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The changing face of bullying: An empirical comparison between traditional and internet bullying and victimization

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ABSTRACT

Electronic aggression, or cyberbullying, is a relatively new phenomenon. As such, consistency in how the construct is defined and operationalized has not yet been achieved, inhibiting a thorough understanding of the construct and how it relates to developmental outcomes. In a series of two studies, exploratory and confirmatory factor analyses (EFAs and CFAs respectively) were used to examine whether electronic aggression can be measured using items similar to that used for measuring traditional bullying, and whether adolescents respond to questions about electronic aggression in the same way they do for traditional bullying. For Study I ($n = 17\ 551$; 49% female), adolescents in grades 8–12 were asked to what extent they had experience with physical, verbal, social, and cyberbullying as a bully and victim. EFA and CFA results revealed that adolescents distinguished between the *roles* they play (bully, victim) in a bullying situation but not *forms* of bullying (physical, verbal, social, cyber). To examine this further, Study II ($n = 733$; 62% female), asked adolescents between the ages of 11 and 18 to respond to questions about their experience sending (bully), receiving (victim), and/or seeing (witness) specific online aggressive acts. EFA and CFA results revealed that adolescents did not differentiate between bullies, victims, and witnesses; rather, they made distinctions among the methods used for the aggressive act (i.e. sending mean messages or posting embarrassing pictures). In general, it appears that adolescents differentiated themselves as individuals who participated in specific *mode* of online aggression, rather than as individuals who played a particular *role* in online aggression. This distinction is discussed in terms of policy and educational implications.

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1. Introduction

Despite the prevalent use of Information Communication Technologies (ICTs) in the lives of adolescents, we are only beginning to understand how the internet or cell phones are influencing adolescents' communication skills and social relationships. Research shows that adolescents use the internet to seek out opportunities to interact with school-based peers (Gross, Juvonen, & Gable, 2002), overcome shyness, and facilitate social relationships (Maczewski, 2002; Valkenburg, Schouten, & Peter, 2005). In conjunction with this, however, it also appears that adolescents use the internet as an arena for bullying (Li, 2007; Raskauskas & Stoltz, 2007). As cyberbullying, or internet aggression increase in prominence (e.g., Hinduja & Patchin, 2008; Ybarra & Mitchell, 2004), it becomes important to determine exactly what this form of aggression is, as well as how and why it manifests.

The construct of bullying/aggression that occurs online has yet to be properly defined. The lack of a clear definition prevents a full understanding of this construct and how it relates to developmental outcomes; a task that must be undertaken in order to accurately understand and address the social and emotional outcomes associated with this phenomenon. Indeed, there is little consensus about what to even call it, with terms like online aggression, cyberbullying, internet harassment, and electronic aggression used in the literature (Dooley, Pyzalski, & Cross, 2009; Kowalski, Limber, & Agatston, 2008; Smith, 2009). One approach to this lack of clarity has been to assume that online bullying functions in a manner similar to more traditional forms of bullying – that the nature of it, in essence, is similar, but that the venue is unique (Dooley et al., 2009). This practice has led policy makers and educators to apply a “one size fits all” approach to reducing aggressive incidents that occur online by using the same strategies they would for traditional bullying. Unfortunately, given the lack of evidence that offline and online forms of bullying are functionally similar, the efficacy of these strategies remains questionable. The current work begins to address this gap in the literature. Specifically, in a series of two studies, we first explore the utility of traditional measures

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of bullying for capturing online experiences, and then use these results to explore more sensitive ways of measuring it.

1.1. Offline bullying vs. cyberbullying

As noted, some researchers have supported the hypothesis that electronic media is simply another medium through which youth who already aggress offline, can now aggress online (Patterson, Dishion, & Yoerger, 2000; Werner & Crick, 2004; Werner, Bumpus, & Rock, 2010). However, burgeoning literature argues that online and offline aggression are not the same and that more research is warranted to properly examine the underlying differences (Dooley et al., 2009; Werner & Bumpus, 2010; Ybarra, Diener-West, & Leaf, 2007). Examining existing definitions of bullying (Olweus, 1991), different forms of bullying (Craig, Pepler, & Atlas, 2000; Salmivalli, Kaukiainen, & Lagerspetz, 2000; Underwood, 2003) as well as the different roles individuals play in a bullying situation (Macklem, 2003; Rigby, 2008; Salmivalli, Lagerspetz, Bjorkqvist, Osterman, & Kaukiainen, 1996) can provide some insight into where these differences might lie.

1.1.1. Definitional issues

The most common definition of bullying is based on Olweus's (1991, 1993) definition, which states that "...a person is being bullied when he or she is exposed, repeatedly and over time, to negative actions on the part of one or more other persons" (p. 9). Three characteristics are emphasized: (1) a power differential between those who bully and those who are victimized; (2) repeated harm over time; and (3) an intention to harm (Olweus, 1991, Pellegrini & Bartini, 2001; Smith & Boulton, 1990; Vaillancourt, Hymel, & McDougall, 2003), although spontaneous lay definitions of bullying by both educators (Hazler, Miller, Carney, & Green, 2001) and youth (Vaillancourt et al., 2008) do not typically recognize these components. It also remains unclear whether these characteristics are consistently present in online instances of bullying. Even if they are present, they may function in very different ways. For instance, physical bullying often involves a larger individual exerting his/her physical power over a smaller or weaker individual (Atlas & Pepler, 1998). In an online environment, however, physical size no longer holds power, as even the smallest and least physically powerful individual can engage in cyberbullying. Similar arguments have been made regarding the potential power of having high social status. Even the most unpopular, socially ostracized individuals can operate as a bully over the internet. The power differential that distinguishes bullying from other forms of aggression is still present in online bullying situations, but that the nature of this power is different. Those who are more technologically savvy may hold the power. More generally, Dooley and colleagues (2009) contend that power in an online environment is not based on the perpetrator's possession of power, but rather on the victim's lack of power.

Although some authors have argued that critical, single incident events can also constitute bullying (e.g., Arora, 1996; Randall, 1996), repetition over time is another distinguishing characteristic of bullying emphasized in the literature (Olweus, 1991). As was the case with power differentials, it is also unclear how this definitional aspect translates to online forms of aggression. We know that young people report being victimized online rather infrequently compared to offline bullying (Gradinger, Strohmeier, & Spiel, 2009); However, given the archival nature of the internet (i.e. content that is uploaded or posted on the internet is often available in perpetuity; Viegas, 2005), victims (and bullies) can repeatedly re-read, re-look at, or re-watch the aggravating incidents and 'relive' the experience. Moreover, with online bullying individuals are no longer restricted by time (Walther, 2007); while

offline bullying must occur in "real time", electronic aggression can be executed anywhere and at any time.

1.1.2. Is it just social aggression?

Bullying researchers tend to distinguish among three main forms of bullying: (1) physical bullying, (e.g. hitting, punching, kicking; Craig et al., 2000), (2) verbal bullying (e.g. yelling, cursing, name calling; Salmivalli et al., 2000), and (3) social bullying (e.g. excluding others, gossip and rumour spreading; Underwood, 2003). Initial hypothesizing about cyberbullying suggested that it was simply social bullying being expressed in a virtual way (Beran & Li, 2005; Li, 2007); However, there is evidence to suggest that the degree of visual anonymity afforded by an online environment provides a sense of privacy and protection, such that individuals feel comfortable and powerful saying things they would not normally say offline (Peter, Valkenburg, & Schouten, 2005; Ward & Tracey, 2004). As such, even if the nature of social bullying is highly consistent with cyberbullying (e.g., gossip, public humiliation, rumour spreading, etc.), there are particular characteristics associated with the medium used for cyberbullying that nullifies our understandings of who the perpetrators are likely to be.

1.1.3. Bully, victim, bystander

Previous work has demonstrated that individuals can play a variety of roles in a bullying situation (Salmivalli et al., 1996). However, most studies have distinguished among three main roles: bullies, victims, and bystanders (cf., witnesses; Macklem, 2003; Rigby, 2008). Research has found that the number of bystanders observing a bullying situation can be a source of power to the perpetrator (e.g., Twemlow, Fonagy, Sacco, & Hess, 2001). For example, in a schoolyard fight, bullies often report being 'egged on' by the crowd that has gathered to watch (Burns, Maycock, Cross, & Brown, 2008). It is unclear whether this transfer of power from bystander to bully occurs in an online setting, given that the number of witnesses in an online environment remains largely unknown, but can range from a few individuals to hundreds or even thousands.

Moreover, there may be a blurring of roles unique to cyberbullying. For example, if a person decides to share or post something that was initiated by somebody else, have they now switched from bystander to bully? Similarly, does the victim who retaliates (often in a rapid-fire fashion) after being persecuted online suddenly become a bully as well as a victim? It is not clear whether these online 'bully/victims' are similar to the bully/victims identified by more traditional forms of bullying, who tend to score less favorably on psychosocial measures and report the highest levels of problem behaviors (e.g., Haynie et al., 2001). Given the growing body of research that has identified the high number of bully/victims (e.g., individuals who are both the target and the perpetrator) involved in cyberbullying situation (Authors, submitted; Kowalski & Limber, 2007; Werner & Bumpus, 2010; Ybarra & Mitchell, 2004), and the low frequency of bully/victims in traditional bullying situations (Kaukiainen et al., 2002; Pellegrini, 2001), this is something that needs to be explored further.

In sum, it is clear that current research has not yet determined how online and offline bullying are related and/or distinct. One reason for this is the lack of a clear definition for cyberbullying and the absence of a well-accepted measure of the construct. The present study is a preliminary step toward exploring whether youth respond to questions about the role they play in online aggressive situations in the same way they do when it comes to traditional bullying. In a series of two studies, exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were used to explore whether cyberbullying/electronic aggression can be measured using the same types of items used for measuring traditional bullying.

2. Study I

The primary purpose of Study I was to determine whether on-line aggression was a unique construct, or whether it functioned similarly to traditional bullying constructs for adolescents. Accordingly, exploratory and confirmatory factor analyses were conducted to determine whether adolescents differentiated cyberbullying/victimization items from physical, verbal, and social bullying/victimization items. Based on the literature review above, which calls into question assumed similarities between traditional forms of bullying and cyberbullying, it was hypothesized that cyberbullying/victimization has its own unique factor structure that cannot be interpreted or examined in the same ways as offline bullying. In addition, this work questions whether cyberbullying is simply another venue for social bullying; in this vein, it was predicted that if cyberbullying is merely another arena for social bullying, then social and cyberbullying items would load together in the factor analyses.

2.1. Participants

Data for this study were drawn from a larger, district-wide effort to evaluate the social experiences of secondary school youth. Given the data were collected by and for schools, passive consent procedures were employed. Parents were informed of the study through email and newsletters and could request their child(ren) be withdrawn from participation. The initial sample included 19,551 participants, which represented approximately 80% of an entire school district's high school population in the Lower Mainland of British Columbia, including all students who were present on the date the survey was administered. After removing missing data using listwise deletion, the final sample included 17,551 participants (49% female) between grades 8 and 12 (ages 14–18). The participants were distributed equally across grade levels (ranging from 19.1% to 20.8%). The population was ethnically diverse, with 54% of participants being of East Asian descent, 19% being Caucasian, and 9% being of mixed ethnicity. The remaining students – who were of Aboriginal, African/Caribbean, South Asian, Latin American, and Middle Eastern – comprised approximately 2% each of the sample.

2.2. Measures

The “Safe Schools and Social Responsibility Survey for Secondary Students” asked adolescents to report on a broad range of social experiences, including school safety and belonging, adult and peer support, self-esteem, violence, drug and alcohol use, activity participation, social responsibility behavior, racial discrimination, sexual harassment, sexual orientation discrimination, and bullying. The present study examined differences in the prevalence of reported online vs. offline aggression, and considered only items tapping student reports of both bullying and victimization. Specifically, participants were asked to rate how often they had experience with “bullying and harassment” generally, as well as specific forms of “physical bullying”, “verbal bullying”, “social bullying” as a victim (i.e., “had this done to me”) and as a bully (i.e., “took part in doing this to others”). In addition, they were asked to rate how often they had experience with cyberbullying “at school” and “outside of school,” and “cyberbullying that caused problems at school” as both victim (i.e., “had this done to me”) and bully (i.e., “took part in doing this to others”). Following Vaillancourt and colleagues (2008), each form of bullying and victimization item was defined with examples in order to increase precision in measurement. Participants responded to all items on four-point Likert scales, ranging from “never” to “every week or

more”. This measure had high internal consistency ($\alpha = .91$). The majority of responses for each of the items are at the low-end (i.e. Never) of the scale. Specifically, a mean of 6% of participants took part in bullying others once a month or more, and a mean of 8% reported being victimized by some form of bullying about once a month or more.

2.3. Analysis and results

To evaluate the factor structure of student reports of different types of bullying, LISREL 8.54 was used to conduct an initial exploratory factor analysis (EFA) using 50% of the total sample ($n = 8697$) chosen at random. The EFA was applied to polychoric correlations in order to account for the ordinal nature of the data. The unweighted least squares (or MINRES in LISREL) method of extraction was used because it makes no assumption of multivariate normality and is recommended with the use of polychoric correlations (Joreskog & Sorbom, 1993). A Promax rotation strategy was chosen to allow for the factors to be correlated. The EFA was first run on all 14 items of the bullying and harassment portion of the survey which, as noted above, included three traditional forms of bullying (physical, verbal, social) and three cyberbullying items (in school, outside of school, outside of school but caused problems in school).

The polychoric correlations revealed that the items were highly correlated (i.e., $r > .7$). Three factors with eigenvalues greater than 1.0 (8.94, 1.55, and 1.26, respectively) emerged from the EFA. In addition, assessment of the reproduced correlations indicated that only 18% of the residuals were non-redundant and had absolute values greater than .05. When the observed correlations were subtracted from the reproduced correlations, 82% were near-zero, lending further support for the three-factor model as a good fit for the data. The three factors could be labeled as (a) cyberbullying/victimization, (b) traditional bullying, and (c) traditional victimization (see Table 1).

The rotated solution confirmed ‘very good’ to ‘excellent’ factor loadings for two of the three factors: traditional bullying and traditional victimization (see Table 1), based on Comrey and Lee's (1992) suggestion that loadings above .71 are considered excellent, .63 are very good, .55 are good, .45 are fair, and .32 are poor. The

Table 1

Unweighted least squares factor analysis pattern matrix for bullying and victimization items.

Item	Factor		
	1	2	3
<i>Cyberbullying and cybervictimization</i>			
Cyberbullying at school to me	.795		.304
Cyberbullying caused problems at school to me	.782		.346
Cyberbullying outside of school to me	.777		.327
Cyberbullying at school to others	.675	.521	
Cyberbullying caused problems at school to others	.651	.517	
Cyberbullying outside of school to others	.642	.508	
<i>Traditional bullying</i>			
Verbal bullying (name calling, teasing, threats) to others		.879	.207
Bullying and harassment to others		.763	.193
Physical bullying (hitting, shoving, kicking, etc.) to others		.764	
Social bullying (exclusion, rumours, gossip) to others		.629	
<i>Traditional victimization</i>			
Verbal bullying (name calling, teasing, threats) to me			.885
Bullying and harassment to me			.825
Social bullying (exclusion, rumours, gossip) to me			.657
Physical bullying (hitting, shoving, kicking, etc.) to me			.616

Note: Only factor loadings of .32 or greater are reported here as is consistent with reporting procedures for factor analyses (Tabachnick & Fidell, 2001). Eigenvalues: Factor 1 = 8.94, factor 2 = 1.55, factor 3 = 1.26.

remaining factor, however, included both cyberbullying and cybervictimization items; there did not appear to be the same distinction between bullying and victimization. Most of the items loaded strongly on the first extracted factor, with loadings in the very good to excellent range (.64 and above). However, strong to relatively strong crossloadings were also observed between the cyberbullying and traditional bullying items, and between the cybervictimization and traditional victimization items, respectively. Nevertheless, although cyberbullying demonstrated some links to traditional bullying, and cybervictimization demonstrated some links to traditional victimization, the stronger associations were observed between the cyberbullying and cybervictimization items.

These results demonstrate there are some discrepancies between online bullying/victimization and offline bullying/victimization, with the offline bullying items differentiating between bullying and victimization items, regardless of form, while online bullying and victimization items being considered similarly, as a single construct; albeit, one that is related to traditional forms of bullying and victimization (as indicated by the cross-loadings). Moreover, the finding that social aggression and cyberbullying did not load as a single factor lends support to the idea that they are two separate constructs and that cyberbullying is not simply social bullying manifested online.

To further evaluate the three factor model revealed by the EFA, confirmatory factor analysis (CFA), with traditional bullying, traditional victimization, and cyberbullying/victimization as factors, was performed on the remaining 50% of the sample ($n = 8854$). The CFA model was specified such that each item was allowed to load only on its respective factor; no crossloadings were permitted. The selected fit indices for the CFA were CFI = .99; $\chi^2 = 6853.126$, $p < .001$; RMSEA = .102; and SRMR = .092. Except for the CFI, these fit indices indicated rather poor fit (Browne & Cudeck, 1993).

2.4. Study I conclusions

Based on the results of Study I, it was concluded that the crossloadings observed in the EFA may have a strong impact on the fit of the three factor model. This demonstrates that the cybervictimization and cyberbullying items are *not* clearly distinguishable from each other, nor from the traditional bullying and victimization factors. That students clearly distinguished between bullies and victims for traditional bullying, but not for the cyberaggression items is especially noteworthy. One possible explanation for this pattern of response is that students are engaged in reciprocal banter whereby each participant is both the target and the perpetrator. This is consistent with other work in this area (Kowalski & Limber, 2007; Werner & Bumpus, 2010; Ybarra & Mitchell, 2004). However, it is also possible that the questionnaire items assessing cyberbullying and victimization were too general (e.g. *how often have you had experience with cyberbullying... outside of school?*) such that the 'cyber' aspect of the items superseded any distinction between victim and bully; thus, resulting in poor model fit. Study II addresses this limitation by asking more specific questions.

3. Study II

The results of Study I underscore the need to investigate electronic aggression more closely, and, when it comes to online aggression, it may be important to examine the *role* adolescents play, rather than the *form* of aggression (physical, verbal, social). Using the findings from Study I, and previous work on bullying as a guide, the questionnaire administered at Study I was modified for Study II in order to focus specifically on the *role* (bully, victim, witness) adolescents might identify with in an online aggressive

situation. Questions about witnessing were specifically included in this questionnaire to remain consistent with previous work on bullying that has identified at least three roles an individual might play in an aggressive situation (Macklem, 2003; Rigby, 2008; Salmivalli et al., 1996). Moreover, the number of witnesses in an online environment increases exponentially as compared to traditional offline settings; as such, it becomes important to examine this more closely. Based on the results of Study I and the modification of the questionnaire to focus on the role individuals might play in a cyberbullying situation, it was hypothesized that items would differentiate according to three roles: bully, victim, and witness.

3.1. Participants

Following receipt of ethics approval from both the University Behavioural Research Ethics Board and four school districts in southern British Columbia, 1487 elementary and high school students between the ages of 11 and 18 were invited to participate in a study of internet use. Students who received parental consent for participation in the study and who themselves agreed to participate completed the paper and pencil questionnaire *Social Responsibility on the Internet* during class time. This questionnaire was developed specifically for the purposes of this study in consultation with researchers with expertise in developmental psychology, socio-emotional learning, technology use, and measurement. The questionnaire took approximately 45 min to complete and was administered by the first author and research assistants.

In total, 733 elementary and high school students (62% female) participated in the study (49% participation rate). After removing missing data, the final sample included 675 participants (62% female). Grade 8 and grade 10 students each comprised 20% of the sample, while grades 6, 7, 9, 11 and 12 students comprised a total of 53% of the sample (approximately 10% per grade). In terms of ethnicity, 45% of the participants were of East Asian descent (e.g., Cambodian, Chinese, Japanese, Korean, Taiwanese, Vietnamese, Filipino), and 34% were of European descent. The remaining ethnic groups included Aboriginal, African/Caribbean, South Asian, Latin American, Middle Eastern, and mixed background; all of whom comprised approximately 2% of the sample. Student responses to a series of Yes/No questions about their access to internet and cell phone technologies indicated that the vast majority of the students (81%) had access to high speed internet, and approximately 60% of participants had their own cell phone.

3.2. Measures

In keeping with traditional bullying research and the strong cross-loadings observed for cyberbullying and cybervictimization items in Study I, the items of the revised measure were designed to have adolescents identify themselves according to *role* (bully, victim and/or witness). Participants were asked to respond to a series of nine questions related to the role they play in an online aggressive situation. Specifically, they were asked how often they had experience, as a victim ("done to me"), bully ("took part in doing it to others") and witness ("saw or heard about it") with (a) *mean things, rumours, or gossip being said through the internet websites, email, or text messaging* and (b) *how often they had experience with embarrassing pictures or video clips of yourself or people you know being sent or posted on the Internet*. Participants were also asked how often they had experience (c) *using the Internet or text messaging to send mean messages, spread rumours, or gossip about others?*, (d) *replying to mean messages about yourself using the internet or text messaging?* and (e) *receiving mean messages about somebody you know over the internet or text messaging*. Items were situated on a 3-point, Likert scale ranging from *Never* to *Every week or more*.

3.3. Analysis and results

As in Study I, an unweighted least squares EFA on polychoric correlations with promax rotation was used in Study II to determine the factor structure of the revised items. This initial EFA used 50% of the total sample ($n = 339$), chosen at random. Only two factors emerged (rather than the hypothesized three) with eigenvalues greater than one (4.75 and 1.20, respectively). The items seemed to load according to method of aggression (*modality*), rather than *role* (bully, victim, witness). Specifically, the factors could be described as (1) aggressive messaging and (2) posting embarrassing pictures online.

For both factors, the majority of items had factor loadings within the good to excellent range (see Table 2). However, cross-loadings were found for two items: “had mean things posted online about me” and “saw mean things posted about others online”. Upon examining these items it makes sense given that the word “post” is rather vague and could be interpreted as either mean messages or embarrassing pictures. In sum, the findings from the EFA indicated that student responses to inquiries about online aggression again did not load according to bully, victim, witness (*role*) as hypothesized, but by *modality*; similar to the finding from Study I, where role is less distinguishable in an online environment. To test this modality model, two CFA’s were run in follow-up.

The first CFA was conducted to test the two factor *modality model* that emerged from the EFA. This analysis was run on the remaining 50% of the sample ($n = 336$). Table 3 shows the size and location of the CFA factor loadings. The selected fit indices for this model were CFI = .99; $\chi^2 = 93.546$, $p < .001$; RMSEA = .088; and SRMR = .077, indicating mediocre fit (MacCallum, Browne, & Sugawara, 1996). The results of this analysis demonstrate that, although the measure asked specific questions about electronic aggression from the perspective of *role*, items loaded according to *modality*; when it was compared to traditional bullying. To test this further, a second CFA was run.

The second CFA was conducted using the same sample as the previous CFA ($n = 336$). For this analysis, however, items were fit to three factors: (1) bully, (2) victim, (3) witness. The fit indices obtained for this *role model* were CFI = .979; $\chi^2 = 152.969$, $p < .01$; RMSEA = .127; and SRMR = .102, indicating poor fit. Comparing the fit indices obtained from the two factor *modality model* with those obtained for the three factor *role model*, we concluded that the *modality model* is a better fit to the data.

Taken together, the results of Study I and Study II demonstrate important differences between online and offline aggression in the way they are conceptualized by students. When compared to offline aggressive modalities, online aggression items load less

Table 2
Study II exploratory factor analysis for bullying and victimization.

Item	Factor	
	1	2
<i>Aggressive messaging</i>		
Had mean things posted online about me	.502	.286
Posted mean things about others online	.618	
Saw mean things posted about others online	.396	.314
Sent mean messages about others online	.858	
Replied to mean messages about me online	.731	
Received mean messages about others online	.742	
<i>Embarrassing pictures</i>		
Had embarrassing pictures posted about me online		.792
Posted embarrassing pictures of others online		.758
Saw embarrassing pictures posted about others online		.906

Eigen values: Factor 1 = 4.75, factor 2 = 1.20.

Table 3
Study II confirmatory factor analysis for modality model.

Item	Factor	
	1	2
<i>Aggressive messaging</i>		
Had mean things posted online about me	.748	
Posted mean things about others online	.798	
Saw mean things posted about others online	.783	
Sent mean messages about others online	.773	
Replied to mean messages about me online	.756	
Received mean messages about others online	.689	
<i>Embarrassing pictures</i>		
Had embarrassing pictures posted about me online		.782
Posted embarrassing pictures of others online		.860
Saw embarrassing pictures posted about others online		.834

strongly according to *role*. As well, when examining the *role* associated with cyberbullying, items load according to *mode*. Based on the results of these two studies, it seems apparent that cyberbullying and traditional bullying are different constructs and require different approaches to measurement. Future measures of these constructs should be mindful of the unique characteristics of cyberbullying, where the roles of individuals are blurred, but where mode of aggression is more apparent.

4. Discussion

The goal of this research was to examine whether student reports of experiences with cyberbullying were similar to their reports of more traditional forms of interpersonal harassment. Results of Study I indicated that student responses to offline and online aggression questions differ significantly. Specifically, both the EFA and the CFA results revealed that adolescents interpreted items pertaining to traditional, offline aggression as either about bullying or victimization, with little distinction across the kind of bullying considered – physical, social, or verbal. For cyberbullying, however, the EFA and CFA results showed that students did not distinguish between the roles of bully and victim when it came to cyber-aggression.

In order to tease out the findings of Study I, Study II explored in more detail student experiences with particular forms of online aggression. Consistent with Study I, student reports of involvement in online bullying were similar to their reports of online victimization. Specifically, student reports of online aggression varied across the *methods* used to aggress online, but not across the roles involved in aggression (bully, victim, witness). That is, the constructs that emerged from the factor analyses distinguished among the modes of aggression, not the role of the people involved in the aggressive acts. Specifically, in Study II, both the EFA and the CFA demonstrated that online aggression varied across two broad forms of online aggression: aggressive messaging, and commenting/posting embarrassing photos/videos.

One possible explanation for the finding that reports of online victimization were not distinguishable from perpetration in an online environment is that, in an online venue, victims are much more comfortable and capable of retaliating to aggressive acts, increasing the likelihood of victims also engaging in bullying (authors, submitted; Kowalski & Limber, 2007; Werner & Bumpus, 2010; Ybarra & Mitchell, 2004). For example, if an individual posted something mean to or about another person on somebody’s Facebook page, and the initial “target” responded aggressively in return, both individuals have essentially engaged in bullying behavior and have also been the victim of such behavior. Moreover, it is possible that the initial event and response could rapidly expand into a series of bullying/victimization incidents between

the two individuals, making it difficult to clearly differentiate who the victim is and who the bully is. As the online retaliatory interactions continue, it is likely to draw in friends and bystanders from both sides, who might also begin to engage in aggressive online behavior, further blurring the role distinctions between bully and victim.

A similar situation would be far less likely to occur in the schoolyard due to the nature of face-to-face bullying situations which typically involve a clear power imbalance (e.g. vocal, physically larger in stature, domineering; Atlas & Pepler, 1998); thus, making it unlikely that victims would immediately respond in kind to the perpetrator, regardless of whether that power differential is due to social or physical characteristics (e.g., shyness, unpopularity, small stature). If retaliation did take place, it would likely occur at a different time, when the original target was more prepared, and it would likely be thought of as a separate incident, making it easier to distinguish between the bully and the victim in offline situations. The increased likelihood of retaliating online as compared to offline is consistent with research showing that individuals are more comfortable saying things online than offline due to the perceived protectiveness of the screen (Peter et al., 2005; Ward & Tracey, 2004). Moreover, these findings are consistent with that of traditional bullying situations, where the aggressive act is usually planned and intentional (Crick & Dodge, 1996; Dodge & Coie, 1987; Dodge, Coie, Pettit, & Price, 1990), whereas, for online bullying, adolescents report the primary motivations for engaging in aggressive behavior is spontaneous retaliation (Authors, submitted).

Additional work is necessary to elucidate more fully adolescents' perceptions of online aggression/victimization and their motivations for engaging in these aggressive acts. Cyber-aggression appears to be more reciprocal in nature than traditional bullying. For example, the evidence from Study I and Study II suggests that individuals recognize they are oftentimes both a bully and a victim in the same aggressive incident.

4.1. Limitations

There are several limitations to this study that should be discussed. First, the sample size for Study 1 was very large ($N = 17,551$), thus inflating the statistical power of the analyses, and making it easier to achieve statistical significance. At the same time, the sample represents a significant portion (approximately 80%) of secondary students across 18 schools in a large and ethnically diverse urban district in a westernized country. Nevertheless, given that research on cyberbullying is in its infancy, it is critical that research be conducted to replicate these findings.

In order to understand this phenomenon, future work in this area needs to collect longitudinal data in order to parse out between-person effects from within-person effects. It would also be meaningful to employ observational techniques of cyberbullying in order to assess the true nature of this form of aggression.

4.2. Conclusion

The research reported herein has demonstrated that electronic aggression is different from traditional forms of bullying. Specifically, youth differentiate items according to *mode* of electronic aggression, rather than *role*. These findings emphasize the need to further investigate the concept of cyberbullying and cybervictimization as unique forms of interpersonal aggression. This distinction allows for a better understanding of these phenomena and how they manifest in the lives of young people. Our results highlight the importance of ensuring that intervention and prevention attempts go beyond the schoolyard, and extrapolate to the electronic environment. Given that technology is becoming

increasingly prevalent in the lives of youth, it is imperative that empirical research continues to elucidate the conceptualization and operationalization of electronic aggression. This study provides an initial framework for examining electronic aggression more systematically and thus contributes to the healthy development of youth in electronic age.

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