POPULAR IN THE DIGITAL AGE: SELF-MONITORING, AGGRESSION, AND

PROSOCIAL BEHAVIORS IN DIGITAL CONTEXTS AND THEIR ASSOCIATIONS WITH

POPULARITY

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ABSTRACT

Information and communication technologies (ICT) play an important role in the social lives of adolescents, as many of the social interactions that once occurred in face-to-face contexts are now occurring through digital technologies. Although many of these interactions are prosocial in nature, adolescents may also engage in high levels of aggression in ICT-mediated contexts (Bauman, 2013; Bauman & Newman, 2013). Furthermore, they often engage in self-monitoring when communicating with peers through ICTs in order to maintain a positive public image (Subrahmanyam, Garcia, Harsono, Li, & Lipana, 2009). These digital behaviors may have implications for how individuals establish and maintain their place within social hierarchies in natural peer contexts (e.g., schools). Drawing on both The Hyperpersonal Theory of Computer-Mediated Communication and Resource Control Theory, the current study examined concurrent associations between digital self-monitoring, cyberaggression, cyber-prosocial behaviors, and popularity. A sample of 273 (112 boys; 161 girls) adolescents attending high schools in the Upper-Midwest of the United States provided data for this study during the fall of the 2014 – 2015 school year. Students completed a series of questionnaires consisting of peer-reports and self-reports of aggressive and prosocial behaviors in face-to-face and digital contexts, peer-reports of popularity, and self-reports of self-monitoring in digital and face-to-face environments. Small positive correlations were found when examining associations between peer- and self-rated cyberaggression and peer- and self-rated cyber-prosocial behavior (rs between .11 and .22). Controlling for face-to-face overt and relational aggression, cyberaggression was negatively related to adolescents' popularity, particularly for individuals who engaged in low to moderate levels of digital self-monitoring. Cyber-prosocial behavior was positively associated with popularity generally, and specifically for adolescents low in face-to-

face prosocial behaviors. Cyberaggression, cyber-prosocial behaviors, and sex also interacted to predict popularity. Analyses revealed that for boys high in cyber-prosocial behaviors, cyberaggression was positively associated with popularity, while the relation between cyberaggression and popularity was not significant for girls or for boys low in cyber-prosocial behavior. Results are discussed within the context of Resource Control Theory and how they may be applied to researchers' understanding of peer relationships in digital and face-to-face social contexts.

ACKNOWLEDGMENTS

DEDICATION

I dedicate this work to Regina, Andalucía, and Cohan. As this chapter of our life closes, I look

forward to writing the next part of our story together.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

INTRODUCTION

Information and communication technologies (ICTs) have become extensively integrated into the lives of adolescents and are highly important for their social interactions. Indeed, 72% of adolescents rate texting as very important for their social relationships (Cole, Suman, Schramm, Zhou, & Salvador, 2013), and nearly 89% report spending the same or more amount of time socializing with friends through ICTs as they do face-to-face (Cole et al., 2011). As increasing amounts of time are spent interacting in digital contexts, the social processes and organizational structures that adolescents use to determine status and position within social hierarchies are likely influenced by peer group interactions conducted in these mediums. Behaviors that adolescents in past generations had engaged in during face-to-face interactions (e.g., bullying/aggression, providing support, prosocial behavior) now also occur through digital technologies (e.g., cyberbullying/cyberaggression, online counseling, Facebook support pages). Aggressive and prosocial behaviors in ICT-mediated contexts may be as important in the lives of adolescents as these same behaviors occurring during face-to-face interactions. As such behaviors are particularly instrumental in controlling social resources and obtaining status (Hawley, 1999; 2003), peer interactions through ICTs broaden adolescents' ability to utilize both aggressive and prosocial behaviors to attain and maintain popularity.

Despite recent empirical attention to the social and emotional causes and consequences of ICT-mediated behaviors, cyberaggression in particular (Badaly et al., 2013; Barlett & Gentile, 2012; Runions, Shapka, Dooley, & Modecki, 2013), limited work has been conducted considering the potential impact of cyberaggression and cyber-prosocial behavior on individuals' popularity within hierarchies occurring in natural peer groups, such as those that form at school. As obtaining and maintaining popular status is of great importance to adolescents (Cillessen,

Schwartz, & Mayeux, 2011; Dijkstra, Cillessen, & Borch, 2013; LaFontana & Cillessen, 2010; Lease, Kennedy, & Axelrod, 2002; Pellegrini, Roseth, Ryzin, & Solberg, 2011), the lack of understanding concerning associations between digital behaviors and popularity is notable. The current study elucidates how behaviors in digitally mediated contexts relate to the development of popularity among adolescents.

Adolescents' ICT use

The ability to connect with others through ICTs is integral to the social lives of modern adolescents. While not fully replacing face-to-face interactions, adolescents consider their ability to access and interact with their peers through digital technologies of paramount importance to their social lives (Cole et al., 2013). Socialization through ICTs is so pervasive that, compared to 35% adolescents who report socializing face-to-face outside of school, 63% of adolescents text their friends daily, 39% talk with friends on cell phones, 29% message friends through social networks, 22% communicate through instant messaging, and 6% email their friends daily (Lenhart, 2012). Although time spent in school and in-person gatherings with friends remain important for adolescents' social and emotional well-being, a majority of the social interactions that peers have with one another during adolescence is currently taking place in digitally mediated contexts (Cole et al., 2011). This shift in the way adolescents conduct interpersonal interactions may have significant implications for their social and emotional development.

Research has shown that despite the mediated nature of ICT social interactions adolescents engage in the same behaviors in digitally mediated contexts as they do in face-to-face situations. Indeed an extensive body of research has documented aggression (Bauman, 2013; Bauman & Newman, 2013; Burgess-Proctor, Patchin, & Hinduja, 2010), victimization (Cook, Williams, Guerra, Kim, & Sadek, 2010; Dempsey, Sulkowski, Dempsey, & Storch,

2011), social support (Ranney & Troop-Gordon, 2012; Subrahmanyam & Smahel, 2011; Swenson, Nordstrom, & Hiester, 2008), identity exploration (DeHaan, Kuper, Magee, Bigelow, & Mustanski, 2013), image maintenance (Subrahmanyam, Garcia, Harsono, Li, & Lipana, 2009), cooperative game play (Selfhout, Branje, Delsing, ter Bogt, & Meeus, 2009), romantic interactions (Blais, Craig, Pepler, & Connolly, 2008; Teenage Research Unlimited, 2007), and civic engagement (Cassell, Huffaker, Tversky, & Ferriman, 2006) in a variety of ICT interactive contexts (Subrahmanyam & Smahel, 2011). These behaviors in both digital and face-to-face contexts have demonstrated significant relations with various forms of social and emotional adjustment during adolescence and into early adulthood (Subrahmanyam & Smahel, 2011). While these behaviors in digital contexts may have similar effects on individuals' socioemotional well-being as their face-to-face counterparts, there are indications that the ways in which adolescents engage in these behaviors through ICTs significantly differ from how they are enacted face-to-face and that these differences alter the social and emotional experiences that occur as a result (Subrahmanyam & Smahel, 2011). The bulk of research has examined how ICT interactions influence individuals' socioemotional adjustment. However, little is known about how changes in the way individuals participate in digital social interactions influence individuals' status within that group.

Hyperpersonal Theory of Computer-Mediated Communication & the influence of ICTs on social interactions

Recent theory suggests that ICT-mediated communication influences the ways in which individuals interact with one another by enhancing their ability to self-monitor and control the flow of information during conversations (Tanis & Postmes, 2007; Tidwell & Walther, 2002). According to the Hyperpersonal Theory of Computer-Mediated Communication, ICTs slow

down the speed with which social interactions take place, allowing individuals more time and consideration when sending and receiving messages (Caplan, & Tuner, 2007; Ledbetter, & Larson, 2008; Tidwell & Walther, 2002). Additionally, ICTs remove social cues by limiting the amount of auditory and visual information present during a given interaction, enabling individuals to focus attention on the content of the messages they intend to send rather than concerning themselves with how their non-verbal behaviors may be interpreted (Lee, 2004; Tanis & Postmes, 2003; Walther, 2011). This slowing down and limiting of interpersonal information enables individuals to monitor themselves and encourages intentionality and self-control when creating messages and posting information (Tidwell &Walther, 2002; Walther, 2011). The ability to control the dissemination of information and monitor self-representation in digital contexts helps individuals develop positive impressions among others and cultivate the esteem of their peers (Walther, 2011). Thus, ICTs facilitate social and emotional adjustment by encouraging individuals to be more careful and deliberative in their digital interactions and behaviors than they are in their face-to-face interactions.

The central tenets of this theory have been confirmed among adolescents (Davis, 2010), young adults (Gonzales & Hancock, 2008; Joinson, 2001), and those in middle adulthood (Tidwell &Walther, 2002; Walther, 2011). Research specifically focusing on adolescents has shown that individuals exploit the limited information available in ICTs to control the information that is presented to others and to create a positive impression with interactive partners. Indeed, when first creating accounts on social networks, email services, and gaming sites, adolescents put careful thought and consideration to their screen names (Smahel & Subrahmanyam, 2007; Smahel & Vesela, 2006), avatars appearance (Smahel, Blinka, & Ledabyl, 2008), and physical appearance in pictures and videos (Subrahmanyam et al., 2009;

Subrahmanyam & Smahel, 2011). Additionally, adolescents take care to post pictures and videos documenting personal achievements (boyd, 2007; Manago, Graham, Greenfield, & Salimkhan, 2008) and highlighting peer valued traits (Subrahmanyam et al., 2009). Adolescents also publically align themselves with popular cultural images and icons while dissociating themselves from unpopular trends, topics, and people (Subrahmanyam et al., 2009). They will even go so far as to delete and "untag" themselves in pictures and videos presenting themselves in a negative light or that make them appear unattractive (Strano, Wattai, & Queen, 2012). Thus, adolescents exploit digital media in order to present aspects of their self in ways that will gain acceptance of their peers, family, and their communities (DeHaan et al., 2013; Strano et al., 2012; Subrahmanyam & Smahel, 2011).

To date, research concerning monitored and idealized self-representations in ICT interactions has focused primarily on how these representations relate to individuals' own feelings about the quality of their social interactions and their overall emotional adjustment (Subrahmanyam & Smahel, 2011). To this end, presenting a positive self-image to others through ICTs generally has been shown to positively predict enhanced emotional adjustment (Boneva, Quinn, Kraut, Kiesler, & Shklovski, 2006; Ling & Yttri, 2002; Subrahmanyam et al., 2009). When interacting with others through ICTs, adolescents feel as if they can more fully connect emotionally with others and express themselves in ways that will gain them acceptance from their peers (Boneva et al., 2006; Davis, 2010; Ling & Yttri, 2002). Through these interactions, adolescents feel that they engage in more meaningful and positive interactions with their peers than they do during face-to-face interactions and are able to disclose information that they normally would feel uncomfortable sharing face-to-face (DeHaan et al., 2013; Ledbetter et

al., 2011). These self-disclosures in digital contexts signals to others that they consider them friends and creates a sense of camaraderie (Ledbetter et al., 2011).

Despite these positive effects, there are some indications that an enhanced ability to present a positive image of oneself in digital contexts can have negative repercussions for adolescents' behaviors toward others. Several studies have shown that interactions through ICTs allow individuals to engage in behaviors that they would generally not be able to engage in face-to-face (e.g., identity exploration, emotional disclosure, discussion of controversial topics; Barlett & Gentile, 2012; Blais et al., 2008; DeHaan et al., 2013; Subrahmanyam & Greefield, 2008; Subrahmanyam & Smahel, 2011; Subrahmanyam, Smahel, & Greenfield, 2006). Of particular importance for social development is the enhanced ability to engage in aggressive behaviors. Although there is considerable overlap in those who identify themselves as aggressive face-to-face and those using cyberaggression, a significant portion of individuals aggress against others in cyber contexts, but not in face-to-face situations (Barlett & Gentile, 2012). Additionally, there is evidence that ICTs shrink the power differential in social interactions thereby giving individuals who may not have the power to aggress against others normally more leeway to enact aggressive behaviors through digital mediums (Barlett & Gentile, 2012). Thus, while there are often many personal benefits of presenting an idealize version of the self, there is also the opportunity to engage in versions of the self that are hostile and hurtful to others.

What is unclear is how this ability to monitor one's self-representation online and control the information presented to peers influences individuals' standing in their peer group. Those who are able to best monitor and manage their self-representation in these digital contexts, according the Hyperpersonal Theory of Computer-Mediated Communication, have an advantage when it comes to social interactions as they are better able to adjust their behaviors and digital

image to optimize their self-representation (Tidwell &Walther, 2002; Walther, 2011). Research, however, has yet to examine how individuals' efforts to monitor and craft their digital self-presentations relate to others' opinions of them and their standing in their peer group. Furthermore, it is not well understood how this ability to create a more idealized representation of oneself in digital contexts influences the social behaviors that one employs in the service of obtaining or maintaining popularity.

Resource Control Theory & the importance of popularity among adolescents

Achieving popularity is a significant goal for adolescents (Cillessen et al., 2011; Dijkstra et al., 2013; LaFontana & Cillessen, 2010; Lease et al., 2002; Pellegrini et al., 2011). Children and adolescents expend a great deal of effort and energy competing for social resources and attempting to gain the esteem of their peers (Adler & Adler, 1998; Dijkstra et al., 2013; LaFontana & Cillessen, 2010). Historically, this drive for popularity was thought to reflect a desire to gain liking and support from one's peers as popularity was defined as those individuals who are well liked and not disliked by members of their peer group (Parkhurst & Hopmeyer, 1998). However, more recent investigations into how youth define popularity and high social status have shown that youth who are considered to be the most popular in the peer group are often both extremely well-liked by certain members of the peer group and extremely disliked by other members (Hawley, 1999; 2003; Parkhurst & Hopmeyer, 1998). Rather than being defined by the degree to which one is "liked" by their peers, recent conceptualizations of popularity and high social status define this quality in terms of the degree to which members of the peer group want to associate themselves with a given individual, the extent to which the person is in a position of influence over peers, and the degree to which that individual is deemed worthy of emulation (Sandstrom, 2011). This change in definition and conceptualization has brought

7

changes in the general understanding of how individuals gain popular status (Mayeux &
Cillessen, 2008; Mayeux, Houser, & Dyches, 2011). Early research focused on personal traits,
social acceptance, and prosocial behaviors (Mayeux et al., 2011; Parkhurst & Hopmeyer, 1998).
However, more recent investigations of the obtainment and maintenance of high status tend to
focus on a wider range of personal characteristics and interpersonal behaviors (Bowker, Rubin,
Buskirk-Cohen, Rose-Krasnor & Booth-LaForce, 2010; Mayeux & Cillessen, 2008; Parkhurst &
Hopmeyer, 1998; Troop-Gordon & Ranney, 2014). There are even indications that the
individuals who are most adept at gaining popularity are those who are willing and able to
employ both aggressive and prosocial strategies (Dijkstra et al., 2013; Hawley, 1999; 2003;
Sandstrom, 2011).

According to Resource Control Theory, adolescents' efforts to obtain and maintain
popularity reflect a natural tendency to compete for resources that has evolved in humans
(Dijkstra et al., 2013; Hawley, 1999; 2003). While in the early stages of human evolution,
competition focused on direct access to food, shelter, and mating partners, humans evolved in
such a way that social relationships became highly important resources that individuals attempt
to acquire and maintain (Hawley, 1999; 2003; Pellegrini et al., 2011). The ability to control and
direct others' social behaviors, therefore, became a valuable skill that allows individuals to
ensure that they have access to relationships that are personally beneficial (Hawley, 1999; 2003;
Pellegrini et al., 2011). As with physical resources, there are limitations on the number of
individuals who are able to control social resources and gain power over the members of the peer
group (Hawley, 1999; 2003; Pellegrini et al., 2011). Thus, individual members of the peer group
compete with one another for access to friends, invitations to peer group activities, and overall
control of peer group functioning. In order to ascend and gain control of social hierarchies,

individuals may employ both aggressive and prosocial behavioral strategies (Hawley, 1999; 2003; Pellegrini et al., 2011).

Resource Control Theory posits that targeted use of both cooperation and coercion enhances adolescents' abilities obtain and maintain popularity among their peers (Hawley, 1999; 2003). Prosocial behaviors allow individuals to cultivate favor with others, inclusion in peer related activities, and access to desirable physical and social resources (e.g., clothes sharing, invitations to parties, insider gossip; Adler & Adler, 1998; Cillessen et al., 2011; Eder, 1985). However, adolescents also may gain respect and access to group resources by intimidating rivals and distancing themselves from weaker, less desirable members of the peer group (Brown, 2011; Cillessen & Mayeux, 2004; Eder, 1985). Shrewd implementation of cooperative and coercive strategies enables individuals to portray themselves as strong, friendly, and worthy of emulation. As cooperative strategies allow adolescents to make friends and coercive strategies often create enemies, it is not surprising that popular adolescents are rated as highly liked by one portion of the peer group and strongly disliked by others (Rodkin, Farmer, Pearl, & Van Acker, 2000; Parkhurst & Hopmeyer, 1998).

Research on the behavior profiles of popular adolescents supports the central tenets of Resource Control Theory. Studies have shown that compared to unpopular youth, popular youth engage in more prosocial activities and behaviors when interacting with peers (Cillessen & Rose, 2005; Parkhurst & Hopmeyer, 1998). Indeed, popular adolescents are more likely to form friendships with others, are more helpful, and are often perceived to be leaders by their peers as well as adults (de Bruyn & Cillessen, 2006). There are also indications that in late childhood and early adolescence popular youth are cooperative, studious, and not shy as rated by their peers (Farmer & Rodkin, 1996; Rodkin et al., 2000). Still other studies have shown that popular

adolescents exhibit high levels of helping (de Bruyn & Cillessen, 2006) and engage in more prosocial behaviors than lower status peers (Adler & Adler, 1998; Cillessen et al., 2011; Closson, 2009; Puckett, Aikins, & Cillessen, 2008). Furthermore, obtaining popularity has been shown to predict future engagement in prosocial behavior (Brown, 2011; Cillessen et al., 2011). Thus, prosocial behaviors seem to enhance individuals' ability to obtain high status and may be further employed to maintain their popularity.

In addition to employing behavioral strategies that cultivate positive regard from peers, research also shows that popular youth often engage in behavioral strategies intended to intimidate and dominate others. Popular youth have been shown to be more manipulative and more aggressive than non-popular youth, and will prioritize protecting their status when confronted by others (Lease et al., 2002; Parkhurst, & Hopmeyer, 1998). Research specifically examining relations between popularity and aggression consistently find that popular youth are able to use both covert (i.e., relational) and overt (i.e. verbal, physical) forms of aggression in order to gain access to physical and social resources (e.g., seating in prime locations during school functions, trendy items, invitations to parties, loyalty of lower status peers; Cillessen et al., 2011; Rose, Swenson, & Carlson, 2004) and achieve instrumental goals (Duncan, 2004; Hawley, 2003). Despite sex differences in the degree to which boys and girls generally engage in physical or relational forms of aggression, studies have shown that popular adolescents are flexible in the types of aggression they use and often employ different types of aggression in service of their social goals (Lease et al., 2002; Rose, Swenson, & Waller, 2004a). Just as aggression has been shown to predict popularity, popularity also predicts increased use of aggressive strategies and heightened feelings of hostility towards others (Farmer et al., 2003; Rose et al., 2004a; Sandstrom & Cillessen, 2006).

There are some indications in the literature that popular youth vary as to the extent to which they use agonistic or prosocial means of achieving their goals. Researchers have identified aggressive and prosocial subtypes of popular adolescents (Farmer & Rodkin, 1996; Rodkin et al., 2000) indicating that popular adolescents may favor certain behavioral strategies for attaining standing and power in the peer group (Farmer & Rodkin, 1996; Rodkin et al., 2000). However, the most successful individuals at obtaining popularity tend to demonstrate an acute ability to employ both aggressive and prosocial strategies (Hawley, 2003; Pellegrini et al., 2011). Furthermore, popular adolescents demonstrate an enhanced awareness of the social repercussions of their behaviors and show flexibility in the behavioral strategies they employ in meeting challenges to their status and obtaining goals in social situations (Andreou, 2006; Brown, 2011; Hawley, 2003; Pellegrini et al., 2011; Sutton, Smith, & Swettenham, 1999). While individuals may employ strictly prosocial or strictly aggressive strategies in gaining control over the social resources of the peer group (Brown, 2011; Hawley, 1999; 2003), those with the cognitive, behavioral, and moral flexibility may be best able to establish themselves in positions of power while maintaining positive regard from peers and others in positions of authority.

In addition to antagonistic and prosocial characteristics, popular adolescents may also obtain social prominence by displaying other peer-valued characteristics and traits. Popular youth exhibit socially desirable traits including physical attractiveness (Boyatzis, Baloff, & Durieux, 1998; Lease et al., 2002; Parkhurst & Hopmeyer, 1998), athleticism (LaFontana & Cillessen, 2002; Parkhurst & Hopmeyer, 1998), and sociability (LaFontana & Cillessen, 2002). Additionally, popular youth tend to come from wealthy families (Vaillancourt & Hymel, 2006; Xie, Li, Boucher, Hutchins, & Cairns, 2006), own the latest trends in clothing (de Bruyn & Cillessen, 2006), and are more likely to own the latest technologies than their lower status peers

11

(Blair & Fletcher, 2011). Individuals who appear more mature and independent and engage in adult-like and risky behaviors (i.e., drinking alcohol, smoking, drug use, cutting class) also tend to be rated by their peers as popular (Balsa, Homer, French, & Norton, 2011; Cillessen et al., 2011; Diego, Field, & Sanders, 2003; Merten, 1996). As would be expected from Resource Control Theory, individuals who appear to command the most physical resources (i.e., trendy clothes, physical beauty) and are better able to engage in self-determined behaviors (i.e., defying adults, drinking, drug use) command peers' esteem and popularity in the peer group.

Self-representation, aggression, & prosocial behavior in digital contexts

Despite the importance of obtaining popularity and the great deal of time that adolescents spend interacting with one another through ICTs, little research exists examining the effects of ICT interactions on status within social hierarchies. However studies concerning adolescents' use of ICTs combined with research concerning adolescents' attempts to become popular suggest that ICTs may be transforming how adolescents strategically manipulate their social environment to gain popularity among their peers. In ICT-mediated environments, individuals have greater control over the flow of information and increased opportunity to present a more desirable image to others (Gross, 2004; Manago et al., 2008; Subrahmanyam & Smahel, 2011; Valkenburg, Schouten, & Peter, 2005). As visual cues are reduced and individuals are physically separated from one another (Caplan, & Tuner, 2007; Ledbetter, & Larson, 2008), ICTs allow individuals to engage in social interactions without relying on physical appearance and physical traits (Gross, 2004; Manago et al., 2008; Subrahmanyam & Smahel, 2011; Valkenburg et al., 2005). Thus, the ways in which individuals gain popularity may now require new sets of skills not valued or even present over a decade ago. Much like relational aggression, engaging in aggressive and prosocial behaviors can be enacted without physical contact with the individual who is the target of the

12

behavior (Badaly et al., 2013; Barlett & Gentile, 2012). However, in ICT-mediated contexts, embarrassing comments and aggressive actions may be widely disseminated throughout the peer group thereby enhancing the negative consequences for the victims (Badaly et al., 2013; Barlett & Gentile, 2012; Subrahmanyam & Smahel, 2011). This makes engaging in these behaviors less risky for the aggressor and potentially more damaging for the victim (Badaly et al., 2013; Barlett & Gentile, 2012). Adolescents successful in using ICTs to enhance their popularity are likely those who effectively manage their digital self-representation and, consequently, engage in aggressive and prosocial behaviors through digital media to exert their dominance while retaining a positive reputation among peers.

Social interactions through ICTs may be ideally suited to helping adolescents obtain popularity by enabling them to manage their image and present idealized versions of their self to others (Badaly et al., 2013). ICTs are often used to highlight and celebrate personal achievements and activities in one's life (boyd, 2007; Manago et al., 2008). When success is experienced, individuals are able to highlight their accomplishments through posting messages to social networking sites and sending direct messages to peers and close others (boyd, 2007; Subrahmanyam & Smahel, 2011). As adolescents frequently engage in voyeuristic activities such as reading other peoples' posts and looking at pictures with tagged friends (Junco, 2012; Yang & Brown, 2013), an individual's postings, pictures, and videos tend to be self-promoting and emphasizing positive qualities (boyd, 2007; Strano et al., 2012; Yang & Brown, 2013).

Online postings of videos, images, and descriptions of their likes and dislikes also tend to reflect the values of the peer group. Research shows that adolescents frequently post pictures and information of their own and others' engagement in risky, adult-like behaviors such as smoking, drug use, sexual behaviors, and alcohol consumption (Huang et al., 2013; Moreno, Brockman,

13

Wasserheit, & Christakis, 2012). In disseminating information through digital networks, adolescents are able demonstrate their maturity and express peer-valued traits in a far reaching and more explicit way than what is typically possible in face-to-face interactions (Baumgartner, Valkenburg, & Peter, 2011; Huang et al., 2013). These public self-enhancing messages may serve the purpose of raising one's visibility in the peer group and depict the individual as someone worthy of esteem. There is also evidence that adolescents are aware of the potential impact that their digital self-representations may have on others' opinion of them. Adolescents often remove tags, pictures, and delete posts they see as damaging to their reputation (Strano et al., 2012). Thus, adolescents who are most aware of their digital self-representations and actively craft these representations will likely experience the most success in obtaining popularity in the peer group.

ICTs may also allow individuals to obtain popularity through acts of aggression without the same repercussions that often incur when acting aggressively toward a peer in a face-to-face situation. Because ICTs allow adolescents to be relatively anonymous (DeHaan et al., 2013; Tanis & Postmes, 2003; Subrahmanyam & Smahel, 2011; Walther, 2011), those who lack the physical strength or the backing of a large number of friends in face-to-face contexts may be better able to act aggressively in cyber contexts (Barlett & Gentile, 2012). Adolescents may hurt or embarrass someone else without immediate retaliation, as the victim first needs to identify the aggressor (Badaly et al., 2013; Barlett & Gentile, 2012; Runions et al. 2013). For example, an individual may post an embarrassing picture to message boards or social networking sites intending to hurt someone. In order retaliate, the victim must first trace the picture to the person who originally posted it and then devise an equally hurtful response. Popular adolescents have been shown to employ relational rather than more overt forms of aggression, as these behaviors

allow for more anonymity and potentially lead to less social censure from other members of the peer group (Mayeux et al., 2011). Indeed research has shown that compared to adolescents employing overt methods of aggression, adolescents who are relationally aggressive are generally more popular (Mayeux et al., 2011). As ICTs provide individuals enhanced abilities to remain anonymous, aggression enacted through ICTs may serve similar functions as relational aggression in the acquisition and maintenance of popularity.

Research has shown that the reduced power differential that occurs in interactions over ICTs is related to increased aggression in social interactions (Barlett & Gentile, 2012). Those who typically are unable to aggress in face-to-face situations show higher levels of aggression in ICT mediated circumstances (Barlett & Gentile, 2012; Lapidot-Lefler & Barak, 2012; Runions et al., 2013; Suler, 2004). In these contexts, individuals with more intellect or experience using computer technologies can use these mediums to hurt and embarrass individuals who are powerful in face-to-face contexts (Barlett & Gentile, 2012; Vandebosch & Van Cleemput, 2008). While physically powerful adolescents and those who are popular tend to have the advantage in face-to-face conflict situations (Adler & Adler, 1998; Farmer & Rodkin, 1996; Rodkin et al., 2000), studies have shown that physically weak and low status children are able to aggress against others through ICTs (Barlett & Gentile, 2012; Vandebosch & Van Cleemput, 2008). As most youth start to socialize through ICTs beginning in the later parts of preadolescence and into early adolescence (Subrahmanyam & Smahel, 2011), the ability to engage in aggression in digitally mediated environments is something that is not present until this developmental period (Barlett, 2013; Barlett & Gentile, 2012). For those individuals who did not possess the physical traits and social power that garners popularity in middle childhood and preadolescence, ICT-mediated environments may provide them with opportunities to engage in social dominance and

15

aggressive behavior that will allow them to gain the popularity that they would otherwise be unable to achieve.

Although the research directly testing relations between cyberaggression and popularity to date is limited, there is evidence that aggression conducted through digitally mediated communication is related to enhanced popularity among adolescents. In a study of 9th graders, Badaly, Kelly, Schwartz, and Dabney-Lieras (2013) found that for girls cyberaggression was positively associated with popularity both concurrently and over the course of one full year, while for boys cyberaggression was positively associated with concurrent popularity, but negatively related to popularity over time. These associations were found controlling for both overt and relational forms of face-to-face aggression. Additionally, it was shown that popular status was also associated with enhanced use of cyberaggression one year later. These findings are similar to findings concerning associations between relational aggression and popularity. While there are some indications that relational aggression is employed by both boys and girls (LaFontana & Cillessen, 2002; Rose et al., 2004a), others have shown girls experience more significant gains in their popularity when engaging in relational aggression than do boys (Cillessen & Mayeuex, 2004; Rose et al., 2004a). Furthermore, obtaining popularity has also been shown to be related to heightened levels of subsequent relational aggression for both boys and girls (Rose et al., 2004a). While studies have shown that relational aggression and cyberaggression are two distinct forms of aggressive behavior (Badaly et al., 2013; Dempsey et al., 2011), these findings indicate that both may serve similar functions in the obtainment and maintenance of popularity. However, it should be noted that research concerning the associations between cyberaggression and popularity is sparse and further study is needed to more fully

explicate the sex differences and contextual factors that may play a role in relations between cyberaggression and popularity.

ICTs may further create increased opportunities to act prosocially toward others. Through ICTs, adolescents are able to engage in positive and supportive interactions with minimal effort and without having to be physically present (Subrahmanyam & Smahel, 2011). Additionally, adolescents may be able to act prosocially toward people with whom they would typically not feel comfortable interacting in face-to-face situations. Studies have shown that ICTs shrink the power differential between interactive partners (Barlett & Gentile, 2012) and provide consistent access to a broad number of social contacts (Subrahmanyam & Smahel, 2011). Adolescents attempt to accumulate a large number of "friends" in their digital social networks in order to appear as if they well-integrated in the peer group (Boneva et al., 2006; Ling & Yttri, 2002). In doing so, they open themselves up to a wide variety of both popular and unpopular peers, providing more opportunities to engage positively with the peer group overall (Subrahmanyam & Smahel, 2011). While evidence suggests that popular youth tend to primarily interact with other popular peers out of fear of losing their high status (Adler & Adler, 1998), ICTs may allow individuals to send positive communications to peers regardless of their status and engage in prosocial behaviors that might be censured in face-to-face situations (e.g., popular youth complementing unpopular youth.

While digital self-monitoring, cyberaggression, and cyber-prosocial behaviors may each be associated with heightened popularity, it is possible that aggressive and prosocial behavior through ICTs is associated with popularity only for those adolescents who are most conscious of their digital self-representation and reputation. Aggression while a useful tool in obtaining popularity, is effective only when it is applied discriminately and with purpose (Andreou, 2006;

Brown, 2011; Hawley, 2003; Pellegrini et al., 2011; Sutton et al., 1999). Similarly, prosocial behaviors tend to help individuals obtain popularity insofar as they allow the individual to cultivate favor from peers who possess desirable resources or skills (Adler & Adler, 1998; Brown, 2011; Cillessen et al., 2011; Closson, 2009; de Bruyn & Cillessen, 2006; Puckett et al., 2008; Rose, Glick, & Smith, 2011). ICTs allow for greater monitoring of the effect of one's actions either through tracking the number "likes", "favorites", or repostings received, considering comments on the posts, or checking others' online messages for references to the actions. Those high in digital self-monitoring should be able to both anticipate how their cyberaggression and cyber-prosocial behaviors will be perceived by others and spin any actions that are not well received by their peers into more socially acceptable expressions. For example, an adolescent who is high in self-monitoring may post a negative comment on another person's wall in an attempt to humiliate that peer. If the comment is perceived by others to be cruel instead of funny, the adolescent may turn the negative comment into a joke, minimizing the cost of the negative comment to his or her reputation. Thus, it would be expected that aggression and prosocial behaviors through ICTs would be predictive of increased popularity only among adolescents who evidence relatively high levels of digital self-monitoring.

THE CURRENT STUDY

The current study tested associations between adolescents' digital self-monitoring, cyberaggression, cyber-prosocial behaviors, and concurrent levels of popularity among peer group members. Data were obtained from a sample of adolescents attending secondary schools in the upper-Midwest of the United States in their freshman, sophomore, or junior years of high school. The first two years of high school tend to be a time when social hierarchies are influx and competition for popularity is particularly high (Cillessen & Mayeux, 2006; Pellegrini & Long, 2002). By sampling adolescents in their freshman, sophomore, and junior years of high school, associations between ICT mediated behaviors and popularity were examined during a developmental period when adolescents are most likely to employ a wide repertoire of behaviors to obtain popular status and when social hierarchies are in flux.

To examine relations between digital self-monitoring, cyberaggression, and cyber-prosocial behaviors, and concurrent levels of popularity, a model was proposed concerning the main and interactive effects of digital self-monitoring, cyberaggression, and cyber-prosocial behaviors on adolescents' popularity (Figure 1). Consistent with Badaly et al.'s (2013) study of cyberaggression and popularity, associations between popularity and digital behaviors were tested controlling for face-to-face forms of aggression, prosocial behavior, and self-monitoring, allowing for a discrete test of the interrelations between ICT-mediated behaviors and popularity rather than general tendencies concerning self-monitoring, aggression, and prosocial behavior.

The model testing associations between digital self-monitoring, cyberaggression, and cyber-prosocial behaviors can be found in Figure 1. Digital self-monitoring was expected to be positively associated with popularity, controlling for self-monitoring in face-to-face situations (see Figure 1, Hypothesis 1). Consistent with finding from Badaly et al. (2013), controlling for

19

relational aggression and overt aggression in face-to-face contexts, cyberagression was expected to be positively associated with popularity for girls and negatively associated with popularity for boys (see Figure 1, Hypothesis 2). Additionally, behaving prosocially through ICTs was expected to be positively related to higher popularity controlling for face-to-face prosocial behavior (see Figure 1, Hypothesis 3). Furthermore, it was hypothesized that digital self-monitoring would moderate relations between cyberaggression and popularity as well as relations between cyber-prosocial behaviors and popularity. Associations between cyberaggression and popularity and between cyber-prosocial behaviors and popularity were expected to be more positive at high levels rather than low levels of digital self-monitoring (see Figure 1, Hypotheses 4 & 5). These interactive effects were expected to be significant for girls and boys.
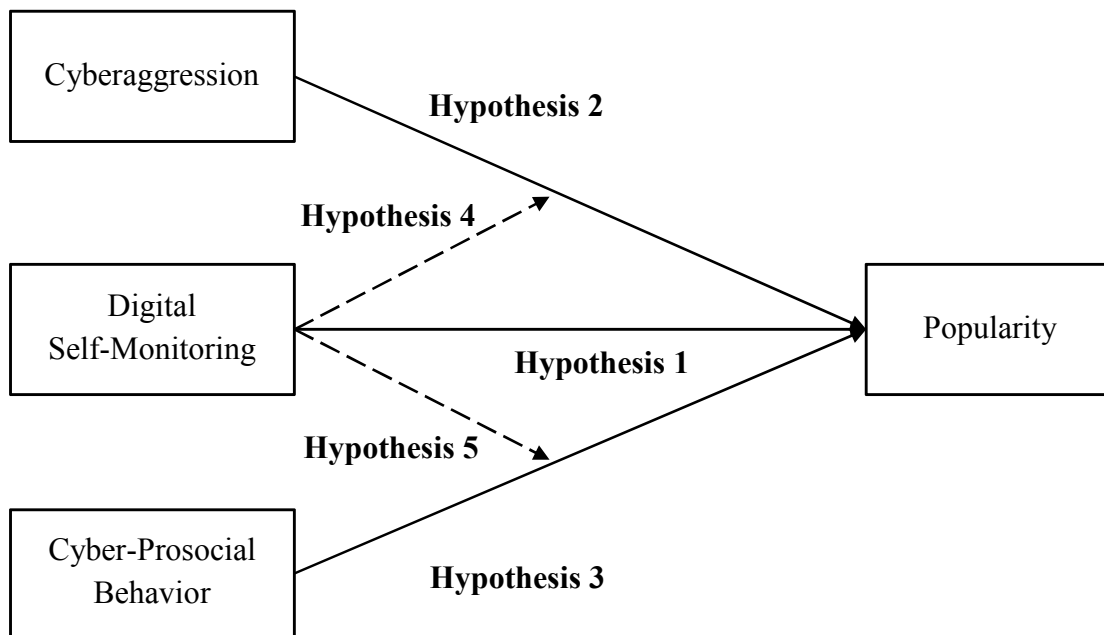
Figure 1. Proposed effects of digital self-monitoring, cyberaggression, and cyber-prosocial behavior on popularity. Hypothesis1: The direct effects of digital self-monitoring on popularity. Hypothesis 2: The direct effect of cyberaggression on popularity. Hypothesis 3: The direct effect of cyber-prosocial behavior on popularity. Hypothesis 4: The interactive effects of digital self-monitoring and cyberaggression on popularity. Hypothesis 5: the interactive effects of digital self-monitoring and cyber-prosocial behavior on popularity.

In addition to tests of the primary model, the interactive effects of cyberaggression and cyber-prosocial behaviors on popularity were tested to examine the assertions of Resource Control Theory that individuals who are most successful at gaining prominence in the peer group are those adept at cultivating favor from peers and diminishing rivals (Hawley, 2003). Engaging in prosocial behaviors in digital contexts may provide adolescents a unique opportunity to act prosocially in view of other members of the peer group and making one appear more desirable. By acting prosocially in digital contexts, individuals may more freely employ both aggressive and prosocial strategies to gain and maintain status. Past research has shown that individuals possessing peer-valued characteristics evidence higher levels of popularity as aggressive behavior increases (Vaillancourt & Hymel, 2006). As acting prosocially tends to be valued by one's peer group, it was expected that cyberaggression would be positively associated with popularity for individuals who are high in cyber-prosocial behaviors, but not for those low in cyber-prosocial behaviors.

Finally, according to Resource Control Theory, individuals who have difficulty engaging in prosocial and aggressive behaviors are disadvantaged in achieving and maintaining high status among their peers, as they are less able to command the social resources of the group (Hawley, 1999; 2003). As ICTs allow individuals to engage in behaviors that they are typically unable to enact in face-to-face contexts (Barlett & Gentile, 2012; Lapidot-Lefler & Barak, 2012; Runions et al., 2013), cyberaggression and cyber-prosocial behavior may enable individuals to gain and solidify their status despite their inability to act aggressively or prosocially face-to-face. Thus, cyberaggression should be more strongly and more positively associated with popularity primarily for those individuals low in face-to-face forms of aggression. Furthermore, cyber-

prosocial behaviors were expected to be more positively associated with popularity particularly

for those engaging in low levels of face-to-face prosocial behavior.

METHODS

Participants

Participants were recruited from three secondary schools in the upper-Midwest of the United States. Principals from each school were contacted requesting permission to distribute parental consent forms (see Appendix A) to students attending school who were either in their freshman, sophomore, or junior years. Of the 677 eligible students contacted, 52.7% ($N = 357$) returned parental consent forms. Of the returned forms, 86.8% ($N = 310$) of students received parental permission to participate in the current study. Of the 310 participants who were granted permission to participate, 4 students explicitly indicated they did not wish to complete the questionnaires, and 28 students across the three schools were unavailable or absent during initial attempts and rescheduled visits to collect data. Data from 5 students were excluded from analyses as their responses to study questionnaires indicated either an unwillingness or inability to provide accurate information on study protocols. A total of 273 (161 female, 112 male; $M_{age} = $ 15 years 4 months, $SD_{age} = 7.90$) participants were rated by their peers and completed study protocols. Participants in the current study primarily identified as Caucasian (70%), 4.0% identified as Hispanic/Latino, 0.4% as Asian/Asian American, 3.3% as African-American/Black, 3.3% American Indian/Alaska Native and 19% other/non-specified. Of the final sample, 65.9% of the students were in their freshman year of secondary school, 26% were in their sophomore year, and 8.1% were juniors.

Procedures

During the fall semester of the 2014-2015 school year, researchers and research assistants traveled to participants' schools to administer study questionnaires. Participants provided written assent (see Appendix B) prior to data collection during the fall. Once signed assent was obtained,

questionnaires were presented electronically to students through a secure website, accessed

through school computers or through school-provided iPads. To ensure students' privacy,

researchers and research assistants logged participants into study questionnaires using

personalized identification codes generated for the study. Researchers remained in the room as

participants completed their questionnaires to monitor their progress, to answer questions, and

resolve issues. Participants returned to their classrooms once they had completed their

questionnaires.

Measures

 Demographics. Participants were asked to provide basic demographic information

including their sex, year and month of their birth, and their ethnicity. In addition to basic

demographic information, participants responded to questions concerning their primary means of

communication with others their own age, as well as the frequency with which they interact with

others through various forms of ICTs.

 Digital and face-to-face self-monitoring. Participants each completed two versions of

the "Ability to modify self-presentation" sub-scale from the Revised Self-Monitoring Scale

(Lennox & Wolfe, 1984). This scale consists of 7 self-report items rated on a scale from 1

(*strongly disagree*) to 5 (*strongly agree*). Items were modified to direct participants to consider

the degree to which they are able to control and alter the image they present to others in ICT-

mediated and face-to-face contexts separately (e.g., In social situations online and in digital

media, I have the ability to alter my behavior if I feel that something else is called for; In social

situations where I get together with other people, I have the ability to alter my behavior if I feel

that something else is called for). The original items have been utilized in previous research

related to both adolescent development (Kosten, Scheier, & Grenard, 2013) and digital media use

24

(Wallace, Buil, de Chematony, & Hogan, 2014). Separate scores were calculated by averaging individuals' responses to the seven items for self-monitoring in ICT contexts ($\alpha = .63$) and averaging the seven items for self-monitoring in face-to-face contexts ($\alpha = .76$).

Peer-report measures. To assess popularity, aggressive behavior in face-to-face and cyber contexts and prosocial behavior in digital and face-to-face contexts, participants were asked to rate a random selection of 20 of their peers at the same grade level who had received parental consent to participate in the study. On all peer-report items, participants were provided with the response option "I cannot rate this person," allowing students to avoid rating peers with whom they were unfamiliar or uncomfortable rating. Analyses of response rates to peer report items showed that the majority of participants felt they were able to provide behavioral and status ratings for 19 or more of the 20 names presented for each peer report item. On average participants rated more than half of the individuals presented for each peer rating items ($M_{\text{popularity}} = 17.51$; $M_{\text{relational aggression}} = 15.47$; $M_{\text{overt aggression}} = 16.03$; $M_{\text{cyberaggression}} = 14.30, 13.59$; $M_{\text{face-to-face prosocial behavior}} = 16.07$; $M_{\text{cyber-prosocial behavior}} = 13.00$).

Popularity. Students rated participating classmates on how "popular" each one was at the time of the study on a scale from 1 *(unpopular)* to 5 *(popular)*. Consistent with past research (e.g., Rose & Swenson, 2009; Troop-Gordon & Ranney, 2014), popular was defined as " being respected by other people, seen as being "cool," and having lots of people want to be friends with them." Peers' ratings were averaged to create a composite popularity score.

Cyberaggression. Cyberaggression was assessed with two peer rating items. Participants rated their peers from 1 *(never)* to 5 *(always)* as to how often each "sends mean or hurtful messages, calls, or pictures to others through the cellphone or the internet" and how often each "bullies others by cellphone or through the internet." These items were adapted from self-

report items used in previous research examining adolescents' cyberaggression and cybervictimization (Williford et al., 2013). Peers' ratings for each individual were averaged for each item. As scores for these two items were highly correlated ($r = .86, p < .001$), they were averaged to create a composite cyberaggression score.

Face-to-face aggression. Consistent with pass research (e.g., Banny, Heilbron, Ames, & Prinstein, 2011), relational aggression was assessed asking students to rate how often each of their peers "spreads rumors or gossips about classmates at school to be mean" on a scale from 1 *(never)* to 5 *(always)*. Similarly, overt aggression was assessed by asking participants to rate the degree to which each peer "insults or picks on others at school" (Smith, Rose, & Schwartz-Mette, 2009). Overt and relational aggression scores were calculated by averaging across peers' ratings for each of the behaviors.

Cyber- and face-to-face prosocial behaviors. To assess prosocial behaviors in digital and face-to-face contexts, participants rated their peers as to how often each person "sends nice messages or does nice things for others by cellphone or through the internet" and the degree to which each "says nice things or does nice things for others at school" on a scale from 1 *(never)* to 5 *(always)*. These items were developed from Ladd and Profilet's The Child Behavior Scale (1996). Wording has been adjusted so that cyber-prosocial behaviors and face-to-face prosocial behaviors have equivalent phrasing and are consistent with the original wording. Composite scores for prosocial behavior in cyber contexts and face-to-face prosocial behaviors were calculated by averaging ratings received for each item.

Self-report measures of cyberagression and prosocial behavior through ICTs. In order to assess and develop the use of peer report measures for examining the frequency of cyberaggression and cyber-prosocial behaviors, participants were asked to rate the degree to

which they personally engaged in cyberaggression (i.e., How often have you bullied others by cellphone or through the internet? How often have you sent mean or hurtful messages, calls, or pictures to others through the cellphone or the internet?), face-to-face relational aggression (i.e., How often have you spread rumors or gossiped about classmates at school to be mean?), face-to-face overt aggression (i.e., How often have you insulted or picked on others at school?), cyber-prosocial behaviors (i.e., How often have you sent nice messages or done nice things for others by cellphone or through the internet?), and prosocial behaviors face-to-face (i.e., How often have you said nice things or done nice things to others at school?). Participants rated each of these behaviors from 1 *(never)* to 5 *(always)*.

Supplemental measures

A set of peer-report and self-report measures of cybervictimization (Appendix G; Williford et al., 2013) and face-to-face victimization (Appendix H; Banny et al., 201; Smith et al., 2009), and self-report measures of self-esteem (Appendix I; Rosenberg, 1965) and depressive symptoms (Appendix J; Radloff, 1977) were also administered. Scores from supplemental measures were not included in the current study.

RESULTS

Descriptive statistics

Table 1 presents means and standard deviations for the total sample and broken down by

sex. Also presented in the table are independent samples *t*-tests comparing means for boys and

girls on peer-rated popularity, self-reported digital and face-to-face self-monitoring, peer- and

self-reported cyberaggression, peer and self-reported cyber-prosocial behavior, peer-reported

overt aggression, peer-reported relational aggression, and peer-reported face-to-face prosocial

behavior. Adolescent girls were rated by their peers as more cyberaggressive than adolescent

boys, $t(271) = -1.98$, $p = .048$, more prosocial in digital contexts, $t(271) = -5.44$, $p < .001$, more

relationally aggressive, $t(271) = -3.70$, $p < .001$, and more prosocial when interacting face-to-

face, $t(271) = -4.31$, $p < .001$. Additionally, adolescent girls more than adolescent boys self-

reported being prosocial in digital contexts, $t(271) = -3.81$, $p < .001$.

Associations between peer- and self-reported digital aggression and prosocial behaviors

Table 2 presents correlations for peer- and self-reported cyberaggression and cyber-

prosocial behavior. Although not always achieving statistical significance, correlations between

peer and self-report cyberaggression items demonstrated small to modest positive associations

(i.e., *How often has the person below bully others by cellphone or through the internet?/ How*

often have you bullied others by cellphone or through the internet? r = .11, p = .07; How often

has the person listed below sent or posted mean or hurtful messages, calls, or pictures to others

through cellphone or the internet?/ How often have you sent or posted mean or hurtful messages,

calls, or pictures to others through the cellphone or the internet? r =.22, p < .001). The

correlation between the composite peer-reported cyberaggression scores and the composite self-

reported cyberaggression scores was similarly moderate and positive ($r = .17$, $p = .006$). The

correlation between peer- and self-reported cyber-prosocial behavior (*How has the person below sent or posted nice messages or done nice things for others by cellphone or through the internet?/How often have you sent or posted nice messages or done nice things for others by cellphone or through the internet?*) was also small and positive ($r = .18$, $p = .004$). While positive and significant, the low magnitude of the correlations between peer and self-report measures of these digital behaviors indicates that self-perceptions and peers' perceptions of cyberaggression and cyber-prosocial behaviors demonstrate little correspondence. This lack of convergence between ratings mirrors past research testing associations peer- and self-reports of aggressive behavior (e.g., Pelligrini, 2001). As these correlations reflect past results, the composite peer-report measure of cyberaggression and peer-reported cyber-prosocial behavior were used in analyses for the current study.

Table 1.
Means, standard deviations, and independent samples t-tests for study variables

Variable	Full sample		Boys		Girls		
	M	*SD*	*M*	*SD*	*M*	*SD*	*t*
Popularity[a]	3.21	.94	3.17	.91	3.24	.97	-.59
Digital monitoring[b]	3.64	.47	3.62	.51	3.66	.44	-.70
FtF monitoring[b]	3.61	.55	3.57	.55	3.64	.56	-1.02
Cyberaggression[a]	1.44	.37	1.39	.34	1.48	.39	-1.98[*]
Cyberaggression[b]	1.24	.45	1.21	.41	1.28	.48	-1.17
Cyber-prosocial[a]	2.92	.51	2.72	.53	3.05	.45	-5.44[***]
Cyber-prosocial[b]	3.16	.94	2.90	.92	3.33	.91	-3.81[***]
FtF overt aggression[a]	1.68	.45	1.77	.47	1.65	.44	1.36
FtF relational aggression[a]	1.91	.56	1.77	.47	2.01	.60	-3.70[***]
FtF prosocial[a]	3.08	.49	2.93	.54	3.19	.43	-4.31[***]
FtF composite aggression[a]	1.79	.47	1.74	.45	1.83	.48	-1.42

[†] $p < .10.$ [*] $p < .05.$ [**] $p < .01.$ [***] $p < .001.$

[a] Indicates peer report measure. [b] Indicates self-report measure.

Note: Sex was coded 0 = boys, 1 = girls.

Note: FtF = Face-to-face

It should be noted that all analyses presented below were conducted a second time substituting self-report assessments for the peer reports. Self-reported cyberaggression, cyber-prosocial behaviors, and their related interactions were not found to predict popularity.

Table 2.
Correlations between peer- and self-reported cyberaggression and cyber-prosocial behavior

	1	2	3	4	5	6
1. How often has the person below bully others by cellphone or through the internet?[a]	-					
2. How often have you bullied others by cellphone or through the internet?[b]	.11†	-				
3. How often has the person listed below sent or posted mean or hurtful messages, calls, or pictures to others through cellphone or the internet?[a]	.86***	.12*	-			
4. How often have you sent or posted mean or hurtful messages, calls, or pictures to others through the cellphone or the internet?[b]	.21***	.65***	.22***	-		
5. How has the person below sent or posted nice messages or done nice things for others by cellphone or through the internet?[a]	-.14*	-.03	-.15*	-.03	-	
6. How often have you sent or posted nice messages or done nice things for others by cellphone or through the internet?[b]	.08	.04	.06	.01	.18**	-

$^{\dagger}p < .10.$ $^{*}p < .05.$ $^{**}p < .01.$ $^{***}p < .001.$

[a] Indicates peer report measure. [b] Indicates self-report measure.

Bivariate correlations

Bivariate correlations between popularity, self-reported self-monitoring in digital and face-to-face contexts, and peer-rated cyberaggression, cyber-prosocial behavior, face-to-face overt aggression, face-to-face relational aggression, and face-to-face prosocial behavior are found in Table 3. Correlations between popularity and aggressive behavior were positive and modest (rs = .23 - .56, all ps < .001). Similar associations were noted between popularity and prosocial behaviors in both digital (r = .40, p < .001) and face-to-face (r = .23, p < .001) contexts. While peer-rated popularity was not associated with digital self-monitoring, there was a small positive correlation between popularity and self-monitoring in face-to-face situations (r = .13, p = .023). Digital self-monitoring was positively and modestly related to face-to-face self-monitoring (r = .55, p < .001), but was unrelated to all aggressive behaviors and prosocial behaviors. Cyberaggression in contrast negatively correlated with prosocial behaviors in both digital (r = -.15, p = .008) and face-to-face contexts (r = -.40, p < .001). Interrelations between cyber-, relational, and overt aggression were strong and positive (rs = .71 - .83, all ps < .001), as was the correlation between cyber- and face-to-face prosocial behaviors (r = .75, p < .001). Digital self-monitoring was not associated with aggression or prosocial behaviors. Relational (r = -.27, p < .001) and overt aggression (r = -.37, p < .001) were each modestly and negatively correlated with face-to-face prosocial behaviors.

Table 3.
Bivariate correlations between popularity, self-monitoring, aggression, and prosocial behavior

	1	2	3	4	5	6	7	8	9.
1. Popularity[a]	-	-.03	.09	.44***	.49***	.43***	.57***	.21**	.55***
2. Digital monitoring[b]	.11	-	.49***	-.03	.05	-.04	-.02	.12	-.03
3. FtF monitoring[b]	.21*	.62***	-	.03	.12	.00	.07	.16*	.04
4.Cyberaggression [a]	.31***	.02	.06	-	-.12	.71***	.84***	-.41***	.85***
5.Cyber-prosocial[a]	.30***	-.09	-.14	-.32*	-	.04	-.04	.68***	.00
6. FtF overt aggression[a]	.42***	.09	.15	.76***	-.15	-	.71***	-.30***	.90***
7. FtF relational aggression[a]	.54***	.08	.11	.82***	-.15	.82***	-	-.34***	.95***
8. FtF prosocial[a]	.26**	-.06	-.10	-.54***	.77***	-.44***	-.38***	-	-.35***
9. Composite FtF aggression	.51*	.09	.13	.83***	-.16	.95***	.95***	-.43***	-

† *p* < .10. * *p* < .05. ** *p* < .01. *** *p* < .001.

[a] Indicates peer report measure. [b] Indicates self-report measure.

Note: FtF = Face-to-face.

Note: Correlations between study variables for girls are above the diagonal. Correlations between study variables for boys are below the diagonal.

Overview of analyses

A set of five hierarchical regressions was conducted testing associations between digital self-monitoring, cyberaggression, cyber-prosocial behaviors, and popularity. As few studies have examined associations between these variables, a set of three regressions were initially conducted with digital self-monitoring, cyberaggression, and cyber-prosocial behavior entered as independent variables in separate models in order to first establish the main effects of each as

they relate to concurrent levels of popularity before considering interactive contributions. Sex was controlled for in all analyses. When testing the association between digital self-monitoring and popularity, face-to-face self-monitoring was entered as a control variable. When testing the association between cyberaggression and popularity, face-to-face overt and relational aggression were entered as control variables. When testing the association between cyber-prosocial behaviors and popularity, face-to-face prosocial behavior was entered as a control variable. This was done to establish the effects of these behaviors specifically in digital contexts rather than the general tendency to engage in broad levels of self-monitoring, aggression, and prosocial behavior. The interactive contributions of digital self-monitoring and both cyberaggression and cyber-prosocial behaviors were tested in two separate regressions. All continuous predictors were mean centered prior to the creation of interaction terms, and significant interactions were decomposed using methods developed by Preacher, Curran, and Bauer (2006).

Main effects

Table 4 presents finding from the hierarchical regression testing the association between digital self-monitoring and popularity. Sex and face-to-face self-monitoring were entered in the first step as control variables. While face-to-face self-monitoring was associated with higher levels of popularity, digital self-monitoring was not.

The relation between cyberaggression and popularity was tested next (see Table 4). In this regression sex, face-to-face overt aggression, and face-to-face relational aggression were entered in the first step to control for the general tendency to aggress against peers. Cyberaggression was significantly and negatively associated with popularity. It should be noted that when face-to-face relational and overt aggression are removed from the analysis, the association between cyberaggression and popularity becomes positive, $\beta = .40$, $p < .001$.

34

Additionally, when face-to-face overt aggression is added back into the analysis as a control

variable without controlling for relational aggression, the association between cyberaggression

and popularity remains positive, $\beta = .19$, $p = .02$.

When testing the association between cyber-prosocial behaviors and popularity, sex and

face-to-face prosocial behavior were entered as control variables in the first step of the regression

analyses. Prosocial behavior in ICT contexts was found to be significantly and positively

associated with popularity.

Table 4.

Main effects of digital self-monitoring, cyberaggression, and cyber-prosocial behavior predicting concurrent popularity

Popularity			Popularity			Popularity		
Predictor	β	ΔR^2	Predictor	β	ΔR^2	Predictor	β	ΔR^2
Step 1:		.02†	Step 1:		.32***	Step 1:		.05***
Sex	.02		Sex	-.08		Sex	-.02	
FtF self-monitoring	.13*		FtF overt aggression	.02		FtF prosocial behavior	.24***	
			FtF relational aggression	.56***				
Step 2:		.00	Step 2:		.02**	Step 2:		.12***
Digital self-monitoring	-.06		Cyberaggression	-.27**		Cyber-prosocial behavior	.53***	

† *p* < .10. * *p* < .05. ** *p* < .01. *** *p* < .001.

Note: FtF = Face-to-face

Interactive effects

To test the proposed interactive effects of digital self-monitoring, aggressive behavior, and cyber-prosocial behavior on concurrent popularity, separate hierarchical regressions were conducted with cyberaggression functioning as the primary predictor in the first regression and cyber-prosocial behavior in the second regression (Table 5). When testing the interaction between digital self-monitoring and cyberaggression, sex, face-to-face overt aggression, face-to-face relational aggression, and face-to-face self-monitoring were entered in the first step as control variables. Cyberaggression and digital self-monitoring were entered in the second step. All two-way interactions between cyberaggression, digital self-monitoring, and sex were entered in the third step, and the three-way interaction between cyberaggression, digital self-monitoring, and sex was entered in the final step. As was found when testing the main effects of cyberaggression and digital self-monitoring, cyberaggression was negatively associated with popularity, and digital self-monitoring was not associated with popularity. A marginal interaction between cyberaggression and digital self-monitoring emerged. Simple slope analyses revealed that at low levels of digital self-monitoring, $b = -.92$, $t(265) = -2.95$, $p = .003$ and at moderate levels of digital self-monitoring, $b = -.69$, $t(265) = -2.32$, $p = .02$, cyberaggression was negatively associated with popularity. Cyberaggression was not associated with popularity at high levels of digital self-monitoring, $b = -.46$, $t(265) = -1.34$, ns. As shown in Figure 2, popularity was highest at low levels of cyberaggression regardless of the extent to which adolescents engaged in digital self-monitoring. However, high levels of cyberaggression were associated with the lowest levels of popularity at low levels of digital self-monitoring

Table 5.
Interactive effects of digital self-monitoring, cyberaggression, and cyber-prosocial behavior predicting concurrent popularity

Predictor	β	ΔR^2	Predictor	β	ΔR^2
Step 1:		.33***	Step 1:		.07***
Sex	-.09†		Sex	-.03***	
Face-to-Face overt aggression	.01		Face-to-face prosocial behavior	.23***	
Face-to-Face relational aggression	.57***		Face-to-face self-monitoring	.12*	
Face-to-face self-monitoring	.09†				
Step 2:		.02*	Step 2:		.12***
Cyberaggression	-.26**		Cyber-prosocial behavior	.54***	
Digital self-monitoring	-.03		Digital self-monitoring	-.04	
Step 3:		.01	Step 3:		.02†
Cyberaggression × sex	.04		Cyber-prosocial behavior × Sex	.17*	
Digital self-monitoring × sex	-.09		Digital self-monitoring × Sex	-.12	
Cyberaggression × digital self-monitoring	.09†		Cyber-prosocial × Digital self-monitoring	.00	
Step 4:		.00	Step 4:		.00
Cyberaggression × digital self-monitoring × Sex	.05		Cyber-prosocial × Digital self-monitoring × Sex	.03	

† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

38
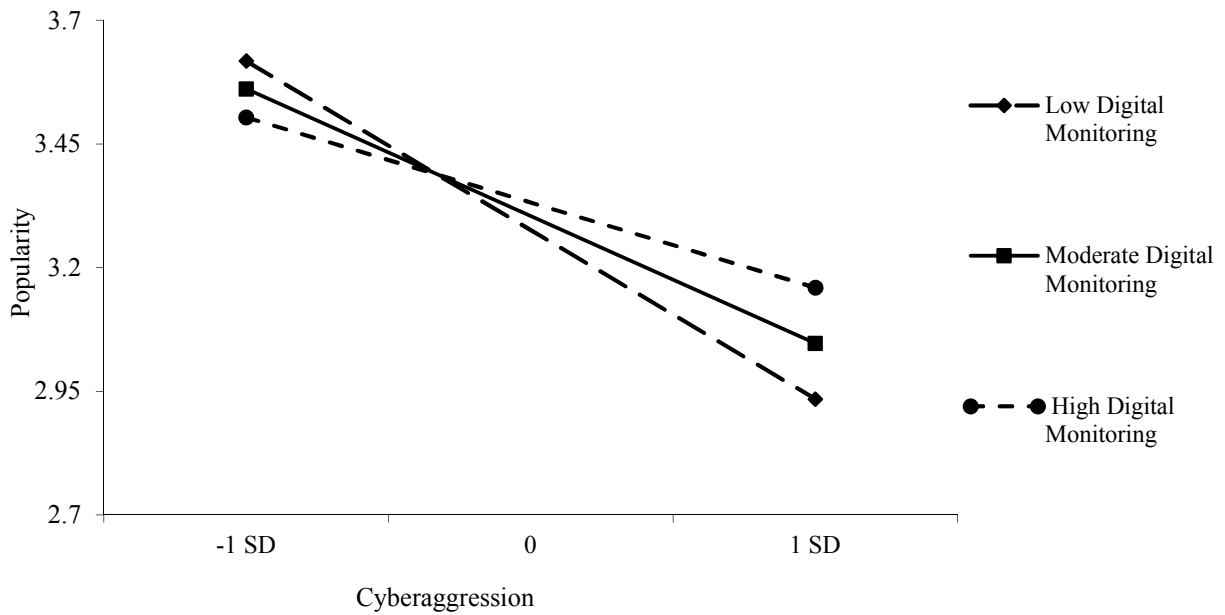
Figure 2. Interactive contributions of cyberaggression and digital self-monitoring predicting popularity.

When testing the interaction between digital self-monitoring and cyber-prosocial behavior, sex, and face-to-face prosocial behavior were entered in the first step. Cyber-prosocial behavior and digital self-monitoring were entered in the second step. All two-way interactions between cyber-prosocial behavior, digital self-monitoring, and sex were entered in the third step, and the three-way interaction between cyber-prosocial behavior, digital self-monitoring, and sex was entered in the final step. The results of this analysis can be found in Table 5. Cyber-prosocial behavior was positively associated with popularity. However, a significant interaction between cyber-prosocial behavior and sex emerged. Decomposition of the interaction is shown in Figure 3. While cyber-prosocial behavior was positively associated with popularity for adolescent boys and girls, the relation was stronger for girls [Boys: $b = .70$, $t(264) = 3.70$, $p < .001$; Girls: $b = 1.19$, $t(264) = 6.45$, $p < .001$]. The interaction between cyber-prosocial behavior

and digital self-monitoring was not significant, nor was the three-way interaction between prosocial behavior in ICTs, digital self-monitoring, and sex.
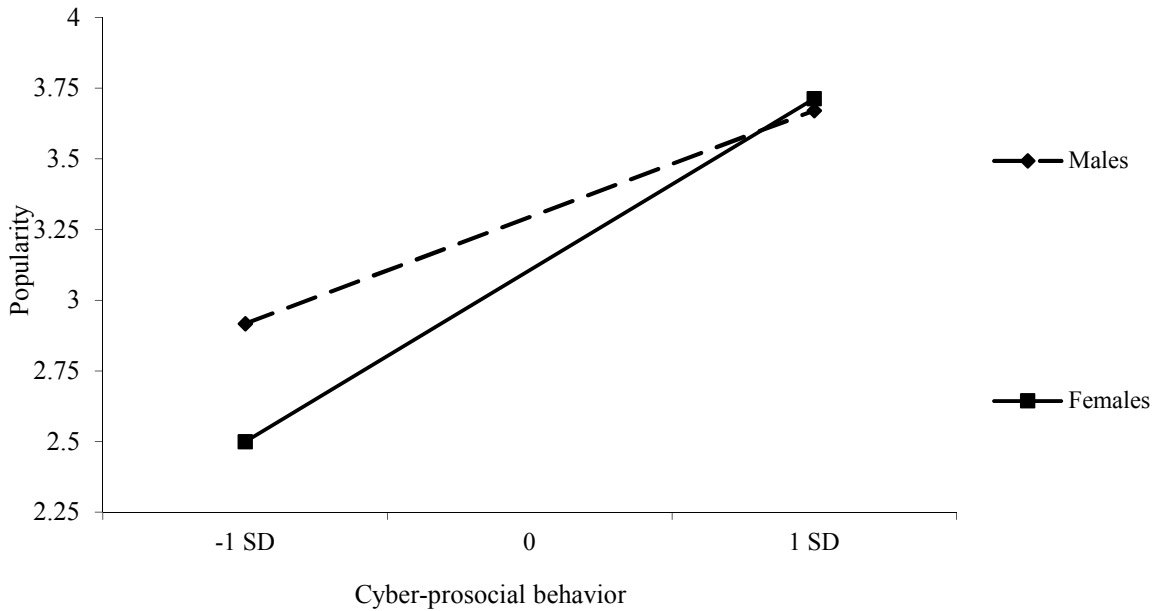
Figure 3. Interactive contributions of cyber-prosocial behavior and sex predicting popularity.

Supplemental analyses

As past research has shown that adolescents often employ a combination of aggressive and prosocial strategies to gain and maintain high social status (Hawley, 1999; 2003), supplemental analyses were conducted to test whether implementation a combination of aggressive and prosocial behaviors in digital contexts is associated with popularity and whether this combination of cyberaggression and cyber-prosocial behavior may be differentially associated with popularity for adolescent boys and girls. To this end, a hierarchical regression was conducted in which sex, face-to-face overt aggression, face-to-face relational aggression, and face-to-face prosocial behavior were entered in the first step as control variables. Cyberaggression and cyber-prosocial behavior were entered in the second step. All two-way interactions cyberaggression, cyber-prosocial behavior, and sex were entered on the third step,

and the three-way interaction between cyberaggression, cyber-prosocial behavior, and sex was entered on the final step. A significant three-way interaction emerged (see Table 6). Simple slope analysis revealed that for adolescent boys engaging in high levels of prosocial behavior in ICT mediated contexts, cyberaggression was associated with heightened popularity, $b = 1.21$, $t(263)$ $= 2.48$, $p = .01$. For adolescent boys low in prosocial behavior in ICT mediated contexts, $b = .09$, $t(263) = -.35$, ns, and for adolescent girls both low and high in cyber-prosocial behaviors [girls low in cyber-prosocial: $b = -.18$, $t(263) = -.66$, ns; girls high in cyber-prosocial: $b = -.10$, $t(263) =$ $-.34$, ns], cyberaggression was not related to popularity.

Table 6.
 Interactive effects of cyberaggression and cyber-prosocial behaviors predicting concurrent popularity

Predictor	β	ΔR^2
Step 1:		.54***
Sex	-.20***	
Overt aggression	.24***	
Relational aggression	.56***	
Face-to-face prosocial behavior	.53***	
Step 2:		.02*
Cyberaggression	-.06	
Cyber-prosocial behavior	.22***	
Step 3:		.03*
Cyberaggression × sex	-.12	
Cyber-prosocial × sex	.17**	
Cyberaggression × cyber-prosocial	.11*	
Step 4:		.01*
Cyberaggression × cyber-prosocial × sex	-.15*	

†$p < .10$. *$p < .05$. **$p < .01$. ***$p < .001$.

As shown in Figure 4, popularity was lowest for girls at low levels of cyber-prosocial

behavior regardless of their level of cyberaggression. High levels of cyber-prosocial behavior for

girls and low levels of cyber-prosocial behavior for boys were associated with moderate levels of

popularity, regardless of level of cyberaggression. For adolescent boys, a combination of low

levels of cyberaggression and high levels of cyber-prosocial behavior was associated with

moderate levels of popularity, and a combination of high levels of cyberaggression and high

levels of cyber-prosocial behavior was associated with high levels of popularity.
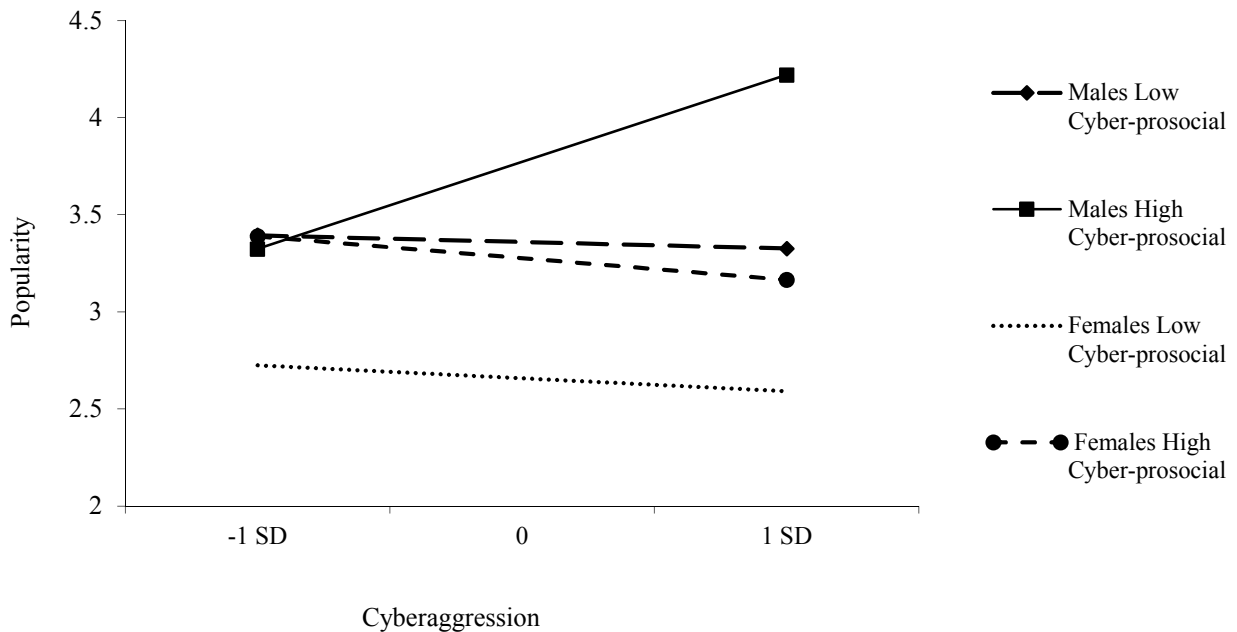
Figure 4. Interactive contributions of cyberaggression, cyber-prosocial behavior, and sex predicting popularity.

To test whether, cyberaggression is positively associated with popularity in the absence

of face-to-face aggression and whether this association differs for adolescent boys and girls, a

hierarchical regression was conducted. In order to simplify analyses, the face-to-face overt

aggression and face-to-face relational aggression scores were averaged to create a composite

face-to-face aggression score for this analysis. Sex was entered in the first step. Cyberaggression

and face-to-face aggression were entered in the second step. All two-way interactions were entered in the third step, and the three-way interaction between face-to-face aggression, cyberaggression, and sex was entered in the last step. (see Table 7). Cyberaggression and face-to-face aggression were positively associated with popularity. A significant interaction between cyberaggression and sex emerged (see Figure 5). Cyberaggression was positively associated with popularity for adolescent boys and girls. However, this association was stronger for adolescent girls than for adolescent boys [Boys: $b = .88$, $t(267) = 3.70$, $p < .001$; Girls: $b = 1.59$, $t(267) = 6.92$, $p < .001$]. Interactions between face-to-face aggression and cyberaggression and face-to-face aggression and sex were not significant nor was the three-way interaction between cyberaggression, face-to-face aggression, and sex.
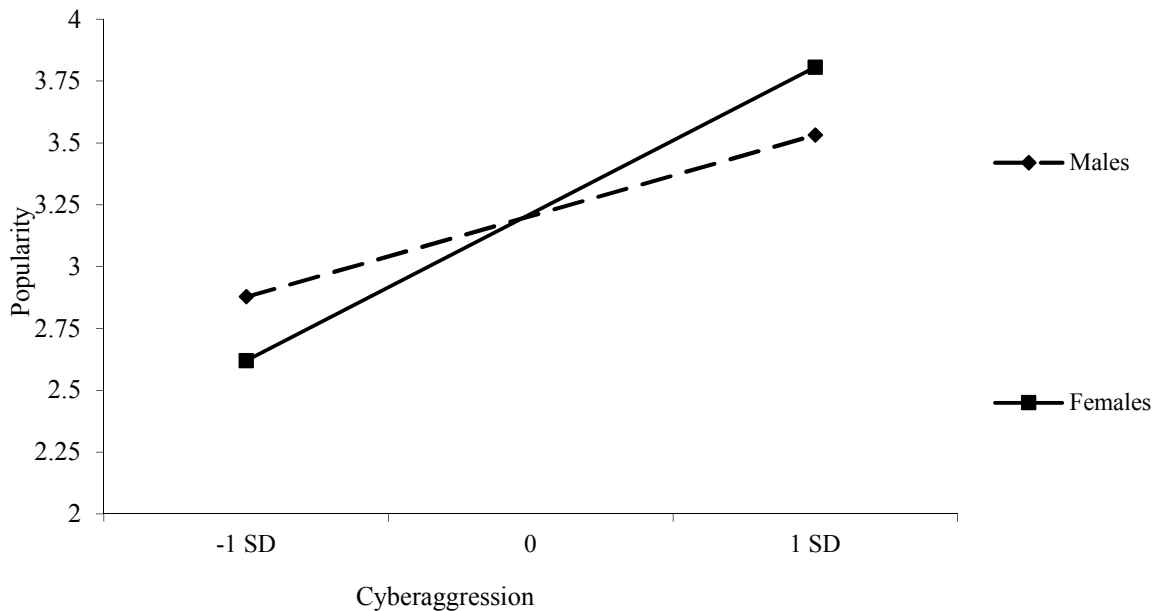
Figure 5. Interactive contributions of cyberaggression and sex predicting popularity

The final analysis tested whether cyber-prosocial behavior was associated more strongly with popularity in the absence of face-to-face prosocial behavior. A hierarchical regression was conducted in which sex was entered in the first step. Cyber-prosocial behavior and face-to-face

prosocial behavior were entered in the second step. All two-way interactions were entered in the third step, and the three-way interaction between cyber-prosocial behavior, face-to-face prosocial behavior, and sex was entered in the last step (see Table 7). Cyber-prosocial behavior was positively related to popularity, and face-to-face prosocial behavior was negatively, albeit marginally, associated with popularity. These associations were moderated by a significant two-way interaction between cyber-prosocial behavior and sex and a marginal two-way interaction between cyber-prosocial behavior and face-to-face prosocial behavior. The cyber-prosocial behavior × sex interaction replicated the finding shown in Figure 3.

An examination of the simple slopes for the cyber-prosocial behavior × face-to-face prosocial behavior showed that for those low in face-to-face prosocial behavior ($b = .57$, $t(267) = 2.22$, $p = .03$, cyber-prosocial behavior was positively associated with popularity. However, cyber-prosocial behavior was not associated with popularity at moderate ($b = .39$, $t(267) = 1.62$, $p = .11$) and high levels of face-to-face prosocial behaviors ($b = .21$, $t(267) = .81$, ns). As shown in Figure 6, although popularity was generally low at low levels of cyber-prosocial behaviors, popularity was lowest for those who were also low in face-to-face prosocial behaviors. Popularity was generally higher at high levels of cyber-prosocial behavior. However, popularity was highest when cyber-prosocial behavior was combined with low levels of face-to-face prosocial behavior.

Table 7.
Interactive effects of cyberaggression and face-to-face aggression and the interactive effect of cyber-prosocial behavior and face-to-face prosocial behaviors predicting concurrent popularity

Predictor	β	ΔR²		β	ΔR²
Step 1:		.00	Step 1:		.00
Sex	.04		Sex	.05	
Step 2:		.21***	Step 2:		.17***
Cyberaggression	.48***		Cyber-prosocial behavior	.53***	
FtF aggression	.25***		FtF prosocial behavior	-.14†	
Step 3:		.02	Step 3:		.04**
Cyberaggression × sex	.23*		Cyber-prosocial × sex	.38*	
FtF aggression × sex	-.11		FtF prosocial × sex	-.15	
Cyberaggression × FtF aggression	.04		Cyber-prosocial × FtF prosocial	-.12†	
Step 4:		.00	Step 4:		.00
Cyberaggression × FtF aggression × sex	.14		Cyber-prosocial × FtF prosocial × sex	.09	

† $p < .10.$ * $p < .05.$ ** $p < .01.$ *** $p < .001.$

Note: FtF = Face-to-face
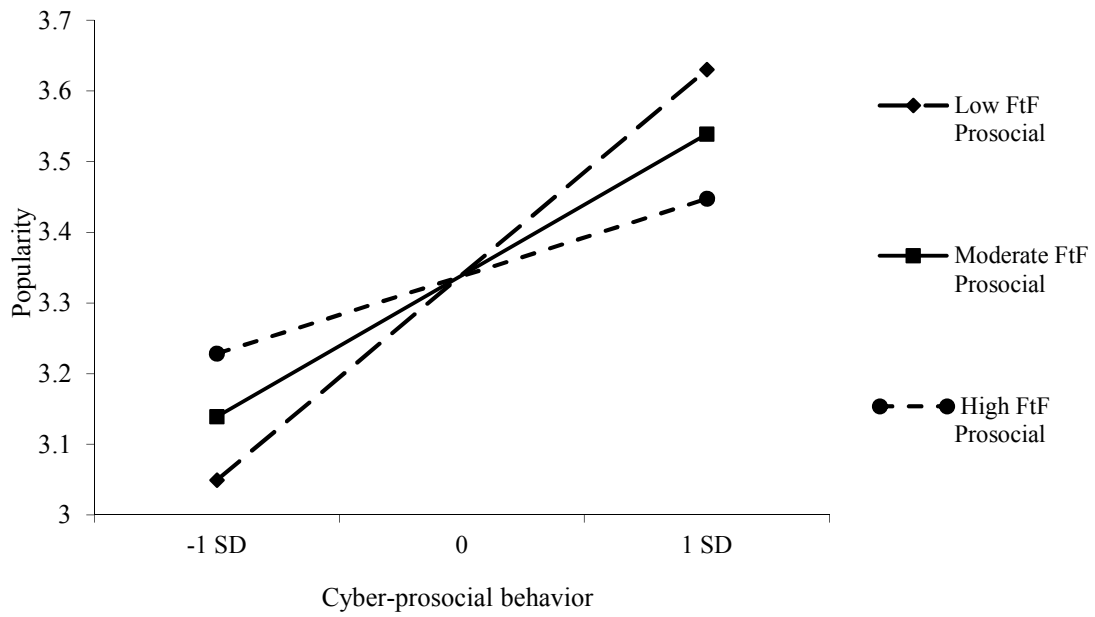
Figure 6. Interactive contributions of cyber-prosocial behavior and face-to-face prosocial behavior predicting popularity.

DISCUSSION

By utilizing a unique and novel set of peer-report and self-report assessments of cyberaggression, cyber-prosocial behaviors, and digital self-monitoring, the current study provides insights concerning the relation between digital social behaviors and popularity in adolescents' peer groups. The results indicate that prosocial behaviors in digital contexts may be used in the pursuit and maintenance of popularity. The results for cyberaggression suggested that this behavior is negatively associated with popularity, particularly when adolescent are not high skilled at digital self-monitoring. There was also evidence that for adolescent boys who frequently engage in cyber-prosocial behaviors, cyberaggression is associated with greater popularity. From the perspective of Resource Control Theory (Hawley, 1999; 2003), these findings suggest that digital contexts may allow boys more flexibility in utilizing both prosocial and coercive strategies to gain prominence and status. Digital context may be more limited for girls in that cyberaggression was not positively associated with their popularity. However, the findings point to cyber-prosocial behaviors as a strong correlate of their social standing. Thus, the current study is an important initial investigation into the construction of adolescents' social hierarchies in an age of digital communication.

Cyber-prosocial behavior and popularity

Of the contributions of the current study, the most novel was the identification of cyber-prosocial behavior as a significant predictor of concurrent popularity. Notably, associations between cyber-prosocial behaviors and popularity were significant when accounting for face-to-face prosocial behavior. Theory and research have often noted the importance of engaging in prosocial behaviors in order to cultivate favor and gain allies among one's peers (Closson, 2009; Hawley, Little, & Card, 2007). Few studies have examined the contextual differences in the

47

application of various prosocial behaviors or whether such differences are in anyway associated with differences in status. Not only was cyber-prosocial behavior positively associated with popularity, these behaviors were found to be strongly associated with popularity across several different analyses and controlling for a variety behaviors that have been shown to be associated with popularity in previous studies. Engaging in prosocial behaviors through digital technologies may have benefits that are not procured from engaging in prosocial behaviors face-to-face. Cyber-prosocial behaviors potentially provide adolescents the unique opportunity to portray themselves to a broad digital audience as nice, helpful, and prosocial, making them appear to be someone who is worthy of emulation and whom others desire to have as a friend. Such behaviors may also be easily reciprocated by others, making the adolescent appear to be liked by agemates. Digital contexts also allow adolescents to vary prosocial behaviors to suggest more or less closeness with particular peers. For example, a popular adolescent may post lengthy messages to other popular peers, and may send simple, less intimate messages (e.g., "Happy birthday) to less popular peers. The latter may allow popular youth to portray an image of someone who knows to engage positively, yet superficially, with lower status peers.

The positive association between cyber-prosocial behavior and popularity was moderated by sex and frequency of face-to-face prosocial behaviors. The sex difference indicated that low levels of cyber-prosocial behavior are associated with lower levels of popularity for adolescent girls than for adolescent boys. However, high levels of cyber-prosocial behavior are associated with high levels of popularity for adolescent boys and girls equally. This suggests that an absence of cyber-prosocial behavior may be more negatively associated with popularity for girls than for boys. Girls are generally found to be more prosocial than boys (Closson, 2008; Eisenberg & Fabes, 1998; Warden, Cheyne, Christie, Fitzpatrick, & Reid, 2003), and cyber-

prosocial may be considered normative behavior for adolescent girls. Indeed, in the current study cyber-prosocial behaviors were more frequent among girls than boy. As research has shown that individuals engaging in gender non-normative behavior tend to be censured by their peers (Crick, 1997; Mayeux, 2011), girls' social status may suffer as a function of not engaging in cyber-prosocial behavior. In contrast, adolescent boys, like girls, may similarly benefit from cyber-prosocial behaviors, but they may face less censure than adolescent girls when they do not engage in cyber-prosocial behaviors.

The relation between cyber-prosocial behaviors and popularity was further moderated by face-to-face prosocial behavior. Specifically, cyber-prosocial behavior was positively related to popularity at low levels of face-to-face prosocial behaviors, but not at moderate or high levels. It had been hypothesized that engaging in cyber-prosocial behaviors may allow adolescents who do not have the means, ability, or will to act prosocially in face-to-face circumstances to enhance or maintain their status in digital contexts that require minimal effort and allow individuals to be more calculated in their social interactions (Subrahmanyam & Smahel, 2011). This may indeed partially explain the results. However, the analyses suggest that a combination of frequent cyber-prosocial behavior and infrequent face-to-face prosocial behaviors is associated with greater popularity than engaging in both cyber- and face-to-face prosocial behaviors. It is possible that adolescents employ digital and face-to-face prosocial behaviors for different purposes. Cyber-prosocial behaviors may be used to gain and maintain popular status among peers more broadly, while face-to-face prosocial behaviors may be implemented to solidify close and intimate relationships. Thus, adolescents may gain popularity if they are perceived to be generally prosocial, but more restrictive when engaging in prosocial behaviors that are direct and more intimate.

Cyberaggression and popularity

Although cyberaggression was often found to be associated with greater popularity, it was related to lower levels of popularity when accounting for covariance with relational aggression. The strong correlation between cyberaggression and relational aggression was quite high, suggesting that adolescents who aggress electronically against peers are often also relationally aggressing against peers face-to-face. By employing relationally aggressive strategies, individuals are able to damage rivals reputations and exert influence over the peer group while remaining relatively anonymous (Xie, Swift, Cairns, & Cairns, 2002). However, when relationally aggressive adolescents move their aggression to digital contexts, their aggression may be may become less covert, observed by a larger portion of the peer group (Subrahmanyam & Smahel, 2011), and may involve more direct harm to the victims. Such overtly aggressive behaviors may seem overly cruel to peers, and thus diminish any gains in popularity afforded to them by their relationally aggressive behaviors.

These findings are in contrast to findings reported in Badaly et al. (2012). In their study, cyberaggression was positively associated with concurrent popularity when controlling for relational and overt aggression, and was positively related with popularity for girls, and negatively related to popularity for boys longitudinally. Differences in findings between their study and the current study may be due, in part, to the ages of the children in the two studies. Whereas the current study included adolescents in grades 9-11, Badaly et al. (2012) studied only 9th graders. In the year following a transition to high school, it is likely that adolescents aggress in multiple contexts to obtain popularity. As social hierarchies stabilize, the use of cyberaggression may increasingly become more analogous with face-to-face aggression in terms of frequency and targeted victims. Consistent with this proposition, although the correlation

between cyberaggression and relational aggression was high in the Badaly et al. study ($r = .70$), it was still lower than that found with the slightly older adolescents in this sample. Greater overlap in the use of cyberaggression and face-to-face relational aggression may render the use of cyberaggression redundant and seemingly excessive, reducing its effects on popularity and possibly even harming it. The divergent findings may also have been due to demographic differences across samples. The current study focused on adolescents from rural and mid-sized communities who attended small or moderately large schools. Badaly et al.'s study was conducted in a very large urban school, with over 800 9th graders, serving primarily Hispanic adolescents. It is possible that within larger schools cyberaggression becomes a more important means of establishing popularity than in smaller schools which may allow greater opportunities for face-to-face relationally aggressive behaviors. Thus, it will be important to continue to test the proposed relations across different developmental periods and contexts.   .

This negative relation between cyberaggression and popularity, however, was moderated by the extent to which adolescents engaged in digital self-monitoring. At low or moderate levels of digital self-monitoring, cyberaggression was associated with lower levels of popularity. However, at high levels of digital self-monitoring, cyberaggression was unrelated to popularity. These findings lend limited support to the Hyperpersonal Theory of Computer-Mediated Communication (Tanis & Postmes, 2007; Tidwell & Walther, 2002), such that adolescent who are able to effectively maintain their online image may be able to engage in cyberaggression without damaging their popularity. They may engage in more subtle forms of cyberaggression that do not gain the same level of attention or that are not considered to be serious offenses by peers overall. In contrast, adolescents who are less adept at monitoring their digital image may engage in aggressive behaviors through ICTs that meet with disapproval and elicits negative peer

perceptions. Just as socially adept adolescents have been shown to engage in aggressive behaviors in face-to-face contexts in ways that help them gain status (Hawley, 1999; 2003), adolescents high in digital self-monitoring may be better able to employ cyberaggression in ways that do not inhibit their ability to gain or maintain popularity.

The role of cyberaggression in popularity was found to be even more complex when investigating interactive effects with cyber-prosocial behavior. For adolescent boys, cyberaggression was positively related to popularity at high levels of cyber-prosocial behavior, but not at low levels of cyber-prosocial behavior. Similar associations were not found for adolescent girls, which is somewhat surprising as research has shown that popular youth of both sexes tend to be highly flexible in the strategies they use to obtain social goals (Lease et al., 2002; Rose et al., 2004a). Despite being limited to boys, these findings are consistent with Resource Control Theory and the notion that individuals who are most successful at obtaining and maintaining popularity in the peer group utilize a variety of aggressive and prosocial behavioral strategies (Hawley, 1999; 2003). These findings may suggest that the ways in which individuals engage in aggression in digital contexts, while distinctive, may have aspects that are more similar to overt forms of aggression, that tend to be preferred by boys, than to relational forms of aggression. Cyberaggression may be more enduring and more readily observed by others than other forms of aggression. Hurtful messages may be seen and distributed among numerous members of the peer group (Subrahmanyam & Smahel, 2011), and may be more readily seen by the victim. Potentially, engaging in prosocial behavior in digital contexts allows boys to employ cyberaggression to enhance their status due in part to social expectations that boys are naturally more overtly aggressive. Girls may not gain similar benefits, as overt

aggression on the part of girls tends to be less accepted by adults and peers alike (Mayeux et al., 2011).

Peer-reports, self-reports, and the assessment of cyber-prosocial behaviors

Despite a wealth of studies examining the social and emotional correlates and consequences of cyberaggression and cyberbullying, few have examined these behaviors utilizing peer reports of these ICT-mediated behaviors (see Badaly 2013 for an exception), nor have they attempted to delineate associations between cyber-prosocial behaviors and peer perceptions. Cyberaggression has generally been considered to be a low base rate behavior, as past research has shown that only 1.1% to 3.2% of adolescents report aggressing against others in digital contexts (Olweus, 2012). In the current study only 7.7% of students were rated by their peers as having absolutely never engaged in aggressive behaviors in digital contexts, while 71.4% of students self-reported never engaging in cyberaggression. While the bulk of adolescents participating in the study were generally rated by their peers as rarely engaging in cyberaggression, the difference in frequencies and the low correlations between self-rated and peer-rated (all rs between .11 and .22) cyberaggression suggest that there are aggressive behaviors occurring in digital context that are not captured by self-report measures, which are the primarily assessment used in research related to cyberaggression and cybervictimization. Furthermore, associations between cyberaggression and popularity and cyber-prosocial behaviors and popularity suggest that peers' noting of these behaviors may have significant implication for their perception of an individual's social status. The results of the current study suggest that past research on cyberaggression may not have accounted for important predictors and consequences of these behaviors due to their reliance on self-report measures.

Additionally, apart from noting the capability of digital technologies to allow individuals to act positively toward one another, few studies have attempted to examine interrelations between prosocial behaviors in digital contexts and social outcomes. Research has examined how ICTs provide access to and influence social support (Ranney & Troop-Gordon, 2012; in press; Subrahmanyam & Smahel, 2011; Swenson et al., 2008). Few studies, if any, have been conducted concerning the positive digital interactions that are not prompted by negative or stressful life events. The current study shows not only that these behaviors are positively associated with obtaining popularity, but based on the magnitude of the bivariate correlations, they may play a larger role in determining popularity than prosocial behaviors conducted face-to-face.

Limitations and future directions

Although the current study utilized a variety of peer- and self-rating measures and elucidated unique associations between digital behaviors and popularity, careful consideration should be taken when interpreting these findings. As analyses were conducted using concurrent data, it is not possible to determine the direction of the associations between cyberaggression, cyber-prosocial behaviors, and popularity. Indeed, studies concerning social status and its associations with aggressive and prosocial behaviors have found that popularity is reciprocally related to both aggression and prosocial behaviors (Cillessen et al., 2011; Closson, 2009; Lease et al., 2002; Parkhurst, & Hopmeyer, 1998; Puckett et al., 2008; Rose et al., 2004a). Thus, it could be the case that popular youth employ more cyber-prosocial behaviors and engage in less cyberaggression once they have obtained their popular status. Longitudinal analyses should be conducted to clarify the direction of these associations.

Additionally, the associations between cyberaggression, cyber-prosocial behaviors, and popularity while compelling may have been inflated due to shared method variance. Peer-reports were used to measure aggression, prosocial behaviors, and popularity. Findings did not replicate when self-reports of aggressive and prosocial behaviors were included in the analyses. To control for shared method variance, researchers should test the relations between digital self-monitoring, cyberaggression, cyber-prosocial behaviors, and popularity using additional sources of information (e.g., observation, ecological momentary assessment, daily diary). Furthermore, cyberaggression and cyber-prosocial behaviors were treated as monolithic constructs without accounting for the variety of ways that individuals may behave aggressively (e.g., excluding others from activities and posting pictures online, online shaming, aggressive direct messaging) or prosocially (e.g., liking other's posts, saying happy birthday, providing social support) in digital contexts. Although this is consistent with past research on cyberaggression (Badaly et al., 2013; Barlett & Gentile, 2012; Olweus, 2012), potentially more direct forms of cyberaggression and cyber-prosocial behavior (e.g., direct messages, public posts) may have a differential impact on one's social standing when compared with more subtle or superficial forms of these digital behaviors (e.g., liking other's posts, selectively sharing pictures).

CONCLUSIONS

Findings from the current study are important for understanding how becoming popular and establishing one's position in upper levels of social hierarchies occurs in the context of digital peer interactions. Previous research on digital peer interactions has tended focused on the precursors and psychological outcomes of cyberaggression while tending to neglect the impact of prosocial behaviors in these contexts and failing to consider the broader implications of the behaviors for individuals' standing among their peers. Furthermore, these studies have primarily employed self-report measures of digital behaviors, which may bias results and lead to underreporting of cyberaggression and over reporting of cyber-prosocial behaviors. Indeed, findings showed minimal concordance between peer- and self-ratings of digital behaviors suggesting that previous research relying on self-report data may provide an incomplete understanding of the causes and consequences of these behaviors. Ultimately, this research demonstrated the positive influence that prosocial behaviors in digital contexts may have on popularity. It further elucidated the potentially limited role of cyberaggression in obtaining popularity. Thus, this work provides important insights concerning the behavioral strategies that adolescents use in digital contexts to gain and solidify the veneration of their peers.

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60

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CONSENT TO PARTICIPATE IN RESEARCH

Adolescents' Internet Use and Peer Relationships Study

John D. Ranney, M.A., M.S.   Wendy Troop-Gordon, Ph.D.
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Dear Parent,

Research Study

Your student is invited to participate in a research study of how social interactions taking place both online and face-to-face influence their social lives and emotional well-being. This study is conducted by Dr. Wendy Troop-Gordon, Associate Professor and John D. Ranney M. A., M. S., Candidate for PhD. from the Department of Psychology at North Dakota State University

Basis for Participant Selection

High school students from school districts in Minnesota, North Dakota, and South Dakota are eligible to participate in a study of adolescents' behaviors through the internet and other forms of digital communication and how they relate to peers face-to-face.

Overall Purpose of the Study

The purpose of the study is to understand how adolescents engage in social interactions with their peers both online and face-to-face. During the study, your student will complete several questionnaires related to popularity, their efforts to construe a positive self-image online and face-to-face, aggression and prosocial behaviors online and face-to-face, self-esteem, and depressive feelings. Students will also rate the popularity and behaviors of students' who are also participating in this study. This will allow us to understand how high school students experience positive and negative interactions with their classmates and how computers and cellphones affect these experiences.

Explanation of Procedures

This study will be conducted during a class period during the school day selected by the school administrators. Students will be presented with 6 questionnaires delivered through NDSU's secure study administration system, *Qualtrics*. These questions will be administered on computers in high school computer labs and will take approximately 20 minutes to complete. Students will respond to questions once during the Fall semester and one more time during the Spring semester of the 2014 -2015 school year. To ensure students' privacy, participants will be given individual ID codes and no personally identifying information will be collected. Lists linking names with ID codes will be kept on paper stored in locked cabinets at NDSU, and the computerized files used to create the lists will be destroyed. All information collected from participants will be kept on secured, password-protected computers at NDSU, and all data will be coded with the confidential identification number. Thus, students' data will not be able to be matched to any information that could identify him or her. A copy of the questionnaires to be distributed are on file in your school's main office.

Potential Risks and Discomforts

The procedures used in this study have been used in published psychological research conducted with children and adolescents across the United States and around the world. Any potential risks to students are anticipated to be minimal. There is a possibility that some of the items in the questionnaires may be viewed as personal. Students may skip any question they are uncomfortable answering.

Potential Benefits

This research will help us learn how online activities and behaviors influence their lives both online and offline. Information from this study may be used to help school administrators and teachers develop programs and policies to protect students and advise them about how to appropriately handle issues that arise both online and face-to-face.

Compensation for Participation

For returning the signed consent form, your student will be entered into a drawing for one Ipad mini, one Kindle Fire, and one of three $100 gift cards to I-tunes. Drawings for these prizes will be conducted in the spring of 2015 following the final data collection.

Assurance of Confidentiality

Information collected from your child will be kept strictly confidential and will be read only by the research team. The information we collect from your student in this study will be stored by a number, not by name. All questionnaires will be stored on external hard drives not connected to computers at NDSU that are accessible only to the research staff. Data collected from your students will be kept completely confidential and will not be shown to any individual including parents or school personnel. Your child's identity will not be revealed or connected with the study results. We are interested in combining data from all of the participants, not in separately examining the pattern for each person. Your student's data will be combined with the data from other participants and reported in summary form. Data and records created by this project are the property of the University and the investigator.

Withdrawal from the Study

Your student's participation is voluntary, and your student may withdraw from the study at any time without penalty or loss of benefits. Your student's decision of whether or not to participate will not affect his or her relationship with XXXXX High School or North Dakota State University. If you decide to allow your student participate now, you are free to withdraw your consent and to discontinue participation at any time.

Offer to Answer Questions

You should feel free to ask questions now or at any time during the study. If you have further questions about this study, you can contact John D. Ranney M.A., M.S. at 701-231-5490 or Dr. Wendy Gordon at 701-231-8738. If you have questions about the rights of human research participants, or wish to report a research-related injury, contact the NDSU IRB office at (701) 231-8908.

Consent Statement (Please Mark ONE)

_____ **My child/ward HAS my permission to participate in this study By selecting this option and signing this form, you are stating that you have read and understand this form and the research project, and are freely agreeing to be a part of this study.**

_____ **My child/ward does NOT have my permission to participate in this study.**

_____
Name of Child/Legal Ward   Your Relation to Participant

_____
Print full name of Parent/Guardian   Signature of Parent/Guardian   Date

----
[office use only]

_____
Printed name of individual obtaining consent   Signature of individual obtaining consent   Date

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YOUTH ASSENT FORM
Adolescents' Internet Use and Peer Relationships Study

Invitation:
- o You are invited to take part in a research study to understand how adolescents engage in social interactions with their peers both online and face-to-face.
- o The study is being done by John D. Ranney M. A., M. S., Candidate for PhD and Dr. Wendy Troop-Gordon, Associate Professor in the Department of Psychology at North Dakota State University.

What will the research involve? If you agree to participate, you will complete 6 questionnaires delivered through a secure NDSU website. You will respond to questions on computers in your high school computer labs during the school day. The questionnaires will take 15 - 20 minutes to fill out. You will fill out the questionnaires once in the fall and one more time in the spring. The questionnaires ask you to:
- *Provide general information about yourself and the amount of time you spend online*
- *Provide information as to the things you do online and in person*
- *Rate other students as to how popular, mean, nice, and picked on they are on line and at school*
- *Rate how you feel about yourself and life in general*

What are any risks or benefits for me? It is possible you might think some of the questions are personal, and you may feel a little uncomfortable answering some of the questions about yourself and your classmates. You may skip any questions that you are uncomfortable answering, and you may stop your participation in the study at any time.

It may be good for you to take part in this research because it may help you understand how your behaviors online and in person influence others at your school. You may be able to help others by helping the researchers understand how high school students experience positive and negative interactions with their classmates and how computers and cellphones affect these experiences. You can also feel good about helping to inform others about the impact that computers have on the daily lives of high school students.

Do I have to take part in the research?
- o Your parent(s) or legal guardian(s) have given their permission for you to be in the research, but it is still your choice whether or not to take part.
- o Even if you say yes now, you can change your mind later, and stop participating.
- o Your decision will have no effect bad or good on your chances of winning the prize drawing.

There are some situations where we may decide that you should leave the study; like when you are not following instructions, or if you give indications that you are distressed.

Who will see my answers and information?
- o We will make every effort to keep your information private; only the people helping us with the research will know your answers or see your information.
- o Your information will be combined with information from other people in the study. When we write about the study, we will write only about this combined information, and no one will be able to know what your information is.
- o If you want to look at the information we collect from you, just let us know, and we will provide it to you. You cannot look at information from others in the research.

What potential rewards are involved with this study?
For returning your completed parent consent form, you have been entered in a drawing for one Ipad mini, one Kindle Fire, and one of three $100 gift cards to I-tunes. Drawings for these prizes will be conducted in the spring of 2015.

Is there anything else I should know?
If you experience distress because of this research, you should tell your parent(s)/guardian(s) to contact John Ranney at the following phone number 701-231-5490.

What if I have questions?
- o You should ask any questions you have right now, before deciding whether or not to be a part of the research.
- o If you or your parent(s) or guardian(s) have questions later, contact us at: John Ranney, 701-231-5490, or at john.ranney@my.ndsu.edu, or Dr. Wendy Troop-Gordon, 701-231-8738, or at wendy.troop@ndsu.edu.
- o Your parent(s) or legal guardian will receive a copy of this form to keep.

What are my rights?

- o You have rights as a research participant.
- o For questions about your rights, or to tell someone else about a problem with this research, you can contact the NDSU Human Research Protection Program (HRPP) at:
  - 701-231-8908
  - Toll-free at 1-855-800-6717
  - ndsu.irb@ndsu.edu .
- o The HRPP is responsible to make sure that your rights and safety are protected in this research. More information is available at: www.ndsu.edu/research/irb.

Sign this form only if you:

- have understood what the research is about and why it's being done,
- have had all your questions answered,
- have talked to your parent(s)/legal guardian about this project, and
- agree to take part in this research

_____

Your Signature   Printed Name   Date

_____

Name of Parent(s) or Legal Guardian(s)

_____

Signature   Printed Name   Date
Researcher explaining study

APPENDIX C: DEMOGRAPHICS

Please respond to the following questions by either providing the appropriate information or by selecting from the items listed.

Please select one of the following:

Gender:　　　　　　　1. Male　　　　　　　2. Female

What month were you born? _____

What year were you born? _____

Please select one of the following:

What is your ethnicity?

- Hispanic/Latino
- Caucasian
- African-American/Black
- Asian/Asian-American
- American Indian/Alaska Native
- Pacific Islander/Native Hawaiian
- Other

How do you primarily communicate with others your age **(check all that apply)**?

- Talk to each other in person
- Talk on the phone (voice)
- Text message
- Chat online/ Instant message
- Post messages on social networking sites (e.g., Twitter, Facebook, Yik Yak)
- Write letters/notes

How much time per day do you spend texting with your friends?

- O 0 – 1 hour and 59 minutes
- O 2 - 3 hours and 59 minutes
- O 4 - 5hours and 59 minutes
- O 6 – 7hours and 59 minutes
- O 8 – 9hours and 59 minutes
- O 10 – 11hours and 59 minutes
- O More than 12 hours

How much time per day do you spend interacting online with others (e.g., chatting though Facebook, talking on Skype, Snapchat)?

- O 0 – 1 hour and 59 minutes
- O 2 - 3 hours and 59 minutes
- O 4 - 5hours and 59 minutes
- O 6 – 7hours and 59 minutes
- O 8 – 9hours and 59 minutes
- O 10 – 11hours and 59 minutes
- O More than 12 hours

How much time per day do you spend on social media (e.g., Twitter, Facebook, Tumblr)?

- O 0 – 1 hour and 59 minutes
- O 2 - 3 hours and 59 minutes
- O 4 - 5hours and 59 minutes
- O 6 – 7hours and 59 minutes
- O 8 – 9hours and 59 minutes
- O 10 – 11hours and 59 minutes
- O More than 12 hours

How often do you post to social media per day (e.g., status updates, pictures, Instagram posts, sharing articles, Tumblr entries)?

- ○ 0 – 10 posts
- ○ 11 – 20 posts
- ○ 21 – 30 posts
- ○ 31 – 40 posts
- ○ 41 – 50 posts
- ○ 51 – 60 posts
- ○ 61 – 70 posts
- ○ 71 – 80 posts
- ○ 81 – 90 posts
- ○ 91 – 100 posts
- ○ More than 100 posts

How many times per day do you check other people's post online (e.g., check Twitter, check Facebook, read their blogs, watch their videos)?

- ○ 0 – 10 times per day
- ○ 11 – 20 times per day
- ○ 21 – 30 times per day
- ○ 31 – 40 times per day
- ○ 41 – 50 times per day
- ○ 51 – 60 times per day
- ○ 61 – 70 times per day
- ○ 71 – 80 times per day
- ○ 81 – 90 times per day
- ○ 91 – 100 times per day
- ○ More than 100 times per day

APPENDIX D: DIGITAL & FACE-TO-FACE SELF-MONITORING

Below is a list of statements dealing with how you are when you are interacting with other people. Please indicate how strongly you agree or disagree with each statement.

When I am interacting with others through text message, email, and social media, I have the ability to control the way I come across to people depending on the impression I wish to give them.				
O	O	O	O	O
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

When I feel that the image I am portraying through social media, email, and texting isn't working, I readily change it to something that does.				
O	O	O	O	O
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

I have trouble changing my online and digital behaviors to suit different people and different situations.				
O	O	O	O	O
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

Once I know what the situation calls for, it's easy for me to regulate my online actions accordingly.				
O	O	O	O	O
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

In social situations online and in digital media, I have the ability to alter my behavior if I feel that something else is called for.				
O	O	O	O	O
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

I have found that I can adjust my behavior to meet the requirements of any online social situation I find myself in.				
O	O	O	O	O
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

Even when it might be to my advantage, I have difficulty putting up a good front when interacting with people through text message, email, and social media.				
O	O	O	O	O
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

When talking with people in person, I have the ability to control the way I come across to people depending on the impression I wish to give them.				
O	O	O	O	O
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
When I am interacting with people face-to-face and I feel that the image I am portraying isn't working, I change it to something that does.				
O	O	O	O	O
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
I have trouble changing my behavior to suit different people and different in person situations.				
O	O	O	O	O
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Once I know what the face-to-face interaction calls for, it's easy for me to regulate my actions accordingly.				
O	O	O	O	O
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
In situations where I get together with other people, I have the ability to alter my behavior if I feel that something else is called for.				
O	O	O	O	O
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

I have found that I can adjust my behavior to meet the requirements of any face-to-face social situation.				
O	O	O	O	O
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

Even when it might be to my advantage, I have difficulty putting up a good front when interacting with people in person.				
O	O	O	O	O
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

For each of the following questions you will be asked to provide your perceptions of classmates' behavior and social standing in the group. Please make a selection for each individual listed below each statement. Questions asking about things that happen at school include things that occur in person on a regular school day or school related event.

Please rate how **POPULAR** each classmate listed below is. Being popular is being respected by other people, seen as being "cool," and having lots of people want to be friends with them.						
	Unpopular	Somewhat Unpopular	Neither Popular nor Unpopular	Somewhat Popular	Popular	I cannot rate this person
Jimmy Hoffa	O	O	O	O	O	O
Wendy Moira Angela Darling	O	O	O	O	O	O
Peter Pan	O	O	O	O	O	O
Luke Skywalker	O	O	O	O	O	O
Tink R Bell	O	O	O	O	O	O
Princess Leia	O	O	O	O	O	O
Harry Potter	O	O	O	O	O	O
Jinny Weasley	O	O	O	O	O	O
Ron Weasley	O	O	O	O	O	O
Hermione Granger	O	O	O	O	O	O
Lilly Potter	O	O	O	O	O	O
Sirius Black	O	O	O	O	O	O
Severus Snape	O	O	O	O	O	O
Molly Weasley	O	O	O	O	O	O
Frodo Baggins	O	O	O	O	O	O
Arwen Evenstar	O	O	O	O	O	O
Bilbo Baggins	O	O	O	O	O	O
Kendra Dumbledoor	O	O	O	O	O	O
Laura Ingalls Wilder	O	O	O	O	O	O
Anne Shirley	O	O	O	O	O	O
Nancy Drew	O	O	O	O	O	O
Luna Lovegood	O	O	O	O	O	O
Elphaba Wicked	O	O	O	O	O	O
Dorothy Gale	O	O	O	O	O	O
Michaela Quinn	O	O	O	O	O	O

Rate how often each person below **BULLIES OTHERS** by cellphone or through the internet.						
	Never	Rarely	Sometimes	Most of the Time	Always	I cannot rate this person
Jimmy Hoffa	O	O	O	O	O	O
Wendy Moira Angela Darling	O	O	O	O	O	O
Peter Pan	O	O	O	O	O	O
Luke Skywalker	O	O	O	O	O	O
Tink R Bell	O	O	O	O	O	O
Princess Leia	O	O	O	O	O	O
Harry Potter	O	O	O	O	O	O
Jinny Weasley	O	O	O	O	O	O
Ron Weasley	O	O	O	O	O	O
Hermione Granger	O	O	O	O	O	O
Lilly Potter	O	O	O	O	O	O
Sirius Black	O	O	O	O	O	O
Severus Snape	O	O	O	O	O	O
Molly Weasley	O	O	O	O	O	O
Frodo Baggins	O	O	O	O	O	O
Arwen Evenstar	O	O	O	O	O	O
Bilbo Baggins	O	O	O	O	O	O
Kendra Dumbledoor	O	O	O	O	O	O
Laura Ingalls Wilder	O	O	O	O	O	O
Anne Shirley	O	O	O	O	O	O
Nancy Drew	O	O	O	O	O	O
Luna Lovegood	O	O	O	O	O	O
Elphaba Wicked	O	O	O	O	O	O
Dorothy Gale	O	O	O	O	O	O
Michaela Quinn	O	O	O	O	O	O

Rate how often each person listed below sends nice messages or does nice things **FOR OTHERS** by cellphone or through the internet.						
	Never	Rarely	Sometimes	Most of the Time	Always	I cannot rate this person
Jimmy Hoffa	○	○	○	○	○	○
Wendy Moira Angela Darling	○	○	○	○	○	○
Peter Pan	○	○	○	○	○	○
Luke Skywalker	○	○	○	○	○	○
Tink R Bell	○	○	○	○	○	○
Princess Leia	○	○	○	○	○	○
Harry Potter	○	○	○	○	○	○
Jinny Weasley	○	○	○	○	○	○
Ron Weasley	○	○	○	○	○	○
Hermione Granger	○	○	○	○	○	○
Lilly Potter	○	○	○	○	○	○
Sirius Black	○	○	○	○	○	○
Severus Snape	○	○	○	○	○	○
Molly Weasley	○	○	○	○	○	○
Frodo Baggins	○	○	○	○	○	○
Arwen Evenstar	○	○	○	○	○	○
Bilbo Baggins	○	○	○	○	○	○
Kendra Dumbledoor	○	○	○	○	○	○
Laura Ingalls Wilder	○	○	○	○	○	○
Anne Shirley	○	○	○	○	○	○
Nancy Drew	○	○	○	○	○	○
Luna Lovegood	○	○	○	○	○	○
Elphaba Wicked	○	○	○	○	○	○
Dorothy Gale	○	○	○	○	○	○
Michaela Quinn	○	○	○	○	○	○

Rate how often each person listed below **SENDS** mean or hurtful messages, calls, or pictures **TO OTHERS** through the cellphone or the internet.						
	Never	Rarely	Sometimes	Most of the Time	Always	I cannot rate this person
Jimmy Hoffa	O	O	O	O	O	O
Wendy Moira Angela Darling	O	O	O	O	O	O
Peter Pan	O	O	O	O	O	O
Luke Skywalker	O	O	O	O	O	O
Tink R Bell	O	O	O	O	O	O
Princess Leia	O	O	O	O	O	O
Harry Potter	O	O	O	O	O	O
Jinny Weasley	O	O	O	O	O	O
Ron Weasley	O	O	O	O	O	O
Hermione Granger	O	O	O	O	O	O
Lilly Potter	O	O	O	O	O	O
Sirius Black	O	O	O	O	O	O
Severus Snape	O	O	O	O	O	O
Molly Weasley	O	O	O	O	O	O
Frodo Baggins	O	O	O	O	O	O
Arwen Evenstar	O	O	O	O	O	O
Bilbo Baggins	O	O	O	O	O	O
Kendra Dumbledoor	O	O	O	O	O	O
Laura Ingalls Wilder	O	O	O	O	O	O
Anne Shirley	O	O	O	O	O	O
Nancy Drew	O	O	O	O	O	O
Luna Lovegood	O	O	O	O	O	O
Elphaba Wicked	O	O	O	O	O	O
Dorothy Gale	O	O	O	O	O	O
Michaela Quinn	O	O	O	O	O	O

Rate how often each person listed below spreads rumors or gossips **ABOUT CLASSMATES** at school to be mean.						
	Never	Rarely	Sometimes	Most of the Time	Always	I cannot rate this person
Jimmy Hoffa	○	○	○	○	○	○
Wendy Moira Angela Darling	○	○	○	○	○	○
Peter Pan	○	○	○	○	○	○
Luke Skywalker	○	○	○	○	○	○
Tink R Bell	○	○	○	○	○	○
Princess Leia	○	○	○	○	○	○
Harry Potter	○	○	○	○	○	○
Jinny Weasley	○	○	○	○	○	○
Ron Weasley	○	○	○	○	○	○
Hermione Granger	○	○	○	○	○	○
Lilly Potter	○	○	○	○	○	○
Sirius Black	○	○	○	○	○	○
Severus Snape	○	○	○	○	○	○
Molly Weasley	○	○	○	○	○	○
Frodo Baggins	○	○	○	○	○	○
Arwen Evenstar	○	○	○	○	○	○
Bilbo Baggins	○	○	○	○	○	○
Kendra Dumbledoor	○	○	○	○	○	○
Laura Ingalls Wilder	○	○	○	○	○	○
Anne Shirley	○	○	○	○	○	○
Nancy Drew	○	○	○	○	○	○
Luna Lovegood	○	○	○	○	○	○
Elphaba Wicked	○	○	○	○	○	○
Dorothy Gale	○	○	○	○	○	○
Michaela Quinn	○	○	○	○	○	○

Rate how often each person listed below insults or picks **ON OTHERS** at school.						
	Never	Rarely	Sometimes	Most of the Time	Always	I cannot rate this person
Jimmy Hoffa	○	○	○	○	○	○
Wendy Moira Angela Darling	○	○	○	○	○	○
Peter Pan	○	○	○	○	○	○
Luke Skywalker	○	○	○	○	○	○
Tink R Bell	○	○	○	○	○	○
Princess Leia	○	○	○	○	○	○
Harry Potter	○	○	○	○	○	○
Jinny Weasley	○	○	○	○	○	○
Ron Weasley	○	○	○	○	○	○
Hermione Granger	○	○	○	○	○	○
Lilly Potter	○	○	○	○	○	○
Sirius Black	○	○	○	○	○	○
Severus Snape	○	○	○	○	○	○
Molly Weasley	○	○	○	○	○	○
Frodo Baggins	○	○	○	○	○	○
Arwen Evenstar	○	○	○	○	○	○
Bilbo Baggins	○	○	○	○	○	○
Kendra Dumbledoor	○	○	○	○	○	○
Laura Ingalls Wilder	○	○	○	○	○	○
Anne Shirley	○	○	○	○	○	○
Nancy Drew	○	○	○	○	○	○
Luna Lovegood	○	○	○	○	○	○
Elphaba Wicked	○	○	○	○	○	○
Dorothy Gale	○	○	○	○	○	○
Michaela Quinn	○	○	○	○	○	○

Rate how often each person listed below says nice things or does nice things **FOR OTHERS** at school.						
	Never	Rarely	Sometimes	Most of the Time	Always	I cannot rate this person
Jimmy Hoffa	O	O	O	O	O	O
Wendy Moira Angela Darling	O	O	O	O	O	O
Peter Pan	O	O	O	O	O	O
Luke Skywalker	O	O	O	O	O	O
Tink R Bell	O	O	O	O	O	O
Princess Leia	O	O	O	O	O	O
Harry Potter	O	O	O	O	O	O
Jinny Weasley	O	O	O	O	O	O
Ron Weasley	O	O	O	O	O	O
Hermione Granger	O	O	O	O	O	O
Lilly Potter	O	O	O	O	O	O
Sirius Black	O	O	O	O	O	O
Severus Snape	O	O	O	O	O	O
Molly Weasley	O	O	O	O	O	O
Frodo Baggins	O	O	O	O	O	O
Arwen Evenstar	O	O	O	O	O	O
Bilbo Baggins	O	O	O	O	O	O
Kendra Dumbledoor	O	O	O	O	O	O
Laura Ingalls Wilder	O	O	O	O	O	O
Anne Shirley	O	O	O	O	O	O
Nancy Drew	O	O	O	O	O	O
Luna Lovegood	O	O	O	O	O	O
Elphaba Wicked	O	O	O	O	O	O
Dorothy Gale	O	O	O	O	O	O
Michaela Quinn	O	O	O	O	O	O

APPENDIX F: SELF-REPORT CYBERAGGRESSION & PROSOCIAL BEHAVIOR

THROUGH ICTS

For each of the following questions you will be asked about things that may have happened to you or that you may have partaken in both inside and outside of school and school related activities.

How often you have bullied others by cellphone or through the internet?				
O	O	O	O	O
Never	Rarely	Sometimes	Most of the Time	Always

How often have you sent nice messages or done nice things for others by cellphone or through the internet?				
O	O	O	O	O
Never	Rarely	Sometimes	Most of the Time	Always

How often have you sent mean or hurtful messages, calls, or pictures to others through the cellphone or the internet?				
O	O	O	O	O
Never	Rarely	Sometimes	Most of the Time	Always

How often have you spread rumors or gossiped **about classmates** at school to be mean?				
O	O	O	O	O
Never	Rarely	Sometimes	Most of the Time	Always

How often have you insulted or picked on others at school?				
O	O	O	O	O
Never	Rarely	Sometimes	Most of the Time	Always

How often have you said nice things or done nice things to others at school?				
O	O	O	O	O
Never	Rarely	Sometimes	Most of the Time	Always

For the following question you will be asked to provide your perceptions of classmates' behavior and social standing in the group. Please make a selection for each individual listed below each statement.

Rate how often **OTHERS BULLY** each person below by cellphone or through the internet.						
	Never	Rarely	Sometimes	Most of the Time	Always	I cannot rate this person
Jimmy Hoffa	O	O	O	O	O	O
Wendy Moira Angela Darling	O	O	O	O	O	O
Peter Pan	O	O	O	O	O	O
Luke Skywalker	O	O	O	O	O	O
Tink R Bell	O	O	O	O	O	O
Princess Leia	O	O	O	O	O	O
Harry Potter	O	O	O	O	O	O
Jinny Weasley	O	O	O	O	O	O
Ron Weasley	O	O	O	O	O	O
Hermione Granger	O	O	O	O	O	O
Lilly Potter	O	O	O	O	O	O
Sirius Black	O	O	O	O	O	O
Severus Snape	O	O	O	O	O	O
Molly Weasley	O	O	O	O	O	O
Frodo Baggins	O	O	O	O	O	O
Arwen Evenstar	O	O	O	O	O	O
Bilbo Baggins	O	O	O	O	O	O
Kendra Dumbledoor	O	O	O	O	O	O
Laura Ingalls Wilder	O	O	O	O	O	O
Anne Shirley	O	O	O	O	O	O
Nancy Drew	O	O	O	O	O	O
Luna Lovegood	O	O	O	O	O	O
Elphaba Wicked	O	O	O	O	O	O
Dorothy Gale	O	O	O	O	O	O
Michaela Quinn	O	O	O	O	O	O

How often have others bullied you by cellphone or through the internet?				
O	O	O	O	O
Never	Rarely	Sometimes	Most of the Time	Always

For the following question you will be asked to provide your perceptions of classmates' behavior and social standing in the group. Please make a selection for each individual listed below each statement.

Rate how often **OTHERS SEND** each person listed below mean or hurtful messages, calls, or pictures through the cellphone or the internet.						
	Never	Rarely	Sometimes	Most of the Time	Always	I cannot rate this person
Jimmy Hoffa	O	O	O	O	O	O
Wendy Moira Angela Darling	O	O	O	O	O	O
Peter Pan	O	O	O	O	O	O
Luke Skywalker	O	O	O	O	O	O
Tink R Bell	O	O	O	O	O	O
Princess Leia	O	O	O	O	O	O
Harry Potter	O	O	O	O	O	O
Jinny Weasley	O	O	O	O	O	O
Ron Weasley	O	O	O	O	O	O
Hermione Granger	O	O	O	O	O	O
Lilly Potter	O	O	O	O	O	O
Sirius Black	O	O	O	O	O	O
Severus Snape	O	O	O	O	O	O
Molly Weasley	O	O	O	O	O	O
Frodo Baggins	O	O	O	O	O	O
Arwen Evenstar	O	O	O	O	O	O
Bilbo Baggins	O	O	O	O	O	O
Kendra Dumbledoor	O	O	O	O	O	O
Laura Ingalls Wilder	O	O	O	O	O	O
Anne Shirley	O	O	O	O	O	O
Nancy Drew	O	O	O	O	O	O
Luna Lovegood	O	O	O	O	O	O
Elphaba Wicked	O	O	O	O	O	O
Dorothy Gale	O	O	O	O	O	O

How often have others **sent you** mean or hurtful messages, calls, or pictures through the cellphone or the internet?				
O	O	O	O	O
Never	Rarely	Sometimes	Most of the Time	Always

For the following question you will be asked to provide your perceptions of classmates' behavior and social standing in the group. Please make a selection for each individual listed below each statement.

Rate how often each person listed below is insulted or picked on **BY OTHERS** at school.						
	Never	Rarely	Sometimes	Most of the Time	Always	I cannot rate this person
Jimmy Hoffa	O	O	O	O	O	O
Wendy Moira Angela Darling	O	O	O	O	O	O
Peter Pan	O	O	O	O	O	O
Luke Skywalker	O	O	O	O	O	O
Tink R Bell	O	O	O	O	O	O
Princess Leia	O	O	O	O	O	O
Harry Potter	O	O	O	O	O	O
Jinny Weasley	O	O	O	O	O	O
Ron Weasley	O	O	O	O	O	O
Hermione Granger	O	O	O	O	O	O
Lilly Potter	O	O	O	O	O	O
Sirius Black	O	O	O	O	O	O
Severus Snape	O	O	O	O	O	O
Molly Weasley	O	O	O	O	O	O
Frodo Baggins	O	O	O	O	O	O
Arwen Evenstar	O	O	O	O	O	O
Bilbo Baggins	O	O	O	O	O	O
Kendra Dumbledoor	O	O	O	O	O	O
Laura Ingalls Wilder	O	O	O	O	O	O
Anne Shirley	O	O	O	O	O	O
Nancy Drew	O	O	O	O	O	O
Luna Lovegood	O	O	O	O	O	O
Elphaba Wicked	O	O	O	O	O	O
Dorothy Gale	O	O	O	O	O	O
How often have you been insulted or picked on by others at school?						

O	O	O	O	O
Never	Rarely	Sometimes	Most of the Time	Always

For the following question you will be asked to provide your perceptions of classmates' behavior and social standing in the group. Please make a selection for each individual listed below each statement.

How often have you had mean rumors or gossip spread about you at school?				
O	O	O	O	O

Rate how often each person listed below has rumors or gossip spread **ABOUT THEM** at school.					
	Never	Rarely	Sometimes	Most of the Time	Always	I cannot rate this person
Jimmy Hoffa	O	O	O	O	O	O
Peter Pan	O	O	O	O	O	O
Luke Skywalker	O	O	O	O	O	O
Tink R Bell	O	O	O	O	O	O
Princess Leia	O	O	O	O	O	O
Harry Potter	O	O	O	O	O	O
Jinny Weasley	O	O	O	O	O	O
Ron Weasley	O	O	O	O	O	O
Hermione Granger	O	O	O	O	O	O
Lilly Potter	O	O	O	O	O	O
Sirius Black	O	O	O	O	O	O
Severus Snape	O	O	O	O	O	O
Molly Weasley	O	O	O	O	O	O
Frodo Baggins	O	O	O	O	O	O
Arwen Evenstar	O	O	O	O	O	O
Bilbo Baggins	O	O	O	O	O	O
Kendra Dumbledoor	O	O	O	O	O	O
Laura Ingalls Wilder	O	O	O	O	O	O
Anne Shirley	O	O	O	O	O	O
Nancy Drew	O	O	O	O	O	O
Luna Lovegood	O	O	O	O	O	O
Elphaba Wicked	O	O	O	O	O	O
Dorothy Gale	O	O	O	O	O	O
Never	Rarely		Sometimes	Most of the Time	Always

Below is a list of statements dealing with your general feelings about yourself. Please indicate how strongly you agree or disagree with each statement.

I feel that I am a person of worth and equal with others.			
O	O	O	O
Strongly Disagree	Disagree	Agree	Strongly Agree
I feel I have a number of good qualities.			
O	O	O	O
Strongly Disagree	Disagree	Agree	Strongly Agree
I feel I am a failure.			
O	O	O	O
Strongly Disagree	Disagree	Agree	Strongly Agree
I am able to do things as well as most people.			
O	O	O	O
Strongly Disagree	Disagree	Agree	Strongly Agree
I feel that I do not have much to be proud of.			
O	O	O	O
Strongly Disagree	Disagree	Agree	Strongly Agree
I take a positive attitude toward myself.			
O	O	O	O
Strongly Disagree	Disagree	Agree	Strongly Agree

I am satisfied with myself.			
O	O	O	O
Strongly Disagree	Disagree	Agree	Strongly Agree
I wish I could have more respect for myself.			
O	O	O	O
Strongly Disagree	Disagree	Agree	Strongly Agree
I certainly feel useless.			
O	O	O	O
Strongly Disagree	Disagree	Agree	Strongly Agree
I feel I am no good at all.			
O	O	O	O
Strongly Disagree	Disagree	Agree	Strongly Agree

APPENDIX J: CENTER FOR EPIDEMIOLOGICAL STUDIES DEPRESSION SCALE

Below is a list of the ways you might have felt or behaved. Please tell me how often you have felt this way during the past week.

I was bothered by things that usually don't bother me			
O	O	O	O
Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	Most or all of the time (5-7 days)

I did not feel like my appetite was poor.			
O	O	O	O
Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	Most or all of the time (5-7 days)

I felt that I could not shake off the blues even with help from my family or friends.			
O	O	O	O
Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	Most or all of the time (5-7 days)

I felt I was just as good as other people.			
O	O	O	O
Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	Most or all of the time (5-7 days)

I had trouble keeping my mind on what I was doing.			
O	O	O	O
Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	Most or all of the time (5-7 days)

I felt depressed.			
O	O	O	O
Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	Most or all of the time (5-7 days)

I felt that everything I did was an effort.			
O	O	O	O
Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	Most or all of the time (5-7 days)

I felt hopeful about the future			
O	O	O	O
Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	Most or all of the time (5-7 days)

I thought my life had been a failure.			
O	O	O	O
Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	Most or all of the time (5-7 days)

I felt fearful.			
O	O	O	O
Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	Most or all of the time (5-7 days)

My sleep was restless.			
O	O	O	O
Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	Most or all of the time (5-7 days)

I was happy.			
O	O	O	O
Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	Most or all of the time (5-7 days)

I talked less than usual.			
O	O	O	O
Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	Most or all of the time (5-7 days)

I felt lonely.			
O	O	O	O
Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	Most or all of the time (5-7 days)

People were unfriendly.			
O	O	O	O
Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	Most or all of the time (5-7 days)

I enjoyed life.			
O	O	O	O
Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	Most or all of the time (5-7 days)

I had crying spells.			
O	O	O	O
Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	Most or all of the time (5-7 days)

I felt sad.			
O	O	O	O
Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	Most or all of the time (5-7 days)

I felt that people dislike me.			
O	O	O	O
Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	Most or all of the time (5-7 days)

I could not get "going."			
O	O	O	O
Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	Most or all of the time (5-7 days)