EMPIRICAL RESEARCH

Traditional and Cyber Aggressors and Victims: A Comparison of Psychosocial Characteristics

Lisa M. Sontag · Katherine H. Clemans ·
Julia A. Graber · Sarah T. Lyndon

Abstract To date, relatively little is known about differences between perpetrators and victims of cyber and traditional forms of aggression. Hence, this study investigated differences among traditional and cyber aggressors and victims on psychosocial characteristics typically examined in research on traditional aggression and victimization, specifically effortful control, manipulativeness, remorselessness, proactive and reactive aggression, and anxious/depressive symptoms. Participants ($N = 300$; 63.2% female; M age = 12.89, SD = .95; 52% Caucasian, 27% African American, 11% Latino, and 10% other) were categorized based on aggressor type (non/low aggressor, traditional-only, cyber-only, and combined traditional and cyber) and victim type (non-victim, traditional-only, cyber-only, and combined traditional and cyber). Cyber aggressors reported lower levels of reactive aggression compared to traditional-only and combined aggressors. Combined aggressors demonstrated the poorest psychosocial profile compared to all other aggressor groups. For victimization, cyber-only and combined victims reported higher levels of reactive aggression and were more likely to be cyber aggressors themselves compared to traditional-only victims and non-victims. Findings suggest that there may be unique aspects about cyber aggression and victimization that warrant further investigation.

Introduction

A recent report of social media and mobile internet use in 2009 (Lenhart et al. 2010) indicated that 73% of 12–17 year olds in the US with access to the internet used social networking websites (up from 55% in 2006), and 75% of teens reported having cell phones; much of the growth in cell phone ownership occurred among the youngest teens (e.g., an increase of 18% among 12-year olds since 2004). Along with increasing popularity of social mediums such as MySpace, Facebook, Twitter, instant messaging, and text messaging has been increased concern about cyber aggression and victimization in adolescent research (e.g., David-Ferdon and Hertz 2007) and mainstream media (e.g., *The New York Times*; Hoffman 2010). Understanding cyber aggression, as well as the characteristics of those who engage in or become victims of it, may help researchers, educators, and policy makers reduce the incidence of such experiences among adolescents.

Although various definitions of cyber aggression have emerged in recent years (David-Ferdon and Hertz 2007; Kowalski and Limber 2007; Patchin and Hinduja 2006), most researchers agree that cyber aggression is intentional, harmful behavior that occurs through a variety of electronic and cyber-space mediums (e.g., instant messaging, text messaging, website postings). Compared to traditional aggression (i.e., aggressive behavior committed off-line),

L. M. Sontag (✉)
Division of Adolescent Medicine, Cincinnati Children's Hospital
Medical Center, ML 4000, 3333 Burnet Ave, Cincinnati,
OH, USA
e-mail: lisa.sontag@cchmc.org

K. H. Clemans
Johns Hopkins Bloomberg School of Public Health,
Baltimore, MD, USA

J. A. Graber · S. T. Lyndon
Department of Psychology, University of Florida,
Gainesville, FL, USA

cyber aggression provides a number of advantages to the perpetrator. Cyber aggression can occur at any time, can spread quickly, and often occurs outside school property, making it difficult for adults to monitor and regulate these behaviors (Agatston et al. 2007). Given that increased exposure to bullying and victimization during childhood and adolescence has been linked to disorders and symptoms of psychopathology, namely anxiety, depression, aggression, and delinquency (see Deater-Deckard 2001 for a review), and that cyber aggression may result in greater rates of perpetration of aggression, further examination into the nuances of cyber aggression and victimization are needed.

Characteristics of Perpetrators and Victims of Cyber Aggression

Recently, research on cyber aggression has begun to shift its focus from broad descriptors of cyber aggression (i.e., prevalence rates) to the identification and characteristics of individuals at risk for perpetration or victimization. Much of the recent interest in cyber aggression is based on the belief that this form of aggression poses a new and unique threat to the youth involved. Considering the unique medium of cyberspace for aggressive acts, it is possible that those adolescents who *exclusively* engage in or are victims of cyber aggression may exhibit unique characteristics from their peers. For instance, Vandenbosch and Van Cleemput (2008) found that adolescents perceived as more powerful or threatening in real life were more likely to be targets of cyber aggression compared to traditional aggression. Other research on cyber aggressors and victims suggests similarities between these two groups in that both possess poor psychosocial functioning, difficulties at school, conduct problems, and poor parent–child relationships (Dehue et al. 2008; Hinduja and Patchin 2008; Ybarra and Mitchell 2004; Ybarra and Mitchell 2007). Generally, findings from these studies suggest that adolescents engaged in cyber aggression may represent distinct groups of adolescents and that cyber victimization may pose unique threats to psychosocial adjustment during adolescence.

Although recent studies have suggested that cyber aggression and victimization represent behaviors distinct from those associated with traditional (i.e., off-line) aggression, Williams and Guerra (2007) have argued that technological advances merely provide an additional medium through which aggression or bullying among youth can occur. Considering this argument, one might anticipate that the core characteristics of cyber aggressors and victims are no different from perpetrators and victims of traditional forms of aggression. Notably, few studies have considered whether the same youth were perpetrators of both cyber and traditional aggression, and even fewer as

to whether youth were victims of both traditional and cyber aggression. Hence, further investigation into the overlap of cyber aggression and victimization with traditional aggression and victimization are needed.

Thus far, studies examining both traditional and cyber aggression and victimization have found moderate to high correlations (.38–.61) between the two types of aggression or victimization (Dehue et al. 2008; Katzer et al. 2009; Werner et al. 2010), indicating that these behaviors are consistent across venues but do not completely overlap. One study found that traditional bullies were more likely to be online victims than traditional victims were to be online bullies (Hinduja and Patchin 2008). To date, however, consistent behavioral patterns of cyber versus traditional aggression and victimization have yet to be described.

Psychosocial Correlates of Aggression and Victimization

Although research on cyber aggression and victimization has begun to examine behavioral and contextual correlates of these behaviors, only a handful of studies (e.g., Katzer et al. 2009; Werner et al. 2010; Williams and Guerra 2007) have investigated social and psychological constructs that have been shown to be strongly related to traditional aggression and victimization. Such factors include temperament and personality dimensions, underlying behavioral motivation, and co-occurring mood problems.

Temperament and Personality Factors

Temperament and personality traits have been identified as critical factors related to the development of aggression and peer problems during childhood and adolescence. For instance, under-controlled temperament or poor effortful control (a quality indicative of poor emotional, behavioral, and attentional inhibition) is strongly associated with aggression and self-reported delinquency, as well as with traditional victimization (Caspi 2000; Eisenberg et al. 2009). Other research investigating predictors and correlates of traditional aggression have found that adolescents with callous, socially manipulative personality profiles are likely to have higher rates of aggression, as well as to engage in more violent or severe forms of aggression (Andershed et al. 2002; Saltaris 2002). Recent studies on cyber aggression have begun to examine personality dimensions consistent with research on traditional aggression. For instance, Werner et al. (2010) found that acceptability of aggressive behaviors predicted involvement in Internet plus traditional aggression over traditional aggression alone. Another study (Katzer et al. 2009) examining manipulativeness found that, in comparison to victims of in-school bullying, victims of chat room

bullying exhibited more socially manipulative behavior when visiting chatrooms (e.g., spreading lies or false statements about their age or sex). Although these findings suggest that cyber aggression may have additional appeal to those adolescents who are already aggressive and socially manipulative in face-to-face interactions, cyber aggression may also appeal to a wider range of individuals who may otherwise fear acting out in face-to-face interactions. In turn, adolescents who *only* engage in cyber aggression may more closely resemble nonaggressive adolescents than those who engage in traditional forms of aggression.

Behavioral and Mood Problems

Recent studies on traditional aggression have found underlying motives of aggressive behavior (e.g., reactive, provoked aggression versus proactive, unprovoked aggression) to be strongly predictive of involvement in specific aggressive behaviors (Dodge et al. 2006; Raine et al. 2006). Both reactive and proactive aggressive behaviors have been associated with emotion regulation problems, impulsivity, sensation seeking, and higher rates of bullying. However, proactive aggression has been uniquely associated with involvement in relational and social aggression as well as with callous-unemotional behavior (Marsee and Frick 2007), whereas reactive aggression has been associated with poorly regulated emotional responses to provocation (Crapanzano et al. 2010). Adolescents high on both proactive and reactive aggression tend to show the most severe psychosocial problems and engage in the highest rates of aggression (Crapanzano et al. 2010). In a recent study of cyber aggression, Williams and Guerra (2007) found that moral approval of bullying was positively related to traditional and Internet bullying. However, the association was weaker for Internet bullying, suggesting that Internet bullies were more likely to disapprove of bullying overall.

Less is known about the relationship between victimization (both traditional and cyber) and behavioral motives underlying aggressive or antisocial behavior. As indicated, adolescents perceived as more powerful or threatening in real life may be more likely to be targets of aggression themselves, particularly cyber aggression (Vandenbosch and Van Cleemput 2008). Also, victimization by peers has been consistently associated with depressed and anxious symptoms, as well as aggressive problems during adolescence (Graber and Sontag 2009; Hawker and Boulton 2000; Nansel et al. 2004). In a recent study examining the relationship between online and offline forms of victimization and psychosocial adjustment, Mitchell et al. (2007) found that all forms of victimization (offline and online)

were associated with depressive symptoms, delinquency, and substance use. However, after adjusting for demographic characteristics, life adversity, and offline victimization, online victimization was no longer related to any of the outcomes, suggesting that cyber victimization may not be uniquely associated with mood and behavior problems when traditional victimization is taken into account. To date, little is known about whether being a victim of offline aggression only versus online aggression only is differentially associated with symptoms of anxiety and depression.

Of the few studies that have begun to examine differences in psychosocial characteristics for traditional versus cyber aggression, findings suggest that cyber aggressors and victims may possess some unique characteristics compared to traditional aggressors and victims. However, differences in the above psychosocial factors (i.e., temperament and personality, aggression motives, anxious and depressive symptoms) between adolescents engaging in and victims of cyber versus traditional aggression have yet to be directly examined. Therefore, research is still needed to understand how these two forms of aggression differ in order to inform subsequent research and prevention efforts.

Goals of the Present Study

The goal of the present study was to compare traditional versus cyber aggressors, as well as traditional versus cyber victims on a variety of psychosocial characteristics. Specifically, the present study examined whether temperament and personality factors (i.e., effortful control, manipulativeness, and remorselessness), behavioral motives (i.e., proactive and reactive aggression), and mood problems (i.e., anxious and depressive symptoms) differed by type of aggressor (i.e., non/low aggressors, traditional-only aggressors, cyber-only aggressors, and combined aggressors) and by victim type (i.e., non-victims, traditional-only victims, cyber-only victims, and combined victims).

Following from previous research on psychosocial correlates of traditional and cyber aggression, it was hypothesized that all aggressors would report lower effortful control and higher manipulativeness, remorselessness, proactive and reactive aggression, and anxiety/depression compared to non/low aggressors (Andershed et al. 2002; Dodge et al. 2006). Although empirical findings on cyber aggression are limited, it was also expected that cyber-only aggressors would report higher effortful control and lower manipulativeness, remorselessness, proactive and reactive aggression, and anxiety/depression compared to adolescents who engage in traditional forms of aggression (traditional-only and combined aggressors).

Based on prior research examining psychosocial correlates of victimization, it was hypothesized that, on average,

victims of aggression would report lower effortful control and greater manipulativeness, remorselessness, proactive and reactive aggression, and anxious and depressive symptoms compared to non-victims (Dodge et al. 2006; Eisenberg et al. 2009; Nansel et al. 2004). Again, although empirical research on psychosocial characteristics of cyber victims is scarce, it was expected that adolescents who reported being victims of cyber aggression (cyber-only and combined victims) would report lower levels of effortful control and higher levels of manipulativeness, remorselessness, and proactive and reactive aggression compared to traditional-only victims.

Methods

Procedure

The current study was derived from the Adolescent Peer Experiences (APEX) project. Data collection took place in two middle schools in a small city in the Southeastern US during the 2006–2007 school year. School 1 was a kindergarten through 12th grade public school, demographically representative of the county population (as designated by district mandate); only students in 6th, 7th, and 8th grade classes were approached to participate in this study. School 2 was a large public middle school (6th through 8th grade). Unlike school 1, demographic characteristics of school 2 were not mandated by the district; however, school-wide data suggest the student population was comparable on demographic characteristics to the county. (See results for comparison of participants by school.) Data collectors visited each 6th, 7th, and 8th grade homeroom class to briefly describe the study and distribute parental consent forms. Each student who returned a signed form, regardless of consent decision, received a snack in class (e.g., small bag of chips, candy, trail mix, etc.). After receipt of parental consent, data collectors returned to the schools to administer surveys to participants during their homeroom or lunch periods (time and location determined by school officials). Parents were also asked to provide consent for their own participation in a brief phone interview to assess family background characteristics. Procedures were approved by the IRB from the institution of record.

Of the 1,100 students eligible for participation in the study, approximately 37% ($N = 412$) returned signed consent forms; of those students, 83.5% ($N = 344$) received parental consent to participate in the study. Ultimately, 95% ($N = 327$) of students who received parental consent agreed to participate. When the participation rate was examined by school, School 1 had a 56% participation rate versus a 23% participation rate for School 2. Although participation rates for School 2 were relatively low, it is not uncommon to have lower participation rates in school-based studies requiring active parental consent [e.g., when active parental consent is required, consent was typically obtained for only 30–60% of students, with some reports as low as 6–25% (Tigges 2003)]. Another difference between the two schools was that school 1 provided a dedicated class time for participation in the study whereas school 2 limited data collection to the lunch period. As such, the desirability of participation for adolescents likely varied between the 2 schools; in particular, we suspect that students who did not want to participate during their lunch period may have been less likely to take the forms home to parents. Although the sample of students from each school was consistent with the general demographic make up of the respective school, subsequent analyses were conducted to determine potential differences in core constructs by school.

Participants

From the 327 middle school students who participated in the larger study, a total of 300 (41% 6th graders, 34% 7th graders, 25% 8th graders; 63.2% female; M age = 12.9, SD = 1.0) students were utilized in the analyses. Specifically, participants were excluded if their data appeared falsified (e.g., students circled the same number for an entire measure even when items were reverse scored) or if their data were substantially incomplete. Approximately 52% of the sample was Caucasian, 27% African American, 11% Latino, and 10% other ethnicities, which was a close reflection of the larger school district's population.

Measures

Demographic Data

Students reported their gender, race/ethnicity, and age. During the phone interview, one parent (usually the adolescent's mother) verified participants' age and ethnicity. Parents also reported their own and, if applicable, their spouses' education, occupation, and employment status. Family socioeconomic status (SES) was scored using the standard protocol for the Hollingshead Four-Factor Index of Social Status (Hollingshead 1975). The range of possible scores for family SES was 8–66. This sample had an average SES score of 43.4 (SD = 14.00), which equated to an average education of some college or a bachelor's degree and employment as clerical workers, sales workers, owners of small businesses or semi-professionals.

Social Desirability

Social desirability bias, or the tendency to reply to self-report items in a manner that is considered socially accepted or desirable, was measured using the 10-item Version 2 short form of the Marlowe-Crowne Social Desirability Scale (Strahan and Gerbasi 1972), adapted for use with young adolescents. Participants rated each item "true" or "false" (e.g., "I am sometimes annoyed by people who ask favors of me"). Participants received 1 point each time they indicated the more socially desirable response. Sum scores were calculated (range 0–10), with higher scores representing an increased tendency to respond in the "socially desirable" manner ($\alpha = .52$).

Effortful Control

Effortful control, a temperament quality indicative of poor emotional, behavioral, and attentional inhibition, was assessed using the Inhibitory Control and Attention subscales of the Early Adolescent Temperament Questionnaire—Revised (EATQ-R; Ellis and Rothbart 2001). Participants indicated how well each of 8 items applied to them (e.g., "the more I try to stop myself from doing something, the more likely I am to do it"). Responses ranged from 1 (almost always untrue) to 5 (almost always true). Item responses were averaged to create a single score, with higher scores reflecting higher levels of effortful control ($\alpha = .64$).

Manipulativeness

Social manipulativeness, or the tendency to con others or use manipulation to achieve a goal, was assessed using the 5-item Manipulation subscale of the Youth Psychopathic Traits Inventory (YPI; Andershed et al. 2002). Participants rated each item (e.g., "to get people to do what I want, I often find it useful to con them") from 1 ("almost always untrue") to 5 ("almost always true"). Responses were averaged to create a single score ($\alpha = .80$); higher scores indicated higher levels of manipulativeness.

Remorselessness

The 5-item Remorselessness subscale of the YPI (Andershed et al. 2002) was used to assess the relative lack of feelings of remorse and guilt (e.g., "I seldom regret the things I do, even if other people feel that they are wrong"). Responses ranged from 1 ("almost always untrue") to 5 ("almost always true") and were averaged to create a single score ($\alpha = .64$); higher scores indicated higher levels of remorselessness.

Proactive and Reactive Aggression

Both proactive and reactive aggression were assessed using a modified version (16 items) of the Reactive-Proactive Aggression Questionnaire (RPQ; Raine et al. 2006). Reactive aggression is provoked and typically marked by autonomic arousal, anger, and affect-laden, defensive reactions, whereas proactive aggression is unprovoked and often characterized as organized and cold-blooded, with little autonomic activation (Dodge et al. 2006; Raine et al. 2006). In general, items reflected either physical or verbal aggression and included the motivation and situational context for the aggression (e.g., "had fights with others to show who was on top" and "gotten angry when others threatened you"). In order to facilitate a non-defensive response style, the RPQ was designed with instructions that acknowledge that most people feel angry at times. Participants rated each item as 0 (never), 1 (sometimes), or 2 (often). Items were summed with higher scores indicating greater levels of proactive aggression (8 items; $\alpha = .77$) and reactive aggression (8 items; $\alpha = .73$).

Anxious and Depressive Symptoms

The 12 item Anxious/Depressed subscale of the Youth Self Report (YSR; Achenbach 2001), an empirically based syndrome subscale, was used to assess anxious and depressive symptoms within the past 6 months. Participants rated symptoms on a likert scale (0 = not true, to 2 = very true or often true). Example items included "I feel that no one loves me" and "I am nervous or tense." Scores were calculated as sum scores ($\alpha = .84$); higher scores indicated more anxious/depressive symptoms.

Aggressor Type

Participants responded to a series of items that assessed traditional forms of aggression and cyber aggression. Traditional aggression was measured using 13 items from the Revised Peer Experiences Questionnaire (RPEQ; Prinstein et al. 2001) that tapped physical, verbal, relational and reputational aggression. Example items included "I said mean things about someone so that people would think he/she was a loser" and "I chased someone like I was really trying to hurt him/her." Response options ranged from 0 ("never") to 4 ("a few times a week"). Mean scores were calculated with higher scores reflecting a higher frequency of aggression ($\alpha = .84$). Participants whose average scores reflected engaging in each aggressive behavior at least once or twice in the past year (mean score ≥ 1) were classified as high on traditional aggression.

Cyber aggression was assessed via two items ($r = .58$, $p < .01$): "I directly teased someone in a mean way

through email, instant messenger, or text messaging or posted something mean to him/her on a website (like MySpace)" and "I spread rumors or said mean things about someone on a website (like MySpace), email, instant messenger, or text messaging so that people would not like him/her". Participants rated how frequently they engaged in these behaviors on a scale from 0 ("never") to 4 ("a few times a week"). Both items were averaged into a single score of overall cyber aggression; higher scores reflected a higher frequency of cyber aggression.

Participants whose average scores reflected engaging in cyber aggression at least once or twice in the past year (mean score ≥ 1) were classified as high on cyber aggression. Based on participants' traditional and cyber aggression classifications, participants were categorized into one of the following mutually exclusive groups: non/low-aggressor, traditional-only aggressor, cyber-only aggressor, or combined aggressor.

Victim Type

Traditional victimization was assessed via two items ($r = .49$, $p < .01$; "being teased or hassled by other kids" and "being left out or rejected") from the Responses to Stress Questionnaire, a negative peer events checklist (Connor-Smith et al. 2000). Participants indicated if they had experienced each of the events since the start of the school year (1 = yes, 0 = no). In addition, participants responded to two items on cyber victimization that were created for the purposes of this study [$r = .54$, $p < .01$; "being directly teased or hassled in a mean way through email, instant messenger, or text messaging, or have had someone tease me on a website (like MySpace)" and "having rumors or mean things said about me to other people on a website (like MySpace), email, instant messenger, or text messaging"]. Participants indicated if they had experienced each of the two events since the start of the school year (1 = yes, 0 = no). Items were summed into a single score of overall traditional victimization and cyber victimization (ranging from 0 to 2 for each); higher scores reflected a higher frequency of victimization.

Participants whose scores reflected experiencing at least one of the two traditional victimization items (scores ≥ 1) were classified as high on traditional victimization. Similarly, participants who indicated experiencing at least one of the two cyber victimization items (scores ≥ 1) were classified as high on cyber victimization. Based on the traditional and cyber victimization classifications, participants were categorized into one of the following mutually exclusive groups: non-victim, traditional-only victim, cyber-only victim, or combined victim.

Results

Descriptive Analyses

As indicated, participants were classified into the following aggressor groups: non/low aggressor ($n = 170$, 63.4%), traditional-only ($n = 30$, 11.2%), cyber-only ($n = 38$, 14.2%), and combined aggressor ($n = 30$, 11.2%) groups. Participants were also classified into the following victim groups: non-victim ($n = 63$, 22%), traditional-only ($n = 105$, 37%), cyber-only ($n = 22$, 8%), and combined victim ($n = 93$, 33%) groups. As expected, more students reported victimization (77.7%) than reported high aggression (36.6%).

Table 1 shows the average level (M, SD) of aggression and victimization (both continuous measures) by aggressor and victimization sub-type groups. Mean differences in aggression and victimization were examined via univariate ANOVAs separately by aggressor type and victim type; these analyses provided descriptive information on the overlap between victimization and aggression in this sample. Results indicated significant differences by aggressor type for traditional aggression ($p < .01$), cyber aggression ($p < .01$), and cyber victimization ($p < .01$) but not for traditional victimization. For victim type, results indicated significant differences for cyber aggression ($p < .05$), traditional victimization ($p < .01$), and cyber victimization ($p < .01$) but not for traditional aggression.

As would be expected, findings for some of the group comparisons parallel the criteria used to create aggression and victimization groups. That is, non/low-aggressors and non-victims were low on traditional and cyber forms of aggression and victimization, respectively. Additionally, adolescents in the combined (i.e., cyber and traditional) aggressor and victimization groups were highest on all forms of aggression and victimization, respectively, compared to other participants. Interestingly, adolescents in the combined aggressor group were higher on cyber victimization compared to non/low aggressors; and adolescents in the cyber-only and combined victim groups were higher on cyber aggression (not traditional aggression) compared to the traditional victim group. As is evident from these group comparisons, there is overlap between the aggression and victimization groups, suggesting the occurrence of aggressor/victims. In order to account for such overlap, subsequent analyses controlled for victimization (both traditional and cyber) as a continuous variable in all aggression group analyses and for aggression (both traditional and cyber) as a continuous variable in all victimization group analyses.

Descriptive information (M, SD) and correlations among the psychosocial and demographic characteristics are shown in Table 2. Although the study included multiple

Table 1 Mean levels of aggression and victimization by sub-types of aggressors and victims

Continuous measures	Aggressor group type				F-value
	Non/low aggressor 64% M (SD)	Traditional only 11% M (SD)	Cyber only 14% M (SD)	Combined 11% M (SD)	
Traditional aggression	.44 (.25)[a]	1.30 (.26)[b]	.63 (.22)[c]	1.55 (.47)[d]	$F(3,264) = 182.32**$
Cyber aggression	.00 (.02)[a]	.00 (.00)[a]	.75 (.48)[b]	1.43 (.97)[c]	$F(3,264) = 156.81**$
Traditional victimization	1.17 (.85)[a]	1.25 (.89)[a]	1.13 (.81)[a]	1.11 (.96)[a]	$F(3,252) = 0.16$
Cyber victimization	.47 (.74)[a]	.70 (.87)[a,b]	.82 (.87)[a,b]	.90 (.90)[b]	$F(3,258) = 3.87**$
Continuous measures	Victim group type				F-value
	Non victim 22% M (SD)	Traditional only 37% M (SD)	Cyber only 8% M (SD)	Combined 33% M (SD)	
Traditional aggression	.69 (.47)[a]	.61 (5.08)[a]	.86 (.69)[a]	.76 (.52)[a]	$F(3,255) = 1.94$
Cyber aggression	.32 (.76)[a,c]	.12 (.29)[a]	.54 (1.07)[c]	.41 (.70)[c]	$F(3,254) = 4.50*$
Traditional victimization	.00 (.00)[a]	1.55 (.50)[b]	.00 (.00)[a]	1.75 (.44)[c]	$F(3,215) = 346.85**$
Cyber victimization	.00 (.00)[a]	.00 (.00)[a]	1.32 (.48)[b]	1.59 (.50)[c]	$F(3,279) = 546.53**$

Means in the same row that do not share superscripts differ at $p < .05$ in the Bonferroni significant difference comparison

$* p < .05; ** p < .01$

indicators of temperament and personality (i.e., effortful control, manipulativeness, and remorselessness) and mood and behavioral problems (i.e., proactive and reactive aggression and symptoms of anxiety/depression), low correlations among the indicators for each psychosocial domain suggested that these variables were only weakly tapping common constructs. Hence, subsequent analyses examined these factors via individual ANOVAs rather than a MANOVA for each domain.

Covariate Analyses

Demographic characteristics such as gender, race/ethnicity, and SES have often been examined as covariates in studies of aggression and victimization. As noted, social desirability is also often used as a covariate due to its documented association with reporting bias relating to negative personality attributes and problem behaviors (Nederhof 1985). Because potential confounding effects emerge when a variable (e.g., SES) is associated with both the independent variable (e.g., aggressor group) and dependent variable (e.g., effortful control), variables were only retained as covariates in subsequent analyses if they demonstrated a significant association with both the independent variable (aggressor type or victimization type) and the dependent variable (effortful control, manipulativeness, remorselessness, proactive and reactive aggression, or anxious/depressed symptoms).

No significant gender differences emerged for aggressor type [i.e., non/low aggressor, traditional-only, cyber-only,

Table 2 Descriptives and correlations among psychosocial and demographic factors

	M (SD)	1	2	3	4	5	6	7	8
1. Effortful control	3.45 (.65)	–							
2. Manipulativeness	2.21 (.79)	−.17**	–						
3. Remorselessness	2.24 (.76)	−.39**	.47**	–					
4. Proactive aggression	9.34 (2.11)	−.27**	.23**	.32**	–				
5. Reactive aggression	14.02 (2.89)	−.35**	.21**	.20**	.50**	–			
6. Anxiety/depression	6.16 (4.62)	−.45**	.13*	.17**	.14*	.27**	–		
8. Socioeconomic status (SES)	43.40 (13.98)	.11	.07	−.03	−.21**	−.08	−.05	–	
7. Social desirability bias	5.30 (2.06)	.35**	−.22**	−.24**	−.31**	−.47**	−.28**	−.05	–

Total sample ($N = 300$) means and standard deviations are presented

$* p < .05; ** p < .01$

or combined; $\chi^2(3) = .20$, $p = .98$] or for victim type [i.e., non-victim, traditional-only, cyber-only, or combined; $\chi^2(3) = 3.74$, $p = .30$]. Similarly, there were no differences in the distribution of race/ethnicity among aggressor type [$\chi^2(9) = 7.22$, $p = .62$] or victim type [$\chi^2(9) = 5.38$, $p = .80$]. Results demonstrated group differences in SES by victim type [$F(3,258) = 2.89$, $p = .04$], such that, on average, adolescents in the cyber-only victim group demonstrated SES scores 9.67 points (69% of the SD) above adolescents in the non-victim and combined victim groups. Differences in SES were not observed for aggressor type [$F(3,244) = 1.50$, $p = .22$]. Finally, results indicated significant differences in social desirability bias among aggressor sub-types [$F(3,250) = 11.23$, $p < .001$], such that non/low aggressors had higher social desirability scores compared to all aggressor types; this effect did not emerge for victim type [$F(3,266) = .56$, $p = .64$].

Due to differences in SES by victim type and social desirability bias by aggressor type, correlations between SES and social desirability bias and effortful control, manipulativeness, remorselessness, proactive and reactive aggression, and anxiety/depression were examined (Table 2). Only one significant correlation emerged between SES and proactive aggression ($r = -.20$, $p < .05$). Social desirability demonstrated weak to moderate correlations with all psychosocial outcome variables (see Table 2). Although the measure for social desirability bias demonstrated lower internal consistency ($\alpha = .52$), social desirability demonstrated significant associations with aggressor type and most of the psychosocial outcomes in the expected direction (i.e., higher social desirability with lower temperament/personality and behavior problems). Hence, subsequent analyses for aggressor type controlled for social desirability bias. However, because SES was only weakly correlated with proactive aggression and was not correlated with any of the other psychosocial outcomes, the decision was made to exclude SES as a potential confounding effect between victimization group and the outcomes.

In addition to the above analyses, school (i.e., School 1 vs. 2) was examined as a potential confounding variable due to reported differences in assessment environments and participation rate. Group comparisons between the two schools on all demographic and psychosocial variables were conducted. Results indicated that there were no differences in the distribution of race/ethnicity, gender, and aggression groups across the two schools. However, some differences did emerge that may influence the primary analyses. Specifically, compared to school 2, school 1 was younger by 0.42 years, had a higher SES by 5.24 points (37% of the SD of SES), reported slightly lower levels of manipulativeness, remorselessness, proactive aggression, reactive aggression, and traditional aggression, and reported lower levels of traditional victimization (all mean differences were equivalent to no more than 39% of the SD of the measure). Finally, school 1 had fewer participants categorized as cyber-only victims than would be expected [$\chi^2(3) = 10.89$, $p = .018$]. Because of these differences, the variable "school" was incorporated as a covariate in subsequent analyses to control for potential confounding effects.

Differences by Aggressor Type

Group differences in effortful control, manipulativeness, remorselessness, proactive and reactive aggression, and symptoms of anxiety/depression by aggressor type (i.e., non/low aggressor, traditional-only aggressor, cyber-only aggressor, and combined aggressor) were examined by univariate ANOVAs; analyses controlled for social desirability, traditional and cyber victimization scores, and school. Significant group differences in manipulativeness ($p < .01$), proactive aggression ($p < .01$) and reactive aggression ($p < .01$) were observed, whereas only a trend effect for remorselessness ($p < .10$) was found. No group differences for effortful control or symptoms of anxiety/ depression were observed. Table 3 presents F values and comparisons of estimated marginal means by aggressor type.

When comparing adolescents low on aggression to adolescents high on traditional, cyber, or combined forms of aggression, results indicated several differences. Group comparisons demonstrated that adolescents in the traditional-only and combined aggressor groups reported significantly higher levels of manipulativeness compared to adolescents in the non/low aggressor group. For remorselessness, adolescents in the combined aggressor group reported significantly higher levels of remorselessness compared to the non/low aggressor group. Although univariate effects for remorselessness was only a trend, estimated marginal mean comparisons revealed that adolescents in the combined aggressor group had significantly higher levels of remorselessness compared to the non/low-aggressor group. As for aggressive motives, group comparisons indicated that all aggressor groups (traditional-only, cyber-only, and combined) reported significantly higher levels of proactive and reactive aggression compared to the non/low aggressor group.

When comparing adolescents in the cyber-only aggressor group to adolescents in the traditional-only and combined aggressor groups, two differences were observed. Specifically, cyber-only aggressors were significantly lower on proactive aggression compared to combined aggressors, and lower on reactive aggression compared to both traditional-only and combined aggressors. However, no differences were observed among aggressor groups for symptoms of anxiety/depression.

Table 3 Mean comparisons of temperament/personality and mood/behavioral problems by aggression type

	Non/low aggressor (N = 170) M (SE)	Traditional-only (N = 30) M (SE)	Cyber-only (N = 38) M (SE)	Combined (N = 30) M (SE)	F-value	η^2
Effortful control	3.56 (.05)[a]	3.49 (.11)[a]	3.47 (.10)[a]	3.33 (.125)[a]	$F(3,236) = 1.07$	.01
Manipulativeness	2.07 (.06)[a]	2.40 (.15)[b]	2.24 (.13)[a,b]	2.53 (.15)[b]	$F(3,236) = 3.34^*$	.04
Remorselessness	2.16 (.06)[a]	2.19 (.14)[a]	2.17 (.127)[a]	2.57 (.15)[b]	$F(3,236) = 2.24^{\dagger}$	.03
Proactive aggression	8.71 (.15)[a]	10.13 (.36)[b]	9.56 (.30)[b]	11.62 (.37)[c]	$F(3,238) = 18.88^{**}$	.19
Reactive aggression	13.37 (.20)[a]	15.85 (.47)[b]	14.21 (.40)[a]	15.39 (.48)[b]	$F(3,238) = 10.59^{**}$	.12
Anxiety/depression	5.65 (.34)[a]	6.87 (.79)[a]	6.72 (.69)[a]	7.08 (.88)[a]	$F(3,232) = 1.41$	.02

Based on estimated marginal means comparisons. Means in the same row that do not share superscripts differ at $p < .05$ in the Bonferroni significant difference comparison

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

Differences by Victim Type

Similar to analyses for aggressor type, group differences in effortful control, manipulativeness, remorselessness, proactive and reactive aggression, and symptoms of anxiety/depression by victim type (i.e., non-victim, traditional-only victim, cyber-only victim, and combined victim) were also examined via a series of univariate ANOVAs; as noted, all analyses controlled for traditional and cyber aggression scores and school. Results indicated a significant victim group effect for effortful control ($p < .001$), reactive aggression ($p < .01$), and symptoms of anxiety/depression ($p < .001$); no group differences were found for manipulativeness, remorselessness, and proactive aggression. Table 4 shows F values and comparisons of estimated marginal means by victim type.

When comparing adolescents in the non-victim group to adolescents in the traditional-only, cyber-only, or combined victim group, several differences emerged. Results

indicated that adolescents in the traditional-only, cyber-only and combined victim groups reported significantly lower levels of effortful control compared to adolescents in the non-victim group. Significant group differences on reactive aggression were observed between groups who had experienced some type of cyber victimization (i.e., cyber-only or combined groups) and the non-victim group; notably, adolescents in the traditional-only group were not significantly different from adolescents in the non-victim group on reactive aggression. For symptoms of anxiety/depression, comparisons of estimated marginal means demonstrated that traditional-only, cyber-only and combined victim groups reported significantly higher levels of anxiety/depression compared to the non-victim group.

Although results did not indicate any unique differences between adolescents in the cyber-only group compared to other victim groups, results did reveal that adolescents who had experienced some type of cyber victimization (i.e., cyber-only or combined groups) reported significantly

Table 4 Mean comparisons of temperament/personality and mood/behavioral problems by victimization type

Variable	Non-Victim (N = 63) M (SE)	Traditional-Only (N = 105) M (SE)	Cyber-Only (N = 22) M (SE)	Combined (N = 93) M (SE)	F-value	η^2
Effortful control	3.78 (.08)[a]	3.40 (.06)[b]	3.43 (.15)[b]	3.44 (.07)[b]	$F(3,246) = 5.24^{**}$	.06
Manipulativeness	2.29 (.10)[a]	2.07 (.08)[a]	2.34 (.18)[a]	2.18 (.08)[a]	$F(3,245) = 1.31$	.02
Remorselessness	2.22 (.10)[a]	2.16 (.07)[a]	2.38 (.18)[a]	2.23 (.08)[a]	$F(3,245) = 0.61$	.01
Proactive aggression	9.50 (.24)[a]	9.14 (.19)[a]	9.30 (.44)[a]	9.42 (.21)[a]	$F(3,2489) = 0.54$	.01
Reactive aggression	13.40 (.32)[a]	13.79 (.25)[a]	14.92 (.57)[b]	14.42 (.27)[b]	$F(3,248) = 3.11^*$	.04
Anxiety/depression	3.67 (.56)[a]	6.77 (.43)[b]	5.92 (1.00)[b]	7.03 (.49)[b]	$F(3,241) = 8.31^{**}$	.09

Based on estimated marginal means comparisons. Means in the same row that do not share superscripts differ at $p < .05$ in the Bonferroni significant difference comparison

$^* p < .05$; $^{**} p < .01$

higher rates of reactive aggression compared to adolescents in the traditional-only victim group. No other victim group differences emerged.

Discussion

The purpose of this study was to expand upon the limited research examining psychosocial correlates of cyber aggression and victimization in adolescence. Researchers have argued that cyberspace may offer a degree of physical safety as well as removal from the direct observation of victims' suffering; thus, adolescents who are less likely to engage in aggressive acts face-to-face may be able and willing to engage in these behaviors in the safety of cyberspace (Hinduja and Patchin 2008). Lending support to this notion, 25.4% of all participants in this study engaged in cyber aggression [(cyber-only and combined aggressors)/(total participants)], with 40% of adolescents classified as aggressive engaging *exclusively* in cyber aggression [(cyber-only aggressors)/(total traditional-only, cyber-only, and combined aggressors)]. However, approximately 31% of aggressive adolescents engaged in both traditional and cyber aggression [(cyber-only and combined aggressors)/(total traditional-only, cyber-only, and combined aggressors)]. Thus, some young adolescents who engage in traditional forms of aggression are also using cyberspace as another outlet for aggressing.

A different pattern occurred for victimization than was seen with aggression. Although 41% of all participants in this study experienced cyber victimization, most young adolescents who experienced at least one form of victimization (traditional-only, cyber-only, or combined victim) experienced it both in and out of cyberspace (42% of victims were combined) or in traditional venues only (48% of victims were traditional-only). Thus, for many young adolescents, cyber experiences often mirrored experiences in their face-to-face peer interactions.

Consistent with prior studies on psychosocial correlates of traditional aggression (e.g., Andershed et al. 2002; Crapanzano et al. 2010; Raine et al. 2006), adolescents who engaged in traditional aggression demonstrated poor psychosocial profiles compared to adolescents in the non/low aggressor group; specifically, adolescents who engaged in traditional aggression (i.e., either traditional-only or combined aggressor groups) reported higher levels of manipulativeness, remorselessness, and proactive and reactive aggression. Although group means were in the expected direction, no significant differences in effortful control or symptoms of anxiety/depression were observed, which was contrary to expectation.

When considering differences in the psychosocial characteristics between traditional and cyber aggressors,

few significant differences were observed among adolescents in the traditional-only versus cyber-only aggressor groups. When differences were observed, the group that stood out from the others was the combined aggressor group, which had significantly lower levels of effortful control and higher rates of manipulativeness, remorselessness, and proactive aggression. These findings fell in line with Williams and Guerra's (2007) notion that cyber space and other technological advances merely provide additional mediums through which aggressive youth can act and that students most likely to become involved in cyber aggression are likely to be identified by teacher, peers, or parents as already aggressive in off-line situations.

Although traditional-only and cyber-only aggressor groups resembled one another in most analyses, there was one exception. Adolescents in the traditional-only and combined aggressor groups had significantly higher scores on reactive aggression compared to adolescents in the cyber-only group; those in the cyber-only group were no different from those in the non/low aggressor group. Given that cyber aggressors by definition were high *only* on cyber forms of aggression, the distinction on reactive aggression may simply be an artifact of the measure used; that is, many of the items used tapped motives and behaviors more in line with traditional forms of aggression (e.g., "yelled at others when they have annoyed you" and "damaged things because you felt mad") rather than cyber aggression. However, this finding may also be highlighting inherent differences in aggression venues. As indicated, reactive aggression is an impulsive and retaliatory form of aggression marked by increased tendencies to attribute hostile intents to ambiguous situations (Dodge et al. 2006). Hence, reactive/impulsive aggression may be more likely to emerge in face-to-face encounters, whereas cyberspace may be conducive to pre-meditated or proactively aggressive responses. This hypothesis appears to be supported by the finding that adolescents who engaged in traditional aggression (i.e., both traditional-only and combined aggressors) reported higher rates of both proactive *and* reactive aggression compared to the non/low aggressor group, whereas adolescents who only engaged in cyber aggression were higher only on proactive aggression (Table 3).

In parallel analyses of victimization, adolescents who experienced any form of victimization exhibited lower levels of effortful control and greater symptoms on the anxious/depressed subscale of the YSR (Achenbach 2001) compared to non-victims. These findings are consistent with a vast literature highlighting psychosocial problems associated with victimization during childhood and adolescence (Hawker and Boulton 2000). However, comparing adolescents who only experienced traditional forms of

victimization to those adolescents who experienced cyber victimization, two differences among victim groups emerged. Specifically, adolescents who were victims of cyber aggression (either cyber-only or a combination of cyber and traditional aggression) reported higher rates of cyber aggression (Table 1) and reactive aggression (Table 4) than those in the traditional-only group. Interestingly, adolescents in the traditional victim group were no different on reactive aggression or cyber aggression compared to those in the non-victim group. These findings suggest that there may be something unique about adolescents who are targeted via text messaging, website posts, instant messaging, etc. in contrast to those targeted off-line (i.e., traditional victimization). Consistent with recent research on Internet aggressors (Werner et al. 2010), it may be that adolescents who experience cyber victimization are often cyber aggressors themselves. Because the Internet (and text messaging, instant messaging, etc.) offers an ease of immediate retaliation without threat of physical or verbal harm, victims of cyber aggression may find it particularly appealing to get revenge within the safety of cyberspace. Additional studies of the directionality of cyber aggression and victimization are needed to determine whether different types of victimization lead to pathways for different psychopathologies, including examination of the longitudinal relationship between cyber and traditional victimization and aggression.

One issue to consider is that the rates of cyber aggression and victimization in the present study (41% of all participants reported cyber victimization and 26% of all participants reported cyber aggression in this study) were slightly higher than those previously reported by studies using similar methods (e.g., Katzer et al. 2009; Werner et al. 2010). For instance, rates of perpetration have ranged from 7% to 18% of youth. For victimization, studies have reported that 16–35% of adolescents experienced cyber victimization every few months (Dehue et al. 2008; Hinduja and Patchin 2008; Katzer et al. 2009; Werner et al. 2010; Ybarra and Mitchell 2004). Although criteria for categorizing adolescents as cyber aggressors or victims varies somewhat across studies, the prevalence rates in this study may still reflect a true increase in cyber aggression over the past few years as a result of advances in technology and increased knowledge of such behaviors through word-of-mouth and media attention. It may be that as cyberspace becomes an increasingly ubiquitous social venue for youth, cyber aggression may attract adolescents who typically would not engage in aggressive behaviors outside of cyberspace; hence, engagement in this type of aggression may pose a unique threat to psychosocial development during adolescence. Alternatively, rather than increasing the number of aggressors, cyberspace may be most effective at increasing the number of victims or increasing the frequency of aggression. Moreover, those traditionally aggressive adolescents who also engage in cyber aggression appear to be the youth with the poorest overall adjustment. Given that cyber aggression is difficult to monitor and manage by teachers, administrators, and parents, figuring out how to combat this rising phenomenon is of particular importance.

Despite the novel findings of the present study, there were some limitations to consider. First, this study relied solely on self-report of aggressive behaviors to determine the categorization of aggressors and victims. A measure of social desirability was included as a control variable in some analyses (see Covariate Analyses section) to reduce the influence of bias in reporting (Nederhof 1985); future studies may want to also consider using multiple informants for aggressive behavior. However, given that cyber aggression is often performed outside school hours, relying on outside informants such as parents or teachers to identify perpetrators may result in a severe under-representation of the actual number of cyber aggressors. Though not analyzed in the current study, peer reports of traditional aggression were collected in the larger APEX project via the use of "social experts" (i.e., students nominated by teachers as being knowledgeable of peer groups and others' social standings; Prinstein, 2007). Interestingly, in comparison to peer reports, adolescents identified as aggressive via self-report demonstrated socioemotional profiles parallel to aggressive adolescents identified in other studies on aggression (Clemans and Sontag 2009); that is, they demonstrated poorer emotion regulation skills and reported more callous/unemotional and manipulative behavior. In contrast, peer reports of aggression may have been influenced by social stereotypes about aggressive individuals (e.g., "mean girls" and aggressive African American males). Although peer reports and self-report of aggression in the larger study were discrepant, examination of psychosocial profiles suggested that self-reported aggression was a valid form of assessment of aggression in the present study. The comparison between peer report and self report of aggression does not directly address the validity of self report of other variables in the study; however, the observation of expected associations between aggression and victimization and the various psychosocial characteristics suggests that the use of self report in this study was merited.

Additionally, internal consistency of effortful control and remorselessness was below conventionally desirable levels of Chronbach's alpha ($\alpha = .64$ for both) for this sample. Lower alphas suggest that items in these measures may be tapping multiple constructs within the domains of effortful control and remorselessness. Hence, interpretation of the findings for these two scales may be specific to the items used in this study and caution should be utilized

when generalizing or comparing findings to other studies using similar constructs.

Another limitation may have been the sampling strategy used, such that participants for this study were recruited from public middle schools without any exclusion criteria related to technology or computer use. Many studies examining cyber aggression have recruited individuals online (Hinduja and Patchin 2008; Ybarra and Mitchell 2004) in order to examine individuals most at risk for experiencing and engaging in cyber aggression. Although inclusion of participants with limited use of or access to technology and computers may have reduced the sample's overall exposure to cyber aggression or victimization, this recruitment method also makes the sample more representative of the general population. A strong indicator of whether adolescents have limited access to the technologies needed to engage in or be victims of cyber aggression is socioeconomic status. That is, adolescents of higher SES backgrounds are more likely to have access to computers, cell phones, and other technologies used in cyber aggression. In this study, SES was investigated as a potential confounding variable; however, covariate analyses indicated that SES was only related to victim groups and proactive aggression. Because the correlation with proactive aggression was quite low ($r = .20$), inclusion of SES as a potential confounding effect in the analyses was deemed unnecessary. In turn, inclusion of participants with limited access to technology may not be a limitation, but rather a strength lending to the generalizability of findings.

Additionally, because participation in the study required active parental consent, the participants may have been in some ways unique from the population from which they were drawn (i.e., students with more behavioral problems tend to have less involved parents and thus lower rates of participation; Tigges 2003). Notably, participants recruited from the school with the lower participation rate actually had lower SES and higher scores on several measures of aggression and poorer psychosocial functioning in comparison to participants from the other school. Finally, due to the cross-sectional nature of the study, causal relationships could not be inferred. Given the rising rates of cyber aggression, it would be advantageous for future studies to examine the prospective impact of cyber victimization compared to traditional victimization and pathways to cyber aggression compared to pathways to traditional aggression.

Limitations notwithstanding, the results of this study inform prevention programs seeking to curb aggression and victimization among adolescents. Simultaneous engagement in both traditional and cyber aggression may be an indicator that a student is escalating his/her antisocial behaviors. In addition, for the small number of students who are engaging solely in cyber aggression, psychosocial profiles more closely resemble non-aggressive students;

hence, these students may not be as readily identified by teachers, parents, or peers as having behavioral problems. Given our preliminary evidence that victims of cyber versus traditional aggression are more likely to be cyber aggressors themselves, it may also be beneficial to discuss with adolescents ways to cope effectively with bullying and aggression in different types of venues in order to minimize retaliation and/or feelings of emotional distress. Furthermore, if rates of cyber aggression are increasing over time, problems associated with victimization are also likely to expand if effective prevention is not implemented.

Findings from this study, along with other emerging research, indicate that further research is needed to elucidate pathways of risk for involvement in cyber aggression. Moreover, given the rapid increase in access to cyber media and near saturation levels of internet access in the US population, intervention and prevention initiatives aimed at reducing the incidence of cyber aggression and victimization environment are already lagging. Hence, developing, implementing, and evaluating prevention and intervention efforts both within and outside the school should be a national adolescent health priority.

References

Achenbach, T. M. (2001). *Manual for the youth self-report and 2001 profile*. Burlington, VT: Department of Psychiatry, University of Vermont.

Agatston, P. W., Kowalski, R., & Limber, S. (2007). Student perspectives on cyber bullying. *Journal of Adolescent Health, 41*, S59–S60.

Andershed, H., Kerr, M., Stattin, H., & Levander, S. (2002). Psychopathic traits in non-referred youths: A new assessment tool. In E. Blauuw & L. Sheridan (Eds.), *Psychopaths: Current international perspectives* (pp. 131–158). The Hague: Elsevier.

Caspi, A. (2000). The child is father of the man: Personality continuities from childhood to adulthood. *Journal of Personality and Social Psychology, 78*, 158–172.

Clemans, K. H., & Sontag, L. M. (2009). Characteristics of adolescent aggressors: Peer vs. individual approaches. Paper presented at the biennial meeting of the Society for Research in Child Development, Denver, CO.

Connor-Smith, J. K., Compas, B. E., Wadsworth, M. E., Thomsen, A. H., & Saltzman, H. (2000). Responses to stress in adolescence:

Measurement of coping and involuntary stress responses. *Journal of Consulting and Clinical Psychology, 68*, 976–992.

Crapanzano, A. M., Frick, P. J., & Terranova, A. M. (2010). Patterns of physical and relational aggression in a school-based sample of boys and girls. *Journal of Abnormal Child Psychology, 38*, 433–445.

David-Ferdon, C., & Hertz, M. F. (2007). Electronic media, violence, and adolescents: An emerging public health problem. *Journal of Adolescent Health, 41*, S1–S5.

Deater-Deckard, K. (2001). Annotation: Recent research examining the role of peer relationships in the development of psychopathology. *Journal of Child Psychology and Psychiatry, 42*, 565–579.

Dehue, F., Bolman, C., & Völlink, T. (2008). Cyberbullying: Youngsters' experiences and parental perception. *Cyber Psychology and Behavior, 11*, 217–233.

Dodge, K. A., Coie, J. D., & Lynam, D. (2006). Aggression and antisocial behavior in youth. In N. Eisenberg, W. Damon, & R. M. Lerner (Eds.), *Handbook of child psychology* (6th ed., Vol. 3, pp. 719–788). New York: Wiley.

Eisenberg, N., Valiente, C., Spinrad, T. L., Cumberland, A., Liew, J., Rieser, M., et al. (2009). Longitudinal relations of children's effortful control, impulsivity, and negative emotionality to their externalizing, internalizing, and co-occurring behavior problems. *Developmental Psychology, 45*, 988–1008.

Ellis, L. K., & Rothbart, M. K. (2001, April). *Revision of the early adolescent temperament questionnaire*. Poster presented at the 2001 Biennial Meeting of the Society for Research in Child Development, Minneapolis, Minnesota.

Graber, J. A., & Sontag, L. M. (2009). Internalizing problems during adolescence. In R. M. Lerner & L. Steinberg (Eds.), *Handbook of adolescent psychology* (2nd ed., pp. 642–682). New York: Wiley.

Hawker, D. S., & Boulton, M. J. (2000). Twenty years' research on peer victimization and psychosocial adjustment: A meta-analytic review of cross-sectional studies. *Journal of Child Psychology and Psychiatry, 41*, 441–455.

Hinduja, S., & Patchin, J. W. (2008). Cyberbullying: An exploratory analysis of factors related to offending and victimization. *Deviant Behavior, 29*, 129–156.

Hoffman, J. (2010). Online bullies pull schools into the fray. *The New York Times,* pp. A1, A12.

Hollingshead, A. B. (1975). *Four factor index of social status*. New Haven, CT: Yale University Press.

Katzer, C., Fetchenhauer, D., & Belschak, F. (2009). Cyberbullying: Who are the victims? *Journal of Media Psychology, 21*, 25–36.

Kowalski, R. M., & Limber, S. P. (2007). Electronic bullying among middle school students. *Journal of Adolescent Health, 41*, S22–S30.

Lenhart, A., Purcell, K., Smith, A., & Zickuhr, K. (2010). Social media and mobile internet use among teens and young adults. Retrieved April 8, 2010, from http://www.pewinternet.org/Reports/2010/Social-Media-and-Young-Adults.aspx.

Marsee, M. A., & Frick, P. J. (2007). Exploring the cognitive and emotional correlates to proactive and reactive aggression in a sample of detained girls. *Journal of Abnormal Child Psychology, 35*, 969–981.

Mitchell, K. J., Ybarra, M., & Finkelhor, D. (2007). The relative importance of online victimization in understanding depression, delinquency, and substance use. *Child Maltreatment, 12*, 314–324.

Nansel, T. R., Craig, W., Overpeck, M. D., Saluja, G., & Ruan, W. J. (2004). Cross-national consistency in the relationship between bullying behaviors and psychosocial adjustment. *Archives of Pediatric & Adolescent Medicine, 158*, 730–736.

Nederhof, A. J. (1985). Methods of coping with social desirability bias: A review. *European Journal of Social Psychology, 15*, 263–280.

Patchin, J. W., & Hinduja, S. (2006). Bullies move beyond the schoolyard: A preliminary look at cyberbullying. *Youth Violence and Juvenile Justice, 4*, 148–169.

Prinstein, M. J., Boergers, J., & Vernberg, E. M. (2001). Overt and relational aggression in adolescents: Social-psychological adjustment of aggressors and victims. *Journal of Clinical Child Psychology, 30*, 479–491.

Raine, A., Dodge, K., Loeber, R., Gatzke-Kopp, L., Lynam, D., Reynolds, C., et al. (2006). The reactive-proactive aggression questionnaire: Differential correlates of reactive and proactive aggression in adolescent boys. *Aggressive Behavior, 32*, 159–171.

Saltaris, C. (2002). Psychopathy in juvenile offenders: Can temperament and attachment be considered as robust developmental precursors? *Clinical Psychology Review, 22*, 729–752.

Strahan, R., & Gerbasi, K. C. (1972). Short, homogeneous versions of the Marlowe-Crowne Social Desirability Scale. *Journal of Clinical Psychology, 28*, 191–193.

Tigges, B. B. (2003). Parental consent and adolescent risk behavior research. *Journal of Nursing Scholarship, 35*, 283–289.

Vandenbosch, H., & Van Cleemput, K. (2008). Defining cyberbullying: A qualitative research into the perceptions of youngsters. *Cyberpsychology and Behavior, 11*, 499–503.

Werner, N. E., Bumpus, M. F., & Rock, D. (2010). Involvement in internet aggression during early adolescence. *Journal of Youth and Adolescence, 39*, 607–619.

Williams, K. R., & Guerra, N. G. (2007). Prevalence and predictors of internet bullying. *Journal of Adolescent Health, 41*, S14–S21.

Ybarra, M. L., & Mitchell, K. J. (2004). Online aggressor/targets, aggressors, and targets: A comparison of associated youth characteristics. *Journal of Child Psychology and Psychiatry, 45*, 1308–1316.

Ybarra, M. L., & Mitchell, K. J. (2007). Prevalence and frequency of internet harassment instigation: Implications for adolescent health. *Journal of Adolescent Health, 41*, 189–195.

Author Biographies

Lisa M. Sontag is an NRSA research fellow at Cincinnati Children's Hospital Medical Center. She received her Ph.D. in Developmental Psychology from the University of Florida. Dr. Sontag's research focuses on the development of psychopathology during adolescence and the influence of stress, emotion regulation process and puberty.

Katherine H. Clemans is a postdoctoral fellow at Johns Hopkins Bloomberg School of Public Health. She received her Ph.D. in Developmental Psychology from the University of Florida. Her research focused on psychosocial correlates of aggression and moral judgments during adolescence.

Julia A. Graber is a Professor in Psychology at the University of Florida. She received her Ph.D. in Developmental Psychology from Penn State University. Dr. Graber's research focuses on the development of psychopathology and health compromising behaviors during late childhood and adolescence.

Sarah T. Lyndon is a recovery coach at the Shoreline Treatment Center in Long Beach, CA. She received her Bachelor's of Science in Psychology from the University of Florida.