Connecting Online and Offline Social Skills to Adolescents' Peer Relationships and Psychological Adjustment

By

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Abstract

As peer victimization is an essential peer experiences that connects to psychological adjustment in high school students, this study explores how social competence offline and online may mediate this relationship. High school participants (n =303, $Mage$= 15.83) reported about their peer victimization experiences, social skills online and offline, perceptions of peers' acceptance offline and social media acceptance, social media behaviors, and psychological adjustment. Results indicate that overall, teens' who experience peer victimization are likely to have deficits in their offline and online social competence and use aspects of social media in different ways. However, the pathways between online social competence and social media behaviors do not support mediation of the relationship between peer victimization and psychological adjustment. Also, the use of sociometric methods to measure peer processes on social media shows potential as an informative method. Since teens are interacting with social media as another context of their everyday life and as an important context of peer socialization, the implications for targets of peer victimization are meaningful.

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Introduction

Peers and friends are a central component of development during adolescence (Hartup, 1993; Hartup, 1996; Sullivan, 1953) as evidenced by increases in time spent with peers, self-disclosure, intimacy, reciprocity, and commitment (Brown, 2011; Furman & Buhrmester, 1992; Harter, 2012; Hartup, 1993; Larson & Verma, 1999). These increases in the influence and importance of peer relationships plays a vital role in teens' social and emotional development (Espelage & Swearer, 2003). Past studies have found significant associations between positive peer relationships, such as peer group membership, and friendships during adolescence and teens' psychological adjustment (Buhrmester, 1990), sense of self-worth (Berndt & Hanna, 1995), self-esteem (Berndt & Hanna, 1995), adjustment to and achievement in school (Berndt & Keefe, 1995; Wentzel & Caldwell, 1997), mental health (Way, 2013), physical health (Allen, Uchino, & Hafen, 2015) and well-being (Harter, 1999). Whereas, problematic peer relationships and social difficulties during adolescence, such as peer victimization, are predictors of negative psychological adjustment and developmental disadvantages (Parker & Asher, 1987; Hartup, 1996; Prinstein, Rancourt, Guerry, & Browne, 2011).

The peer environment is complex with many different structures of relationships and contexts (Brown, 1999; Davis, 2013). While in person contexts, such as in school and after school activities, have received the most empirical attention, there has recently been a proliferation of research exploring online contexts as another environment that can influence peer relationships (Best, Manktelow, & Taylor, 2014; Schoffstall & Cohen, 2011). Currently, a significant amount of adolescents' interpersonal interactions take place through technology, specifically social media (Lenhart et al., 2015; Tsisksika et al., 2014). Online interactions are similar in many ways to traditional offline means of teen interaction (Brown, 1999; Gross, Juvonen, & Gable, 2002; Mikami & Szwedo, 2012). As Subrahmanyam, Smahel, and Greenfield

(2006) explain in their co-construction model of online experiences, online and offline worlds are connected with adolescents bringing the issues, people, experiences, and concerns from offline into online mediums and vice versa. However, they clarify that while digital lives and offline lives center around similar themes, the two contexts are not identical (Subrahmanyam & Smahel, 2011). Nesi, Choukas-Bradley, and Prinstein (2018) echo this idea, that while there are some expected similarities between the offline and online contexts that there are many important differences in experiences and outcome, in their transformation framework. There are stark differences between the two contexts, such as constant access to peers and different peer norms, which makes the online context important to study (Nesi et al., 2018; Reich, 2016). As the online context is often overlooked, it is important to investigate how it relates to teens' peer experiences and adjustment in addition to the similarities between the offline and online context.

Recent reports indicate over 94% of 13-17-year-old adolescents have access to the Internet with 92% accessing the Internet daily and 24% online almost constantly (Lenhart et al., 2015). The same report revealed that 81% of older teens ages 15-17 use social media sites (Lenhart et al., 2015). Social media websites and apps are online environments where users can contribute, retrieve, and/or explore content primarily generated or shared by themselves or fellow users (McGowan et al., 2012). With social media there is an emphasis on the ability to interact, communicate, and share with others (Moreno & Kota, 2013). As an age group, adolescents (ages 12-17 years) have the highest rates of Internet use compared to any other age group (Lenhart, Purcell, Smith, A., & Zickuhr., 2010; Rideout, 2015). The commonplace nature of social networking sites and other social media environments has created a complex and diverse landscape for adolescents to connect and interact (Landoll, 2012).

Peer Problems During Adolescence

Teens who experience problematic peer relationships may miss out on peer interactions that are important for positive adjustment and well-being (Parker & Asher, 1987; Desjarlais & Willoughby, 2010). Peer victimization is commonly experienced by adolescents (Nansel et al., 2001), relevant to the offline and offline contexts (Seabrook, Kern, & Rickard, 2016; Sumter, Valkenburg, Baumgartner, Peter, & van der Hof, 2015; Yen et al., 2012), and linked to psychological adjustment in these spaces (Gross et al., 2002; Underwood & Ehrenreich, 2017). Also, considering the interrelatedness of peer victimization and social anxiety as they connect to psychological adjustment, specifically self-worth, makes it important to examine them together (Grills & Ollendick, 2002).

Peer victimization, being the target of unwanted aggressive behavior by peers (Hawker & Boulton, 2000; CDC, 2016), is a common experience among high school students with prevalence rates ranging between 15%-40% (Hinduja & Patchin, 2017; Nansel et al., 2001; Schneider, O'Donnell, Smith, 2015). There are four subtypes of victimization frequently discussed, physical, verbal, relational, and cyber, that are uniquely defined based on the experience. However, there is significant overlap between involvement in the different types and the associated outcomes are often similar to one another (Casper & Card, 2016; Juvonen & Gross, 2008; Kowalski & Limber, 2013). Victims tend to have lower social status (Buhs, Ladd, & Herald, 2006), fewer friends (Hodges & Perry, 1999), and are less embedded in their social networks (Faris & Felmlee, 2014). While in person peer-relational difficulties of victimized youth and associated psychological, physical, and social outcomes have received considerable empirical attention, relatively few studies have explored whether victimization impacts how adolescents engage with social media. Among the studies that have explored these impacts, peer victimization, online and offline, is associated with many maladaptive outcomes such as lower

life satisfaction (Sumpter, Baumgartner, Valkenburg, & Peter, 2012), lower satisfaction with friendships (Gini, Marino, Pozzoli, & Holt, 2017), more social anxiety (Storch & Masia-Warner, 2004), more loneliness (Hawker & Boulton, 2000), and lower self-esteem (Patchin & Hinduja, 2010).

As teens that experience peer victimization often have problematic peer relationships, these teens may utilize social media in a compensatory way (Leung, 2007; Valkenburg & Peter, 2009). There are mixed findings on whether social media use among adolescents who have negative peer experiences serves as a protective factor (Cole, Nick, Zelkowitz, Roeder, & Spinelli, 2017; Ybarra, Mitchell, Palmer, & Reisner, 2015) or increases maladaptive outcomes (Weidman et al., 2012). The mixed results of these studies may be due to the constant evolution of media, the many types of platforms and networks that exist, and differences in what teens are doing on social media (Gross et al., 2002; Valkenburg & Peter, 2009, Yang & Brown, 2015). For example, Underwood and Ehrenreich (2017) state that lurking may lead to worse outcomes for vulnerable teens. Yet, Ybarra et al. (2015) found that when vulnerable teens used social media to make new friends and receive social support it had a buffering effect. Building on these findings, Desjarlais and Willoughby (2010) found that for teenage boys who report more problematic peer experiences, using computers socially with friends increased friendship quality. The aforesaid studies point to the importance of teens' behaviors online as a mediator between problematic peer relationships and psychological adjustment. It seems that when teens who experience peer victimization use social media in a social way it improves their well-being, yet it is still unknown what leads some teens to do this better than others (Weidman et al., 2012). It is necessary to examine additional potential risks and benefits in order to illuminate the pathways between peer victimization, social media use, and psychological adjustment.

Overarching Perspectives of Peer Problems

Parker and Asher (1987) describe two models to explain the link between problematic peer relationships and current and future adjustment. These models can be applied to the previous findings to understand why teens who experience social problems will likely have negative outcomes. The causal model suggests that youth who are victimized are excluded from normal peer interactions and therefore deprived from learning beneficial socialization behaviors. As a result, victimized youth become more vulnerable to maladaptive behaviors and outcomes. Whereas, the incidental model suggests that underlying early stage maladaptive behaviors and psychopatholgy are the cause of later problems. So peer problems, such as being victimized, are a symptom of the deviant behavior that has no independent influence on poor adjustment.

While the debate continues in the literature, many recent longitudinal studies support a causal view of the relationship between peer experiences and later psychological adjustment (Cillessen, 2011). This view asserts that peer relationships help teach youth adaptive social behavior (Ladd, 1999). Therefore, teens who do not have these experiences because they are victimized by their peers may not learn important social skills and competencies needed for positive interactions and experiences, and instead may utilize negative social behaviors and interaction patterns (Dodge et al., 2003). These poor social skills exacerbate the relationship between experiencing problems with peers and psychological adjustment (Bagwell, Newcomb, & Bukowski, 1998; Cillessen, 2011; Sandstrom & Cillessen, 2010). Furthermore, several studies suggest a causal pathway between different offline characteristics and experiences, online behaviors, and psychological adjustment (Mikami, Szwedo, Allen, Evans, & Hare, 2010; Nesi, Miller, & Prinstein, 2017; Selfhout, Branje, Delsing, Ter Bogt, & Meeus, 2009).

More recently, Pepler and Craig (2007) developed the Relational Framework in an effort to understand contextual factors related to bullying, victimization, and other problematic

aggressive behaviors (Craig & Harel, 2004). The relational framework considers peer group social dynamics and the importance of social skills to address problematic peer processes and to promote positive psychological adjustment for targets (Pepler, Craig, Cummings, Petrunka, & Garwood, 2017; Rodkin et al., 2015). Given peer victimization is a dynamic relationship between peers that is embedded in the social context, targets of peer victimization will miss out on opportunities for positive relationships and be prevented from building their social skill sets (Rodkin et al., 2015). While previous literature using this framework focused on offline victimization, the relational framework is well suited for application to the online context because social media is an extension of teens' peer group dynamics and social lives (Primus, 2015). In many ways this framework builds upon and adapts the Parker and Asher (1987) model by incorporating more fluid relationship dynamics and an understanding of problematic peer processes (Prevnet.com).

While a large amount of the available research presumes social media use precedes peer problems (Frison & Eggermont, 2016; Kross et al., 2013), it is also likely that peer problems predict teens' online behaviors and related outcomes (Ehrenreich & Underwood, 2016; Nesi et al., 2017). For example, teens who experience problems with their peers may use social media as a platform to discuss inappropriate or negative topics (Ehrenreich & Underwood, 2016; Radovic, Gmelin, Stein, & Miller, 2017). The Causal Model and the Relational Framework provide a basis for understanding this relationship and ground future work extending these theories into the online context by explaining the direction, causal nature, and importance of contextual factors.

Social Competence, Online Behaviors, and Connections to Psychological Adjustment

A central aspect of both the causal model and the relational framework is the implication that social competence is a critical skill. Social competence is multi-dimensional and the definition generally includes effectiveness and/or success in social interactions (Buhrmester,

Furman, Wittenberg, & Reis, 1988, Rose-Krasnor, 1997). Due to its complexity, social competence is often operationalized in different ways (Cillessen & Bellmore, 2011). Given the relational framework's tenant that experiences of victimization generalize to other relationships, experiences, and contexts (Pepler et al., 2006), peer acceptance and social skills are two aspects of social competence that are particularly relevant to the relationship between adolescents who experience peer problems and their psychological adjustment (Cillessen & Bellmore, 2011). Including another perspective using peer reports of acceptance is important because relational outcomes are another aspect of social competence not captured in self-report of skills (Flannery & Smith, 2016). Social skills and peer acceptance are positively related (Cillessen & Bellmore, 2011). Also, social competence is context dependent (Reich, 2016; Rose-Krasnor, 1997), and so different aspects need to be considered in offline and online contexts. Meaning, that as individuals interact in various environments competence changes and different social skills are needed to be successful (Fischer, Bullock, Rotenberg, & Raya, 2015). So while potentially related, there are likely differences in the behavioral and social skill sets needed in offline and online contexts (Reich, 2016).

Offline indicators include social skills, such as looking at people when talking to them and more complex indicators like managing conflicts (Matson, Rotatori, & Helsel, 1983). Poor social competence in offline environments is associated with poor peer relations (Trentacosta & Fine, 2010), worse academic achievement (Wentzel, 1991), anti-social behavior, and delinquency (Sorlie, Hagen, & Ogden, 2008; Stepp, Pardini, Loeber, & Morris, 2011).

Online indicators of social competence are more nebulous as the affordances differ by platforms (Reich, 2016). Some research has explored how offline social competence and related behaviors are connected to online behaviors and social media experiences. Teens who lack offline social competence are more likely to engage in maladaptive online behaviors, such as

displaying more hostility and posting inappropriate photos on their social media pages (Mikami et al., 2010). Nesi and Prinstein (2015) found that adolescents low in popularity, which is an indicator of social competence, were more likely to engage in social comparison and feedback-seeking behaviors on social media. Furthermore, technology based social comparison and feedback seeking behaviors were associated with more symptoms of psychological maladjustment. It may be that individuals who lack social relationships may still have difficulties connecting with others online and may be less likely to use social media platforms for relational purposes (Lee & Kim, 2014).

However, it is possible that due to the diverse affordances available on different online platforms that distinct online social skills may exist, which are easier to grasp and positively impact related behaviors and psychological outcomes (Reich, 2016). For example, the asynchronous nature of some social media allows users to take time to think through responses if needed, and on many platforms there are fewer non-verbal cues that need to be interpreted (Madell & Muncer, 2007; Nesi et al., 2018). These affordances of online contexts may assist teens that lack offline social connections or social skills feel safer, more in control, and more comfortable with the social rules (Forest & Wood, 2012; Madell & Muncer, 2007; Martoncik & Loksa, 2016). So, in the online context different social competence skills may apply, which can help compensate for poor offline social skills and may promote overall psychological adjustment and well-being (Brunet & Schmidt, 2007; Indian & Grieve, 2014; Kahn, Gagne, Yang, & Shapka, 2016; Koutamanis, Vossen, Peter, & Valkenburg, 2013; Peter, Valkenburg, & Schouten, 2005).

Teens who experience peer victimization may turn to social media for alternate peer relationships and social support, which may ameliorate or exacerbate their psychological adjustment. Based on the implications of the causal model and relational framework, there are

reasons to suggest that for teens who interact frequently online in a compensatory way, that it may not translate into increased well-being (Mikami et al., 2010; Weidman et al., 2012). There is a need for research that extends knowledge about social competence in online spaces by exploring how it is similar or different from the offline context and how it impacts psychological adjustment (Prinstein, 2017; Reich, 2016; Valkenburg & Peter, 2008).

The Current Study

The current study examines the social skills, both online and offline, and online behaviors employed by adolescents who experience peer problems, specifically peer victimization. Peer victimization is associated with many maladaptive outcomes such as self-worth and well-being (Juvonen and Graham, 2001; Nishina & Jovenen, 2005; Siegel at al., 2009). Based on the causal model (Parker & Asher, 1987) and the relational framework (Rodkin et al., 2015), which elucidate the relationship between problematic peer experiences and social-psychological adjustment, the study explores how online and offline social skills relate to adolescents' peer relationships and psychological adjustment. It is hypothesized that peer problems are connected to maladaptive outcomes because experiencing peer problems fosters deficits in social competence, both online and offline, and the development of maladaptive online behaviors. Then these deficits in online social competence intensify maladaptive online behaviors and lead to worse psychological outcomes.

This model is reflective of Parker and Asher's (1987) causal model of peer rejection. Since peers play many indispensable multiple causal roles in the socialization of social competence, when teens miss out on opportunities, due to victimization, they are excluded from normal peer interactions, and therefore deprived from learning beneficial socialization behaviors. As a result, victimized youth become more vulnerable to maladaptive behaviors and outcomes and have worse psychological adjustment (Parker & Asher, 1987).

Since positive peer experiences, such as friendships both online and offline, enhance knowledge about social situations (Rose-Krasnor, 1997; Yau & Reich, 2017), aversive peer experiences lead adolescents to withdraw from relationships with other teens and miss out on gaining social knowledge (Falkner, Neumark-Sztainer, Story, Beuhring, & Resnick, 2001). These teens miss out on peer interactions that are important for positive adjustment and well-being (Parker & Asher, 1987; Desjarlais & Willoughby, 2010). As social media is a part of teens everyday lives, it is another important context for adolescent social development. Incorporating key indicators of social competences, specific skills and behaviors, from the online context as a mediator and evaluating whether there is a significant pathway between peer difficulties and psychological adjustment is necessary (Subrahmanyam & Smahel, 2011).

The proposed model also uses a relational framework for understanding peer problems (Craig, Pepler, Petrunka, 2017; Pepler & Craig, 2014; Rodkin et al., 2015). This framework considers problematic relationship dynamics, such as bullying, as a peer process where aggression is displayed in the context of a relationship within a larger social context (Rodkin at al., 2015). Since I am studying the experiences of those who are the targets of peer victimization, this model is directly relevant. The relational framework provides additional justification for the inclusion of social competence as an important mediator for understanding psychological adjustment among adolescents who experience peer problems. Given peer victimization is a dynamic relationship between peers that is embedded in the social context, victims of peer victimization will miss out on opportunities for positive relationships and be prevented from building their social skill sets (Rodkin et al., 2015). Using both the causal model of peer rejection and the relational framework will allow for exploration of the relationships between problematic peer relationships, social competence, online behaviors, and psychological adjustment.

While there are some expected similarities between the offline and online contexts, there are many important and transformative differences in experiences and outcomes (Nesi et al., 2018; Subrahmanyam & Smahel, 2011). For example, constant access to an extended network of peers, immediate feedback, and the ability to control presentation and publicness are important differences between the two contexts, which makes the online context critical to study as a separate space (Nesi et al., 2018; Reich, 2016). Also, given the extensive theoretical work that has explored how behavior and cognitions change in different environments and contexts (Wozniak & Fischer, 1993), the relationship between context related social competence should be related to behaviors unique to that context.

Previous evidence indicates that when teens experience problematic peer relationships and miss out on offline, typically school based, peer relationships, they often turn to social media (Barry, Sidoti, Briggs, Reiter, & Lindsey, 2017; Ehrenreich & Underwood, 2016; Reich, 2016) and use it in different compensatory ways (Resnik & Bellmore, in prep). However, it is inconclusive if using social media in a compensatory way is beneficial for psychological adjustment. Especially since past research indicates that those who do not understand the "rules" of social media or place more importance on digital status seeking are likely to behave in less adaptive ways on social media (Prinstein, 2017; Nesi & Prinstein, 2018; Yau & Reich, 2018). Thus, it is expected that teens who have poor online social competence, due to peer victimization, will use social media in a way that exacerbates their psychological adjustment.

Within the proposed model, deficient offline and online social competence are the first expected outcomes of poor peer relationships based on previous evidence revealing a direct relationship (Ladd, 1999; Prinstein et al., 2011; Wentzel, 2011) and the directionality expressed in the causal model (Parker & Asher, 1987). Social skills offline and online are considered separately since research indicates that social competence is context dependent (Reich, 2016;

Rose-Krasnor, 1997). By considering both contexts separately, I can test the underlying assumption of the Relational Framework that different contexts are important and have unique impacts on teens who are targets of peer victimization. Deficient offline social competence is conceptualized as low adaptive social skills and low peer acceptance because knowing specific behavioral skills and the ability to decipher when and how to use them in response to social feedback are critical aspects of social competence (Bierman, 2004). Self-reports of teens' perception about their social skills provide information about their repertoire of skills, whereas peer nominated acceptance is a reliable way to gain representative information about teens' social behaviors in real life peer and social settings (Bierman, 2004). Reports obtained from self-report and peer-nominations are utilized to have multiple measures and perspectives to represents the phenomenon (Beran, 2007; Burt, Obradovic, Long, & Maston, 2008; Little, Jones, Henrich, & Hawley, 2003). Deficient online social competence is conceptualized as low Internet social skills and low peer interaction with their social media, since low perceptions of knowledge of how and abilities to interact with peers online are thought to be important aspects of online social competence (Reich, 2016).

As no studies have directly studied social competence on social media by explicitly exploring this relationship (Reich, 2016), my model will be able to explain the impact of online social competence on online behaviors and elucidate the similarities, differences, and potential impact of another modern context that is critical for adolescents' development. Social competence is a mediator of the relationship between problematic peer relationships and psychological adjustment during adolescence that needs to be investigated in both the online and offline contexts. In line with past research findings and building on the Relational Framework, it is expected that more victimization will predict lower social competence in both offline (Fortner, 2012; Kaeppler & Erath, 2017; Rose-Krasnor, 1997, Rudolph, Troop-Gordon, Monti, &

Miernicki, 2014) and online contexts (Anderson, Fagan, Woodnutt, & Chamorro- Premuzic, 2012; Navarro, Serna, Martínez, & Ruiz-Oliva, 2012; Peter et al., 2005; Valkenburg & Peter, 2007b; Vandebosch & Van Cleemput, 2009).

These deficits in online social competence are expected to lead to the next outcome in the model, which is intensified maladaptive online behaviors. It is presumed that being skillful is necessary to have positive social media interactions since it requires knowing how to adapt to and manage the affordances of different social media sites (Reich, 2016). Teens who miss out on opportunities to develop online social competence skills, likely lack the know-how to behave appropriately online. Maladaptive online behaviors are conceptualized as incompetent and/or inadequate use of social media. This will be measured with self-report surveys assessing three types of social media behavior: use, engagement, and online safety behaviors. The focus on multiple aspects of social media behaviors allows for a broad understanding of its relationship with victimization and psychological adjustment. Based on previous evidence that indicates that more use of social media is related to worse psychological adjustment (Kross et al., 2013), it is hypothesized that use will be associated with worse psychological adjustment. Engagement is expected to be associated with worse psychological adjustment since having, as opposed to actively using, is an indicator of more passivity and breadth (Verduyn, Ybarra, Resibois, Jonides, & Koss, 2017). Whereas, more online safety behaviors are expected to be associated with better psychological adjustment (Agosto & Abbas, 2015). I also hypothesize direct paths between victimization and maladaptive online behavior, such that more victimization is predictive of increases in maladaptive online behavior (Resnik & Bellmore, in prep).

As the final outcome in the model, psychological adjustment is conceptualized as self-worth since it is a key indicator of positive development during adolescence (Galambos & Costigan, 2003; Harter, 1986; Prinstein, 2017). Self-worth is a global perception of the self and how happy

one is with himself or herself as a person (Harter, 2012). During adolescence there is heightened awareness and preoccupation with the self, which increases the significance of self-worth during this developmental stage and makes it an important indicator of teens' psychological adjustment (Harter, 1988; Prinstein, 2017). As peer victimization is an essential peer experiences that connects to self-worth in high school students (Grills & Ollendick, 2002), this study explores how social competence offline and online may mediate these relationships.

Methods

Participants

This study included 303 consented participants, however 24 teens (7.9%) did not respond to any of the surveys and were excluded from the study results. Table 3 presents information about recruitment, enrollment, and participation rates for each school. The adolescents (age range 15-18, M_{age} = 15.83) were recruited from the 10th and 11th grades of three public high schools in south central Wisconsin. Adolescents in grades 10 and 11 are the focus since previous research indicates older adolescents ages 15-17 are the most active social media users generally (Lenhart et al., 2015; Selfhout et al., 2009). As reported in Table 4, Participants self-reported their gender (65.2% female, 32.6% male, 2.2% did not report their gender) and ethnicity (85.7% White, 3.6% Latino(a)/Mexican American, 1.8% African American or Black, 1.1% Asian, 0.7% Pacific Islander/Filipino, 0.7% Native American, 3.9% Multiple or Other, and 2.5% did not report their ethnicity). The ethnicity breakdown of the participants in this study are similar to the schools where they were recruited from. Total school enrollment in 2016 at School 1 was 1,155 (89.09% White; 14.9% economically disadvantaged), at School 2 was 975 (85.13% White; 18.7% economically disadvantaged), and at School 3 was 270 (92% White; 19.2% economically disadvantaged) (Wisconsin Department of Public Instruction, 2016). This study was part of a larger study examining teens' experiences of bullying and social media.

Procedure

The data collection included online surveys that the teens completed six times over a two-week period during the Spring or Fall of 2017. Parental consent was obtained for each teen. The parents of all teens received a letter detailing the procedures and research questions of the study. If the parents and teen decided they wanted to participate, then they returned a signed consent and assent form. These procedures were in assurance with the IRB at the University of Wisconsin, Madison and the school districts under which the study took place. To increase participation and response rates, teens received up to $50 based on the number of surveys completed ($10 for 1, $20 for 2, $30 for 3, $40 for 4, $50 for 5 & 6). 84.89% earned the full $50. The cash was given directly to the participants at the end of the study.

On six random weekdays within a two-week period a link to complete an online survey was emailed to participants using Qualtrics survey software. Participants had 24 hours to complete each survey from the time it was sent. Students who missed surveys for this study were able to make up the one-time measures on the last day. Of the teens enrolled in the study, 83.81% of teens completed all relevant one-time measures. All identifying information was manually de-identified through the assignment of ID numbers. On each day of data collection, participants completed self-report questionnaires and peer nominations.

Measures

Table 1 provides references, sample items, and response formats for all measures. Full measures are provided in the Appendix.

Demographics. Participants reported their age, gender, and ethnicity on the first, third, and sixth day of the study. For age, participants typed in how many years old they were. To gather information on gender, participants selected whether they identified as male or female. Participants selected their ethnicity as either African/African American, Asian/Asian American,

Caucasian/White, Mexican American/Latino(a)/Hispanic, Pacific Islander/Filipino, Native American/Alaskan Native, or other/more than one. If teens completed a survey on the first day, then their response from day one was used. If there was no response from day one, then the response provided on the third or sixth day was used. These were measured multiple times to maximize likelihood of collecting these data.

Peer Problems

Peer victimization frequency. The Recollections of Harassment Incidents measure (Juvonen, Nishina, & Graham, 2000) was used to assess the frequency adolescents experienced victimization. The survey included 18 self-report items about experiences with physical victimization, verbal victimization, relational victimization, and online victimization that are averaged to create an overall victimization score. For all items, adolescents responded to the question "In the past year, how often has someone…" Sample items included "taken or damaged some of your belongings?" and "excluded you from taking part in an activity?" Participants responded on a four-point Likert scale that included responses that ranged from "1 = *Never this year*" to "4 = *Around once a day*" where higher scores indicated more frequent experiences of victimization. With this sample, this scale has excellent internal reliability (Cronbach's $\alpha = .92$) and was significantly correlated with self-worth. Also, previous research found it is moderately correlated with self-worth, depression, and loneliness indicating adequate criterion validity (Juvonen et al., 2000).

Social anxiety. Social anxiety was measured using the Social Anxiety Scale for Adolescents (La Greca & Lopez, 1998). The scale included nine self-report items such as, "I worry about what others think of me". Teens indicate how much each sentence is true for them on a five-point Likert scale ranging from 1 = *"Not at all"* to 5 = *"All the* time" where higher average scores indicated more anxiety. This scale had excellent internal reliability (Cronbach's α

= .88) for this sample and previous research found a significant correlation with social support indicating adequate criterion validity (La Greca & Lopez, 1998; Storch & Masia-Warner, 2004).

Social Competence

Offline social skills. Teen's self-reported social skills were measured using a condensed version of The Matson Evaluation of Social Skills with Youngsters (Matson et al., 1983). The survey included 23 self-report items about appropriate social skills that were averaged to create an overall social skills score. For all items, adolescents rated how true the statement was for them. Sample items included "I do nice things for people who are nice to me" and "I take care of others' property as if it were my own". Participants responded on a five-point Likert scale that included responses that ranged from "1 = *Least like me*" to "5 = *Most like me*". The scale had excellent internal reliability in this sample (Cronbach's $\alpha = .94$) and adequate criterion validity as indicated by its significant positive association with empathy in this sample. Previous research has found that the scale correlated well with teacher observation of social competence (Matson & Wilkins, 2009).

Sociometric peer-reports. Teens' perceptions of their peers' social status offline and online were measured using sociometric peer nomination procedures (Cillessen, 2011; Cillessen & Rose, 2005; Coie, Dodge, & Coppotelli, 1982). Teens were asked for each question to write the "first name and last initial of the students in your grade who fit that question". Unlimited peer-nominations were allowed. The sum of each nomination question was calculated and then standardized within each school for each participant.

The first question asked teens *"Who do you like the MOST?*", which measured acceptance (Cillessen & Marks, 2011). To measure rejection participants were asked *"Who do you like the LEAST?"* (Bellmore, 2011). Next teens were asked *"Who are the MOST popular students?",* which measured popularity (Cillessen & Marks, 2011). To measure unpopularity

participants were asked "*Who are the LEAST popular students?*" (Bellmore, 2011). To measure friendship teens were asked *"Who are your BEST friends?"* (Cillessen & Marks, 2017). To measure influence teens were asked *"Who are the MOST influential students?"* (Lafontana & Cillessen & Marks, 2002). To measure admiration teens were asked *"Which students do you admire the MOST"*. (Graham, Taylor, & Hudley, 1998).

The difference between the "like most" and "like least" standardized scores was computed and re-standardized to create a measure of social preference, where higher scores indicated more likeabilty (Prinstein & Cillessen 2003). The difference between the "most popular" and "least popular" standard scores was computed and re-standardized to create a measure of social impact referred to as peer-perceived popularity, where higher scores indicated more likeabilty (Prinstein & Cillessen 2003).

Additionally, new social media peer nominations were added as indicators of social media social status. To measure social media attraction participants were asked *"Whose social media posts do you pay the MOST attention to?"*. To measure social media impact teens were asked *"Whose social media posts does everyone in your school pay the MOST attention to?"*. Lastly, to measure social media acceptance participants were asked *"Whose social media posts do you interact with the MOST?".* Again, the sum of nominations for each question was calculated and then standardized within each school for each participant.

Internet social skills. Social skills online were measured using the social subscale of the Internet skills scale (Van Deursem, Helsper, & Eynon, 2015). In the measure teens were presented with six statements about social situations online (e.g. I know how to change who I share content with) and then they are asked for their perception of how true each statement was about them with scores ranging from 1 = "*Not at all true of me*" to 5 = *"Very true for me"*. The items were averaged with high means indicating better Internet social skills. In this study the

scale had good internal reliability (Cronbach's α = .88) and was associated with offline social skills and social media social connectivity indicating good validity.

Social media social connectedness. Teens' self-perceptions of social connectedness on social media was measured using a modified version of the Facebook social connectedness scale (Grieve, Indian, Witteveen, Tolan, & Marrington, 2013). It was modified so that it was relevant more social media platforms. The scale included 20 items such as, "I see friends on social media as friendly and approachable". Teens respond on a six-point Likert scale ranging from 1 = *Strongly disagree* to 6 = *Strongly agree*. The twenty items are averaged, and higher scores indicate more feelings of connectedness to social media. In this sample, the scale had good internal reliability (Cronbach's α = .88) and there was a moderate positive association with well-being and a negative association with anxiety (Grieve et al., 2013).

Online Behaviors

Internet and social media use. Internet and social media use was measured using a condensed and modified version of the Parent/Teen Digital Citizenship Survey originally prepared by the Princeton Survey Research Associates International for the Pew Research Center's Internet and American Life Project (Lenhart et al., 2011). The survey included five subscales of self-report questions. The first subscale asks teens to respond as "Yes (I do)" or "No (I do not)" to whether or not they used different social media platforms (e.g., "Do you ever use and/or visit Twitter?" and "Do you ever record or upload videos using YouTube, Vine, etc.?"). The next subscale asked the teens to check the box next to the social media sites they have an account on from 18 listed options (e.g., Facebook, Twitter, Instagram, Kik, Snapchat etc.). Then for the sites they picked, they were asked to indicate which they used regularly by checking the box next to the site. The responses in these two subscales were used to gather frequency information. The fourth subscale asked teens to respond to six questions about how they use

technology to socialize with their friends. Teens were prompted to think about how often they communicate with their friends and to respond on a 5-point Likert scale ranging from "0 = *Never*" to "4 = *Everyday*" to questions such as "exchange instant message?" and "exchange messages through social media sites". The final subscale asked teens a series of four questions about the privacy settings of their most used social media profile. Teens responded on a 3-point Likert scale ranging from "1 = *Totally public*" to "3 = *Completely private*" to questions such as "who can see your picture" and "how restricted is your profile". Responses for each subscale are used to indicate different aspects of social media use.

Digital media use. Information about digital media use was measured using one item from The Common Sense Census, Media Use by Tweens and Teens (Rideout, 2015). The question asked the teens to respond about what social media they used and how many minutes they spent using it yesterday. The total number of minutes spent on social media was used.

Psychological Adjustment

Self-worth. Self-worth was assessed using the Global Self-Worth subscale (Harter, 1988), which was reformatted for completion online. The teens were presented with six statements about some teens in general (e.g., "some teens are pretty pleased with themselves") and then they were asked to "check the response that indicates how true each of the following statements are about you" with scores ranging from 1 = *"Really NOT true for me"* to 4 = *"Really true for me"*. The score for each item was summed and then averaged across items. The global self-worth subscale had adequate reliability (Cronbach's $\alpha = .65$) in this sample and previous research found evidence of acceptable validity (Harter, 2012).

Data Analysis

To confirm that the included scales would lead to meaningful comparisons bivariate correlations were computed. After the scales were confirmed, the hypothesized model was

tested. Mean average composite scores were used for the model since all scales were previously validated and path analysis utilizes continuous observed variables (Kaplan, 2009). All analyses were conducted in lavaan, which is a package available in R version 3.3.3 (Rosseel, 2012).

To evaluate the hypothesized model several goodness-of-fit criteria were considered. The Chi Squared goodness-of-fit statistic was used to compare the predicted covariance matrix of the observed variables with the actual covariance matrix found in the data. Nonsignificant values (p>.05) indicate only minor differences between the two matrices and therefore a good fit of the model to the data.

The Comparative Fit Index (CFI) and the Root Mean Square Error of Approximation (RMSEA) were also considered. CFI is a comparison of two fit functions: one from the covariance matrix estimated from the fitted model and one from a model that assumes no association between the observed. Values greater than .95 indicate good fit (Hu & Bentler, 1999). The CFI is less sensitive to sample size than other fit indices (Hooper, Coughlan, & Mullen, 2008). The RMSEA is a measure of average fit based on the square root of the model misfit divided by the model's degrees of freedom, where 0 represents perfect fit and higher values reflect poorer fit. Values between .05 and .08 are considered a fair fit and values between .08 and .10 are considered a mediocre fit (Kaplan, 2009). Additionally, the Bayesian information criterion (BIC) and the Akaike information criterion (AIC) were used together as additional indicators of fit when comparing the competing full model. The model with the lowest value of BIC and AIC is considered to fit the data best from a predictive perspective (Kaplan, 2009). Also, by selecting the model based on the BIC and AIC it increases the model's cross-validation capacity and meaningfulness if used on a different sample (Kaplan, 2009).

Results

How do Online and Offline Social Competence Relate to Other Measures of Social Functioning?:

The two mediating constructs of offline social competence and online social competence were compared to each other, peer victimization, and other related variables to learn about their associations with one another and to inform inclusion in the model. Offline social skills were positively correlated with online social skills (r=.18, p<.01), indicating that the two constructs are related but not the same. This is in line with expectations and indicates their inclusion as separate constructs (Reich, 2016). The pattern of results between the correlations of offline social skills and the peer reports of acceptance, popularity, and social media attraction aligned with expectations since accepted adolescents are likely to be socially competent (Rubin, Begle, & McDonald, 2012). Offline social skills were positively correlated with acceptance (r=.16, p<.05), popularity (r=.16, p<.05), overall social preference (r=.20, p<.01), and social media attraction (r=.15, p<.05). Online social skills were positively correlated with social media attraction (r=.15, p<.05) and social media acceptance (r=.15, p<.05).

As indicated by the bivariate correlations (Table 6), the pattern of significant correlations between the constructs of social media status and the traditional peer status constructs diverged in expected ways. Social media acceptance was positively associated with peer acceptance (r=.55, p<.001) and social preference (r=.32, p<.001), but not with popularity (r=.05, *ns*) or perceived popularity (r=.06, *ns*). Social media attraction was associated with peer acceptance (r=.52, p<.001), social preference (r=.26, p<.001), popularity (r=.22, p<.001) and perceived popularity (r=.20, p<.01). Social media attraction was also associated with rejection (r=.16, p<.01) and influence (r=.17, p<.01).

Social media impact was positively associated with popularity (r=.62, p<.001) and perceived popularity (r=.49, p<.001), negatively associated with social preference (r=-.17 p<.01), and not significantly associated with peer acceptance (r=.05, *ns*). Also, social media impact was positively correlated with social impact (r=.21, p<.001), influence (r=-.39, p<.001), and admiration (r=.13, p<.05).

How do Online Behaviors Relate to Each Other and Other Measures of Social Functioning?:

I also examined the associations between the behaviors in order to confirm expected significance, directions, and to determine which indicators to include in later model testing. Descriptive statistics for all variables were computed prior to testing the model (Table 5) to explore the means and standard deviations. In addition, bivariate correlations (Table 6) between all variables were calculated to examine the relationships between variables, to inform expected directions, and to establish criterion validity. Use of social media (r=.20, p<.01) and the number of social media accounts teens have (r=.18, p<.01) were associated with victimization frequency. These findings are in line with previous evidence indicating a relationship between victimization experiences and increased social media presence (Resnik & Bellmore, in prep). Additionally, the amount of online safety behaviors was the only indicator associated with online social skills (r=.13, p<.05).

Finally, the measure of social media social connectedness was significantly correlated with offline social skills (r=.28, p<.001), online social skills (r=.16, p<.01), and some social media behaviors, including time on social media (r=.16, p<.05) and number of accounts teens had (r= .15, p<.01). However, there were no significant relationships between social media social connectedness and peer victimization (r=.02, *ns*). Furthermore, there were no significant correlations between social media connectedness and acceptance (r=.01, *ns*), popularity (r=-.04, *ns*), social media acceptance (r=.01, *ns*), social media attraction (r=.03, *ns*), and social media

impact (*r*=.08, *ns*). Based on the inconsistent pattern of correlations, social media social connectedness was excluded from the model.

Test of Hypothesized Model: Do Offline and Online Social Competence and Online Behaviors Mediate the Relationship Between Peer Problems and Psychological Adjustment?

Path analysis was used to estimate the significance and magnitude of the hypothesized paths in the proposed model. Path analysis allows for complex models to be tested, along with direct, mediation (indirect), and total effects. Prior to proceeding with the path analyses, I evaluated the data for missingness and normality. I conducted Little's Missing Completely at Random test and found that the data were missing completely at random (x^2 (122) = 140.61, p>.05). Next, each variable was checked to see if it met the assumptions of multivariate normality. After checking the variables, not all variables were multivariate normal. This is because when measuring problematic behaviors, like peer victimization, only a low frequency of teens will have some experiences. Based on these results, the Full Information Maximum Likelihood (FIML) procedure was used for data imputation and Maximum Likelihood Robust (MLR) estimation was used for analyses.

As illustrated in the path diagram (see figure 3), the model tested if offline social skills and online social skills, measured with self and peer reports, mediated the relationship between peer victimization and psychological adjustment. It was predicted that online social skills would in turn predict social media behaviors, which would predict self-worth. Additionally, it was predicted that social media behaviors would mediate the relationship between peer victimization and psychological adjustment, while controlling for social anxiety. Based on the correlations described and similarity in measurement, correlated errors were added between peer victimization and social anxiety, offline social skills and online social skills, and acceptance and

social media acceptance. The model fit the data; $X^2(20)$ =36.735, p=.027, CFI =.944, RMSEA =.044, RMSEA 90% CI = .017-.078, BIC =5560.864, and AIC = 5397.459. Path estimates for the model are displayed in Table 7.

Even though several of the paths in the hypothesized model were significant, model changes were made to improve the fit of the model and to increase parsimony in the model. Model 2, as shown in the path diagram (see figure 4), excluded the peer reports of acceptance and social media acceptance due to their insignificant relationship with social media behaviors and self-worth when included in the model. All other paths remained the same. As indicated by the fit statistics model 2 fit the data fairly; $X^2(11)$ = 20.526, p=.039., CFI =.932, RMSEA =.056, RMSEA 90% CI = .013-.093, BIC = 4005.025 AIC = 3885.195. The Chi Squared goodness-of-fit statistic decreased, and the p-value increased slightly. The CFI and RMSEA both indicate fair fit. Plus, the BIC and AIC both decreased by over 1,500 points indicating better fit than the prior model from a predictive perspective.

As displayed in Table 8, confirming the hypothesis, peer victimization significantly predicted worse offline social skills (β =-.*22*, p<.01) and online social skills (β =-.*18*, p<.05). Also as hypothesized, peer victimization predicted the number of account teens' have (β =.19, p<.05) and marginally predicted the amount of time spent on social media (β =.21, p<.10), but not the amount of privacy settings used (β =-.04, *ns*). Partially supporting the hypothesis that social media behavior would impact psychological adjustment, online social skills predicted the amount of privacy settings used (β =.12, p<.05), but not time (β =.04, *ns*) or number of accounts teens have (β =.05, *ns*). Peer victimization (β = -.17, p<.05) and social anxiety (β =-.38, p<.001) directly predicted lower levels of self-worth. Offline social skills (β =.15, p<.05) and privacy

setting (β =.11, p<.05) both predicted increased self-worth. Tests of indirect paths were insignificant for all paths. A test for the total effects was significant (β = -0.05, p < .05).

Given the concurrent nature of the data and to test the contrasting incidental model (Parker & Asher, 1987) because previous research has found that kids who have poor social skills and are not accepted by their peers are at a greater risk for peer victimization (Fox & Boulton, 2005; Graham & Juvonen, 1998), the mediating pathways in the model were reversed (see figure 5). This reversed model fit the data worse than model 2 (χ^2 (8) = 16.62, p = .03; CFI = .938; RMSEA = .062; 90% CI = .016-.104; BIC = 4018.008; AIC = 3887.285). Additionally, the Satorra-Bentler scaled Chi-Square difference test indicated a significant difference between the models, with model 2 fitting better.

Discussion

This study was motivated by the goal of understanding how social competence skills, offline and online, employed by teens who experience peer victimization impact their psychological adjustment. In line with expectations and the Relational Framework, the findings indicate that peer victimization is associated with deficient offline and online social competence. Also, in line with expectations, peer victimization predicted more passive engagement on social media. Similar to previous studies (Storch & Ledley, 2005) and the causal model (Parker & Asher, 1987), offline social skills mediate the relationship between peer victimization and psychological adjustment. Additionally, the model indicates that worse online social competence is predictive of using less online safety behaviors, and that the use of less online safety behaviors is predictive of poorer psychological adjustment. Overall, teens' who experience peer victimization are likely to have deficits in their offline and online social competence and use aspects of social media in different ways, however the pathways between online social

competence and social media behaviors do not support mediation of the relationship between peer victimization and psychological adjustment.

Relation Between Online and Offline Social Competence and Peer Victimization

As teens spend increasingly more time interacting in online contexts (Rideout, 2016), it is necessary to further knowledge about social competence in online spaces by exploring how it is similar or different from the offline context. There was a modest correlation between the indicators of offline social skills and online social skills indicating that they are not identical. Again, this confirms the expectation that these two contexts are related, but not mirrors of one another (Reich, 2016). Whereas, peer acceptance and social media acceptance were highly correlated, which suggests that peers' perceptions of status may translate between contexts more fluidly (Pepler et al., 2017). Also, the behavioral constructs of use, engagement, and online safety behaviors were not significantly related to each other, which verifies that each construct is its own type of behavior on social media. It also highlights the importance of multiple constructs for understanding teens' behavior on social media as several recent studies have relied on frequency of use as the sole construct for understanding teens' behavior, which may lead to skewed conclusion (Cramer & Inkster, 2017; Twenge, Martin, Campbell, 2018; Vannucci et al., 2017).

Consistent with prior work connecting teens who experience victimization and social anxiety (Siegel et al., 2009), the correlation between victimization and social anxiety was expected. Also, interpreting prior evidence through the lens of the causal model (Parker & Asher, 1987), experiencing symptoms of social anxiety plays a role in the development of maladaptive behaviors since teens withdraw from peer interactions (La Greca & Stone, 1993). Thus, the significant relationship between social anxiety and psychological adjustment was also expected. As anticipated, peer victimization was negatively correlated with both offline social skills, peer

acceptance, and online social skills. However, peer victimization was not associated with social media peer acceptance. This may be understood by considering the contextual factors associated with peer social relationships online, such as how having a wider social network available online may lead teens to interact more with peers who do not go to school with them (Pepler & Craig, 2007; Subrahmanyam & Greenfield, 2008). Additionally, victimization was positively associated with more social media use. This finding extended across both the amount of time and the amount of accounts teens had. This finding indicates that teens who experience more peer victimization may try to compensate for the negative interactions (Resnik & Bellmore, in prep) and also as another context to spend time connecting to peers in if they withdraw from in-person peer socialization (Parker & Asher, 1987; Zywica & Danowski, 2008). Utilizing affordances from different contexts provides evidence for extension of the Relational Framework..

The hypothesized model incorporated multiple indicators of social competence offline and online. Since teens with poor social skills have worse perceptions of their own social skills (Cillessen & Bellmore, 2011), including another indicator aside from self-report is beneficial. While peer acceptance is commonly used as a relational outcome indicating social competence offline (Flannery & Smith, 2017), there were no pre-existing available parallel peer report measures to indicate social competence online. Additionally, because social media transforms peer relationships by adding new behaviors and norms, just adding "on social media" to the end of the offline peer report of acceptance would not assess the unique aspects of status online and be able to measure what it means to be accepted on social media (Nesi et al., 2018). A new measure of social media acceptance was created that underscored the importance of interaction as a characteristic of acceptance on social media (Moreno & Kota, 2013; Underwood & Ehrenreich, 2017; Underwood & Faris, 2015). This construct parallels the use of questions such as "who do you hang out at school with" to indicate peer acceptance (Bellmore, Nishina, Wikow,

Graham, & Juvonen, 2007; Graham & Juvonen, 1998). Also, previous research in offline contexts has found that being accepted by peers is associated with frequent interactions (Cillessen, 2008; LaFontana & Cillessen, 2002). So, it was expected based on the co-construction model (Subrahmanyam et al., 2006) and transformational framework (Nesi et al, 2018) that teens who were more socially adept online would be more likely to have a following online who interacts with them. This study found evidence for construct validity of social media acceptance, as findings aligned with expectations. Furthermore, evidence for construct validity of two other peer report social media peer status constructs, social media attraction and social media popularity, were found. While not used in the hypothesized model explicitly, they were used to confirm construct validity among the included measures. These constructs will be beneficial for future studies that incorporate additional aspects of social media specific behaviors as they relate to the dual-component model of social competence (Cillessen, 2011).

This study conceptualized the four subtypes of victimization, physical, verbal, relational, and cyber, together as part of a singular measures of overall victimization. The measure of peer victimization included some specific online experiences, in addition to questions about the other offline sub-types of victimization experiences (Juvonen et al., 2000). The decision to conceptualize peer-victimization across subtypes allowed for the examination of social competence skills of all teens who have these experiences, how they behave on social media, and how they contribute together to their psychological adjustment. This was done deliberately since the distinction between the subtypes is not always clear (Modecki, Minchin, Harbaugh, Guerra, & Runions, 2014). The experiences of bullying online and offline overlap (Modecki et al., 2014; Sumpter et al. 2012) with most targets of cyber-victimization also targets of offline victimization (Kota & Selkie, 2018; Waasdorp & Bradshaw, 2015), similar roles (Kota & Selkie, 2018), forms (Juvonen & Gross, 2008), social media use (Resnik & Bellmore, in prep), and effects on victims

(Hemphill et al., 2013, Modecki et al., 2014). Additionally, a report from the National Academies of Science, Engineering, and Medicine (2016) recommended that cyber-victimization be considered within the larger context of bullying, rather than separately.

Missing Relations Between Online Social Competence, Behaviors, and Psychological Adjustment

Since the skills needed to be competent online and how they impact psychological adjustment have yet to be identified, including these aspects in the study are necessary (Reich, 2016). While not all findings were as expected, exploration of the connections illuminated key pathways that impact psychological adjustment for teens who experience peer victimization. Even though not all hypotheses were supported, online social skills were associated with the online safety behaviors, such that teens who had worse online social skills reported using fewer online safety behaviors. While this was the only construct that was predicted by online social competence, this association is important because the available research indicates that for adolescents utilizing online safety behaviors, such privacy settings and other privacy management techniques, are associated with confidence in ability to manage their settings and social experiences on social media (Agosto & Abbas, 2015; Lewis, Kaufman, & Christakis, 2008; Madden et al., 2013). If teens miss out on experiences to learn the norms of social media use among their peer group, and thereby do not learn how to strategically manage their profiles, they leave themselves more vulnerable (Hofstra, Corten, & van Tubergen, 2016; Kelly, Kerr, & Drennan, 2017).

Contrary to my hypotheses, online social skills were not significant predictors of psychological adjustment and did not mediate the relationship between peer victimization and adjustment directly. It may be that online social skills are not as important of an influence as offline social skills on psychological adjustment. Previous studies have found that online only

experiences do not predict well-being, whereas offline only or dual-context experiences do (Gorzig, 2016; Sumter & Baumgartner, 2017). However, it is also likely that because of the layered and multifaceted nature of online social skills (Reich, 2016), a more nuanced understanding is needed to capture the relationship between online social skills and psychological adjustment. Perhaps, as indicated by the correlations between social media social connectedness and social skills in both contexts, how connected teens feel to social media is another aspect of online social competence that could influence the relationship. Given the relationship frameworks emphasis on the importance of peer processes and connections (Rodkin et al., 2015), it may be that learning the skills is less important than feeling a sense of belonging and satisfaction with experiences that is enhanced by knowing the skills. For example, Snodgrass et al. (2018) found that lonely videogame players who played videogames more and felt that their play allowed them to build meaningful social connections experienced psychosocial benefits.

The measure of online social skills, The Social Subscale of the Internet Skills Scale, was selected because of its application across platforms, validation with teens, and inclusion of strategic social abilities beyond only technical operational skills (van Deursen et al., 2015). For example, the question "I am careful to make my comments and behaviors appropriate to the situation I find myself in online" can be applied broadly across the online context and gets at information about the behavioral underpinnings of social decisions made online. However, the measure only asked teens if they know how to do each item, not whether they feel comfortable or satisfied with their experience, nor how well teens understand the social rules needed to interact in beneficial ways online. Other measures such as the social media self-efficacy scale (Hocevar, Flanagin, & Metzger, 2014) or the digital citizenship scale (Jones & Mitchell, 2016) could address some of these oversights and provide a more holistic look at many aspects of social skills

online. Yet, even these scales do not include a comprehensive understanding of the social skills needed by teens to have beneficial interactions on social media (Bryant & Marmo, 2012; Reich, 2016).

Also, deficits in online social competence did not predict use or engagement behaviors on social media. While this set of findings are in contrast to my hypotheses, the results overall do indicate that there is a difference in the skill sets needed to be socially competent in each setting. It may be an extension of previous evidence indicating that passive social media use is associated with worse well-being whereas active social media use is associated positively with wellbeing (Verduyn et al., 2017). Thus, the type of social media behavior teens chose to do on social media is what is related to their online social competence, more so than their behavior as a whole. Specifically, the more specific active behaviors, such as the implementation of strategic safety behaviors, are influenced by online social competence directly, whereas passive behaviors, such as number of accounts have, are not.

This study used a broad understanding of online social skills that could be applied across platforms in order to gain a general understanding of the connection between online social competence and psychological adjustment. However, as teens reported having many social media accounts on a variety of social media platforms, it is important to consider how specifics of platforms matter. The diversity of platforms used by teens has implications for the specific skill sets needed, how teens use them, and how the context of multiple social media platforms effect and interact with other contexts in their lives to impact their psychological adjustment (Lenhart et al., 2015; Subrahmanyam et al., 2006). For example, norms may be easier to acquire on platforms that are more public, such as platforms that encourage public photo sharing and commenting, since teens can observe what others are doing without having to directly interact with them (Underwood & Ehrenreich, 2017). Also, some platforms require different patterns of

interaction that vary in the amount of effort required (Yau & Reich, 2018). For example, based on focus groups with adolescents and young adults, they feel they have to be more aware, use more perspective taking skills, and generally put in a lot of work with Instagram posts (Yau & Reich, 2018), whereas on Snapchat they feel like there are less rules and skills needed (Bayer, Ellison, Schoenebeck, & Falk, 2015). So, it is important to consider specific social skills needed on different platforms (Bryant & Marmo, 2012), as well as social skills that are applicable across diverse platforms (van Deursen et al., 2015), and how they are related to adolescents' developmental needs (Subrahmanyam & Greenfield, 2008) and psychological adjustment (Uhls, Ellison, & Subrahmanyam, 2017).

Overall, this study provides evidence that teens who experience peer problems are utilizing social media in a compensatory way and have deficits in social competence online and offline. While the interplay between social competence, social media behaviors, and psychological adjustment are less defined than hypothesized, this study suggests that if teens are using specific social media behaviors in a less adaptive way then there is an increase in maladaptive psychological adjustment. Echoing previous findings, these mixed results may be due to the differences in what victimized teens are doing on social media (Gross et al., 2002; Valkenburg & Peter, 2009, Yang & Brown, 2015)

This current study underscores the importance of considering offline and online contexts as two distinct environments, and not mirrors of one another. While the offline and online contexts may not be completely unconnected, this study confirms that there are separate setting specific skills that teens' need to be successful in each context. Especially for teens who experience peer problems, the social media context provides both benefits and risks for psychological adjustment (Uhls et al., 2017; Underwood & Ehrenreich, 2017).

Limitations and Future Directions

Measuring social competence, especially social skills can be difficult given its multi-dimensionality (Rose-Krasnor, 1997). In this study I measured offline social skills using the Matson Evaluation of Social Skills with Youngsters (Matson et al., 1983) and online social skills using the Social Subscale of the Internet Skills Scale (van Deursen et al., 2015). As described, the measure of Internet social skills only asked teens if they know how to do each item. Similarly, the measure of offline social skills only asks about behaviors teens do. Focusing on behaviors may overlook other aspects of social skills, such as emotion regulation, attribution styles, and perspective taking (Milligan et al., 2017). However, these aspects are harder to define and measure (Milligan et al. 2017; Reich, 2016), leading to scarce availability of valid self-report measures. While recognizing these limitations, it was important to use existing measures that were previously validated for each context, and highlighted social skills that can be enacted at the behavioral level (Milligan et a., 2017). In order to gain a more comprehensive understanding of social savviness, future studies could incorporate different measures or create new measures that include additional aspects of social skills.

The use of peer nominations to measure social skillfullness offline and online seems promising as indicated by the pattern of bivariate correlations (Table 6) and validity seemed acceptable. While the social media peer nominations successfully measured the constructs of interest, there were some logistical limitations that should be considered. Conducting school-based research has become increasingly difficult (Mayeux & Kraft, 2017) and as high-school students are less motivated to participate in research (Lenhart, 2013), there are logistical issues that make high participation rates “essentially impossible” (Fournier, 2009). Participation rates were less than 50% of the recruited participants in each school, so there were far fewer nominations made, which may limit the range of nominees for each construct. While there is no

set standard of minimum percentage of consenting participants, maximizing the number of nominators is critical (Cillessen & Marks, 2017). This lower than ideal percentage of consenting participants per school may explain why the peer nominations were not incrementally predictive of social skills in the model.

Also, while students were prompted to write the first name and last initial of their classmates, many did not and instead wrote in the name of a celebrity, social media platform, or an unidentifiable other. These responses could not be included in the data, but they highlight a new reality of the social networks of teens: they extend beyond the walls of the school. Future studies should consider how to incorporate teens' peers and online social networks beyond their grade level when incorporating sociometric procedures for social media phenomena. Adolescents' social networks are broader than ever since teens are better able to stay in touch with friends from out-of-school contexts, who move away and live in different places, or who they only know from the online context (Boneva, Quinn, Kraut, Kiesler, & Shklowski, 2006; Lenhart et al., 2015). So studies, including this one, that look only at school networks are now missing a major aspect of teens' peer relationships and social lives. All future studies incorporating sociometric procedures should be understood as representing only a fraction of teens' networks when they do not measure teens extended social networks, even when it is due to ethical or logistical issues.

When considering the relationship between social media and psychological adjustment an individual differences perspective may be necessary where psychological adjustment can be enhanced or hampered by specific social media influences and events that day. The focus of this study was to explore more general social media behavior, but it is possible that these relationships are fluid and change quickly over time (Weinstein, 2018). But, due to the cross-sectional nature of this study that cannot be assessed. Replicating this study longitudinally would

allow the investigation of these questions and allow for more definitive predictive generalizability. Also, looking at short term daily experiences of teens victimization experiences, social media behavior, and well-being would be informative. It is possible that there was a mismatch between the timing of the measures to the fleetingness of the experience since the measures were spread out across two weeks. By exploring teens' social media behavior on a single day and whether that is predictive of both feelings of well-being on that day and future well-being would allow the exploration of more micro-changes in psychological adjustment and what specific behaviors were related to it.

Another limiting factor of the study is that it relied on self-report information about social media behaviors. Many have argued that teens are unreliable estimators of their own behaviors online (Fan et al., 2006; Khan et al., 2016) and so multiple sources of information should be included. In order to address this limitation multiple indicators of social media behavior and experiences were accessed. By incorporating multiple measures of social media behavior, a more complete profile of teens' online behaviors could be understood and each aspects' relationship to peer victimization, social competence, and psychological adjustment could be explored. However future studies could incorporate teens' social media content that is easily quantifiable, such as how frequently teens post, number of responses they receive, and sentiment of their posts, and see if these specific observed behaviors are associated with peer victimization, online social competence, and psychological adjustment (Ehrenreich & Underwood, 2016; Nesi et al., 2018). In fact, a recent systematic narrative review found that only six out of 234 (2.6%) studies about adolescents' social media use and well-being incorporated content from the teens themselves (Sarmiento et al., in prep). This is a major gap since content provides rich quantifiable data about teens' skills and behaviors, which may explain some of the pathways between victimization and psychological adjustment.

Implications and Contributions

This study has several practical, methodological, and theoretical implications. Practically, for teens who have problematic peer relationships, social skills training programs are commonly used as an intervention technique (Fox & Boulton, 2003; Fox & Boulton, 2005; Merrerll, Gueldner, Ross, & Isava, 2008). These social-skills training interventions teach effective and appropriate ways of interacting with others, which hopefully decreases future victimization for these children and lessens the impact that missing out on beneficial peer experiences has on their psychological adjustment (Hanish & Guerra, 2000). However, most available social skills training programs do little to incorporate social media as another separate context where victimized teens experience deficits (McFarland & Ployhart, 2015; Morgan, 2012; Vernon, Miller, Ko, & Wu, 2016). As the relational framework stresses that disrupting problematic peer processes requires understanding the dynamic roles of peers in different contexts (Pepler et al., 2017; Rodkin et al., 2015), it is important that both contexts receive adequate consideration as opportunities for social skills growth. For example, encouraging and teaching the skills necessary to make savvy decisions regarding online safety behaviors may ameliorate some of victimizations effects on psychological adjustment. Additionally, teachers and trainers may not know the key skills necessary for adolescents to be successful online broadly and on different platforms due to the diversity in norms and affordances (Morgan, 2012). This study sheds light on the need to incorporate online social competence and social skills training in intervention programs.

Methodologically, incorporating multiple measures of social competence, offline and online, are informative aspects of this study. Commonly single self-report measures are used to assess social competence. However, this is not adequate as teens with poor social competence have less reliable self-perceptions of their own social standing (Bellmore & Cillessen, 2003;

Cillessen & Bellmore, 2011) and so multiple perspectives yield more accurate results (Fox & Boulton, 2005). So, using multiple informants and sources of social competence is both a methodological strength and contribution of this study. Furthermore, few studies have used sociometric procedures to measure peer processes on social media. The inclusion of this novel method of understanding social competence on social media shows promise as an informative method to measure teens' social media social competence based on the correlational results among the constructs, even though they were not included in the final model. These constructs will be beneficial for future studies that explore aspects of the social media context and its influence and impact by teens' peer status on social media (Cillessen, 2011; Nesi & Prinstein, 2018).

Theoretically, this study provides evidence for the application and extension of the causal model (Parker & Asher, 1987) and the relational framework (Pepler & Craig, 2007; Rodkin et al., 2015) in the online context in addition to the offline context. Since teens spend a significant amount of time online and socializing on social media (Lenhart et al., 2015), the application of these theories to the online context is critical. Also given the importance of social contexts' influences on teen' skills and adjustment, examining both contexts within the same framework enhances the reach of both theories.

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Table 1. ***Summary of Study Measures***

Measure	Reference	Sample item; response scale
Demographics	Gender/ethnicity	
Peer victimization frequency	Recollections of Harassment Incidents measure (Juvonen, Nishina, & Graham 2000, modified)	How often has someone: Said nasty things about you being your back? 1 = has not happened this year; 4 = around once a day
Social anxiety	Social Anxiety Scale for Adolescents. (La Greca & Lopez, 1998)	I worry about what others say about me; 1 = not at all; 5 = all the time
Social skills offline	The Matson Evaluation of Social Skills with Youngsters (Matson, Rotatori, & Helsel, 1983)	I take care of others' property as if it were my own; 1 = least like me; 5 = most like me
Peer nominations of status online and offline	Peer nominations (Graham & Juvonen, 1998)	Who do you like the most?
Internet social skills	Internet skills scale (Van Deursem, Helsper, & Eynon, 2015).	I know how to change who I share content with; 1 = Not at all true of me; 5 = Very true for me
Social media social connectedness scale	The Facebook social connectedness scale (Grieve, Indian, Witteveen, Tolan, & Marrington, 2013)	I see friends on social media as friendly and approachable; 1 = strongly disagree; 6 = strongly agree
Internet and social media use	Parent/Teen Digital Citizenship Survey originally prepared by the Princeton Survey Research Associates International for the Pew Research Center's Internet and American Life Project (Lenhart et al., 2011)	Do you have an account Facebook?, Twitter?, Instagram?, Kik?, Snapchat?).
Digital media use	The Common Sense Census, Media Use by Tweens and Teens (Rideout, 2015)	For how many minutes did you use social media (such as Facebook, Twitter, or Instagram) yesterday?
Self-worth	SPPA—Global Self-Worth Subscale (Harter, 1988, 2012)	Some teens are pretty pleased with themselves; 1 = really not true for me; 4 = really true for me

***Table* 2. *School recruitment and participation* rates**

	Recruited (passed out in class)	Returned	Issues (not enrolled)	Enrolled	Participated
School 1	477	189	15	174	156
School 2	265	103	5	98	92
School 3	61	33	2	31	31
Total	803	325	22	303	279

Note. Issue include the assent was not returned (21) and no parent consent (1)

Table 3. ***Demographic Characteristics***

		N	%
Gender			
	Males	91	32.6%
	Females	182	65.2%
	Did not report	6	2.2%
Race/ethnicity			
	African American or Black	5	1.8%
	Asian	3	.7%
	Caucasian or White	239	85.7%
	Latino(a)/Mexican American	10	6.6%
	Pacific Islander/Filipino	2	1.1%
	Native American	2	0.7%,
	Multiple or Other	11	3.9%,
	Did not report	7	2.5%
Age			
	15	88	32.2%
	16	145	53.1%
	17	38	13.9%
	18	2	0.7%
	Did not report	6	2.2%

Note. N = 279

Table 4. ***Table of all variables in hypothesized model with descriptive statistics and α***

Variables	N Participants	*M*	SD	Potential Range	Observed Range	N of items	α
Victimization Frequency	267	1.38	.43	1-4	1-3.11	18	.92
Social Anxiety	258	2.73	.83	1-5	1-5	9	.88
Offline Social Skills	253	4.18	.61	1-5	1-5	23	.94
Internet Social Skills	267	4.61	.56	1-5	1.5-5	6	.88
Acceptance	279	0	1	NA	Z= -.91-4.50	1	NA
Social Media Acceptance	279	0	1	NA	Z = -.59-4.40	1	NA
Time on social media	256	99.64	123.73	NA	0-720	1	NA
Have Accounts	268	5.85	2.12	0-17	0-11	17	NA
Privacy	267	2.19	.84	1-3	1-3	4	.84
Self-worth	256	2.70	.55	1-4	1-4	6	.65

Table 5. *Bivariate Correlation Table of All Variables*

Bivariate Correlation Table

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
1	--																									
2	.27***	--																								
3	-.31***	-.44**	--																							
4	-.21**	-.05	.19**	--																						
5	-.18**	-.05	.21**	.19**	--																					
6	-.18**	-.11	.04	.18**	.09	--																				
7	.02	-.05	.17**	.28***	-.06	.16**	--																			
8	.20**	.13*	-.13*	.10	-.06	.00	.16*	--																		
9	.20**	-.08	.07	.14*	-.05	.11	.29***	.09	--																	
10	.18**	.14*	-.10	.10	.00	.02	.15*	-.05	.14*	--																
11	.10	.11	-.06	.20**	-.03	.01	.17**	.06	.20**	.48***	--															
12	-.30***	.00	.14	-.05	.10	-.01	-.26***	-.18**	-.44***	-.13*	-.19**	--														
13	-.06	-.02	.12	.08	.14*	.13*	.06	.06	-.06	-.08	-.04	.06	--													
14	-.04	.04	.02	.15*	.12	.15*	.03	.03	.11	.06	.11	-.04	-.01	--												
15	.02	-.03	.04	.11	.03	-.03	.08	.04	.06	.01	.08	-.04	.03	.28***	--											
16	-.05	.01	.00	.10	.07	.15*	.01	-.02	.14*	.09	.12	-.04	-.03	.65***	0.04	--										
17	-.17**	-.01	.06	.16*	.11	.09	.01	-.07	-.02	-.03	-.03	.07	.04	.52***	0.05	.548***	--									
18	.03	-.06	-.01	-.13*	-.07	-.03	.06	.03	.09	-.05	-.08	.00	.00	.16**	.27***	.11	.05	--								
19	-.01	-.05	.07	.16*	-.01	-.09	.08	-.03	.12*	-.03	.10	-.03	-.03	.22***	.62***	.05	.08	.26***	--							
20	.05	.18**	-.14*	-.06	.06	-.03	-.01	-.04	-.18**	.07	.00	.05	-.05	-.07	-.07	-.05	.03	.04	-.08	--						
21	-.11	-.03	.08	.16*	.09	.14*	.08	-.04	.08	.076	.01	-.00	.05	.54***	.04	.54***	.66***	.06	.08	.06	--					
22	-.04	.01	.07	.11	.09	-.02	.02	-.06	.01	-.06	-.03	.00	.02	.17**	.39***	.10	.22***	.10	.42***	-.05	.18**	--				
23	-.09	.02	.06	.18**	.16*	.05	-.02	-.10	.01	-.03	-.10	.05	.05	.24***	.13*	.25***	.44***	-.07	.25***	-.05	.36***	.53***	--			
24	-.14*	.04	.04	.20**	.12*	.08	-.04	-.08	-.08	.02	.04	.05	.03	.26***	-.17**	.32***	.68***	-.69***	-.14*	-.01	.43***	.08	.37**	--		
25	-.10	-.05	.05	.02	.03	.04	.05	-.03	.05	-.06	-.07	.05	.03	.46***	.21***	.45***	.72***	.73***	.23***	.05	.50***	.21***	.25**	-.01	--	
26	-.04	-.15*	.14*	.15*	-.04	-.02	.07	.00	.20**	-.07	.07	-.06	.01	.20**	.49***	.06	.04	.16**	.77***	-.69**	.02	.33***	.21***	-.10	.13*	--
N	267	258	256	253	256	267	268	256	268	268	266	268	267	279	279	279	279	279	279	279	279	279	279	279	279	279
Mean	1.38	2.73	2.70	4.18	3.05	4.61	3.91	99.64	3.09	5.85	3.45	4.28	2.19	0	0	0	0	0	0	0	0	0	0	0	0	0
SD	.43	.83	.55	.61	.58	.56	.82	123.73	.63	2.12	.31	1.30	.84	1	1	1	1	1	1	1	1	1	1	1	1	1

Notes. * <.05, **<.01, ***<.001

1. Peer Victimization Frequency
2. Social Anxiety
3. Self-Worth
4. Offline Social Skills (Offline)
5. Empathetic Concern (Offline)
6. Internet Social Skills (Online)
7. Social Media Social Connectedness (Online)
8. Time Spent on Social Media Yesterday
9. Socialize with Friends on Social Media
10. Number of Social Media Accounts Have
11. Number of Social Media Accounts Use
12. Number of Ways use Social Media
13. Amount of Privacy Settings
14. SM Attraction: Whose social media do you pay the MOST attention to? (peer nomination)
15. SM Impact: Whose social media does everyone pay the MOST attention to? (peer nomination)
16. SM Acceptance: Whose social media do you interact with the MOST? (peer nomination)
17. Acceptance: Like most (peer nomination)
18 Antipathy: Like least (peer nomination)
19 Popular: Most popular (peer nomination)
20. Rejection: Least popular (peer nomination)
21. Best friend (peer nomination)
22. Influence: Most influential
23. Admiration: Admire most
24. Preference: Social preference
25. Impact: Social impact
26. Perceived popularity

Table 6. ***Standardized path estimates for the hypothesized model***

Direct Paths	β Estimate	β Standardized	S.E.
Victimization → Self-worth	-.23*	-.17*	.10
Social anxiety → Self-worth	-.26***	-.38***	.000
Offline Social Skills → Self-worth	.13*	.15*	.05
Acceptance → Self-worth	.00	.00	.04
Online Social Skills → Self-worth	-.06	-.06	.05
Social Media Acceptance → Self-worth	.00	.01	.03
Time → Self-worth	-.19	-.06	.14
Have accounts → Self-worth	-.01	-.03	.02
Privacy → Self-worth	.07*	.11*	.04
Victimization → Offline Social Skills	-.32**	-.22**	.12
Victimization → Acceptance	-.41**	-.17**	.12
Victimization → Online Social Skills	-.23*	-.18*	.12
Victimization → Social Media Acceptance	-.12	-.05	.11
Online Social Skills → Time	.01	.04	.02
Social Media Acceptance → Time	-.00	-.01	.01
Victimization → Time	.09†	.21†	.05
Online Social Skills → Have accounts	.14	.04	.21
Social Media Acceptance → Have accounts	.18	.09	.14
Victimization → Have accounts	.93**	.19**	.33
Online Social Skills → Privacy	.19*	.12*	.08
Social Media Acceptance → Privacy	-.04	-.05	.05
Victimization → Privacy	-.08	-.04	.51

Note. † $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$, n = 279
$X^2(20) = 36.735$, p=.027, CFI =.944 , RMSEA =.044 , RMSEA 90% CI = .017-.078, BIC =5560.864 AIC = 5397.459

Table 7. ***Path analysis results for model 2***

Direct Paths	β Estimate	β Standardized	S.E.
Victimization → Self-worth	-.22*	-.17*	.10
Social anxiety → Self-worth	-.26***	-.38***	.04
Offline Social Skills → Self-worth	.13*	.15*	.05
Online Social Skills → Self-worth	-.05	-.06	.05
Time → Self-worth	-.19	-.06	.14
Have accounts → Self-worth	-.01	-.03	.02
Privacy → Self-worth	.07*	.11*	.04
Victimization → Offline Social Skills	-.32**	-.22**	.12
Victimization → Online Social Skills	-.23*	-.18*	.12
Online Social Skills → Time	.01	.04	.02
Victimization → Time	.09†	.21†	.05
Online Social Skills → Have accounts	.19	.05	.22
Victimization → Have accounts	.94**	.19**	.34
Online Social Skills → Privacy	.18*	.12*	.08
Victimization → Privacy	-.07	-.04	.12

Note. † $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$, n = 279
$X^2(11) = 20.526$, p=.039., CFI =.932 , RMSEA =.056 ., RMSEA 90% CI = .013-.093, BIC = 4005.025 AIC = 3885.195

Figure 1: ***Conceptual Model***

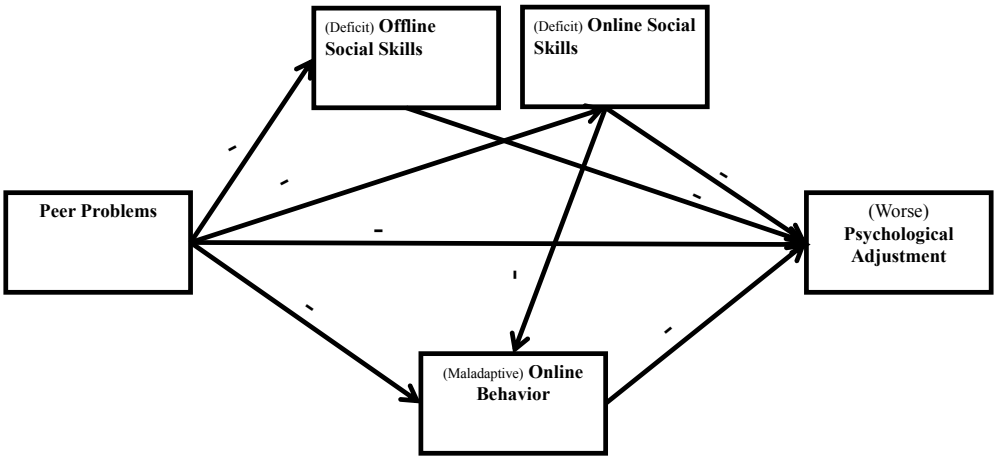


Figure 2: ***Conceptual Model with Measures***

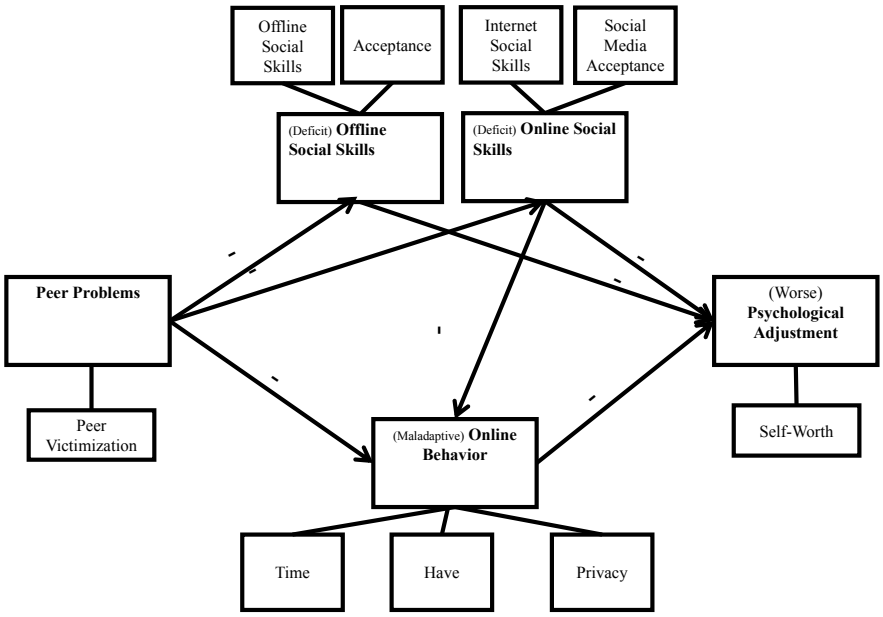
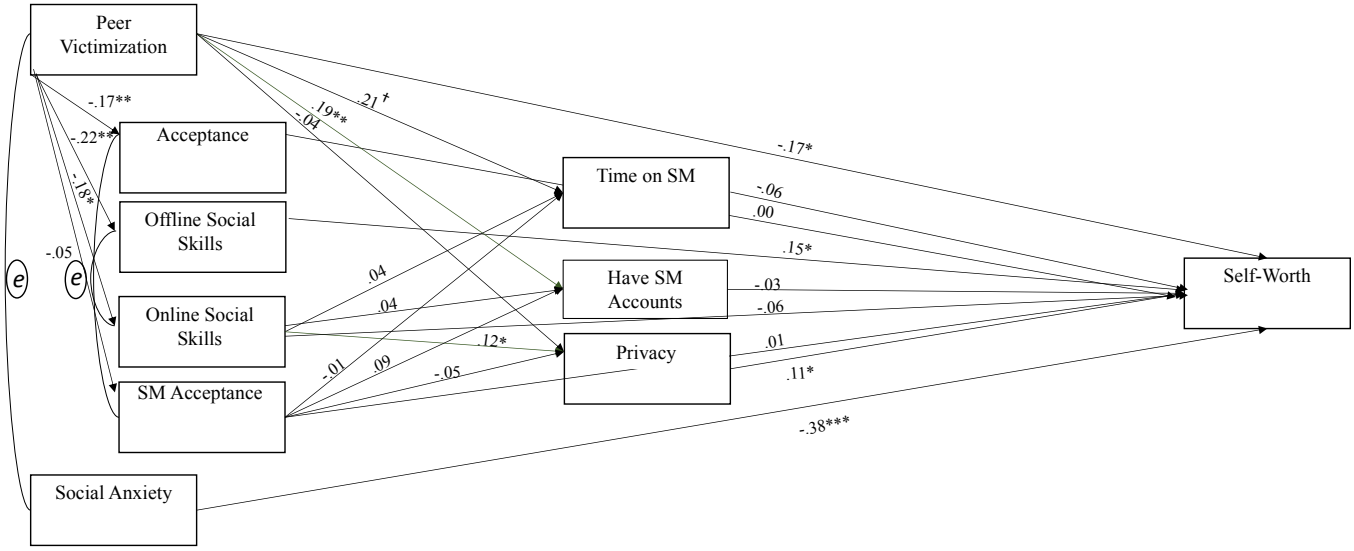
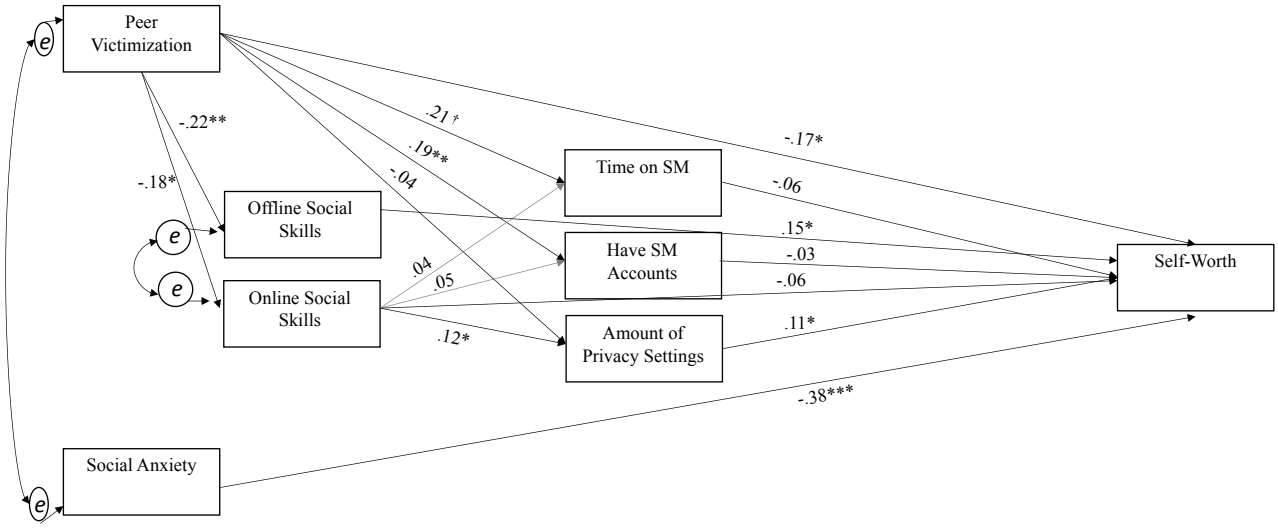


Figure 3: ***Path Diagram***



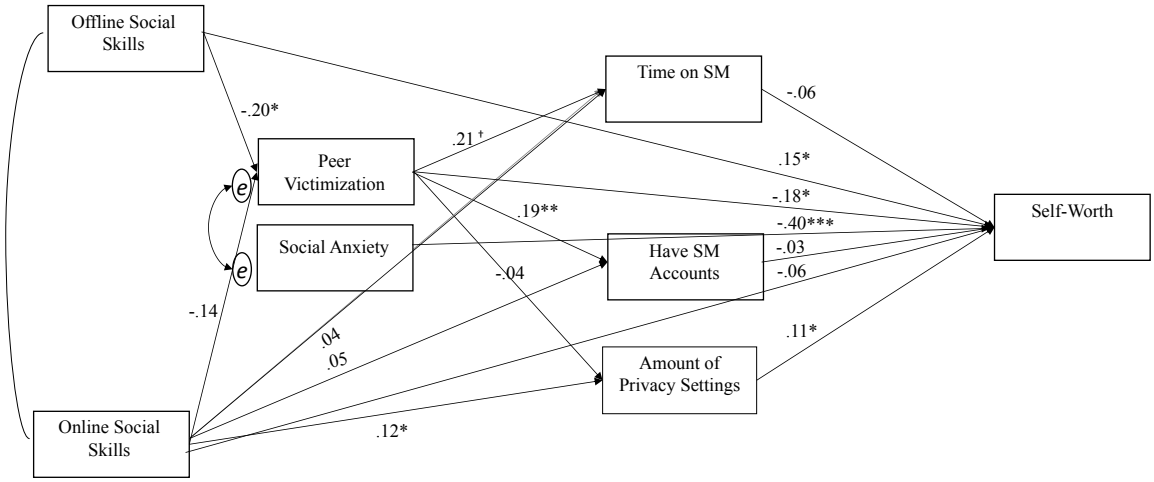
Note: * $p < .05$, ** $p < .01$, *** $p < .001$
$X^2(20) = 36.735$, p=.027, CFI =.944, RMSEA =.044, RMSEA 90% CI = .017-.078, BIC =5560.864, AIC = 5397.459

Figure 4: ***Path Diagram for the Trimmed Model***



Note: * $p < .05$, ** $p < .01$, *** $p < .001$
$X^2(11) = 20.526$, p=.039., CFI =.932, RMSEA =.056, RMSEA 90% CI = .013-.093, BIC = 4005.025 AIC = 3885.195
Error terms for measured variables are represented by *e* when correlated with one another

Figure 5: ***Path Diagram for the Reversed Model***



Note: * $p < .05$, ** $p < .01$, *** $p < .001$
χ^2 (12) = 38.337, p = .000; CFI = .811, RMSEA = .089, 90% CI = .058-.121, BIC = 4017.205; AIC = 3901.006