0.141	0.276*	0.112
Popularity goal	0.215**	0.034	0.541**	0.061	---	---
Acceptance goal	---	---	---	---	0.175*	0.075

$** \ p < .01, * \ p < .05, ^ p < .10$

In order to explore if social goals were unique to each specific social media behavior, and to examine gender differences on associations between goals and social media behaviors, I conducted two additional sets of models (one for each goal). Each set controlled for ethnicity, grade-level, wave of participation, and all the other social media engagement indices, and contained the gender X goal interaction (gender X popularity goal, gender X acceptance goal).

The positive associations between popularity goal and both self-presentation ($B =$ and social monitoring remained after controlling for the other behaviors (Table 6). Gender moderated the association between popularity goal and social monitoring ($B = -.245$, $t = -2.38$, $p = .01$), simple slopes tests revealed a positive association between popularity goal and social monitoring for both girls ($B = .418$, $p < .001$) and boys ($B = .175$, $p = .01$, Figure 2), although the effect was stronger for girls. The interaction effect of gender and self-presentation on popularity goal trended towards significance ($B = -$

.108, t = -1.830, p = .068), there was a positive association between popularity goal and self-presentation for girls (B = .125, p = .005) but not boys (B = .018, p = .60).

After controlling for all the other behaviors, the positive association between acceptance goal and self-disclosure dropped below significance (B = .084, t = .208, p = .31). Additionally, a positive main effect of acceptance goal on social monitoring emerged (B = .309, t = -1.399, p = .006), suggesting that adolescents with high acceptance goals engaged in more social monitoring. There was also a trending negative main effect of acceptance goal on self-presentation (B = -.144, p = .066; Table 7).

Table 6: Popularity Goal on Social Media Behaviors with Gender Moderations

	Self-presentation		Social monitoring		Self-disclosure		Lurking	
	B	S.E.	B	S.E.	B	S.E.	B	S.E.
Constant	0.439**	0.123	-0.142	0.220	0.263	0.170	0.331	0.301
Black	-0.031	0.082	-0.048	0.144	-0.191^	0.111	0.268	0.198
Hispanic	0.018	0.125	-0.597**	0.217	-0.242	0.169	0.537^	0.299
Other ethnicity	0.050	0.093	-0.060	0.163	0.108	0.126	0.032	0.224
Wave	-0.052	0.056	-0.277**	0.097	0.190*	0.075	0.147	0.134
Gender	0.119	0.149	0.310	0.262	-0.473*	0.201	0.022	0.360
7th grade	-0.095	0.067	-0.111	0.117	0.098	0.091	0.287^	0.160
8th grade	-0.042	0.068	-0.203^	0.119	0.093	0.092	0.375*	0.162
Self-disclosure	0.312**	0.036	0.049	0.070	---	---	0.386**	0.093
Self-presentation	---	---	0.409**	0.092	0.577**	0.066	-0.070	0.130
Lurking	-0.012	0.022	0.295**	0.036	0.123**	0.030	---	---
Social monitoring	0.132**	0.030	---	---	0.029	0.042	0.556**	0.068
SM frequency	-0.001	0.015	0.020	0.026	0.054**	0.020	0.119**	0.036
SM hours	0.012^	0.007	0.009	0.013	0.006	0.010	0.004	0.017
Popularity goal	0.120**	0.042	0.407**	0.071	-0.077	0.057	0.077	0.102
Popularity goal * gender	-0.108^	0.059	-0.245*	0.103	0.154^	0.080	-0.079	0.142

$** p < .01, * p < .05, ^ p < .10$
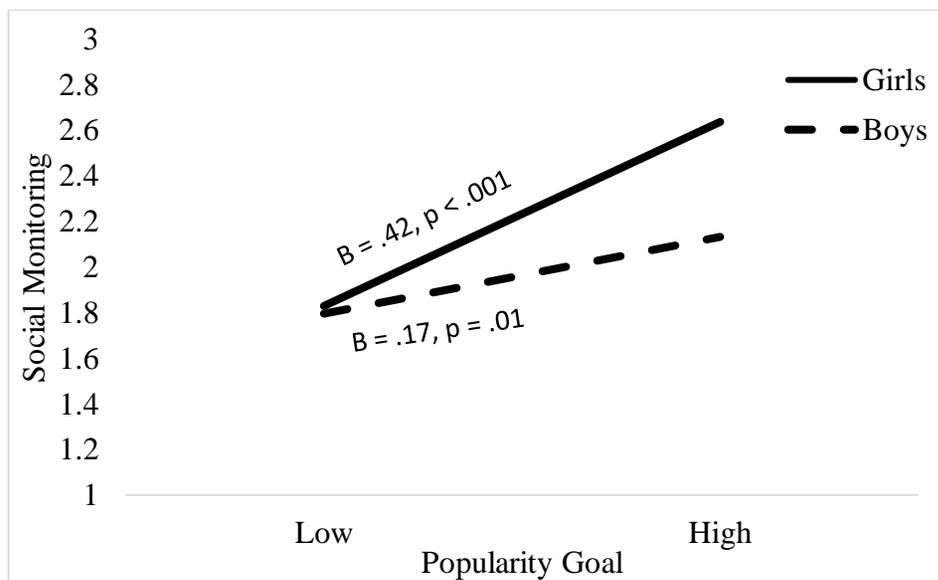
Figure 2. Interaction Effect of Popularity Goal and Gender on Social Monitoring

Table 7: Acceptance Goal on Social Media Behaviors with Gender Moderations

	Self-presentation		Social monitoring		Self-disclosure		Lurking	
	B	S.E.	B	S.E.	B	S.E.	B	S.E.
Constant	1.095**	0.290	-0.968^	0.534	-0.210	0.400	0.269	0.707
Black	-0.030	0.083	-0.043	0.150	-0.193^	0.112	0.265	0.198
Hispanic	-0.019	0.125	-0.713**	0.224	-0.220	0.169	0.506^	0.299
Other ethnicity	0.045	0.094	-0.144	0.170	0.107	0.127	0.007	0.224
Wave	-0.044	0.056	-0.284**	0.100	0.176*	0.075	0.154	0.133
Gender	-0.334	0.397	0.888	0.719	-0.217	0.538	-0.540	0.950
7th grade	-0.097	0.067	-0.076	0.122	0.093	0.091	0.308^	0.161
8th grade	-0.055	0.068	-0.183	0.124	0.104	0.093	0.383*	0.163
Self-disclosure	0.314**	0.036	0.019	0.072	---	---	0.373**	0.093
Self-presentation	---	---	0.558**	0.093	0.576**	0.066	-0.046	0.129
Lurking	-0.008	0.023	0.325**	0.037	0.120**	0.030	---	---
Social monitoring	0.169**	0.028	---	---	0.010	0.040	0.564**	0.064
SM frequency	0.004	0.015	0.033	0.027	0.050*	0.020	0.122**	0.036
SM hours	0.009	0.007	0.010	0.013	0.009	0.010	0.003	0.017
Acceptance goal	-0.114^	0.062	0.309**	0.111	0.084	0.084	0.042	0.148
Acceptance goal * gender	0.051	0.090	-0.227	0.162	0.025	0.122	0.095	0.215

** $p < .01$, * $p < .05$, ^ $p < .10$

Hypothesis 1e: Popularity goal will mediate the relationship between pubertal status and self-presentation and social monitoring. Acceptance goal will mediate the relationship between pubertal status and self-disclosure.

No direct effect was found between pubertal status and social media engagement (hypothesis 1c), thus there was no empirical reason to test a mediating effect of social goals. Therefore, no further analyses were conducted: hypothesis 1e was not supported.

Testing Research Question 2

Hypotheses 2a-2e were tested with a series of linear regression models, all models included gender, ethnicity, wave of participation, and grade as control variables. The main effect of each form of social media engagement (self-disclosure, self-presentation, social monitoring, lurking, frequency of social media use, and number of hours spent on social media) on each outcome variable (internalizing, prosocial support, and peer victimization) were examined in separate models. Additionally, to test hypothesis 2c, the quadric term for self-presentation (self-presentation squared) was entered into the model.

Hypothesis 2a: Time spent online will be associated with more internalizing problems, social support, and peer victimization.

The frequency of social media use was not associated with internalizing problems ($B = 0.000$, $t = 0.003$, $p = .998$), but was positively associated with prosocial support ($B = .159$, $t = 5.26$, $p < .001$) and peer victimization ($B = .054$, $t = 3.224$, $p = .001$; Table 8). The number of hours spent on social media was positively associated with internalizing

problems ($B = .020$, $t = 2.15$, $p = .032$) and peer victimization ($B = .029$, $t = 2.94$, $p =$

.004), and was not associated with social support ($B = .020$, $t = 1.09$, $p = .275$; Table 9).

Table 8: Outcomes of Frequency of Social Media Use

	Internalizing		**Prosocial support**		**Victimization**	
	B	**S.E.**	**B**	**S.E.**	**B**	**S.E.**
Constant	2.022**	0.129	1.571**	0.240	0.364**	0.131
Black	0.006	0.125	0.057	0.231	0.020	0.127
Hispanic	0.088	0.177	-0.495	0.327	-0.075	0.179
Other	-0.003	0.133	0.425^	0.240	-0.006	0.134
Wave	-0.033	0.079	-0.082	0.144	0.001	0.080
Gender	-0.397**	0.081	-0.123	0.149	-0.170*	0.082
7th Grade	-0.094	0.095	0.029	0.175	-0.055	0.096
8th Grade	-0.092	0.099	-0.315^	0.181	-0.046	0.100
SM frequency	0.000	0.016	0.159**	0.030	0.054**	0.017

** $p < .01$, * $p < .05$, ^ $p < .10$

Table 9: Outcomes of Number of Hours Spent on Social Media

	Internalizing		**Prosocial support**		**Victimization**	
	B	**S.E.**	**B**	**S.E.**	**B**	**S.E.**
Constant	1.932**	0.099	2.435**	0.190	0.568**	0.102
Black	-0.009	0.124	0.092	0.239	0.019	0.127
Hispanic	0.058	0.176	-0.457	0.339	-0.094	0.180
Other	0.005	0.134	0.481^	0.251	0.000	0.137
Wave	-0.020	0.078	-0.054	0.149	0.011	0.080
Gender	-0.402**	0.079	-0.328*	0.150	-0.224**	0.081
7th Grade	-0.076	0.095	0.060	0.181	-0.038	0.097
8th Grade	-0.093	0.097	-0.214	0.184	-0.021	0.099
SM hours	0.020*	0.010	0.020	0.018	0.0290**	0.010

** $p < .01$, * $p < .05$, ^ $p < .10$

Hypothesis 2b: Self-disclosure will be negatively associated with internalizing problems and will be positively associated with social support and peer victimization.

Contrary to hypothesis 2b, self-disclosure was positively associated with internalizing problems ($B = .198$, $t = 4.446$, $p < .001$, see Table 10). Consistent with hypothesis 2b, self-disclosure was positively associated with prosocial support ($B = .375$, $t = 4.58$, $p < .001$) and peer victimization ($B = .305$, $t = 6.9$, $p < .001$), suggesting that adolescents who disclose more information on social media report more support and victimization from their peers.

Table 10: Outcomes of Self-disclosure

	Internalizing		Prosocial support		Victimization	
	B	S.E.	B	S.E.	B	S.E.
Constant	1.638**	0.124	1.778**	0.232	0.105	0.123
Black	0.066	0.123	0.155	0.231	0.119	0.122
Hispanic	0.161	0.173	-0.346	0.325	0.047	0.172
Other	0.036	0.133	0.451^	0.245	-0.001	0.132
Wave	-0.078	0.078	-0.069	0.146	-0.035	0.078
Gender	-0.315**	0.082	-0.127	0.152	-0.115	0.081
7th Grade	-0.115	0.095	0.027	0.177	-0.084	0.095
8th Grade	-0.131	0.097	-0.266	0.181	-0.092	0.096
Self-disclosure	0.198**	0.044	0.375**	0.082	0.305**	0.044

** $p < .01$, * $p < .05$, ^ $p < .10$

Hypothesis 2c: There will be a curvilinear relationship between self-presentation and adjustment outcomes. Very high and very low levels of self-presentation will be associated with less support, and more victimization and internalizing. Moderate levels of self-presentation will be associated with more support, and less victimization and internalizing.

Contrary to hypothesis 2c, there were no curvilinear effects of self-presentation on any of the outcome variables (all *B's* < .291, all *p's* > .05), therefore, the quadratic effect of self-presentation was removed from subsequent analyses. After removing the quadratic effect, there was a positive association between self-presentation and internalizing (B = .329, t = 5.51, p < .001) and peer victimization (B = .495, t = 8.45, p < .001): adolescents who engaged in more self-presentation also reported experiencing more internalizing and peer victimization. There was no association between self-presentation and prosocial support (B = .184, t = 1.60, p = .11), suggesting that the image adolescents present on social media is unrelated to the amount of peer support they receive (See Table 11).

Table 11. Outcomes of Self-presentation

	Internalizing		**Prosocial support**		**Victimization**	
	B	**S.E.**	**B**	**S.E.**	**B**	**S.E.**
Constant	1.463**	0.134	2.182**	0.262	-0.146	0.132
Black	0.053	0.121	0.087	0.236	0.099	0.118
Hispanic	0.173	0.170	-0.410	0.334	0.064	0.167
Other	0.029	0.131	0.466^	0.251	-0.011	0.129
Wave	-0.035	0.077	-0.006	0.150	0.030	0.076
Gender	-0.284**	0.081	-0.233	0.157	-0.071	0.080
7th Grade	-0.077	0.093	0.091	0.182	-0.024	0.092
8th Grade	-0.095	0.095	-0.175	0.184	-0.033	0.093
Self-presentation	0.329**	0.060	0.184	0.115	0.495**	0.059

** p < .01, * p < .05, ^ p < .10

Hypothesis 2d: Lurking will be positively associated with internalizing problems and will

not be associated with social support or peer victimization.

Consistent with hypothesis 2d, lurking was positively associated with

internalizing problems ($B = .109$, $t = 4.33$, $p < .001$), suggesting that adolescents who

engage in more lurking behaviors experience more internalizing problems. However,

although hypothesis 2d predicted that lurking would not be associated with social support

or peer victimization, there were significant positive associations for both (social support:

$B = .106$, $t = 2.21$, $p = .028$; peer victimization: $B = .118$, $t = 4.53$, $p < .001$; Table 12).

Table 12. Outcomes of Lurking

	Internalizing		Prosocial support		Victimization	
	B	**S.E.**	**B**	**S.E.**	**B**	**S.E.**
Constant	1.653**	0.124	2.111**	0.238	0.300*	0.128
Black	0.003	0.124	0.059	0.238	0.027	0.128
Hispanic	0.099	0.173	-0.442	0.332	-0.048	0.178
Other	0.057	0.134	0.496*	0.251	0.027	0.137
Wave	-0.063	0.079	-0.019	0.150	-0.002	0.081
Gender	-0.313**	0.082	-0.222	0.156	-0.160^	0.085
7th Grade	-0.137	0.096	0.066	0.183	-0.096	0.099
8th Grade	-0.149	0.098	-0.210	0.187	-0.091	0.101
Lurking	0.109**	0.025	0.106*	0.048	0.118**	0.026

** $p < .01$, * $p < .05$, ^ $p < .10$

Hypothesis 2e: Social monitoring will be positively associated with internalizing problems and peer victimization, and will be negatively related to social support.

Consistent with Hypothesis 2e, social monitoring was positively associated with internalizing problems ($B = .134$, $t = 4.09$, $p < .001$) and peer victimization ($B = .176$, $t = 5.28$, $p < .001$). However, inconsistent with Hypothesis 2e, social monitoring was not negatively associated with peer support: in fact, the association between social monitoring and peer support trended in a positive direction ($B = .112$, $t = 1.80$, $p = .072$) although this relationship failed to reach significance (see Table 13).

Table 13. Outcomes of Social Monitoring

	Internalizing		Prosocial support		Victimization	
	B	S.E.	B	S.E.	B	S.E.
Constant	1.654**	0.127	2.169**	0.244	0.209	0.130
Black	0.031	0.123	0.089	0.236	0.064	0.125
Hispanic	0.219	0.175	-0.347	0.337	0.112	0.178
Other	0.074	0.134	0.506*	0.251	0.054	0.136
Wave	-0.013	0.079	0.028	0.150	0.056	0.080
Gender	-0.317**	0.082	-0.240	0.157	-0.139^	0.084
7th Grade	-0.096	0.095	0.098	0.182	-0.049	0.097
8th Grade	-0.090	0.097	-0.156	0.184	-0.024	0.098
Social monitoring	0.134**	0.033	0.112^	0.062	0.176**	0.033

$** \, p < .01$, $* \, p < .05$, $^ \, p < .10$

Simultaneous analysis of all social media behaviors and adjustment outcomes

Given the high correlations among the forms of social media engagement (r's between .112 - .593; Table 1), it is important to consider all these behaviors in the same model. Three additional models (one for each outcome variable: internalizing, prosocial support, and peer victimization) were conducted to examine the unique effects of each form of social media engagement on adjustment outcomes when controlling for all other forms. In each model, grade, ethnicity, gender, and wave of participation were entered as control variables, and all six forms of social media engagement were entered. No specific hypotheses were made for these analyses (see Table 14).

Self-presentation ($B = .220$, $t = 2.86$, $p = .004$) and lurking were positively associated with internalizing problems. Social media frequency was not associated with internalizing in the individual model, but when all engagement indices were added to the model, there was a negative association between social media frequency and internalizing problems ($B = -.061$, $t = -2.83$, $p = .005$). Although significant in the individual models, self-disclosure ($B = .08$, $t = 1.42$, $p = .157$) and social monitoring ($B = .03$, $t = 0.711$, $p = .477$) were no longer associated with internalizing problems once all forms of social media engagement were entered into the model.

Consistent with the individual models, self-presentation ($B = .386$, $t = 3.68$, $p < .001$) and social media frequency ($B = .111$, $t = 2.7$, $p = .007$) were positively associated with prosocial support; no other forms of social media engagement were associated with prosocial support (all B's $< .200$, all p's $> .05$). Self-disclosure ($B = .145$, $t = 2.612$, $p = .009$) and self-presentation ($B = .348$, $t = 4.566$, $p < .001$) were positively associated with peer victimization, which is consistent with the individual models. However, while social

monitoring, lurking, frequency, and hours on social media were all positively associated
with peer victimization in the individual models, after controlling for all the other forms
of social media engagement, these associations were no longer significant.

Table 14: Simultaneous Models Examining Outcomes of Social Media Behaviors

	Internalizing		Prosocial Support		Victimization	
	B	**S.E.**	**B**	**S.E.**	**B**	**S.E.**
Constant	1.477**	0.160	1.634**	0.305	-0.250	0.159
Black	0.059	0.122	0.100	0.232	0.114	0.121
Hispanic	0.197	0.173	-0.400	0.330	0.080	0.172
Other	0.030	0.132	0.543*	0.247	-0.011	0.131
Wave	-0.023	0.079	-0.10	0.149	0.011	0.078
Gender	-0.264**	0.083	-0.100	0.157	-0.027	0.082
7th Grade	-0.100	0.095	-0.000	0.179	-0.083	0.094
8th Grade	-0.108	0.098	-0.300	0.185	-0.093	0.097
SM frequency	-0.061**	0.022	0.111**	0.041	-0.008	0.021
SM hours	0.014	0.010	-0.000	0.019	0.006	0.010
Self-disclosure	0.080	0.056	0.200	0.105	0.145**	0.056
Self-presentation	0.220**	0.077	0.386**	0.144	0.348**	0.076
Lurking	0.070*	0.032	-0.000	0.060	0.012	0.032
Social monitoring	0.030	0.042	0.000	0.079	0.034	0.042

** $p < .01$, * $p < .05$, ^ $p < .10$

Hypothesis 2 Exploratory Analyses: Gender moderating the association between social

media engagement and adjustment outcomes

Given consistent gender differences in social media use (observed in hypothesis

1b), I also examined the moderating role of gender on adjustment outcomes associated

with the different forms of social media engagement. Three linear regression models

were run for each forms of social media engagement (one for each outcome variable)

containing gender, the forms of social media engagement, and the interaction effect of

gender X each form of engagement, controlling for grade, ethnicity, and wave of

participation. No hypotheses were made for these exploratory analyses.

Gender moderated the relationship between both frequency and hours on social

media and peer victimization (frequency: $B = -.125$, $t = -3.85$, $p < .001$; hours: $B = -.043$,

$t = -2.22$, $p = .027$, Figures 3-4). Both forms of social media engagement were positively

associated with peer victimization for girls (B's $> .052$, p's $< .001$), but not boys (B's $<$

.010 .05, p's $> .69$; Tables 15-16).

Table 15: The Moderating Effect of Gender Between Social Media Frequency and Adjustment

	Internalizing		Prosocial support		Victimization	
	B	S.E.	B	S.E.	B	S.E.
Constant	1.833**	0.174	1.308**	0.324	-0.082	0.173
Black	0.026	0.126	0.081	0.232	0.068	0.125
Hispanic	0.102	0.177	-0.480	0.327	-0.042	0.176
Other	0.019	0.133	0.455^	0.241	0.047	0.133
Wave	-0.033	0.079	-0.081	0.144	0.002	0.078
Gender	-0.099	0.201	0.291	0.372	0.535**	0.200
7th Grade	-0.093	0.095	0.034	0.175	-0.054	0.095
8th Grade	-0.096	0.000	-0.318^	0.181	-0.056	0.098
SM frequency	0.030	0.025	0.201**	0.046	0.125**	0.025
SM frequency X gender	-0.053	0.033	-0.073	0.060	-0.125**	0.033

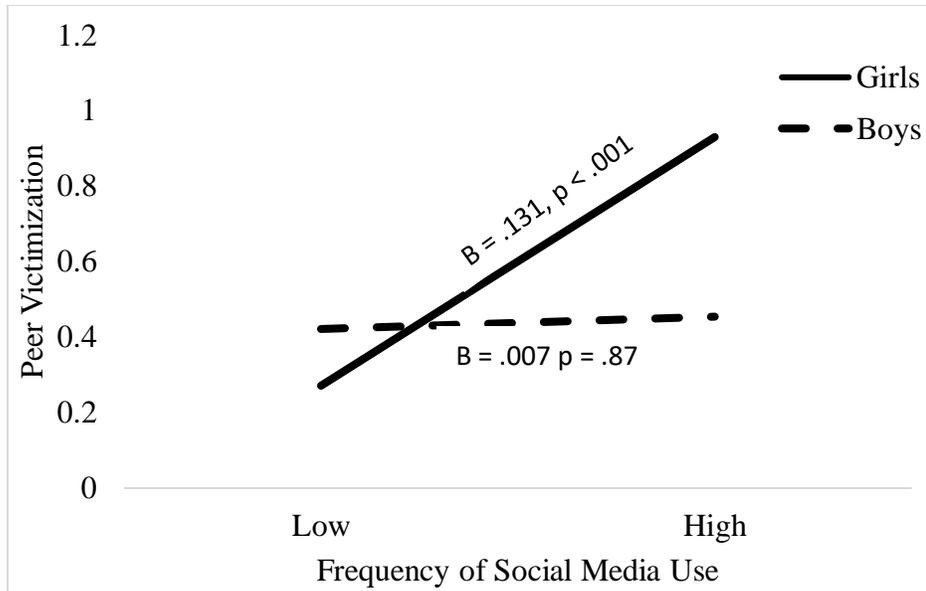** $p < .01$, * $p < .05$, ^ $p < .10$

Figure 3. Interaction Effect of Social Media Frequency and Gender on Peer Victimization

Table 16: The Moderating Effect of Gender Between Hours on Social Media and Adjustment

|	Internalizing		Prosocial support		Victimization	
	B	**S.E.**	**B**	**S.E.**	**B**	**S.E.**
Constant	1.940**	0.105	2.430**	0.203	0.487**	0.107
Black	-0.008	0.125	0.091	0.240	0.007	0.127
Hispanic	0.059	0.176	-0.458	0.339	-0.107	0.179
Other	0.003	0.134	0.482^	0.252	0.017	0.136
Wave	-0.019	0.078	-0.054	0.149	0.009	0.080
Gender	-0.419**	0.105	-0.318	0.200	-0.067	0.107
7th Grade	-0.076	0.095	0.060	0.181	-0.036	0.096
8th Grade	-0.091	0.097	-0.215	0.185	-0.032	0.098
SM hours	0.018	0.013	0.021	0.025	0.050**	0.014
SM hours X gender	0.005	0.019	-0.003	0.036	-0.043*	0.019

$** p < .01, * p < .05, ^ p < .10$
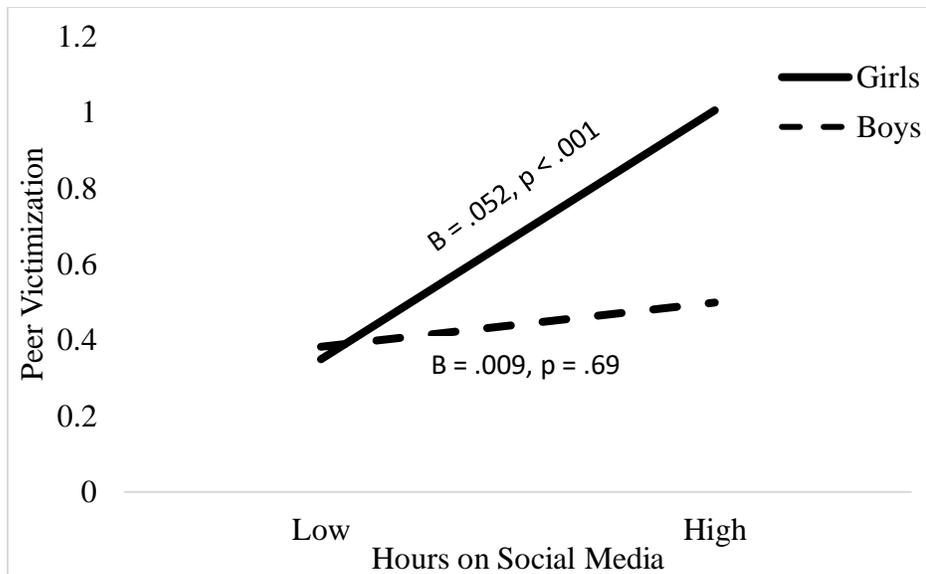
Figure 4. Interaction Effect of Social Media Hours and Gender on Peer Victimization

Gender moderated the relationship between self-disclosure and peer victimization ($B = -.008$, $t = -0.39$, $p = .7$, Table 17). For girls, higher rates of self-disclosure were associated with more peer victimization (simple slope: $B = .458$, $p = .01$, Figure 5). There was no association between self-disclosure and victimization for boys.

Table 17. The Moderating Effect of Gender Between Self-Disclosure and Adjustment

	Internalizing		Prosocial Support		Victimization	
	B	**S.E.**	**B**	**S.E.**	**B**	**S.E.**
Constant	1.526**	0.142	1.868**	0.267	-0.147	0.139
Black	0.066	0.123	0.153	0.231	0.120	0.120
Hispanic	0.168	0.172	-0.353	0.326	0.063	0.169
Other	0.061	0.134	0.432^	0.247	0.055	0.131
Wave	-0.079	0.078	-0.068	0.146	-0.037	0.077
Gender	-0.060	0.180	-0.332	0.336	0.458**	0.176
7th grade	-0.111	0.095	0.024	0.178	-0.075	0.093
8th grade	-0.123	0.096	-0.271	0.181	-0.075	0.095
Self-disclosure	0.249**	0.055	0.334**	0.102	0.421**	0.054
Self-disc. X gender	-0.146	0.092	0.116	0.170	-0.327**	0.090

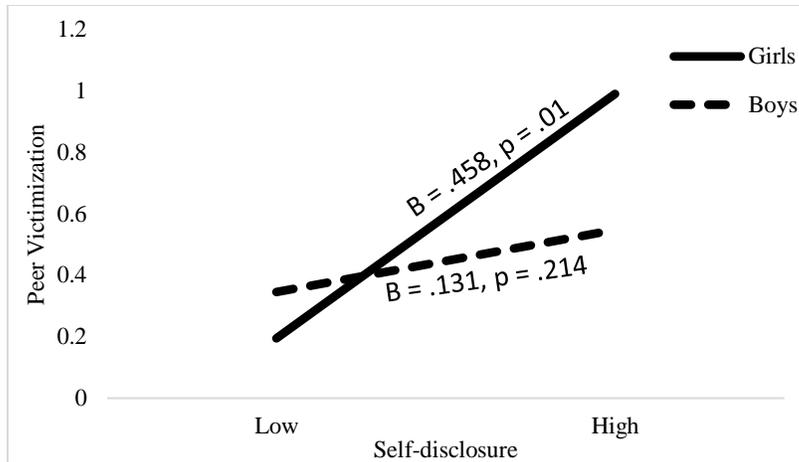*** $p < .01$, * $p < .05$, ^ $p < .10$*

Figure 5. Interaction Effect of Self-Disclosure and Gender on Peer Victimization

Gender did not moderate the relationship between self-presentation (all *B's* <

.292, all *p's* > .05) and any of the outcome variables (Table 18).

Table 18: The Moderating Effect of Gender Between Self-Presentation and Adjustment

	Internalizing		Prosocial support		Victimization	
	B	**S.E.**	**B**	**S.E.**	**B**	**S.E.**
Constant	1.467**	0.146	2.061**	0.285	-0.188	0.144
Black	0.054	0.121	0.072	0.237	0.093	0.119
Hispanic	0.172	0.171	-0.405	0.334	0.068	0.167
Other	0.028	0.132	0.489^	0.252	-0.003	0.129
Wave	-0.035	0.077	-0.005	0.149	0.030	0.076
Gender	-0.297	0.207	0.160	0.400	0.065	0.203
7th Grade	-0.078	0.094	0.109	0.182	-0.018	0.092
8th Grade	-0.095	0.095	-0.164	0.184	-0.030	0.093
Self- presentation	0.326**	0.068	0.251^	0.131	0.518**	0.067
Self-pres. X gender	0.010	0.142	-0.291	0.273	-0.101	0.139

** *p* < .01, * *p* < .05, ^ *p* < .10

Gender moderated the relationship between lurking and internalizing (*B* = -.119, *t*

= -2.34, *p* = .020) and peer victimization (*B* = -.124, *t* = -2.35, *p* = .019, Table 19).

Following the same patterns previously noted, lurking was positively associated with both adjustment outcomes for girls (B's > .16, p's < .001) but not boys (B's < .04, p's > .23) following the same patterns as self-disclosure: the relationship between lurking and adjustment outcomes were stronger for girls than boys (Figures 6-7).

Table 19: The Moderating Effect of Gender Between Lurking and Adjustment

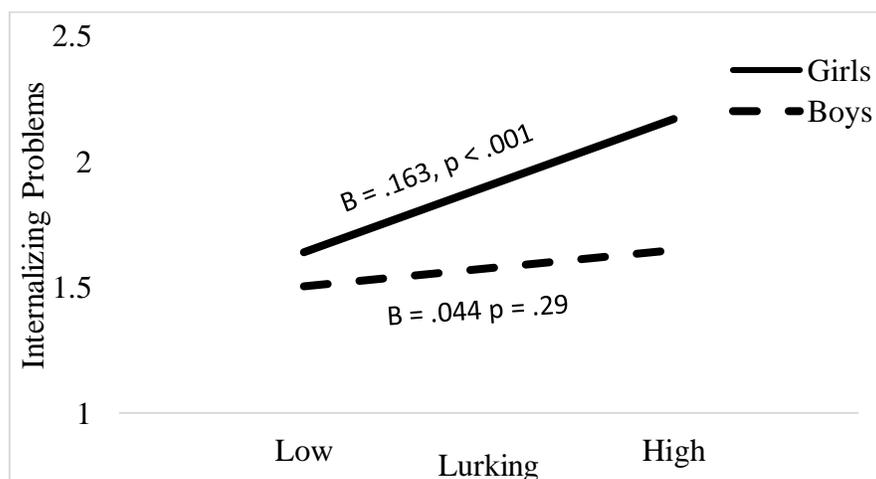|	Internalizing		Prosocial support		Victimization	
	B	**S.E.**	**B**	**S.E.**	**B**	**S.E.**
Constant	1.476**	0.144	2.236**	0.276	0.116	0.149
Black	0.014	0.124	0.053	0.238	0.039	0.127
Hispanic	0.120	0.172	-0.455	0.333	-0.026	0.177
Other	0.097	0.134	0.467^	0.253	0.070	0.138
Wave	-0.075	0.079	-0.01	0.150	-0.014	0.081
Gender	0.069	0.183	-0.500	0.352	0.236	0.188
7th Grade	-0.143	0.096	0.072	0.183	-0.102	0.099
8th Grade	-0.140	0.098	-0.217	0.187	-0.081	0.101
Lurking	0.157**	0.032	0.073	0.061	0.167**	0.033
Lurking X gender	-0.119*	0.051	0.087	0.099	-0.124*	0.053

** $p < .01$, * $p < .05$, ^ $p < .10$

Figure 6. Interaction Effect of Lurking and Gender on Internalizing Problems
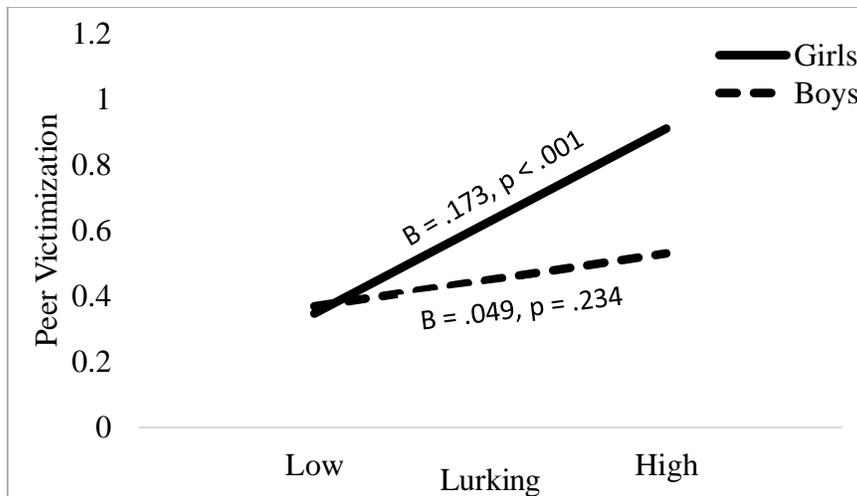
Figure 7. Interaction Effect of Lurking and Gender on Peer Victimization

Gender did not moderate the association between social monitoring (all *B's* <

.134, all *p's* > .05) and any of the outcome variables (Table 20).

Table 20: The Moderating Effect of Gender Between Social Monitoring and Adjustment

	Internalizing		Prosocial support		Victimization	
	B	S.E.	B	S.E.	B	S.E.
Constant	1.552**	0.141	2.155**	0.270	0.085	0.144
Black	0.031	0.123	0.089	0.236	0.064	0.125
Hispanic	0.227	0.175	-0.346	0.338	0.122	0.178
Other	0.092	0.134	0.509*	0.252	0.076	0.136
Wave	-0.017	0.079	0.027	0.151	0.051	0.080
Gender	-0.087	0.163	-0.208	0.311	0.138	0.166
7th Grade	-0.088	0.095	0.098	0.182	-0.039	0.097
8th Grade	-0.079	0.097	-0.155	0.185	-0.010	0.098
Social monitoring	0.172**	0.040	0.117	0.076	0.222**	0.041
Soc. mon X gender	-0.111	0.068	-0.016	0.130	-0.134^	0.069

** $p < .01$, * $p < .05$, ^ $p < .10$

Testing Research Question 3

Hypothesis 3: Pubertal status will moderate the relationship between overt social media behaviors and adjustment outcomes, such that early developers who engage in more self-disclosure and self-presentation will experience more peer victimization and internalizing problems and less social support. No moderating effect of puberty on outcomes for lurking and social monitoring is expected.

To test hypothesis 3, a series of linear regression models were conducted. In each model, grade, wave of participation, and ethnicity were entered as control variables (all models were run separately for boys and girls). Three models were conducted for each forms of social media engagement (one for each outcome variable: internalizing, prosocial support, and peer victimization) containing pubertal status, the form of social media engagement, and the interaction effect of puberty X social media.

Pubertal status did not moderate the relationship between self-disclosure (all *B's* < .17, all *p's* > .05) or self-presentation (all *B's* < .125, all *p's* > .05), and any of the outcome variables for either boys or girls. Thus, hypothesis 3 was not supported (see Tables 21-22). Consistent with hypothesis 3, pubertal status did not moderate the relationship between lurking and any of the adjustment outcomes for either boys or girls (all *B's* < .219, all *p's* > .05; see Table 23). Unexpectedly, pubertal status moderated the relationship between social monitoring and peer victimization (*B* = .172, *t* = 2.47, *p* = .014). Simple slope tests revealed that for early developing girls, more social monitoring was associated with higher levels of peer victimization (*B* = .356, *p* = .004). For later developing girls, there was no association between social monitoring and peer victimization (*B* = .139, *p* = .17; Table 24, Figure 8).

Table 21: The Moderating Effect of Pubertal Status Between Self-Disclosure and Adjustment

| | Girls | | | | | | Boys | | | | | |
| | Internalizing | | Prosocial support | | Victimization | | Internalizing | | Prosocial support | | Victimization | |
	B	S.E.	B	S.E.	B	S.E.	B	S.E.	B	S.E.	B	S.E.
Constant	0.423	0.668	1.228	1.155	-0.598	0.607	1.232*	0.502	0.787	1.141	-0.238	0.500
Black	0.198	0.186	0.086	0.311	0.384*	0.169	-0.100	0.158	0.332	0.373	-0.229	0.158
Hispanic	-0.224	0.290	-0.328	0.486	-0.113	0.264	0.513*	0.210	-0.384	0.497	-0.247	0.210
Other	0.150	0.250	0.251	0.420	0.221	0.228	0.006	0.145	0.558^	0.326	-0.081	0.145
Wave	-0.149	0.124	-0.060	0.209	0.010	0.113	-0.003	0.101	-0.075	0.229	-0.019	0.100
7th grade	-0.272^	0.156	-0.005	0.263	-0.184	0.142	-0.075	0.122	0.218	0.279	-0.101	0.122
8th grade	-0.308^	0.170	-0.121	0.286	-0.205	0.154	-0.183	0.140	-0.384	0.319	-0.051	0.139
Puberty	0.454^	0.231	0.192	0.397	0.154	0.211	0.079	0.215	0.323	0.489	0.256	0.215
Self-disclosure	0.513	0.328	0.872	0.559	0.519^	0.299	0.307	0.295	0.748	0.665	0.259	0.294
Self-dis. X puberty	-0.097	0.107	-0.170	0.181	-0.035	0.097	-0.077	0.121	-0.143	0.273	-0.070	0.121

** $p < .01$, * $p < .05$, ^ $p < .10$

Table 22: The Moderating Effect of Pubertal Status Between Self-Presentation and Adjustment

	Girls						Boys					
	Internalizing		**Prosocial support**		**Victimization**		**Internalizing**		**Prosocial support**		**Victimization**	
	B	**S.E.**	**B**	**S.E.**	**B**	**S.E.**	**B**	**S.E.**	**B**	**S.E.**	**B**	**S.E.**
Constant	0.943	0.635	2.247*	1.106	-0.41	0.588	1.504*	0.637	2.199	1.521	0.031	0.620
Black	0.138	0.185	-0.016	0.315	0.266	0.171	-0.061	0.154	0.209	0.385	-0.168	0.150
Hispanic	-0.212	0.291	-0.383	0.495	-0.111	0.269	0.499*	0.205	-0.460	0.512	-0.258	0.199
Other	0.138	0.254	0.231	0.432	0.160	0.234	-0.029	0.143	0.672*	0.339	-0.142	0.139
wave	-0.103	0.125	0.003	0.214	0.092	0.115	0.030	0.100	-0.041	0.240	0.019	0.097
7th grade	-0.228	0.157	0.036	0.269	-0.102	0.145	-0.065	0.117	0.331	0.284	-0.103	0.114
8th grade	-0.305^	0.170	-0.136	0.290	-0.185	0.157	-0.167	0.135	-0.215	0.326	-0.050	0.131
Pubertal status	0.269	0.232	-0.092	0.400	0.095	0.214	-0.154	0.273	0.010	0.650	-0.030	0.266
Self-presentation	0.216	0.372	0.260	0.636	0.364	0.344	0.167	0.471	-0.288	1.117	0.123	0.458
Self-pres. X puberty	0.022	0.127	0.025	0.217	0.042	0.117	0.080	0.195	0.079	0.464	0.125	0.190

** $p < .01$, * $p < .05$, ^ $p < .10$

Table 23: The Moderating Effect of Pubertal Status Between Lurking and Adjustment

	Girls						Boys					
	Internalizing		**Prosocial support**		**Victimization**		**Internalizing**		**Prosocial support**		**Victimization**	
	B	**S.E.**	**B**	**S.E.**	**B**	**S.E.**	**B**	**S.E.**	**B**	**S.E.**	**B**	**S.E.**
(Constant)	1.661*	0.658	2.959*	1.149	0.410	0.649	1.756**	0.437	0.058	1.005	-0.507	0.430
Black	0.101	0.184	-0.044	0.318	0.212	0.181	-0.138	0.162	0.277	0.383	-0.237	0.159
Hispanic	-0.325	0.286	-0.529	0.492	-0.359	0.281	0.481*	0.212	-0.466	0.501	-0.275	0.209
Other	0.256	0.250	0.320	0.430	0.273	0.245	0.001	0.147	0.689*	0.329	-0.052	0.144
Wave	-0.152	0.123	-0.045	0.215	0.036	0.121	0.029	0.103	-0.046	0.234	-0.016	0.101
7th grade	-0.341*	0.157	-0.055	0.272	-0.284^	0.154	-0.037	0.125	0.189	0.284	-0.128	0.122
8th grade	-0.381*	0.170	-0.177	0.294	-0.312^	0.167	-0.159	0.142	-0.407	0.324	-0.069	0.139
Pubertal status	0.027	0.236	-0.266	0.410	-0.059	0.232	-0.132	0.189	0.697	0.432	0.369*	0.186
Lurking	-0.085	0.187	-0.069	0.331	-0.069	0.184	-0.028	0.144	0.696*	0.326	0.250^	0.141
Lurking X puberty	0.076	0.063	0.060	0.110	0.075	0.061	0.032	0.058	-0.219^	0.131	-0.081	0.057

$** p < .01, * p < .05, ^ p < .10$

Table 24: The Moderating Effect of Pubertal Status Between Social Monitoring and Adjustment

	Girls						Boys					
	Internalizing		**Prosocial support**		**Victimization**		**Internalizing**		**Prosocial support**		**Victimization**	
	B	**S.E.**	**B**	**S.E.**	**B**	**S.E.**	**B**	**S.E.**	**B**	**S.E.**	**B**	**S.E.**
Constant	1.889**	0.571	2.079*	0.988	0.787	0.551	1.600**	0.417	1.544	0.973	-0.594	0.408
Black	0.133	0.184	-0.009	0.316	0.257	0.176	-0.118	0.158	0.252	0.384	-0.256^	0.155
Hispanic	-0.149	0.295	-0.365	0.505	-0.067	0.282	0.538*	0.212	-0.387	0.515	-0.209	0.208
Other	0.228	0.250	0.306	0.428	0.285	0.239	0.017	0.147	0.667*	0.337	-0.024	0.144
Wave	-0.064	0.124	0.032	0.214	0.146	0.119	0.043	0.104	-0.019	0.242	-0.009	0.102
7th grade	-0.262^	0.156	-0.012	0.269	-0.169	0.150	-0.050	0.122	0.299	0.284	-0.116	0.119
8th grade	-0.297^	0.170	-0.111	0.293	-0.179	0.163	-0.163	0.139	-0.27	0.326	-0.055	0.136
Pubertal status	-0.037	0.206	0.019	0.355	-0.241	0.198	-0.072	0.178	0.165	0.413	0.394*	0.174
Social monitoring	-0.265	0.214	0.238	0.371	-0.286	0.206	0.030	0.185	0.147	0.426	0.382*	0.181
Soc. mon. X puberty	0.141^	0.073	-0.030	0.126	0.172*	0.070	0.020	0.076	-0.024	0.174	-0.123^	0.074

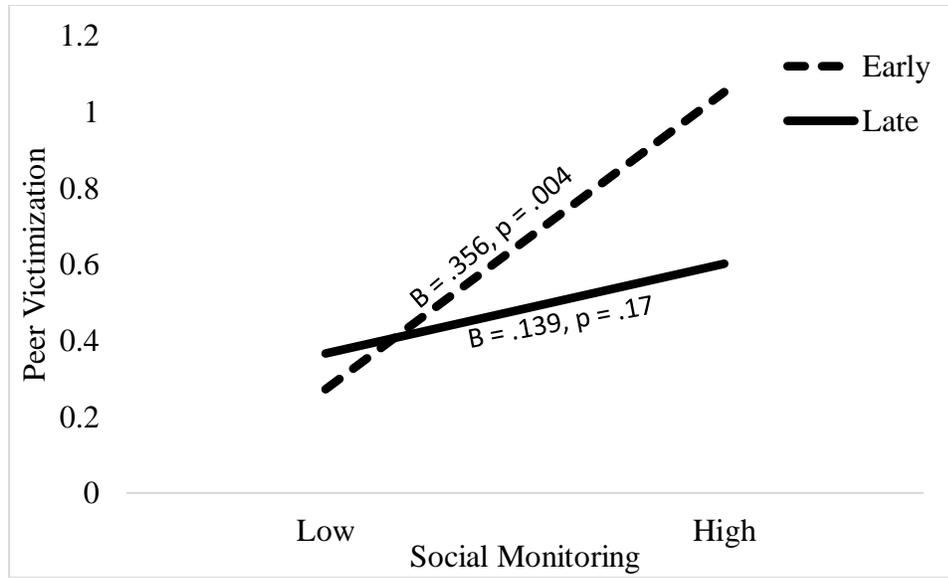$** p < .01, * p < .05, ^ p < .10$

Figure 8. Interaction Effect of Social Monitoring and Pubertal Status on Girls' Peer Victimization

CHAPTER 4: DISCUSSION

This study considered individual differences and adjustment outcomes associated with four specific social media behaviors (self-disclosure, self-presentation, lurking, and social monitoring) and two measures of social media engagement (frequency of social media use, number of hours spent on social media) among adolescents. Participants reported spending an average of 3.97 hours a day on social media when not in school, and engaged in more passive social media behaviors (lurking and social monitoring) than active ones (self-disclosure and self-presentation).

There were three major goals of this study: 1) to assess individual factors associated with adolescents' social media engagement, 2) to examine both positive (peer prosocial support) and negative (peer victimization and internalizing) outcomes of social media engagement, and 3) to examine the moderating role of pubertal status in the relationship between social media engagement and adjustment outcomes. The following sections detail the findings from each research question.

Research Question 1: Individual Factors Associated with Adolescents' Social Media Engagement

Hypothesis 1a: Older adolescents will use more social media than younger adolescents.

Hypothesis 1a was partially supported: grade-level differences were found for three of the six forms of social media engagement: self-disclosure, lurking, and the frequency of social media use. Specifically, eighth graders reported more self-disclosure and frequency of social media use, and both seventh and eighth graders reported more lurking compared to sixth graders. The other engagement indices (i.e., self-presentation,

social monitoring, and hours spent on social media) failed to show significant grade-level differences, although most of the patterns were consistent with hypothesis 1a.

I had expected that the prolonged exposure to sexual hormone activation among older adolescents would result in increased motivations towards social goals (Forbes & Dahl, 2010), increasing the frequency of social media engagement. However, the lack of grade-level differences in half of the social media engagement indices suggest that factors other than reproductive hormones are at work in understanding adolescents' social media engagement. Instead, consistent with Sullivan's interpersonal theory (1953), the increase in social media engagement across grade-levels may be due to the shift in developmental tasks during the transition from childhood to adolescence. Social media engagement may be a way to work towards completing the primary developmental tasks of adolescence: 1) increasing peer acceptance and intimacy in relationships, 2) developing self/identity, and 3) exploring sexuality (Erikson, 1950, 1968; Borca et al., 2015; Sullivan, 1953; Valkenburg & Peter; 2011). However, there were only significant grade-level differences in three of the six forms of social media engagement, suggesting that some forms of social media engagement may be more effective than others in helping adolescents fulfill the developmental needs of the time period.

There were no grade-level differences in self-presentation. Self-presentation involves tweaking and curating one's image to present a certain persona to the peer group (Valkenberg et al., 2006; 2011). While there may be some advantages to a highly curated social media presence (e.g., increasing peer acceptance by allowing the adolescent to present themselves in ways that fit in with the existing peer group), there is also the risk of being perceived as fake. The lack of grade-level differences in self-presentation

suggests that adolescents may not find the risk work taking. In fact, self-presentation had the lowest mean rates of all the social media behaviors, suggesting that it is not a strategy adolescents utilize often.

There were no grade-level differences in social monitoring, although both seventh and eighth grade adolescents reported more lurking than sixth graders. Lurking and social monitoring are both passive social media behaviors, the crucial difference being intention – lurking is purposeless (e.g., browsing news feeds) while social monitoring is intentional (e.g., checking how one's own posts were received). Regardless of grade, lurking was the most endorsed social media behavior, suggesting that nonintentional scrolling through social media content is common among adolescents. It is not surprising that lurking increased across grade-levels: as adolescents become more interested in the behaviors of their peers, it follows that they will spend more time observing them. In line with Sullivan's interpersonal theory (1953), observing peer behavior through lurking may allow the adolescent to "research" accepted behaviors within their social environment, thus increasing peer acceptance and identity development. In contrast, social monitoring refers to deliberately checking one's own social media pages for peer attention which may not help increase acceptance or intimacy.

The frequency of social media use showed significant grade-level differences, although the number of hours reported did not. The increase in frequency was expected: as adolescents become more aware of and motivated by social goals, they should increasingly feel the need to stay in touch with the social environment (Underwood & Faris, 2015). The mean score for social media frequency was 5.59, which falls between "a few times a day" and "once an hour" on the Likert-scale measure, suggesting that

adolescents are checking their social media profiles often, likely for only short periods at a time. Conversely, the number of hours adolescents report spending on social media represents the total, cumulative amount of time they spend on social media sites. Frequent, short-lived "check-ins" may be developmentally appropriate as they fulfill the need to stay connected, whereas spending large chunks of time on social media may be indicative of maladjustment such as loneliness or social anxiety.

Hypothesis 1b: Girls will engage in more social media use than boys

Consistent with hypothesis 1b and previous literature (e.g., Anderson & Jiang, 2018; Rideout et al., 2010), I found clear gender differences in social media use: girls engaged more in of five of the six social media engagement indices than boys (except the number of hours spent on social media). However, these gender differences were consistent across all three grade levels, there were no significant gender by grade-level interaction effects.

I had expected to see gender differences in social media engagement as a result of the activation of social goals consistent with the onset of puberty (Forbes & Dahl, 2010). These patterns were consistent with an activation theory approach – girls reported more social media engagement than boys. However, this pattern can also be explained by alternative possibilities, such as gender differences in interpersonal relationships. Social media is primarily used for peer communication (Subrahmanyam & Greenfield, 2008). Peer connections are especially important to girls, who demonstrate stronger investments in peer relationships, are more emotionally invested in friendships, and place higher value on interpersonal relationships compared to boys (Lagerspetz, Bjorkqvist, & Peltonen, 1988; Maccoby & Jacklin, 1974). This is corroborated by a significant correlation such

that girls reported higher acceptance goal than boys. Overall, my findings suggest that girls use more social media than boys, which may be explained by biological (e.g., hormone exposure) and/or social (e.g., interpersonal relationship goals) factors, but there was no evidence for the role of hormone activation.

Hypothesis 1c: Adolescents who entered puberty early compared to their peers will use more social media (sixth grade girls, eighth grade boys)

Contrary to hypothesis 1c, there was no main effect of pubertal status on any of the forms of social media engagement for either boys or girls, suggesting that when an adolescent enters puberty is not related to their social media engagement. Only one significant pubertal status by grade-level interaction effect was observed, which was sixth grade boys' engagement in lurking behaviors. However, the pattern of this interaction effect was not consistent with hypotheses: there was no difference in lurking among early or late maturing eighth graders. Instead, late maturing sixth grade boys engaged in more lurking than their early maturing peers.

Hormone activation theory was the basis for hypothesis 1c: I had expected the onset of puberty to activate motivations towards goal-driven behaviors (social media). Thus, early developers who were under the influence of reproductive hormones once activation begins should have experienced stronger motivations towards social goals, subsequently increasing their goal-driven behaviors (Forbes & Dahl, 2010). Using this logic, early developers should have reported more social media engagement than their later developing peers. However, the overall lack of pubertal status by grade-level interaction effects provide no support for hormone activation theory. Once again, the

alternate explanation is likely a social one: adolescents are motivated to use social media to fulfill their developmental tasks, regardless of pubertal hormones (Sullivan, 1953).

Hypotheses 1a-1c suggest that motivations for social media engagement may be more social than biological. My findings offer no evidence for hormone activation theory; instead, the evidence for motivations in adolescent social media behaviors points towards gender differences in interpersonal relationships, as well as the ability for social media engagement to aid in achieving the developmental goals of adolescence.

Hypothesis 1d: Adolescents with high popularity goals will engage in more self-presentation and social monitoring, those with high acceptance goals will engage in more self-disclosure

The first part of hypothesis 1d was supported: as predicted, there were positive associations between popularity goal and both self-presentation and social monitoring which remained after controlling for the other forms of social media engagement. I had reasoned that self-presentation and social monitoring would help adolescents achieve popularity goals as both behaviors involve concern with one's social image. During early adolescence, popularity goal is prioritized over other social goals (e.g., friendship goals, academic goals; Lafontana & Cillessen, 2010). Both self-presentation and social monitoring are social media behaviors likely to work towards popularity goals by allowing adolescents to present a carefully curated image which in turn may help increase their status. However, exploratory analyses revealed a pattern of gender differences in these relationships; the associations between popularity goal and both self-presentation and social monitoring were stronger for girls. Concern about social image may be more

relevant to girls than boys, making self-presentation and social monitoring effective strategies for girls to increase their social status.

The second part of hypothesis 1d was partially supported: self-disclosure was associated with acceptance goal, but the association dropped below significance after the other forms of social media engagement were added to the model. I had expected adolescents with higher acceptance goals to engage in more self-disclosure, a social media behavior targeted at sharing and connecting with friends (Buhrmester et al., 1988; Camarena et al., 1990; McNelles & Connolly, 1999; Simpkins et al., 2006; Reisman, 1990; & Rose, 2002). However, these findings indicate that looking solely at how much adolescents disclose on social media may not present a complete picture of adolescents' acceptance goals.

There is high overlap between forms of social media engagement, and they are not mutually exclusive. My findings suggest that social media behaviors other than self-disclosure may be the driving force behind promoting friendships. In fact, I found an unexpected positive association between acceptance goal and social monitoring after controlling for the other social media behaviors. Perhaps by monitoring the social environment and staying up to date on peer activities, adolescents with high acceptance goals can create connections with other peers or identify people with whom they want to connect. They may then use the information gleaned from social monitoring to connect with specific peers, possibly via targeted or private self-disclosure. In other words, perhaps it is not only the disclosure that creates peer bonding. The process of identifying a peer with whom one feels a connection or wishes to become friends with may be even more important for adolescents with high acceptance goals.

There was also an unexpected trend of acceptance goal being negatively associated with self-presentation. One possible explanation is that adolescents (both boys and girls) with higher acceptance goals may be both aware of and sensitive to the risks of image curation leading to being perceived as fake or ingenuine by peers. Another explanation is that self-presentation is a behavior targeted at impressing one's peers, which may distance an adolescent from their peers and be nonconductive to deepening peer bonding or relationships.

These data revealed gender differences in the association between popularity goals and social media behaviors. Namely, girls with high popularity goals used more social monitoring and self-presentation, both social media behaviors aimed at image curation and maintenance. This suggests that these social media behaviors may function as goal-driven behaviors for girls to help increase their social status. Gender norms on social media mimic those offline; thus, it is unsurprising that girls are more concerned than boys about their social image and how they are portrayed to others (Haferkamp, Eimler, Papadakis, & Kruck, 2012). Additionally, in line with traditional gender norms, image curation may be more socially acceptable for girls than boys, rendering it a more effective status enhancing strategy for girls.

Overall, my findings suggest that social media can function as goal driven behaviors for adolescents, although the associations vary by the type of behavior, goal, and gender. Girls with high popularity goals may utilize social media behaviors aimed at image curation and monitoring social information to help increase their status, although this strategy may not be as effective for boys who wish to increase their status. Regardless of gender, adolescents with higher acceptance goals may carefully analyze the

social landscape to identify peers with whom they want to connect (social monitoring), while avoiding engaging in behaviors that may be perceived as "fake" (self-presentation). Both popularity (although stronger for girls) and acceptance goals were positively associated with social monitoring, indicating doing "research" into the social landscape may be a particularly effective goal-driven behavior.

Hypothesis 1e: Popularity goal will mediate the relationship between pubertal status and self-presentation and social monitoring. Acceptance goal will mediate the relationship between pubertal status and self-disclosure.

Hypothesis 1e was not supported; there was no direct link between pubertal status and social media engagement for either boys or girls, therefore it was not meaningful to test the mediation model. However, the associations among the three constructs were different for boys and girls. For boys, there was no link between pubertal status and social goals, but both goals were associated with social monitoring. For girls, pubertal status was correlated with popularity goal, and goals were associated with self-presentation (popularity goal) and social monitoring (popularity and acceptance goal).

I had expected pubertal hormones to increase motivation towards social goals (Forbes & Dahl, 2010), which in turn would result in an increase in social media engagement as a goal-driven behavior. Although both links were present and in the expected direction for girls, there was no direct association between pubertal status and social media engagement. This suggests that the mechanisms explaining these associations may be independent of each other and may not add up to a direct effect. In other words, although pubertal status was linked to popularity goal, and popularity goal was linked to some social media behaviors, the lack of a direct link between pubertal

status and social media engagement indicates that girls' popularity goals have an effect on social media engagement that is independent from pubertal hormones.

For boys, there was no association between pubertal status and social goals, but both goals were associated with social monitoring. Boys' pubertal onset does not fully unfold until around age 14 (Mendle et al., 2012). The mean age of this sample was 12.91, making it possible that this sample did not capture the full spectrum of boys' pubertal status – there may not have been enough variation to detect individual differences. Perhaps the activation towards motivational tendencies that occur after the onset of reproductive hormones has not occurred yet for these boys (Forbes & Dahl, 2010).

In conjunction with my findings from hypothesis 1c, these data do not support a hormone activation theory approach, instead pointing towards social and contextual explanations. For example, during the transition from elementary to middle school, adolescents are exposed to many new peers and experience a social reshuffling (Farmer, Hamm, Leung, Lambert, & Gravelle, 2011; Pellegrini, 2002). This reshuffling results in an increased salience of the social hierarchy as adolescents become increasingly aware of and concerned with the popularity of themselves and their peers (Adler & Adler, 1998). As adolescents enter middle school, encounter new peers, and become more concerned with status they may begin to utilize social media behaviors aimed at increasing their popularity (e.g., self-presentation for girls; social monitoring for boys and girls) regardless of pubertal hormones.

Research Question 2: Associations Between Social Media Engagement and

Adolescent Adjustment Outcomes

Hypothesis 2a: Time spent online will be positively associated with internalizing

problems, prosocial support, and peer victimization

I measured adolescents' social media engagement in two ways: frequency of engagement and the number of hours spent on social media on a typical day. These two measures yielded different findings in terms of adolescents' adjustment outcomes, so I will discuss them separately.

Hours on social media. Using the number of hours spent on social media as the index of time, hypothesis 2a was partially supported in the univariate models. As expected, spending time on social media was positively associated with peer victimization (for girls) and internalizing problems. Contrary to predictions, spending time on social media was not associated with prosocial support. However, once all the other forms of social media engagement were entered into the model, hours on social media was no longer associated with any adjustment outcomes.

These findings suggest that the association between spending time on social media and adjustment outcomes may not be a direct one. In fact, researchers have posited that spending large amounts of time online may promote negative outcomes through a variety of mechanisms, such as the perception of wasting time (Sagioglou & Greitemeyer, 2014), fear of missing out (FOMO; Hunt, Marx, Lipson, & Young, 2018), and detraction from other important and constructive activities such as self-reflection, day dreaming, problem-solving, and reading (Underwood & Ehrenreich, 2017). Assessing the amount of time adolescents spend on social media is likely not an adequate way to

measure social media experiences; rather, what adolescents spend that time doing may be a better indication of the potential for adjustment outcomes.

Frequency of social media. Using frequency of social media engagement as the index for time, hypothesis 2a was again partially supported in the univariate models. In line with predictions, the frequency of social media engagement was positively associated with prosocial support and peer victimization (for girls). Contrary to predictions, it was not associated with internalizing problems. However, after controlling for the other social media engagement indices, the frequency of social media use was no longer associated with peer victimization and was negatively associated with internalizing, whereas the positive association with prosocial support remained in the simultaneous model.

These findings add further evidence to the idea that measures of social media engagement (e.g., time, frequency) alone are insufficient in understanding social media experiences. Instead, we must consider the behaviors adolescents engage in while they are using social media. For example, once the other behaviors were accounted for, the association with peer victimization dropped below significance: suggesting that specific behavior(s) utilized while checking social media may be the driving force behind experience peer victimization, rather than the checking itself.

In both the univariate and simultaneous models, a higher frequency of social media usage was associated with more prosocial support. Adolescents who "check in" more often on social media may experience greater feelings of connectedness and involvement with their peers. This can also explain the negative association with internalizing in the simultaneous model: higher levels of peer support are associated with less internalizing problems such as anxiety and depression (Holt & Espelage, 2007).

Hypothesis 2b: Self-disclosure will be negatively associated with internalizing problems

and positively associated with peer victimization and prosocial support.

Hypothesis 2b was partially supported in the univariate models. As expected, self-disclosure was positively associated with prosocial support and victimization. Contrary to predictions, self-disclosure was positively associated with internalizing problems. After controlling for the other social media engagement indices, the associations between self-disclosure and both internalizing problems and prosocial support dropped below significance. The positive association between self-disclosure and victimization remained in the simultaneous model, although it was only significant for girls.

The positive association between self-disclosure and peer victimization in both the univariate and simultaneous models is consistent with previous research suggesting that posting personal information on social media increases vulnerability to negative feedback such as cybervictimization (Dredge et al., 2014; Peluchette et al., 2015). That this association remained after controlling for all the other forms of social media engagement provides strong evidence that self-disclosing content on social media imposes risks for peer victimization. In this study, I was unable to nuance the specific content the adolescent disclosed. However, some researchers have suggested that the type of content disclosed may be relevant in understanding peer victimization. For example, posting indiscreet or negative content was found to predict cybervictimization (Dredge et al., 2014; Peluchette et al., 2015). Future research should continue to examine adjustment outcomes associated with specific content adolescents self-disclose on social media.

Self-disclosure was only associated with peer victimization for girls. These gender differences may be related to the specific self-disclosed content. I used a

composite measure of self-disclosure; however, researchers have noted gender

differences in the content adolescents post on social media. Girls tend to make more

provocative posts than boys, such as sexualized pictures (e.g., suggestive clothing;

Manago, Graham, Greenfield, & Salimkhan, 2008; Willem, Araüna, Crescenzi, &

Tortajada, 2012). A content analysis of teen chatroom profile images found similar

results: girls posted images with more suggestive gaze and dress than boys (Kapidzic &

Herring, 2011). Taken together with research finding posting indiscreet or provocative

content (e.g., sexually suggestive comments or photos) to be a strong predictor of

cybervictimization (Peluchette et al., 2015), these findings suggest that the content of

girls' self-disclosure may leave them more vulnerable to peer victimization than boys.

Self-disclosure was associated with prosocial support in the univariate models,

but not in the simultaneous model. I had expected self-disclosure to allow for the receipt

of prosocial support through a sense of peer connectedness and belonging (Buhrmester &

Prager, 1995; Tichon & Shapiro, 2003), which was only observed when self-disclosure

was examined independently. One possible explanation concerns the distinction between

bonding and support – while self-disclosure may increase peer bonds and connections,

this may not translate into receiving prosocial support from peers when other social

media engagement indices are considered simultaneously.

Inconsistent with hypothesis 2b, self-disclosure was *positively* associated with

internalizing problems in the univariate model, although this association was not

observed in the simultaneous model. I had expected self-disclosure to result in feelings of

connection and belonging among peers, resulting in a negative association with

internalizing problems (Buhrmester & Prager, 1995; Tichon & Shapiro, 2003;

Valkenburg et al., 2011). However, given that self-disclosure appears to be a strong

factor behind peer victimization, perhaps the increase in internalizing problems may

occur via negative peer feedback following self-disclosure of personal information. Once

the other social media engagement indices were controlled; however, this association

vanished, suggesting that the positive association between self-disclosure and

internalizing problems may be a result of overlap between social media behaviors.

Hypothesis 2c: There will be a curvilinear relationship between self-presentation and

adjustment outcomes. Very high and very low levels of self-presentation will be

associated with less prosocial support, and more peer victimization and internalizing

problems. Moderate levels of self-presentation will be associated with more prosocial

support, and less peer victimization and internalizing problems.

Hypothesis 2c was not supported. There were no curvilinear effects of self-

presentation on any of the outcome variables. After the quadratic effects were removed

from subsequent analyses, self-presentation was positively associated with internalizing

and peer victimization in the univariate models. In the simultaneous models, self-

presentation was positively associated with all three outcomes.

I had expected that both high and low self-presentation would be maladaptive.

Too much image curation and selectivity of posting can make adolescents look fake,

while too little may involve posting unfavorable content which could increase the risk of

peer victimization (Peluchette et al., 2015). On the other hand, I had expected a moderate

amount of self-presentation to promote positive adjustment outcomes by allowing the

adolescent to selectively post and curate just enough to decrease the risk for victimization

and subsequent internalizing while still appearing genuine (increasing prosocial support).

Although there were no significant curvilinear effects, my rationale was partially supported in the linear models for high self-presentation. As expected, high self-presentation was associated with more internalizing problems and peer victimization in both the univariate and simultaneous models. It should be noted that these patterns could result from a reversed direction of effects: victims may engage in more self-presentation as they attempt to shape their image into something that will make them less vulnerable to future victimization. Similarly, adolescents with internalizing problems may curate their online image to seek attention for their internalizing or to portray the image that everything is fine.

On the other side of the spectrum and contrary to my expectations, low self-presentation was associated with less peer victimization and internalizing problems. Perhaps adolescents who do not engage in much self-presentation simply post less information, minimizing the need to curate. In fact, self-presentation and self-disclosure were highly correlated ($r = .57$), suggesting that the two constructs are strongly related. This may also explain lower levels of internalizing problems, adolescents who do not experience negative peer feedback may have no catalyst for experiencing internalizing problems. These effects may also run in the other direction: adolescents who do not experience peer victimization or internalizing problems may see no need to curate their social media content.

I had also reasoned that engaging in minimal selectivity and curation of social media content (low self-presentation) would result in less support from peers, which was supported in the simultaneous model. Low self-presentation may decrease the adolescent's visibility in the peer network. While this can be beneficial (e.g., decreasing

peer victimization), it may also mean that the adolescent has less opportunity to receive support from their peers.

Finally, I had also expected high self-presentation to be associated with less prosocial support; however, the simultaneous model revealed the opposite pattern. I had reasoned that adolescents who post very selectively and actively curate their social media images would be viewed as fake by their peers, decreasing the amount of peer support they receive. One possible explanation for these unexpected findings is that since high self-presentation is associated with more victimization and loneliness; these adolescents may then post selective information aimed at eliciting peer support to cope with their experience of victimization and internalizing problems.

Hypothesis 2d: Lurking will be positively associated with internalizing problems and will not be associated with social support or peer victimization.

Hypothesis 2d was partially supported in the univariate models. As expected, lurking was positively associated with internalizing problems. However, contrary to predictions, lurking was also positively associated with prosocial support and peer victimization. After controlling for all the other social media engagement indices, the associations between lurking and both prosocial support and peer victimization dropped below significance. The positive association with internalizing problems remained in the simultaneous models, although it was only significant for girls.

The positive association between lurking and internalizing problems in both the univariate and simultaneous models is consistent with my predictions and previous literature suggesting that lurking may lead to internalizing problems (Underwood & Ehrenreich, 2017). Through lurking, adolescents can engage in self-comparison, which

may result in internalizing problems such as feeling like they do not measure up. Underwood and Ehrenreich (2017) point out that what adolescents see on their peers' social media pages consists of "highly groomed, sanitized, positive representations of their lives and social activities" (p. 150). This association remained significant after controlling for the other forms of social media engagement, providing strong evidence that lurking on social media can impose risks for internalizing problems.

Lurking was only associated with internalizing problems for girls. Lurking allows adolescents to obtain social information, although it remains unclear whether there are gender differences in the sought-after information. On the one hand, boys and girls may be searching for the same information. Adolescence is a time of immense physical change for both boys and girls (Steinberg, 2010), resulting in concerns about body image (Jones, 2001). Therefore, it is possible that adolescents, regardless of gender, are lurking to obtain information about their peers' bodies in order to compare them to their own. However, researchers have found a stronger association between body image concerns and internalizing problems for girls compared to boys (Haferkamp et al., 2012), so lurking to obtain and compare information about body image may have a greater impact on internalizing problems for girls.

On the other hand, boys and girls may be lurking to obtain different social information. Given that girls are more concerned than boys with body image, self-image, and how they are perceived by others (e.g., Haferkamp et al., 2012; Marcotte, Fortin, Potvin, & Papillon, 2002), girls may lurk to seek information about their image while boys may be searching for other information. This may be reflected by gender differences in the use of social media platforms. For example, girls are more likely to use sites such

as Facebook and Twitter which promote interaction and sharing, while boys are more likely to use multi-player video games (e.g., Fortnite, Xbox live) involving gaming strategies and activity (Anderson & Jiang, 2018; Herring & Kapidzic, 2015; Lenhart et al., 2015). Perhaps while girls are lurking to compare themselves to their peers and finding themselves lacking, boys are lurking to determine which peers are playing specific games, which would likely not be associated with internalizing problems.

Additionally, the reverse direction of this effect must be considered. Girls with high internalizing problems may engage in more lurking to try to stay connected with peers or reduce their loneliness. For example, girls are more likely to use social media platforms aimed at peer interaction (Anderson & Jiang, 2018), so a lonely girl may find lurking to be an effective strategy for reducing their loneliness. On the other hand, boys are more likely to use social media to play video games (Anderson & Jiang, 2018), so a lonely boy may use other social media behaviors (e.g., trying to connect with peers via video games) which do not constitute lurking.

Hypothesis 2e: Social monitoring will be positively associated with internalizing problems and peer victimization and will be negatively related to social support.

Hypothesis 2e was partially supported in the univariate models. As expected, social monitoring was positively associated with internalizing problems and peer victimization in the univariate models; however, both associations dropped below significance after controlling for all the other social media engagement indices. Neither the univariate nor the simultaneous models indicated an association with prosocial support, although I had expected to see a negative association.

I had expected selective examination of peers' social media content (i.e., social monitoring) to lead to feelings of exclusion, resulting in internalizing (e.g., depression) and perceptions of victimization. Although there have been no empirical studies on "social monitoring" specifically, research has found that constructs similar to my definition of social monitoring allow adolescents to learn they were left out of activities, fostering feelings of exclusion and rejection (Lenhart et al., 2015).

While it could be that the effects were in the predicted direction (social monitoring leading to peer victimization and internalizing problems), it is also possible that internalizing problems or previous victimization could lead to social monitoring. Adolescents with internalizing problems (e.g., anxiety, loneliness) or who have been victimized before may constantly worry about being excluded, prompting more social monitoring to ensure they are not being excluded. In fact, Underwood and Faris (2015) found that 36% of adolescents specifically checked social media to see if their friends were doing things without them, and 21% reported checking social media to make sure no one was saying mean things about them. While they refer to this as lurking, it is more consistent with my measure of social monitoring, given that it involves intentionally checking peers' social media. Underwood and Faris's (2015) paper also involved correlational analyses, so the direction of the relationship between lurking and internalizing problems and peer victimization warrants further experimental assessment.

Once all the other social media engagement indices were controlled, the positive associations between social monitoring and internalizing problems and victimization dropped below significance. The lack of these associations in the simultaneous models suggests that they may have been due to overlap with other forms of social media

engagement. For example, social monitoring is very closely related to lurking ($r = .59$), which was positively associated with internalizing in the simultaneous model. Perhaps stumbling upon an instance of exclusion by accident (lurking) is more harmful than checking a peers' page because you suspected you might have been excluded (social monitoring). Social monitoring was also not associated with peer victimization in the simultaneous model. Although social monitoring may allow for feelings of rejection or exclusion, these patterns suggest that the active behaviors (self-disclosure and self-presentation) are primarily responsible for peer victimization (as evidenced by the fact that these were the only social media engagement indices associated with peer victimization in the simultaneous model).

I had also predicted that social monitoring would be negatively related to peer social support; however, this relationship was not observed in either the univariate or the simultaneous models. I had expected adolescents who engaged in high social monitoring to see things on social media that made them feel rejected or isolated, leading to feeling unsupported by peers. Although adolescents may use social monitoring to see if they are being excluded (Underwood & Faris, 2015), it can also be a strategy to check for positive responses. In fact, 61% of adolescents reported checking social media to see if their posts are getting likes and comments (Underwood & Faris, 2015). Just as using social monitoring to learn about exclusion may not translate into feelings of experienced victimization, monitoring receiving likes and comments on posts may not translate into feeling supported by peers.

Research Question 3. The Moderating Role of Pubertal Status in the Association Between Social Media Behaviors and Adjustment Outcomes

Hypothesis 3: Pubertal status will moderate the relationship between overt social media behaviors and adjustment outcomes, such that early developers who engage in more self-disclosure and self-presentation will experience more peer victimization and internalizing problems and less social support. I do not expect a moderating effect of pubertal status on adjustment outcomes for lurking or social monitoring.

Hypothesis 3 was not supported; pubertal status did not moderate the association between self-disclosure or self-presentation and adjustment outcomes for boys or girls. I had reasoned that early developers would experience the activation of motivational tendencies (hormone activation theory; Forbes & Dahl, 2010) before their self-control and self-regulation abilities developed sufficiently (dual systems theory; Steinberg, 2010) for them to act on these new desires in socially appropriate ways. Therefore, I posited that early developers would use self-disclosure and self-presentation (behaviors visible to peers) as goal driven behaviors but would do so in imprudent ways given their underdeveloped cognitive control systems, thus resulting in worse adjustment outcomes. In contrast, results suggest that the cognitive control system in relation to puberty-induced social goals may not be critical in influencing how adolescents engage with social media. Instead, it may be the ability to gauge the social appropriateness of content which impacts adjustment outcomes associated with social media engagement. Future research should consider factors such as social savvy and understanding of the social environment in the association between social media engagement and adjustment outcomes.

I did not expect a moderating effect of pubertal status on the association between covert social media behaviors (lurking and social monitoring) and adjustment outcomes. However, for early developing girls, social monitoring was positively associated with peer victimization. One explanation for this unexpected finding could be that early developing girls may experience more peer victimization, leading to increased social monitoring. Girls who enter puberty early are at heightened risk for peer victimization, perhaps because their physical development makes them stand out from their peers (Nadeem & Graham, 2005). As discussed in hypothesis 2e, peer victimization may increase social monitoring as the adolescent constantly checks to make sure they are not being excluded (Underwood & Faris, 2015).

Strengths and Limitations

Despite a growing understanding of the developmental importance of social media use during adolescence (e.g., Anderson & Jiang, 2018; Lenhart, 2015; Subrahmanam & Greenfield, 2008; Uhls et al., 2017), much remains unknown. This study provides a unique opportunity to better understand individual differences that motivate adolescent social media behaviors, as well as some associated adjustment outcomes. One major strength of this study includes the identification and analysis of four social media behaviors (self-disclosure, self-presentation, social monitoring, and lurking) and two measures of social media engagement (number of hours on social media and the frequency of social media use). To my knowledge, this is the first study to directly compare and contrast several forms of social media engagement.

Additionally, the simultaneous examination of six social media engagement indices provides a better understanding of the unique contribution of each engagement

index on three adjustment outcomes common among adolescents: internalizing problems, prosocial support, and peer victimization. The current study also contributes a deeper understanding of some individual differences in social media use; specifically, the role of two factors commonly identified as critical in adolescent development: pubertal status and social goals (popularity goal and acceptance goal).

Despite these strengths, a few limitations warrant further discussion. First, the cross-sectional nature of the study precludes directional conclusions. Thus, it is often unclear whether social media engagement leads to the proposed outcome or vice versa. Future longitudinal and experimental research is needed to clarify the direction of influence. Another limitation is the use of solely self-reported data. Self-report data is a common and useful way to assess adolescents' experiences (i.e., internalizing problems). However, since the measures of social media engagement and adjustment outcomes were both from self-reports, the associations might be overestimated. Future research should use a multi-methods approach to consider these (and other) research questions. Additionally, findings from this study should be generalized with caution as data were collected from one middle school with a 30% participation rate.

This study did not distinguish between different social media platforms (e.g., Twitter, Snapchat); rather, I used broad and inclusive language to encompass the wide range of social media sites adolescents use. However, the platforms have unique functions, which may appeal differently to boys and girls. For example, girls are more likely to use sites such as Facebook and Twitter which promote interaction and sharing, while boys are more likely to use multi-player video games (e.g., Fortnite, Xbox live) which involve gaming strategies and activity (Anderson & Jiang, 2018; Herring &

Kapidzic, 2015; Lenhart et al., 2015). The associations between social media behaviors and adjustment outcomes were stronger for girls, which may be due to gender differences in platform usage. For example, girls' disclosure of provocative content via Twitter may encourage negative peer feedback (e.g., peer victimization), while boys' playing Fortnite may not. Future research should examine the role of different social media platforms in the association between social media engagement and adjustment outcomes. We were also unable to examine the content some of the social media behaviors examined in this study. For example, it was not clear from our measure of self-disclosure what specific content was being disclosed. Given that the type of content disclosed may be relevant in adjustment (e.g., provocative posts predicting peer victimization, Peluchette et al., 2015), this is an important area for future research.

Future Directions

This study provides an important foundation for future research exploring the role of social media engagement on adjustment outcomes among adolescents. Nuancing social media behaviors can further our understanding of how social media engagement can alter adjustment trajectories. Findings suggest that self-disclosure, self-presentation, social monitoring, and lurking are distinct behaviors, which are in turn distinct from the amount of time adolescents spend on social media. Future research would benefit from longitudinal and observational assessment of adolescents' social media behaviors and associated outcomes to better understand the role of these behaviors in predicting adjustment outcomes. This information may then be implemented in intervention efforts through which parents and educators can help adolescents use social media in safer ways.

Another important area for future research is the potential for moderating factors in the relationship between social media behaviors and adjustment. This study considered pubertal status as a moderator in the association between social media engagement and outcomes; however, other behavioral and personality characteristics (e.g., self-esteem, rejection sensitivity, social savvy, social status) likely play an important moderating role in these associations. In addition, contextual influences on adolescent social media engagement should be examined. My findings suggest that social media engagement is not a function of biological or hormonal processes; instead, social and contextual factors may be the driving force behind adolescents' social media use. I examined two individual differences in social media engagement (social goals, pubertal status). However, peers and parents are among the strongest influences on adolescent behavior (Sullivan, 1953; Bandura, 1962); so future research should examine contextual factors such as the role of parental and peer influence in social media engagement.

Finally, social monitoring is a new construct that does not yet have any empirical evidence. My findings suggest that it is a distinct construct that functions uniquely as a goal-driven behavior. Both popularity goal (primarily for girls) and acceptance goal were associated with social monitoring, suggesting that selectively researching peers' social media pages is important in promoting both social status and peer bonding. However, social monitoring was not associated with any adjustment outcomes after controlling for the other social media engagement indices. Thus, this new construct represents an interesting and potentially adaptive goal-driven behavior that can help adolescents work towards their social goals with minimal risk of consequences. Future research should continue to examine the role of social monitoring as a unique social media behavior.

Summary and Conclusions

This study indicates that adolescents engage in various social media behaviors. Adolescents reported engaging in more passive (lurking and social monitoring) than active (self-disclosure and self-presentation) social media behaviors. There were some important gender and grade-level differences; girls and older adolescents reported more social media engagement. My findings also suggest that some social media behaviors (e.g., social monitoring) may be motivated by social goals important during adolescence (e.g., popularity goal).

Social media engagement may be positively or negatively associated with adolescents' adjustment, depending on the specific behavior(s). Contrary to previous literature, time spent on social media was not associated with adjustment outcomes after accounting for all the other behaviors, suggesting the importance of investigating what adolescents are doing with their time online. Unexpectedly, the frequency of social media use (a measure less often considered in the literature) appeared to be associated with more adaptive adjustment after controlling for the other social media engagement indices. Self-presentation may function as a double-edge sword, both promoting peer acceptance and support but also increasing the risk for victimization and internalizing outcomes.

My findings also suggest that the association between social media engagement and adolescent adjustment may be stronger for girls than boys. However, this may again depend on the platform(s) they are engaging with (which was not examined in this study). Finally, I found little evidence for the role of pubertal timing in social media engagement; instead, my findings suggest that social and contextual factors may be the driving force behind adolescents' social media engagement.

In conclusion, we are living in an age of technology and are only just beginning to understand its' ramifications on adolescent development. Social media has become an integral part of development which has not replaced face-to-face interaction, but is a critical component of how today's adolescents fulfill the developmental tasks of this time period (Sullivan, 1953). This study examined individual differences and adjustment outcomes associated with four social media behaviors, as well as two different ways to measure time spent on social media. My findings demonstrate the importance of considering 1) social media behaviors as distinct and unique constructs 2) the role of social goals in social media engagement, and 3) gender differences in associated adjustment outcomes.

REFERENCES CITED

Adler, P. A., & Adler, P. (1998). Peer power: Preadolescent culture and identity. New Brunswick, NJ: Rutgers University Press.

Anderson, M., & Jiang, J. (2018). Teens, social media & technology 2018. *Retrieved from Pew Research Center website: http://www. pewinternet. org/2018/05/31/teens-social-media-technology-2018.*

Andrew, G., Patel, V., & Ramakrishna, J. (2003). Sex, studies, or strife? What to integrate in adolescent health services. *Reproductive Health Matters, 11*(21), 120–129.

Bandura, A. (1962). Social learning through imitation.

Bareket-Bojmel, L., Moran, S., & Shahar, G. (2016). Strategic self-presentation on Facebook: Personal motives and audience response to online behavior. *Computers in Human Behavior*, *55*, 788-795.

Berndt, T. J. (2002). Friendship quality and social development. *Current Directions in Psychological Science*, *11*, 7–10.

Best, P., Manktelow, R., & Taylor, B. (2014). Online communication, social media and adolescent wellbeing: A systematic narrative review. *Children and Youth Services Review*, *41*, 27-36.

Borca, G., Bina, M., Keller, P. S., Gilbert, L. R., & Begotti, T. (2015). Internet use and developmental tasks: Adolescents' point of view. *Computers in Human Behavior*, *52*, 49-58.

Buhrmester, D., Furman,W., Wittenberg, M. T., & Reis, H. T. (1988). Five domains of interpersonal competence in peer relationships. *Journal of Personality and Social Psychology*, *55*, 991– 1008.

Buhrmester, D, & Prager, K. (1995). Patterns and functions of self-disclosure during childhood and adolescence. In K. J. Rotenberg (Ed.), *Disclosure processes in children and adolescents* (pp. 10–56). Cambridge: Camibridge University Press.

Burke, M., Marlow, C., & Lento, T. (2010, April). Social network activity and social well-being. In *Proceedings of the SIGCHI conference on human factors in computing systems* (pp. 1909-1912). ACM.

Camarena, P. M., Sarigiani, P. A., & Petersen, A. C. (1990). Gender-specific pathways to intimacy in early adolescence. *Journal of Youth and Adolescence*, *19*, 19–31.

Chaudron, S., Beutel, M. E., _Cernikova, M., Donoso Navarette, V., Dreier, M., Fletcher-Watson, B., . . .Wolfling, K. (2015). Young children (0-8) and digital technology: a qualitative exploratory study across seven countries. *Brussels: European Commission, Joint Research Centre.*

Christofides, E., Muise, A., & Desmarais, S. (2009). Information disclosure and control on Facebook: Are they two sides of the same coin or two different processes? *Cyberpsychology & Behavior*, *12*(3), 341-345.

Christofides, E., Muise, A., & Desmarais, S. (2012). Risky disclosures on Facebook: The effect of having a bad experience on online behavior. *Journal of adolescent research*, *27*(6), 714-731.

Daneback, K., Masson, S. A., Ross, M. W., & Markham, C.M. (2012). The internet as a source of information about sexuality. *Sex Education, 12,* 583-598.

Dawes, M. & Xie, H. (2017). The trajectory of popularity goal during the transition to middle school. *The Journal of Early Adolescence*, *37*(6), 852-883.

Deters, F., & Mehl, M. R. (2012). Does posting Facebook status updates increase or decrease loneliness? An online social networking experiment. *Social Psychological and Personality Science, 4(5),* 579–586.

Di Iorio, C., Kelley, M., & Hockenberry-Eaton, M. (1999). Communication about sexual issues: Mothers, fathers, and friends. *Journal of Adolescent Health, 24*, 181–189.

Dredge, R., Gleeson, J., & De la Piedad Garcia, X. (2014). Presentation on Facebook and risk of cyberbullying victimization. *Computers in Human Behavior*, *40*, 16-22.

Ellison, N., Heino, R., & Gibbs, J. (2006). Managing impressions online: Self-presentation processes in the online dating environment. *Journal of Computer Mediated Communication, 11*(2), 415–441.

Erikson, E. H. (1950). Growth and crises of the" healthy personality."

Erikson, E. H. (1968). Life cycle. *International encyclopedia of the social sciences*, *9*, 286-292.

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

Farmer, T. W., Hamm, J. V., Leung, M.-C., Lambert, K., & Gravelle, M. (2011). Early adolescent peer ecologies in rural communities: Bullying in schools that do and do not have a transition during the middle grades. *Journal of Youth and Adolescence*, 40, 1106-1117. doi:10.1007/s10964-011-9684-0

Forbes, E. E., & Dahl, R. E. (2010). Pubertal development and behavior: hormonal activation of social and motivational tendencies. *Brain and Cognition*, *72*(1), 66-72.

Frison, E., & Eggermont, S. (2016). Exploring the relationships between different types of Facebook use, perceived online social support, and adolescents' depressed mood. *Social Science Computer Review, 34,* 153–171. http://dx.doi.org/10.1177/0894439314567449

Geist, E. A. (2012). A qualitative examination of two-year-olds interaction with tablet based interactive technology. *Journal of Instructional Psychology*, *39*(1).

Gibbs. J., Ellison, N., & Heino, R. (2006). Self-presentation in online personals: The role of anticipated future interaction, self-disclosure, and perceived success in Internet dating. *Communication Research, 33,* 152.

Grieve, R., Indian, M., Witteveen, K., Anne Tolan, G., & Marrington, J. (2013). Face-to-face or Facebook: Can social connectedness be derived online? *Computers in Human Behavior, 29(3),* 604–609. http://dx.doi.org/10.1016/j.chb.2012.11.017.

Haferkamp, N., Eimler, S. C., Papadakis, A. M., & Kruck, J. V. (2012). Men are from Mars, women are from Venus? Examining gender differences in self-presentation on social networking sites. *Cyberpsychology, Behavior, and Social Networking*, *15*(2), 91-98.

Haynie, D. L. (2003). Contexts of risk? Explaining the link between girls' pubertal development and their delinquency development. *Social Forces, 82*, 355–397.

Herring, S. C., & Kapidzic, S. (2015). Teens, gender, and self-presentation in social media. *International Encyclopedia of social and Behavioral Sciences*, *2*, 1-16.

Hollenbaugh, E. E., & Ferris, A. L. (2014). Facebook self-disclosure: Examining the role of traits, social cohesion, and motives. *Computers in Human Behavior*, *30*, 50-58.

Holt, M. K., & Espelage, D. L. (2007). Perceived social support among bullies, victims, and bully-victims. *Journal of Youth and Adolescence*, *36*(8), 984-994.

Horst, S. J., Finney, S. J., & Barron, K. E. (2007). Moving beyond academic achievement goal measures: A study of social achievement goals. *Contemporary Educational Psychology*, *32*(4), 667-698.

Hsiung, R. C. (2000). The best of both worlds: An online self-help group hosted by a mental health professional. *Cyberpsychology and Behavior, 3(*6), 935–950.

Hunt, M.G., Marx, R., Lipson, C., & Young, J. (2018). No more FOMO: Limiting social media decreases loneliness and depression. *Journal of Social and Clinical Psychology, 37(10), 751-768.*

Hutchison, A. C., Woodward, L., & Colwell, J. (2016). What are preadolescent readers doing online? An examination of upper elementary students' reading, writing, and communication in digital spaces. *Reading Research Quarterly*, *51*(4), 435-454.

IBM Corp. Released 2018. IBM SPSS Statistics for Windows, Version 26.0. Armonk, NY: IBM Corp.

Jones, D. C. (2001). Social comparison and body image: Attractiveness comparisons to models and peers among adolescent girls and boys. *Sex Roles*, *45*(9-10), 645-664.

Kapidzic, S., & Herring, S. C. (2011). Gender, communication, and self-presentation in teen chatrooms revisited: Have patterns changed? *Journal of Computer Mediated Communication*, *17*, 39–59. doi:10.1111/j.1083-6101.2011.01561.x

Kiefer, S. M., Matthews, Y. T., Montesino, M., Arango, L., & Preece, K. K. (2013). The effects of contextual and personal factors on young adolescents' social goals. *The Journal of Experimental Education*, *81*, 44-67. doi:10.1080/00220973.2011.630046

Kim, J. & Lee, J. E. R. (2011). The Facebook paths to happiness: Effects of the number of Facebook friends and self-presentation on subjective well-being. *Cyberpsychology, Behavior, and Social Networking*, *14*(6), 359-364.

Krasnova, H., Widjaja, T., Buxmann, P., Wenninger, H., & Benbasat, I. (2015). Research note—why following friends can hurt you: an exploratory investigation of the effects of envy on social networking sites among college-age users. *Information Systems Research*, *26*(3), 585-605.

Kross, E., Verduyn, P., Demiralp, E., Park, J., Lee, D. S., Lin, N., ... & Ybarra, O. (2013). Facebook use predicts declines in subjective well-being in young adults. *PloS one*, *8*(8), e69841.

Kucirkova, N., Littleton, K., & Kyparissiadis, A. (2018). The influence of children's gender and age on children's use of digital media at home. *British Journal of Educational Technology*, *49*(3), 545-559.

Labrague, L. J. (2014). Facebook use and adolescents' emotional states of depression, anxiety, and stress.

LaFontana, K. M., & Cillessen, A. H. (2010). Developmental changes in the priority of perceived status in childhood and adolescence. *Social Development*, *19*(1), 130-147.

Lagerspetz, K. M., Björkqvist, K., & Peltonen, T. (1988). Is indirect aggression typical of females? Gender differences in aggressiveness in 11-to 12-year-old children. *Aggressive Behavior*, *14*(6), 403-414.

Lauricella, A. R., Cingel, D. P., Blackwell, C., Wartella, E., & Conway, A. (2014). The mobile generation: Youth and adolescent ownership and use of new media. *Communication Research Reports*, *31*(4), 357-364.

Lenhart, A., Duggan, M., Perrin, A., Stepler, R., Rainie, H., & Parker, K. (2015). Teens, social media & technology overview 2015. *Pew Internet & American Life Project.*

Levy-Tossman, I., Kaplan, A., & Assor, A. (2007). Academic goal orientations, multiple goal profiles, and friendship intimacy among early adolescents. *Contemporary Educational Psychology*, *32*(2), 231-252.

Lin, L. Y., Sidani, J. E., Shensa, A., Radovic, A., Miller, E., Colditz, J. B., ... & Primack, B. A. (2016). Association between social media use and depression among US young adults. *Depression and Anxiety*, *33*(4), 323-331.

Livingstone, S., Mascheroni, G., Dreier, M., Chaudron, S., & Lagae, K. (2015) How parents of young children manage digital devices at home: The role of income, education and parental style. *London: EU Kids Online, LSE.*

Maccoby, E. E., & Jacklin, C. N. (1974). Myth, reality and shades of gray-what we know and don't know about sex differences. *Psychology Today*, *8*(7), 109-112.

Madden, M., Lenhart, A., Cortesi, S., Gasser, U., Duggan, M., Smith, A., & Beaton, M. (2013). Teens, social media, and privacy. *Pew Internet & American Life Project.*

Magnusson, D., Stattin, H., & Allen, V. L. (1985). Biological maturation and social development: A longitudinal study of some adjustment processes from mid-adolescence to adulthood. *Journal of Youth and Adolescence*, *14*(4), 267-283.

Manago, A. M., Graham, M. B., Greenfield, P. M., & Salimkhan, G. (2008). Self-presentation and gender on MySpace. *Journal of Applied Developmental Psychology*, *29*(6), 446-458.

Marcotte, D., Fortin, L., Potvin, P., & Papillon, M. (2002). Gender differences in depressive symptoms during adolescence: Role of gender-typed characteristics, self-esteem, body image, stressful life events, and pubertal status. *Journal of Emotional and Behavioral Disorders*, *10*(1), 29-42.

McKenna, K. Y., & Bargh, J. A. (1998). Coming out in the age of the Internet: Identity" demarginalization" through virtual group participation. *Journal of Personality and Social Psychology*, *75*(3), 681.

McNelles, L. R., & Connolly, J. A. (1999). Intimacy between adolescent friends: Age and gender differences in intimate affect and intimate behaviors. *Journal of Research on Adolescence*, *9*, 143–159.

Mendle, J., & Ferrero, J. (2012). Detrimental psychological outcomes associated with pubertal timing in adolescent boys. *Developmental Review*, *32*(1), 49-66.

Mendle, J., Turkheimer, E., & Emery, R. E. (2007). Detrimental psychological outcomes associated with early pubertal timing in adolescent girls. *Developmental Review*, *27*(2), 151-171.

Mishna, F., Cook, C., Saini, M., Wu, M. J., & MacFadden, R. (2011). Interventions to prevent and reduce cyber abuse of youth: A systematic review. *Research on Social Work Practice*, *21*(1), 5-14.

Moreno, M. & Kota, R. (2013). Social media. In V. C. Strasburger, B. Wilson, & A. B. Jordan (Eds.), *Children, Adolescents, and the Media* (3rd ed.). Sage. Retrieved from https ://nls.ldls.org. uk/welco me.html?ark:/81055 /vdc_10002 54214 90.0x000 001.

Nadeem, E. & Graham, S. (2005). Early puberty, peer victimization, and internalizing symptoms in ethnic minority adolescents. *The Journal of Early Adolescence*, *25*(2), 197-222.

Pantic, I., Damjanovic, A., Todorovic, J., Topalovic, D., Bojovic-Jovic, D., Ristic, S., & Pantic, S. (2012). Association between online social networking and depression in high school students: *Behavioral Physiology Viewpoint. Psychiatria Danubina, 24(1)*, 90-93.

Parks, M. R. & Floyd, K. (1996). Meanings for closeness and intimacy in friendship. *Journal of Social and Personal Relationships*, *13*(1), 85-107.

Pellegrini, A. D. (2002). Bullying, victimization, and sexual harassment during the transition to middle school. *Educational Psychologist, 37*, 151-164. doi:10.1207/ S15326985EP3703_2

Peluchette, J. V., Karl, K., Wood, C., & Williams, J. (2015). Cyberbullying victimization: Do victims' personality and risky social network behaviors contribute to the problem?. *Computers in Human Behavior*, *52*, 424-435.

Petersen, A. C., Crockett, L., Richards, M., & Boxer, A. (1988). A self-report measure of pubertal status: Reliability, validity, and initial norms. *Journal of Youth and Adolescence*, *17*(2), 117-133.

Pittman, M. & Reich, B. (2016). Social media and loneliness: Why an Instagram picture may be worth more than a thousand Twitter words. *Computers in Human Behavior*, *62*, 155-167.

Reid, D., & Weigle, P. (2014). Social media use among adolescents: Benefits and risks. *Adolescent Psychiatry*, *4*(2), 73-80.

Reisman, J. M. (1990). Intimacy in same-sex friendships. *Sex Roles*, *23*, 65–82.

Rideout, V. J., Foehr, U. G., & Roberts, D. F. (2010). Generation M 2: Media in the Lives of 8-to 18-Year-Olds. *Henry J. Kaiser Family Foundation*.

Rodkin, P. C., Ryan, A. M., Jamison, R., & Wilson, T. (2013). Social goals, social behavior, and social status in middle childhood. *Developmental Psychology*, *49*(6), 1139.

Rose, A. J. (2002). Co-rumination in the friendships of girls and boys. *Child Development*, 73, 1830–1843.

Sagioglou, C. & Greitemeyer, T. (2014). Facebook's emotional consequences: Why Facebook causes a decrease in mood and why people still use it. *Computers in Human Behavior*, *35*, 359-363.

Sampasa-Kanyinga, H. & Lewis, R. F. (2015). Frequent use of social networking sites is associated with poor psychological functioning among children and adolescents. *Cyberpsychology, Behavior, and Social Networking*, *18*(7), 380-385.

Santor, D. A., Messervey, D., & Kusumakar, V. (2000). Measuring peer pressure, popularity and conformity in adolescent boys and girls. Predicting school performance, school attitudes and substance abuse. *Journal of Youth and Adolescence, 29,* 163-182.

Schmitz, K. E., Hovell, M. F., Nichols, J. F., Irvin, V. L., Keating, K., Simon, G. M., ... & Jones, K. L. (2004). A validation study of early adolescents' pubertal self-assessments. *The Journal of Early Adolescence*, *24*(4), 357-384.

Sharp, J. (2000). The Internet. Changing the way cancer survivors receive support. *Cancer Practice, 8(*3), 145–147.

Shaw, A. M., Timpano, K. R., Tran, T. B., & Joormann, J. (2015). Correlates of Facebook usage patterns: The relationship between passive Facebook use, social anxiety symptoms, and brooding. *Computers in Human Behavior*, *48*, 575-580.

Simpkins, S. D., Parke, R. D., Flyr, M. L., & Wild, M. N. (2006). Similarities in children's and early adolescents' perceptions of friendship qualities across

development, gender, and friendship qualities. *Journal of Early Adolescence*, *26*, 491–508.

Skoog, T., Sorbring, E., & Bohlin, M. (2015). Facebook as a means to make new peers among early maturing girls. *Computers in Human Behavior*, *48*, 500-505.

Skoog, T., & Stattin, H. (2014). Why and under what contextual conditions do early-maturing girls develop problem behaviors? *Child Development Perspectives*, *8*(3), 158-162.

Steinberg, L. (2010). A dual systems model of adolescent risk-taking. *Developmental Psychobiology: The Journal of the International Society for Developmental Psychobiology*, *52*(3), 216-224.

Subrahmanyam, K., & Greenfield, P. (2008). Online communication and adolescent relationships. *The Future of Children*, *18*(1), 119-146.

Sullivan, H. S. (1953). The interpersonal theory of psychiatry. New York: Norton.

Suzuki, L. K., & Calzo, J. P. (2004). The search for peer advice in cyberspace: An examination of online teen bulletin boards about health and sexuality. *Journal of Applied Developmental Psychology*, *25*(6), 685-698.

Tandoc, E. C., Ferrucci, P., & Duffy, M. (2015). Facebook use, envy, and depression among college students: Is Facebooking depressing?. *Computers in Human Behavior*, *43*, 139-146.

Tichon, J. & Shapiro, M. (2003). The process of sharing social support in cyberspace. *Cyberpsychology & Behavior, 6(2)*, 161–170.

Troiden, R. R. (1988). Homosexual identity development. *Journal of Adolescent Health Care*, *9*(2), 105-113.

Tynkkynen, L., Nurmi, J. E., & Salmela-Aro, K. (2010). Career goal-related social ties during two educational transitions: Antecedents and consequences. *Journal of Vocational Behavior*, *76*(3), 448-457.

Uhls, Y. T., Ellison, N. B., & Subrahmanyam, K. (2017). Benefits and costs of social media in adolescence. *Pediatrics*, *140,* S67-S70.

Underwood, M. K. & Ehrenreich, S. E. (2017). The power and the pain of adolescents' digital communication: Cyber victimization and the perils of lurking. *American Psychologist*, *72*(2), 144.

Underwood, M. K. & Faris, R. (2015). #Being thirteen: Social media and the hidden world of young adolescents' peer culture. *Retrieved from https://assets. documentcloud. org/documents/2448422/being-13-report. pdf*.

Valenzuela, S., Park, N., & Kee, K. F. (2009). Is there social capital in a social network site?: Facebook use and college students' life satisfaction, trust, and participation. *Journal of Computer-Mediated Communication, 14*(4), 875-901.

Valkenburg, P. M., & Peter, J. (2011). Online communication among adolescents: An integrated model of its attraction, opportunities, and risks. *Journal of Adolescent Health, 48,* 121-127.

Valkenburg, P. M., Peter, J., & Schouten, A. P. (2006). Friend networking sites and their relationship to adolescents' well-being and social self-esteem. *CyberPsychology & Behavior*, *9*(5), 584-590.

Valkenburg, P. M., Sumter, S. R., & Peter, J. (2011). Gender differences in online and offline self-disclosure in pre-adolescence and adolescence. *British Journal of Developmental Psychology*, *29*(2), 253-269.

Verduyn, P., Lee, D. S., Park, J., Shablack, H., Orvell, A., Bayer, J., ... & Kross, E. (2015). Passive Facebook usage undermines affective well-being: Experimental and longitudinal evidence. *Journal of Experimental Psychology: General*, *144*(2), 480.

Vernon, L., Barber, B. L., & Modecki, K. L. (2015). Adolescent problematic social networking and school experiences: The mediating effects of sleep disruptions and sleep quality. *Cyberpsychology, Behavior, and Social Networking, 18,* 386–392. http://dx.doi.org/10.1089/cyber.2015.0107

Walgrave, M., Vanwesenbeeck, I., & Heirman, W. (2012). Connecting and protecting? Comparing predictors of self-disclosure and privacy settings use between adolescents and adults. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, *6*(1).

Wenninger, H., Krasnova, H., & Buxmann, P. (2014). Activity matters: Investigating the influence of Facebook on life satisfaction of teenage users.

Wentzel, K. R. (2002). The contribution of social goal setting to children's school adjustment. In A. WigWeld & J. S. Eccles (Eds.), Development of achievement motivation (pp. 221–246). New York: Academic Press.

Willem, C., Araüna, N., Crescenzi, L.,Tortajada, I. (2012). "Girls on Fotolog: Reproduction of gender stereotypes or identity play?" *Interactions: Studies in Communication & Culture, 2* (*3),* p. 225-242. DOI: 10.1386/iscc.2.3.225_1

Ybarra, M. L., Mitchell, K. J., Wolak, J., & Finkelhor, D. (2006). Examining
characteristics and associated distress related to Internet harassment: Finding from
the second youth Internet safety survey. *Pediatrics, 118,* 1169-1177.