

## The Joint Development of Traditional Bullying and Victimization With Cyber Bullying and Victimization in Adolescence

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The present study investigated the stabilities of and interrelationships among traditional (i.e., face-to-face) bullying, traditional victimhood, cyber bullying, and cyber victimhood among adolescents over time. About 1,700 adolescents aged 11–16 years at Time 1 self-reported levels of both bullying and victimization in four contexts (in school, outside of school, texting, and on-line) annually for 2 years. Results indicated that all four dynamics were moderately stable over time. The following variables were found to bidirectionally reinforce and predict each other over time: traditional bullying and traditional victimization; traditional bullying and cyber bullying; and traditional victimization and cyber victimization. These results indicate that bullying and victimhood in both face-to-face and cyber-based interactions are related but not identical interpersonal dynamics.

Bullying is a significant and common problem among school-age children around the world. A national study in the United States on students between the ages of 11 and 16 years found that 10.6% reported they had been a victim of bullying during the current term, 29.9% reported moderate to frequent involvement in bullying during the current term, and 13% identified themselves as bullies (Nansel et al., 2001). A New Zealand study found that 58% of students from 13 to 18 years reported that they had been a victim of bullying during the current year and 44% reported that they had bullied others at some time during their years at primary and secondary school (Adair, Dixon, Moore, & Sutherland, 2000). The results of bullying on child and adolescent social development have been documented in many cultures and contexts and are the cause for much concern by parents, schools, psychologists, and the affected children themselves (Ando, Asakura, & Simons-Morton, 2005; Graham, Bellmore, & Mize, 2006; Kumpulainen, Räsänen, & Puura, 2001; You et al., 2008).

Both bullying and victimization can lead to psychological and social maladjustment problems (Graham et al., 2006; Kumpulainen et al., 2001). Some victims develop health problems, drop out of school, and in some extreme cases commit suicide

(Rigby, 1998; Stassen Berger, 2007). In addition, studies have found that adolescents who continuously bully over time are at risk of becoming involved in gang membership, substance abuse, and other types of crime (Feder, 2007; Nansel et al., 2001; Olweus, 1993).

In recent years, growing attention has been drawn to the new manifestation of bullying by electronic communications, that is, cyber bullying (Juvonen & Gross, 2008; Kowalski, Limber, & Agatston, 2007; Ybarra & Mitchell, 2004a). Although much useful and interesting research has been conducted on this recent development in the bullying process, certain gaps still exist in the literature. The present study sought to answer the question of how face-to-face (termed “traditional” in this article following the usage by Ybarra & Mitchell, 2004a) bullying and victimhood are associated with cyber bullying and cyber victimhood over one year’s time during adolescence. This study, then, was designed to illuminate both how stable these phenomena are over time but also how they are related to each other over time.

### Definition of Bullying

Bullying is an aggressive behavior that causes intentional harm, is often repetitive, and usually involves an imbalance of power (Olweus, 1993; Stassen Berger, 2007). The imbalance of power between the victim and bully can be caused by the victim’s smaller size or strength compared to the bully, the

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This longitudinal study was supported by a grant from The Foundation for Research in Science and Technology to the first author. We thank Jo KleeB for input in measure design and methodology; the school principals for allowing us to access students in their schools; and the adolescents for their continued willing participation.

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victim's affiliation with a minority or unpopular group, or the victim's fear or beliefs that prevent the victim to stand up for him or herself (Ma, 2001; Marsh, Parada, Craven, & Finger, 2004). Acts of bullying can be physical (hitting), verbal (teasing), indirect (spreading rumors), sexual (touching the victim's body), or behavioral (holding one's nose as a peer walks by; Stassen Berger, 2007).

### Cyber Bullying

Cyber bullying is a recent variant of the traditional bullying process, in which individuals use electronic communication as a medium to harass, degrade, embarrass, and deliberately hurt others (Kowalski et al., 2007). Cyber bullying using mobile phones and the internet may involve sharing unpleasant or confidential emails, instant messages, pictures, videos, or text messages about a victim to others or sending such messages to a victim. Numerous venues exist on the Internet where cyber bullying can take place, the most popular being chat rooms, personal blogs (online journals), polling sites, and social networking sites (e.g., Facebook, MySpace, and Bebo; Kowalski et al., 2007).

Although the concepts of bullying and victimhood have been a focus of research since the 1970s, several areas relating to these constructs require further delineation. Stability over time of bullying and victimization and the nature of the relationships between bullying and victimization over time require further specification, and their extension to the world of cyber bullying and cyber victimization is needed as well.

### The Stabilities of Traditional Bullying and Victimization

The stabilities of bullying and victimhood have been of interest in previous research for their significance to intervention strategies (Barker, Arseneault, Brendgen, Fontaine, & Maughan, 2008), and for their implications in terms of resilience to bullying perpetration and victimhood (Beran, 2008). Traditional bullying and victimhood have been found to be moderately stable over time (Barker et al., 2008; Beran, 2008; Marsh et al., 2004; Pellegrini & Bartini, 2000). Sourander, Helstelä, Helenius, and Piha (2000) found in their longitudinal study that bullying and victimization at age 8 years was predictive of bullying and victimization at age 16 years. However, some research shows that victimization is less stable depending on the age group. Schäfer, Korn, Brodbeck, Wolke,

and Shulz (2005) found that bullying in primary school (from age 7 years) predicted bullying in secondary school; however, victimization in primary school did not predict victimization in secondary school.

### Stabilities of Cyber Bullying and Cyber Victimization

A significant gap in the literature at this time is research that reports on the stability of cyber bullying and cyber victimization over time. Longitudinal research on these phenomena will be able to tell us whether these two dynamics exhibit similarities to or differences with traditional bullying and victimization, but due to the novelty of this type of bullying behavior research has yet to provide an answer to this question.

### The Relationship Between Traditional Bullying and Victimization

Most studies on bullying find that a moderate positive correlation exists between bullying and victimization, namely a significant proportion of victims are also bullies (Chappell et al. 2006; Ma, 2001). These findings have often led researchers to identify a separate group of youth who are bullies *and* victims, and they have been labeled "bully-victims" (Austin & Joseph, 1996; Besag, 1989; Ormel et al., 2005). However, this effort creates a bully-victim group by dichotomizing bullying and victimization variables, which loses mathematical information (Bosworth, Espelage, & Simon, 1999; Marsh et al., 2004). In the present study, we retained the continuous nature of these variables in order to assess the relationship between bullying and victimization more sensitively.

Marsh et al. (2004) investigated the causal relationships between bullying and victimization assessed as continuous variables. They surveyed 4,000 students ranging the ages of 12–18 years from eight schools in Sydney at three points in time over one year. Marsh et al. (2004) found that the correlation between bullying and victimization increased over time. They constructed a path model using structural equation modeling (SEM), which showed that over time bullying positively predicted victimization and victimization positively predicted bullying. They concluded that bullying and victimization had a reciprocal relationship, in that one dynamic reinforced the other. The present study aims to replicate and extend these findings.

### **The Relationship Between Cyber Bullying and Cyber Victimization**

Corresponding research has found that cyber bullies are often also cyber victims (Kowalski & Limber, 2007; Ybarra & Mitchell, 2004b). Kowalski et al. (2007) found a significant correlation between cyber bullying and cyber victimization, and this relationship yielded a stronger correlation than traditional bullying and victimization. This finding implies that being a cyber bully and being cyber bullied are more closely related than traditional bullying and victimization. However, no studies have investigated the direction of this relationship over time to investigate if there is a bidirectional relationship between cyber bullying and cyber victimization as there is with traditional bullying and victimization, and none have compared the strength of relationships with traditional bullying and victimization.

### **The Relationships Between Traditional Bullying and Cyber Bullying, and Between Traditional Victimization and Cyber Victimization**

Research shows that traditional bullies are often also cyber bullies. Raskauskas and Stoltz (2007) found that cyber bullies constituted a subgroup of traditional bullies at school and suggested that traditional bullying leads to cyber bullying. However, no longitudinal study has yet examined their suggestion. Similarly there is no longitudinal research on whether traditional victimization is related to cyber victimization, although victims are often found to be cyber victims (Juvonen & Gross, 2008; Raskauskas & Stoltz, 2007; Smith et al., 2008).

In other words, cyberspace may simply be a different means through which bullying and victimhood can occur. For example, Juvonen and Gross (2008) showed that there was a sevenfold higher risk of being bullied online in those individuals who were repeatedly targeted at school (Juvonen & Gross, 2008). The authors took these results to indicate, "Cyberspace is not a separate risky environment. Rather, cyberspace seems to be used as a forum that extends the school grounds" (p. 503). Furthermore, Juvonen and Gross (2008) showed that heavy use of cyber communication tools posed less risk for being a target of bullying than in-school bullying experiences, suggesting that it is not the tools that are the problem, rather it is their use by the bullies that causes the problem.

### **Goals and Predictions of the Present Study**

This study will fill several significant gaps in the literature relating to cyber bullying and cyber victimhood outlined above. Namely, this study was conducted to investigate the joint development of cyber- and traditional bullying and victimhood in adolescents over time. We sought to explore the relationships between bullying and victimhood in terms of traditional interpersonal relationships (i.e., face-to-face) as well as in the context of cyber communication. We have not found any longitudinal studies in the literature that have examined both bullying and victimization across the four adolescent life domains studied here (i.e., inside school, outside school, mobile phone use, and Internet use). Studying both bullying and victimization across all four of these domains is valuable as it provides a more diversified and complete assessment of bullying and victimhood across the important ecological niches of adolescence.

*Prediction 1 – Stabilities.* Based on existing longitudinal literature (Barker et al., 2008; Sourander et al., 2000), we predicted that: (1a) traditional bullying and victimization would be moderately stable over time, and (1b) although stability for cyber bullying and cyber victimization has not been investigated, we predicted that they would also be moderately stable over time based on findings that have shown similar developmental pathways between these two phenomena.

*Prediction 2 – Bidirectional relationships.* Based on Marsh et al.'s (2004) findings, we predicted that (2a) we would find a positive bidirectional relationship between traditional bullying and traditional victimization over time, and (2b) we would find a positive bidirectional relationship between cyber bullying and cyber victimization based on findings that have shown similar developmental pathways between these two phenomena. In addition, we also expected that (2c) traditional bullying and cyber bullying would predict each other in a bidirectional relationship, and (2d) traditional victimization and cyber victimization would predict each other in a bidirectional relationship.

## **METHOD**

### **Study Design and Procedures**

Data for the current study were taken from the Youth Connectedness Project (YCP). The YCP is a

sequential longitudinal research project incorporating data gathered over three time points, each one year apart. At the first time of measurement (in 2006), three cohorts based on age were recruited: individuals 10, 12, and 14 years of age. The same individuals were followed across the three time points of the YCP. For the purposes of the current study, only data from the second and third time points were used here because Year 1 did not include all four bullying and victimhood domains. For ease of reference, we will refer to the 2007 data as Time 1 and the 2008 data as Time 2. This 3-year longitudinal project prospectively collected data on young people's connectedness to their families, peers, schools, and communities (readers can obtain further information about the research project from <http://www.vuw.ac.nz/youthconnectedness/index.aspx>). Participants were recruited for the study across 78 schools in New Zealand's North Island. Both adolescent and parental consent was obtained prior to data collection. We achieved a 70% acceptance rate among contacted schools, and approximately 60% among randomly selected students among schools that participated in the study.

### Participants

The sample was composed of a total of 1,774 participants. Of these, 48% identified as male and 52% as female. At Year 1, ages ranged from 11 to 16, with a mean age of 13.12 ( $SD = 1.73$ ). Fifty-eight percent of participants identified as European NZ, 27% as Maori (NZ's indigenous people), and the remaining 15% as 'Other'.

### Procedure

Data collection from adolescents was effected by using self-report measures administered on laptops in schools, under the supervision of a research assistant and a teacher. SurveyPro was used to create and present the survey measure used in the present study. Students were brought into a quiet room that contained up to 30 laptop computers. After a brief introduction to the study, adolescents were seated at individual computers and they logged on with an individual logon identification code (i.e., no names were associated with the actual data). Participants were encouraged to ask questions of the research assistant or teacher who was in attendance during the data collection period if they did not understand the meaning of a word or a question or experienced difficulty with a response format. Data collection took between 30 and 60 min on average.

### Measures

In the current report, we have used eight items created specifically for the YCP project that asked about the frequency of bullying and victimization. Two items constituted our measure of traditional bullying: "In the last month, how often have you bullied other students?" and "In the last month, how often have you bullied young people who do not go to your school/kura?" ("Kura" is a type of school in New Zealand wherein all teaching and learning occurs in the Maori language). Two items were used as a measure of cyber bullying: "In the last month, about how often have you sent a mean text message to someone?" and "In the last month, how often have you bullied others online?" Traditional victimization was measured using two items: "In the last month, how often have you been bullied by other students?" and "In the last month, how often have you been bullied by young people who do not go to your school/kura?" Cyber victimization was comprised of two questions: "In the last month about how often have you received a mean text message from someone?" and "In the last month, how often have you been bullied by others online?" All of the items for these variables were measured on a 5-point Likert scale in which 1 = *never*, 3 = *4–6 times per week*, and 5 = *daily/almost daily*. Before administration of the items, bullying was defined to students in this fashion: "bullying includes all behavior that is done to try and hurt another person's feelings or body."

Pearson's correlations were calculated for each pair of items for both years to determine whether they could be combined for greater reliability. (Cronbach's alphas were not computed as there were too few items in each case to yield suitable internal consistency estimates.) All pairs of items correlated significantly, with cyber bullying correlating somewhat lower than traditional bullying. At Time 1, the traditional bullying items were moderately correlated,  $r(1,774) = .36, p < .05$ , and at Time 2 these items correlated similarly,  $r(1,774) = .38, p < .05$ . Traditional victimization items were moderately correlated at Time 1,  $r(1,774) = .43, p < .05$ , and at Time 2 the correlation remained stable,  $r(1,774) = .42, p < .05$ . Cyber bullying items were not as highly correlated at Time 1,  $r(1,774) = .24, p < .05$ , or at Time 2,  $r(1,774) = .27, p < .05$ . Correlations for cyber victimization were lower again at both Times 1 and 2,  $r(1,774) = .23, p < .05$  and  $r(1,774) = .19, p < .05$ . Means, standard deviations, and correlations among variables are presented in Table 1.

TABLE 1  
Correlations, Means, and Standard Deviations of Bullying and Victimization Variables at Times 1 and 2

	<i>Trad Bullying T1</i>	<i>Trad Victimization T1</i>	<i>Cyber Bullying T1</i>	<i>Cyber Victimization T1</i>	<i>Trad Bullying T2</i>	<i>Trad Victimization T2</i>	<i>Cyber Bullying T2</i>	<i>Cyber Victimization T2</i>
Trad bullying T1		0.61	0.35	0.26	0.44	0.31	0.18	0.19
Trad victimization T1			0.21	0.22	0.32	0.48	0.08 <sup>marg</sup>	0.19
Cyber bullying T1				0.77	0.28	0.17	0.28	0.28
Cyber victimization T1					0.21	0.19	0.18	0.24
Trad bullying T2						0.51	0.29	0.26
Trad victimization T2							0.16	0.33
Cyber bullying T2								0.73
Mean	1.33	1.45	1.34	1.35	1.25	1.33	1.29	1.28
Standard deviation	0.60	0.72	0.65	0.63	0.50	0.60	0.55	0.51

Note. All correlations were statistically significant at  $p < .001$  except Traditional victimization T1 with Cyber bullying T2 at  $p < .10$ .  $N = 1,774$ .

## Data Analysis

Descriptive statistics and MANOVA analyses were used to provide answers to the first hypothesis. SEM (AMOS Ver. 6) was used to answer the remaining questions. Four observed variables were created to represent traditional bullying, cyber bullying, traditional victimization, and cyber victimization, and their relationships were examined in a longitudinal SEM model. The small amount of missing data (about 1%) was dealt with by the use of FIML in AMOS.

## RESULTS

### Prediction 1 – Stabilities of Bullying and Victimization

To test Prediction 1 we constructed a SEM model that estimated the four stability path coefficients for traditional bullying, traditional victimization, cyber bullying, and cyber victimization. No cross-lag paths were estimated in this model as we wished to evaluate stability alone.

Prediction 1a stipulated that traditional bullying and victimhood would be moderately stable over time. The stability path coefficients for traditional bullying ( $\beta = .41, p < .001$ ) and for traditional victimhood ( $\beta = .46, p < .001$ ) were found to be statistically significant and positive. An equality constraint analysis yielded a significant difference between these two stabilities ( $\chi^2$  change = 5.0,  $df = 1, p = .03$ ), indicating that traditional victimhood was somewhat more stable over 1 year than traditional bullying, but both dynamics exhibited moderate stability.

Prediction 1b suggested that moderate stability would be found for cyber bullying and cyber victimhood as well. As expected, the stability path coefficients for cyber bullying ( $\beta = .25, p < .001$ ) and for cyber victimization were found to be statistically significant and positive ( $\beta = .28, p < .001$ ). An equality constraint analysis showed that the stability path coefficients did not differ significantly ( $\chi^2$  change = 0.31,  $df = 1, ns$ ). This result indicates that both cyber bullying and cyber victimization were moderately stable over time, and both were relatively equally stable.

Although not enunciated as a prediction, we also sought to determine whether traditional manifestations were more stable than cyber-based manifestations of victimhood and bullying. An equality constraint between traditional and cyber bullying yielded a statistically significant result ( $\chi^2$  change = 15.2,  $df = 1, p < .001$ ), as did one between traditional and cyber victimhood ( $\chi^2$  change = 26.5,  $df = 1, p < .001$ ). Taken together, these results supported predictions 1a and 1b in that all four variables were found to be moderately stable over time; however, follow-up analyses suggest that traditional manifestations were significantly more stable than cyber-based manifestations of victimhood and bullying.

### Prediction 2 – Bidirectional Relationships

To test Prediction 2a, we constructed another path model, this one focused on traditional bullying and traditional victimization, to see whether these two variables manifested a bidirectional relationship over time. Both stability coefficients as well as the

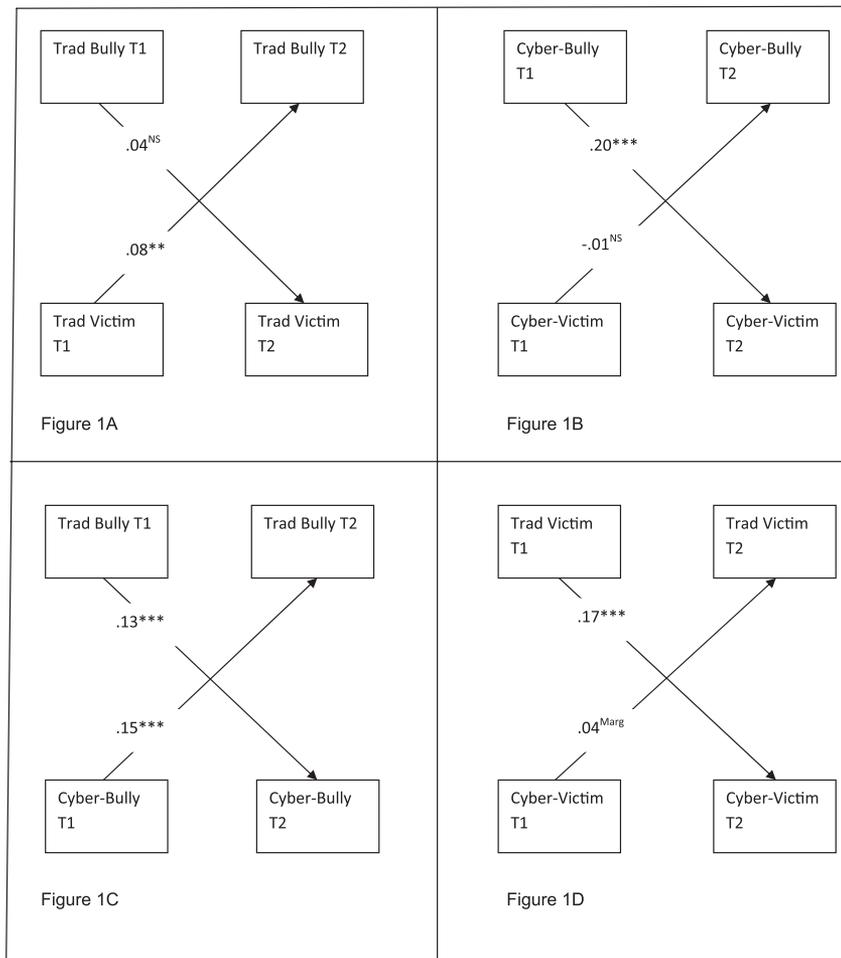


FIGURE 1 Bi-directional relationships tested in predictions 2A to 2D.

two cross-lag paths were estimated (although only cross-lag parameters for the following models are displayed in Figures 1A–1D). The cross-lag path coefficient from traditional victimization to traditional bullying was significant and positive ( $\beta = .08$ ,  $p < .01$ ); however, the cross-lag path coefficient from traditional bullying to traditional victimization was not significant ( $\beta = .04$ ,  $p = .11$ ). Nevertheless, no difference was noted in the equality constraint analysis ( $\chi^2$  change = 0.2,  $df = 1$ ,  $p = .65$ ). This result marginally supports Prediction 2a and suggests a weak bidirectional relationship between traditional bullying and traditional victimization.

To test Prediction 2b, another path model was constructed, this one focused on cyber bullying and cyber victimization. The cross-lag path coefficient from cyber bullying to cyber victimization was significant and positive ( $\beta = .20$ ,  $p < .001$ ); however, the path coefficient from cyber victimization to cyber

bullying was not significant ( $\beta = -.01$ ,  $p = .82$ ). An equality constraint revealed that the path coefficient was significantly stronger from cyber bullying to cyber victimization ( $\chi^2$  change = 5.1,  $df = 1$ ,  $p < .05$ ). This result indicates that cyber bullying predicted cyber victimization, but cyber victimization did not predict cyber bullying in turn. This result does not support Prediction 2b and instead suggests that a unidirectional relationship seems to exist between these two variables.

Prediction 2c suggested that the two bullying variables might be related to each other over time. A path model focused on these two variables found that the cross-lag path coefficient from traditional bullying to cyber bullying was significant and positive ( $\beta = .13$ ,  $p < .001$ ) and the cross-lag path coefficient from cyber bullying to traditional bullying was significant and positive as well ( $\beta = .15$ ,  $p < .001$ ). No difference was noted in the equality constraint ( $\chi^2$  change = 0.1,  $df = 1$ ,  $p = .75$ ). This result

indicates that these two types of bullying reinforced and predicted one another over time.

The same bidirectional relationship was examined for the two types of victimization for Prediction 2d. The cross-lag path coefficient from traditional victimization to cyber victimization was significant and positive ( $\beta = .17, p < .001$ ) and the cross-lag path coefficient from cyber victimization to traditional victimization was marginally significant and positive as well ( $\beta = .04, p < .10$ ). However, a significant difference was noted in the equality constraint ( $\chi^2$  change = 4.2;  $df = 1, p < .05$ ). Prediction 2d was partially supported in that a weak bidirectional relationship was noted, but the relationship seems to be driven more strongly by traditional victimization.

## DISCUSSION

This study investigated the joint development of traditional bullying and traditional victimization with cyber bullying and cyber victimization over one year. The results suggest that the phenomena of bullying and victimization in the two contexts of face-to-face interactions and of communication through electronic media are related but not identical.

### Prediction 1: Stabilities of Bullying and Victimization

The results supported the prediction that all four key variables would be relatively stable over time; however, traditional victimization was more stable than cyber victimization. This result implies that a young person is more likely to remain a victim of traditional bullying rather than remain a victim of cyber bullying. This finding is generally consistent with existing research in that traditional bullying and victimization have been found to be moderately stable over time (Barker et al., 2008; Beran, 2008; Marsh et al., 2004; Pellegrini & Bartini, 2000), but the comparison with cyber victimization suggests that this electronic interpersonal dynamic is not as established or robust as in face-to-face interactions. The difference may lie in the fact that face-to-face interactions, particularly at school, are not optional and perhaps in some cases unavoidable, whereas electronic communication media may allow individuals to more easily withdraw or remove themselves from abusive situations. Another view, enunciated by Beran and Li (2005), is that cyber bullying is less emotionally affecting than traditional bullying.

### Prediction 2: Bidirectional Relationships

The results marginally supported Prediction 2a, revealing that there was a weak bidirectional relationship between traditional bullying and victimization. This result is consistent with Marsh et al.'s (2004) findings; they found that traditional bullying led to traditional victimization and vice versa. Finger, Marsh, Craven, and Parada (2005) also found a weak bidirectional relationship between traditional bullying and victimhood. Surprisingly, to date, the reasons behind this observed relationship have received little attention. Ma (2001) found that victims in poor physical condition may bully in a retaliatory manner for "indirect compensation" against weaker students. Social learning theory has been used to explain the aggressor-victim cycle in family abuse research, and Ma (2001) proposes that this could be applied to the bully-victim literature. Specifically, victims may become more aggressive as they have learned these behaviors as a result of their victimization. We suggest that victims become bullies and bullies become victims because of a vicious cycle of "aggression leading to retaliation"; however, this hypothesis requires further exploration.

In contrast to traditional bullying and victimhood, results did not support Prediction 2b as no bidirectional relationship between cyber bullying and cyber victimization was found. However, the results did reveal that cyber bullying predicted cyber victimization over one year. This result implies that students who engage in cyber bullying are at risk of later becoming the target of cyber bullying themselves, although cyber victims are not more likely to become a cyber bully. Research has found that some cyber bullies also report to be cyber victims (Kowalski & Limber, 2007; Ybarra & Mitchell, 2004b), and until now there has been no investigation into the direction of this relationship. Therefore, this finding extends the literature by indicating that adolescents who cyber bully are more likely to become a cyber victim over time, but not vice versa. It may be that adolescents who cyber bully invite retaliation and thus become cyber victims in turn. However, and in contrast with traditional bullying and victimization, cyber victims seem to choose, or at least manage, to *not* become cyber bullies. There may be something unique (as speculated above under Prediction 1) about the cyber bullying and cyber victimization interaction that discourages the reciprocal exchange of negative behavior or at least allows more ready disengagement of hostile interactants. Or this result may have been obtained because many cyber

victims are not emotionally impacted by incidences of cyber bullying (Ybarra, Mitchell, Wolak, & Finkelhor, 2006), and they may not feel the need to retaliate. This contrasts with traditional bullying and victimhood because youths are less affected by cyber bullying than traditional bullying (Ortega, Elipe, Mora-Merchán, Calmaestra, & Vega, 2009).

In line with Prediction 2c, we found a positive bidirectional relationship between traditional and cyber bullying over time. This result implies that students involved in traditional bullying are also likely to be involved in cyber bullying one year later, and correspondingly students involved in cyber bullying are also likely to become involved in traditional bullying one year later. Research has found that traditional bullying is associated with cyber bullying (Raskauskas & Stoltz, 2007); however, this finding was based on concurrent data. The present finding is significant as it implies that involvement in one type of bullying puts a student at risk of becoming involved in the other type of bullying. This finding lends support to the notion that cyber bullying is a manifestation of the general bullying process and is not a distinctly different dynamic (Juvonen & Gross, 2008).

The results also revealed a positive bidirectional relationship between traditional victimization and cyber victimization over time, supporting Prediction 2d. This result implies that one kind of victimization puts students at risk for other types of victimization. As with bullying, research (Raskauskas & Stoltz, 2007; Smith et al., 2008) has found that traditional victims often also report that they are cyber victims; however, until now this bidirectional relationship has not been investigated over time. The present results are congruent with those of Juvonen and Gross's (2008) cross-sectional study, in which it was found that the probability of a student getting bullied online was higher if the student was a traditional victim. The present study confirms and extends this finding, suggesting also that the probability of a student getting bullied face-to-face is higher if the student had been previously bullied online, controlling for previous face-to-face bullying.

### Limitations and Future Directions

This study shared some of the limitations currently found in bullying research. For example, only mono-source self-report measures of bullying and victimhood were used. The associations between bullying and victimization noted here may have been partially due to the single source of data;

future research should rely additionally on teachers' and peers' reports to avoid this problem.

Although the present study used a large sample across time, the four key measures used here could have been more psychometrically robust. More than two indicators in each case would have been advisable. Correlations between items were lower for the cyber behaviors, and it would be preferable to have equally reliable measures across the two domains of cyber behavior and face-to-face behavior. Additional information concerning reasons for bullying and victimization would enlighten us about the frequencies and associations noted here. Future work should include a wider variety of measures of bullying behaviors and victimization experiences, as well as open-ended explanations to allow fuller understanding of these phenomena.

### CONCLUSIONS

The chief finding in this study was that bullying and victimization seem to generalize across the two contexts of face-to-face interactions and cyber behavior. In addition, the present data confirm the observation made by other researchers that victimization is associated with bullying across time for some individuals, but the present work extends this observation into the world of cyber behavior. However, we do not know yet why certain individuals show a consistent pattern across these domains and some others do not, and future work should examine this question.

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