EMPIRICAL RESEARCH

Is Cyberbullying Worse than Traditional Bullying? Examining the Differential Roles of Medium, Publicity, and Anonymity for the Perceived Severity of Bullying

Fabio Sticca · Sonja Perren

Abstract Cyberbullying, a modern form of bullying performed using electronic forms of contact (e.g., SMS, MMS, Facebook, YouTube), has been considered as being worse than traditional bullying in its consequences for the victim. This difference was mainly attributed to some specific aspect that are believed to distinguish cyberbullying from traditional bullying: an increased potential for a large audience, an increased potential for anonymous bullying, lower levels of direct feedback, decreased time and space limits, and lower levels of supervision. The present studies investigated the relative importance of medium (traditional vs. cyber), publicity (public vs. private), and bully's anonymity (anonymous vs. not anonymous) for the perceived severity of hypothetical bullying scenarios among a sample of Swiss seventh- and eight-graders (study 1: 49 % female, mean age = 13.7; study 2: 49 % female, mean age = 14.2). Participants ranked a set of hypothetical bullying scenarios from the most severe one to the least severe one. The scenarios were experimentally manipulated based on the aspect of medium and publicity (study 1), and medium and anonymity (study 2). Results showed that public scenarios were perceived as worse than private ones, and that anonymous scenarios were perceived as worse than not anonymous ones. Cyber scenarios generally were perceived as worse than traditional ones, although effect sizes were found to be small. These results suggest that the role of medium is secondary to the role of publicity and anonymity when it comes to evaluating bullying severity. Therefore, cyberbullying is not a priori perceived as worse than traditional bullying. Implications of the results for cyberbullying prevention and intervention are discussed.

Keywords Cyberbullying · Traditional bullying · Perceived severity · Publicity · Anonymity · Experimental

Introduction

The way people communicate has been subjected to radical changes during the last decades and is still in constant evolution. New hardware and software continuously are being developed and optimized allowing people to exchange information in an easier, more entertaining, and faster fashion. In Switzerland, almost all adolescents own a mobile phone and have Internet access at home. Furthermore, three out of four Swiss adolescents have access to the Internet from their own room (Willemse et al. 2010). Youth growing up in the middle of this technological evolution see tools such as the Internet and mobile phones as critical to their social life (Kowalski et al. 2008). As a result, these tools have become an essential part of daily life and social interaction for today's youth.

Although most of the communication through these new technologies is of positive or neutral valence (Mitchell et al. 2003), there are also some undesirable side effects. One of these undesirable effects is known as *cyberbullying*. To date, many different scientific definitions of

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cyberbullying can be found in the literature (for review, see Tokunaga 2010). One of these definitions is based on the definition of *traditional bullying*, which is defined as an aggressive behavior that is repeatedly and intentionally carried out against a defenseless victim (Olweus 1993). Thus, cyberbullying is defined as an aggressive behavior that is repeatedly and intentionally carried out against a defenseless victim *using electronic forms of contact* (e.g., cell phones, Internet; see Menesini et al. 2012; Smith et al. 2008).

According to the definition of cyberbullying presented above, the difference between traditional bullying and cyberbullying is the use of electronic forms of contact (i.e., the medium). However, this difference comes along with some specific aspects of cyberbullying that derive from the use of electronic media: an increased potential to reach a large audience (publicity), an increased potential for anonymity of the bully (anonymity), a decreased level of direct feedback between the bully and the victim, decreased time and space limits (Slonje and Smith 2008), and lower levels of supervision (Patchin and Hinduja 2006). Due to these aspects, cyberbullying is believed to pose an even greater threat to the psychosocial adjustment of victims than traditional forms of bullying (Campbell 2005; Dooley et al. 2009; Tokunaga 2010). The present studies examine the differential role of medium, publicity and anonymity for the perceived severity of bullying.

Consequences of Cyberbullying for the Victim

Experiences of cyberbullying are associated with a number of negative outcomes. Results from different studies show that victims of cyberbullying report lower levels of academic performance, lower family relationship quality, a number of psychosocial difficulties, and affective disorders (Machmutow et al. 2012; Tokunaga 2010). However, these outcomes are very similar to those reported by victims of traditional bullying (Li et al. 2012; Tokunaga 2010). Therefore, it is still unknown if there are any differences between cyberbullying and traditional bullying regarding the negative outcomes for the victims. Further, it is unknown if possible differences are due to the medium per se or to other specific aspects of cyberbullying (e.g., publicity and anonymity).

The exploration of potential differences between cyberbullying and traditional bullying is associated with a number of methodical issues. First, there is a high degree of overlap between involvement in cyberbullying and involvement in traditional bullying and only few individuals experience cyberbullying only (e.g., Juvonen and Gross 2008; Perren and Gutzwiller-Helfenfinger 2012; Smith 2011; Sticca et al. in press). Second, there are so many different forms of bullying that it is almost

impossible to assess them all and to compare them systematically. Lastly, the aspects that are believed to distinguish cyberbullying from traditional bullying are hard to implement in a standard cyberbullying and traditional bullying scale in such a way that makes systematic comparisons possible. These issues call for a tool that allows us to assess the severity of different forms of bullying and to compare them systematically. Moreover, this tool should be able to account simultaneously for a number of aspects that may influence the severity of the bullying experience, such as the medium used to bully, the publicity, and the bully's anonymity. One possible way to do this is to assess the *perceived severity of hypothetical bullying scenarios* that are manipulated experimentally based on different aspects (e.g., medium, publicity, and anonymity).

Perceived Severity of Bullying

The perceived severity of bullying has received poor attention in past research on traditional bullying and cyberbullying. Nonetheless, this topic is of high relevance. Victims often do not report traditional bullying and cyberbullying experiences to an adult at school or to their parents mainly because they think that adults lack the specific knowledge to help them, and because they fear restrictions on the access to their devices (Bauman 2009; Blake and Louw 2010; Juvonen and Gross 2008; Mishna et al. 2009); instead, they seek support from their peers. This support, however, may not be received if the experience of the victim is not perceived as severe enough to deserve attention (Slonje and Smith 2008). As a consequence, victims of bullying may not get the help they need to cope with their experiences and feel misunderstood by those in their environment, resulting in a higher potential for negative outcomes. Accordingly, it is important to know how adolescents perceive different forms of bullying in order to inform peers, parents, and teaching staff where help is needed most. In fact, a central element of many interventions against all forms of bullying is to raise awareness of the seriousness and the consequences of different forms of bullying among youngsters, and to encourage them to stand up for the victim and not to reinforce the bully (e.g., Salmivalli et al. 2010).

Further, knowledge about the severity of different forms of bullying may be used to raise awareness of how seemingly harmless bullying acts (i.e., acts that are made for fun) can have huge impacts on victims. This awareness may, in turn, reduce the likelihood of bullying, especially of severe forms, since potential bullies would be more conscientious about consequences of their behavior (Perren and Gutzwiller-Helfenfinger 2012). In sum, we need to know if and how cyberbullying differs from traditional bullying in order to address it through prevention and

intervention (Li et al. 2012), and knowing about the severity of different forms of bullying is an important element of such knowledge.

Until now, no study has examined if cyberbullying is perceived as worse than traditional bullying in its consequences for the victim using an experimental approach that systematically combined more than one aspect at a time (e.g., medium and publicity). In particular, the *differential* role of medium, publicity and anonymity has not yet been examined. The aim of the present study is to compare the perceived severity of different cyberbullying and traditional bullying scenarios with a specific focus on the role of medium (cyber vs. traditional), publicity (public vs. private), and anonymity (anonymous vs. not anonymous bully).

The Role of Medium in the Evaluation of Bullying

To our knowledge, the perceived severity of cyberbullying versus traditional bullying has been investigated in two studies. Smith et al. (2008) asked 533 students aged 11–16 years to compare different forms of cyberbullying to traditional bullying and to state which one they perceive as worse. Picture and video clip bullying was perceived as worse than traditional bullying, while email, instant messaging, website, and chat room bullying were perceived as comparable to traditional bullying. Moreover, phone call and text message bullying were perceived as less severe than traditional bullying. A study by Slonje and Smith (2008) found similar results except for email bullying being evaluated as less severe than traditional bullying and phone call bullying being as severe as traditional bullying. In sum, it is not yet known if cyberbullying is perceived as worse than traditional bullying, although the role of the medium seems to be secondary to the bullying form. The authors discussed that picture and video clip bullying may be the top scorer on perceived severity because the content is very salient and because these media are able to reach a larger audience with comparably low effort. Therefore, the central aspect may be the publicity instead of the medium. Nevertheless, the forms of bullying that were found to be worst in both studies were cyber forms.

The Role of Publicity in the Evaluation of Bullying

Another aspect that plays a central role in the evaluation of bullying is the publicity of the act (i.e., public vs. private bullying). Slonje and Smith (2008), and Nocentini et al. (2010) found that public forms of bullying (e.g., phone calls) are perceived as more severe than private forms of bullying. These results suggest that the more people acknowledge the bullying, the higher the severity of the consequences for the victim (Smith and Slonje 2010).

However, to date no study has examined experimentally the role of publicity while at the same time taking into account the role of medium. Therefore, we do not know about the relative weight of the two dimensions and how they interact.

The Role of Anonymity in the Evaluation of Bullying

A further aspect of the evaluation of bullying that has not yet been studied systematically is the role of the bully's anonymity (i.e., anonymous bully vs. not anonymous bully). In particular, no study has yet examined the effect of anonymity on the perceived consequences for the victim, while also taking the medium into account. Nonetheless, qualitative studies on cyberbullying have found that anonymity increases the level of experienced fear, since potentially anyone could be the bully, including friends or other trusted people (Badiuk 2006; Mishna et al. 2009). Further, anonymity also increases the level of frustration, insecurity, fear, and powerlessness (Dooley et al. 2009; Nocentini et al. 2010; Slonje and Smith 2008; Smith et al. 2008; Vandebosch and Van Cleemput 2008). A contrasting point of view is that an anonymous text may have been addressed to someone else, and therefore be received by chance (Slonje and Smith 2008), which makes it less severe. Furthermore, there is evidence that being bullied by someone you know and trust may be even more severe than by someone you do not know (Nocentini et al. 2010). In sum, evidence on the role of anonymity for the evaluation of bullying is mixed.

Current Studies and Hypotheses

The present article reports results from two studies. The aim of the two studies was to investigate the role of medium and publicity (study 1), and medium and anonymity (study 2) for the perceived severity of hypothetical bullying scenarios. This aim was addressed using an experimental approach that simultaneously considered more than one aspect at a time.

The differential roles of medium and publicity are going to be examined in study 1. Based on results from previous studies, we hypothesize that cyber scenarios are perceived as worse than traditional ones and that public scenarios are perceived as worse than private ones. Moreover we expect that the effect size of medium is smaller than the effect size of publicity. The interaction between medium and publicity also is going to be explored.

The differential roles of medium and anonymity are going to be examined in study 2. Based on results from previous studies, we hypothesize that cyber scenarios are perceived as worse than traditional ones and that anonymous scenarios are perceived as worse than not anonymous

ones. Moreover, we expect that the effect size of medium is smaller than the effect size of anonymity. The interaction between medium and anonymity also is going to be explored.

Method

Procedure

This article presents data from a longitudinal study that was carried out in Switzerland (netTEEN). Two studies were conducted. Data for study 1 was collected during the second assessment (May 2011), while data for study 2 was collected during the third assessment (November/December 2011).

In line with Swiss legislation, permission to carry out the study was obtained from the respective school councils. Furthermore, parents were informed about the study and were asked to inform the teachers if they did not want their children to participate (passive consent). The parents of four adolescents declined to participate in both studies. Finally, the participants were informed about the survey's procedure and goal, and were given the opportunity to refrain from participation without any negative consequences (informed oral consent). Students who did not want to participate were offered another activity during the respective school hour. Five participants declined to participate in both studies.

An electronic self-report questionnaire was administered in classrooms on netbooks. A personal login and password were distributed for students who were absent during the classroom assessment. These students completed an online version of the questionnaire a few days later at home or in school.

Sample

The participants belonged to 43 (45 in study 2) seventh-grade (eight-grade in study 2) classrooms from 12 secondary schools. The schools were randomly selected from 3 Swiss cantons, which in turn were selected from the 26 Swiss cantons. The criterion of inclusion of a canton was the nature of its school system. In Switzerland there are integrative and non-integrative school systems. In integrative school systems all students of the same grade attend the same classrooms, while in non-integrative school systems students with different performance levels are divided into higher and lower performance classrooms. In order to avoid effects due to the performance level of the class, only integrative school systems were considered for the selection.

In study 1, a total of 838 Swiss adolescents participated (49 % females, mean age = 13.7, SD = 0.63). In study 2, two more classrooms were included (due to changes in the structure of the classrooms in the transition from grade seven to eight) and a total of 881 adolescents participated (49 % females, mean age = 14.2, SD = 0.61). Note that most adolescents who participated in study 1 also participated in study 2.

Measures

To disentangle the impact of medium and publicity (study 1), and of medium and anonymity (study 2), an experimental design was used. A set of hypothetical bullying scenarios was developed in written from (see Appendices 1–4). Each scenario described an aggressive act carried out by a hypothetical schoolmate against another hypothetical schoolmate. The gender of both actors was matched to the participant's gender. The perceived severity was assessed using the ranking tool, which is described in detail below.

Study 1 Ranking Tool

The hypothetical bullying scenarios were manipulated based on the aspects of medium (cyber vs. traditional), publicity (public vs. private), and aggression form (exclusion vs. humiliation). A total of eight ($2 \times 2 \times 2$) scenarios resulted from the combination of these aspects (see Appendices 1, 2). In a first step, these eight scenarios were divided into two blocks of four scenarios. The aggression form was used to divide the two blocks. Therefore, block one included four exclusion scenarios (Appendix 1) and block two included four humiliation scenarios (Appendix 2). In a second step, each block was divided into a stem containing the aggression form (e.g., *Someone from your school gives a popular birthday party this evening. One of your schoolmates reads that he is not invited. He reads it…*), and four leafs containing the aspects of medium and publicity (e.g., *…on a letter he found in his personal closet*). The four leafs were labeled using a keyword from the scenario (e.g., email). Within each of the two blocks, the participants were asked to put the four leafs into a rank order going from the *most severe* one to the *least severe* one. Participants were also instructed not to use the same leaf twice.

Study 2 Ranking Tool

The hypothetical bullying scenarios were manipulated based on the aspects of *medium* (cyber vs. traditional), *anonymity* (not anonymous vs. anonymous), and *aggression form* (threatening vs. humiliation). Again, a total of eight ($2 \times 2 \times 2$) scenarios resulted from the combination

of these aspects (Appendices 3, 4). As in study one, the eight scenarios were divided into two blocks. The aggression form was again used to split the eight scenarios into two blocks (i.e., block one *threat* vs. block two *humiliation*; see Appendices 3, 4). The two blocks were further divided into one stem (containing the aggression form) and four leafs (containing the aspects of medium and anonymity). The four leafs were labeled using a keyword from the scenario (e.g., desk). In line with study 1, the participants were asked to put the four leafs into a rank order going from the *most severe* one to the *least severe* one within each of the two blocks. Participants were also instructed not to use the same leaf twice.

As a result, every participant ended up with two severity rankings of four elements each in study 1 and with two severity rankings of four elements each in study 2.

Analysis Strategy

Study 1

IBM SPSS 19 was used to analyze the data. Data was prepared for the analysis using the following procedure: In a first step, data was recoded in such a way that the severity rankings would turn into severity scores for the four leafs. The leaf selected as being the most severe was given a score of 4. The leaf in the second position was given a score of 3. The leaf in the third position was given a score of 2. Lastly, the leaf selected as being the least severe was given a score of 1. This was done within each of the two blocks. In a second step, data was restructured to obtain one *perceived severity* variable and eight observations of perceived severity for every participant (four for each of the two blocks). In a third step, dummy variables for medium, publicity, and aggression form were created. Those participants who used the same leaf twice were given missing values for the whole block. The analyses were split by aggression form in order to compare the results of the two blocks.

Finally, data was analyzed using general estimating equations (GEE). Perceived severity was used as an ordinal dependent variable. Medium and publicity were used as independent variables. Interactions between the independent variables were also computed in order to examine if the difference between cyber and traditional scenarios is bigger, equal or smaller in private than in public scenarios. To obtain a complete picture of the conditional main effects (i.e., main effect of one interaction variable when the other interaction variable equals zero), all models were run again with reversed codings (i.e., to obtain the conditional main effect when the other variable equals 1). This resulted in four conditional main effects and one interaction effect for each model. For simplicity, these are all shown in the same table

together with the respective effect sizes (Omega ω). Effect sizes were computed to account for the large sample and to compare the magnitude of the effects.

Study 2

The same procedure of study 1 was applied to data from study 2. Herein, the ordinal dependent variable was perceived severity, while the independent variables were medium and anonymity. The analyses were split by aggression form.

Results

Results of Study 1

Descriptive Results

Tables 1 and 2 show the means and standard deviations of the four scenarios in the exclusion and the humiliation block, respectively (see also Figs. 1, 2). These results suggest that public scenarios ware perceived as more severe than private ones, while cyberbullying scenarios seemed to be perceived as comparable to traditional bullying scenarios. GEE-analyses were computed to test for significance of these differences and for possible interactions. Results for the exclusion block are presented first, followed by the results for the humiliation block.
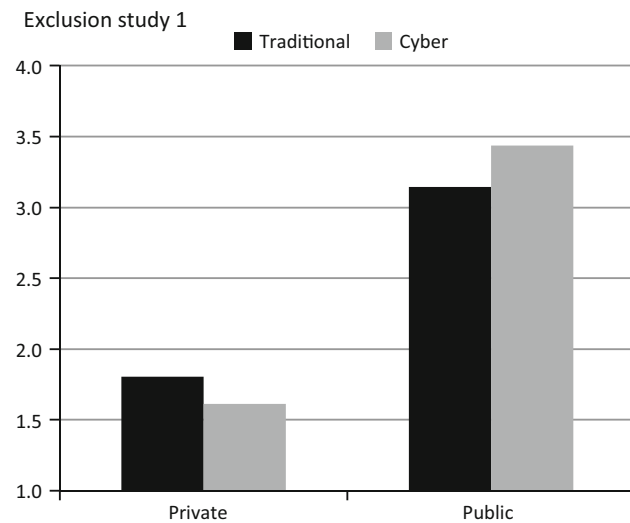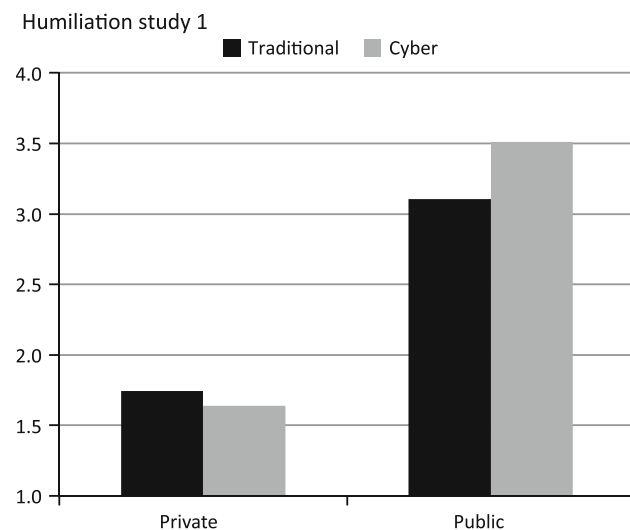
Multivariate Results for the Exclusion Block

Table 3 shows the results of general estimating equations (GEE). Regarding the role of the medium, results showed that there was no significant difference between the cyber and the traditional scenario in private scenarios. In contrast, cyber scenarios were perceived as worse than traditional ones in public scenarios, although the effect size was found to be small. Regarding the role of publicity, results showed that public scenarios were perceived as worse than private ones in both traditional and cyber scenarios, with large effect sizes. Furthermore, the interaction between medium and publicity was found to be significant: The difference between public and private scenarios was stronger in cyber

Table 1 Means and SDs of the severity scores for exclusion in study 1 (n = 780)

	Private	Public	Total medium
Traditional	1.81 (0.80)	3.14 (0.73)	2.48 (1.02)
Cyber	1.61 (0.76)	3.44 (0.84)	2.53 (1.21)
Total publicity	1.71 (0.79)	3.29 (0.80)	2.50 (1.12)

Table 2 Means and SDs of the severity scores for humiliation in study 1 (n = 728)

	Private	Public	Total medium
Traditional	1.74 (0.74)	3.11 (0.74)	2.43 (1.01)
Cyber	1.64 (0.77)	3.51 (0.78)	2.57 (1.22)
Total publicity	1.69 (0.76)	3.31 (0.78)	2.50 (1.12)

Fig. 1 Mean severity for exclusion (study 1)

Fig. 2 Mean severity for humiliation (study 1)

scenarios than in traditional ones. However, the interaction was found to have a small effect size.

Multivariate Results for the Humiliation Block

Table 4 shows the results of general estimating equations (GEE). These results were found to be almost identical to

Table 3 Results of the GEE analysis for exclusion in study 1 (N = 780)

	B	SE B	Wald χ^2	p value	ω
Medium[a] (in private scenarios)	−0.115	0.067	2.931	.087	.06
Medium[a] (in public scenarios)	0.168	0.067	6.261	.012	.09
Publicity[b] (in traditional scenarios)	1.904	0.075	651.595	.001	.91
Publicity[b] (in cyber scenarios)	2.186	0.095	533.428	.001	.83
Medium[a],* publicity[b]	0.283	0.079	12.678	.001	.13

*Interaction; [a]Coding for medium (0 = traditional, 1 = cyber); [b] Coding for publicity (0 = private, 1 = public)

Table 4 Results of the GEE analysis for humiliation in study 1 (N = 728)

	B	SE B	Wald χ^2	p value	ω
Medium[a] (in private scenarios)	0.062	0.069	0.788	.375	.03
Medium[a] (in public scenarios)	0.348	0.066	27.815	.001	.20
Publicity[b] (in traditional scenarios)	1.974	0.081	599.045	.001	.91
Publicity[b] (in cyber scenarios)	2.261	0.098	530.149	.001	.85
Medium[a],* Publicity[b]	0.286	0.076	14.344	.001	.14

*Interaction; [a]Coding for medium (0 = traditional, 1 = cyber); [b] Coding for publicity (0 = private, 1 = public)

those found in the exclusion block. For the medium, results showed that there was no significant difference between the cyber and the traditional scenario in private scenarios. In contrast, cyber scenarios were perceived as more severe than traditional ones in public scenarios, although the effect size was found to be small. For publicity, results showed that public scenarios were perceived as worse than private ones in both traditional and cyber scenarios, with very large effect sizes. Furthermore, the interaction between medium and publicity was found to be significant: The difference between public and private scenarios was stronger in cyber scenarios as opposed to traditional ones. However, the interaction was found to have a small effect size.

Results of Study 2

Descriptive Results

Tables 5 and 6 show the means and standard deviations for the threatening and the humiliation block, respectively (see

Table 5 Means and SDs of the severity scores for threatening in study 2 (n = 775)

	Not anonymous	Anonymous	Total medium
Traditional	2.14 (1.14)	2.56 (1.05)	2.35 (1.11)
Cyber	2.31 (1.06)	2.98 (1.04)	2.65 (1.10)
Total anonymity	2.23 (1.10)	2.77 (1.06)	2.50 (1.12)

Table 6 Means and SDs of the severity scores for humiliation in study 2 (n = 782)

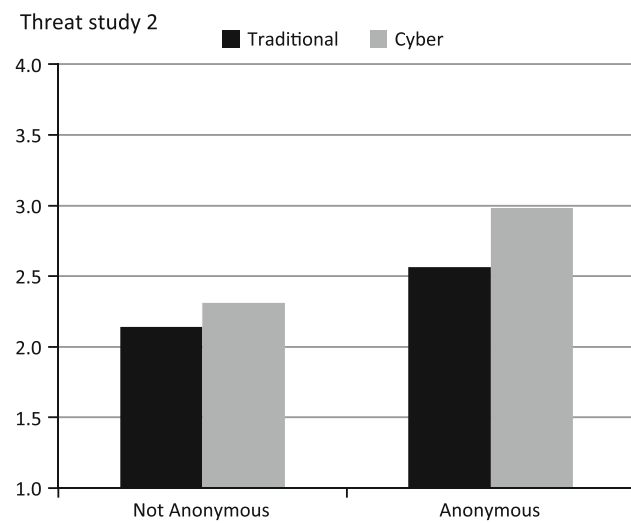|	Not anonymous	Anonymous	Total medium
Traditional	2.11 (1.15)	2.54 (1.04)	2.32 (1.12)
Cyber	2.33 (1.04)	3.04 (1.02)	2.68 (1.09)
Total anonymity	2.22 (1.10)	2.79 (1.06)	2.50 (1.12)

Fig. 3 Mean severity for threatening (study 2)
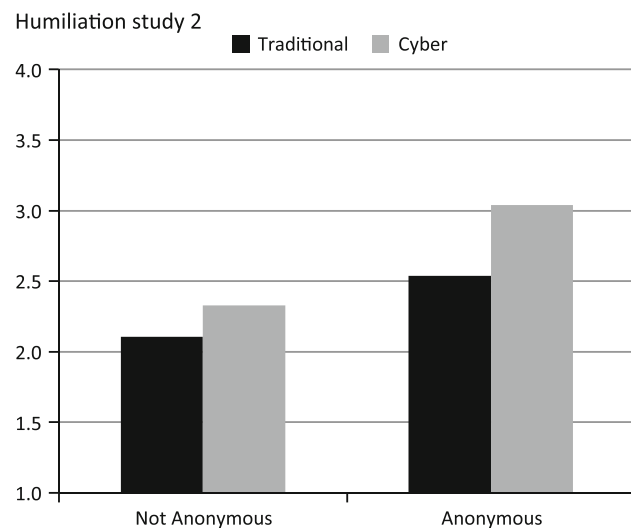

Fig. 4 Mean severity for humiliation (study 2)

also Figs. 3, 4). These results suggest that anonymous scenarios were perceived as worse than not anonymous ones, and that cyberbullying scenarios were perceived as worse than traditional bullying scenarios. Again, GEE-analyses were computed to test for significance of these differences and for possible interactions. Results for the threatening block are presented first, followed by the results for the humiliation block.

Multivariate Results of the Threatening Block

Table 7 shows the results of general estimating equations (GEE). Regarding the role of the medium, results showed that cyber scenarios were perceived as worse than traditional scenarios in both anonymous and not anonymous scenarios, with small effect sizes. Regarding the role of anonymity, results showed that anonymous scenarios were perceived as worse than not anonymous ones in both traditional and cyber scenarios, with moderate effect sizes. Furthermore, the interaction between medium and anonymity was found to be significant: The difference between anonymous and not anonymous scenarios was stronger in cyber scenarios than in traditional ones. However, the interaction was found to have a small effect size.

Multivariate Results of the Humiliation Block

Table 8 shows the results of general estimating equations (GEE). Again, these results were found to be very similar to those found in the threatening block. For the role of the medium, results showed that cyber scenarios were perceived as worse than traditional scenarios in both anonymous and not anonymous scenarios, with small effect sizes. Regarding the role of anonymity, results showed that anonymous scenarios were perceived as worse than not anonymous ones in both traditional and cyber scenarios, with moderate effect sizes. Furthermore, the interaction between medium and anonymity was found to be significant: The difference between anonymous and not anonymous scenarios was stronger in cyber scenarios than in traditional ones. However, the interaction was found to have a small effect size.

Discussion

Cyberbullying has been discussed as being worse than traditional bullying in its consequences for the victim (Campbell 2005; Dooley et al. 2009; Tokunaga 2010). The aim of the present studies was to investigate the role of medium, publicity, and anonymity for the perceived severity of hypothetical bullying scenarios. Accordingly, the hypothetical bullying scenarios were manipulated

Table 7 Results of the GEE analysis for threatening in study 2 (N = 782)

	B	SE B	Wald χ^2	*p* value	ω
Medium[a] (in not anonymous scenarios)	0.162	0.059	7.579	.006	.10
Medium[a] (in anonymous scenarios)	0.387	0.060	41.619	.001	.23
Anonymity[b] (in traditional scenarios)	0.447	0.054	68.778	.001	.30
Anonymity[b] (in cyber scenarios)	0.673	0.051	170.711	.001	.47
Medium[a],* anonymity[b]	0.225	0.061	13.719	.001	.13

*Interaction; [a] Coding for medium (0 = traditional, 1 = cyber); [b] Coding for anonymity (0 = not anonymous, 1 = anonymous)

Table 8 Results of the GEE analysis for humiliation in study 2 (N = 775)

	B	SE B	Wald χ^2	*p* value	ω
Medium[a] (in not anonymous scenarios)	0.242	0.059	16.824	.001	.15
Medium[a] (in anonymous scenarios)	0.479	0.060	63.107	.001	.29
Anonymity[b] (in traditional scenarios)	0.463	0.056	67.472	.001	.30
Anonymity[b] (in cyber scenarios)	0.700	0.054	169.878	.001	.47
Medium[a],* anonymity[b]	0.237	0.062	14.864	.001	.14

*Interaction; [a] Coding for medium (0 = traditional, 1 = cyber); [b] Coding for anonymity (0 = not anonymous, 1 = anonymous)

based on the aspects of medium (cyber vs. traditional) and publicity (public vs. private) in study 1, and based on medium (cyber vs. traditional) and anonymity (anonymous vs. not anonymous) in study 2. In both studies, participants were given two blocks of four scenarios each (see Appendices 1–4) and were asked to put the four scenarios within each block into a rank order going from the most severe one to the least severe one. Our findings showed that when it comes to choosing what is worse, adolescents consider publicity and anonymity as primary aspects, while the medium plays a secondary role. Therefore, cyberbullying is not a priori perceived as worse than traditional bullying.

The Role of Publicity

Public bullying was perceived as much worse than private bullying in both traditional and cyberbullying. This is in line with our hypothesis and with results of other studies (Nocentini et al. 2010; Slonje and Smith 2008; Smith and Slonje 2010) that also found that the aspect of publicity is

more important than the medium itself and that public bullying is perceived as worse than private bullying. Our results extend the present literature and show that the differential role of publicity is more important than the role of medium, which is also in line with our hypotheses.

Public cyberbullying was found to be the scenario that adolescents perceive as most severe, closely followed by public traditional bullying. This may indicate that what adolescents fear most are public attacks against their social status. Public bullying has the potential to cause a large amount of damage to one's image because one's whole environment potentially may be aware of what happened and why. Furthermore, the publicity of the act also means that information may spread very quickly since many people witnessed it and may tell someone else or spread the content in other ways, thereby increasing the potential for harm (Kowalski and Limber 2007; Nocentini et al. 2010). Accordingly, it is not surprising that adolescents are aware that public cyberbullying is a very severe form of aggression that has the potential to cause a large amount of damage in little time.

Another aspect that may increase the perceived severity of public bullying is the controllability of the situation. In public interaction there is less controllability than in private interaction: If one is privately offended, nobody else will know and maybe forward the information; if it is public, then the whole classroom (or maybe even the whole school, neighborhood, etc.) knows what happened, which drastically reduces the means to effectively prevent information diffusion. This is especially true if information is already available online. Lack of control over negative events is associated with feelings of helplessness, helpless reactions, and helpless coping strategies (Asarnow et al. 1987; Spears et al. 2009), which are in turn associated with depressive symptoms (Machmutow et al. 2012; Seiffge-Krenke and Klessinger 2000). Therefore, lack of control in public bullying may contribute to explaining why cyberbullying experiences are cross-sectionally and longitudinally associated with depressive symptoms over and above experiences of traditional bullying (Machmutow et al. 2012).

The Role of Anonymity

Anonymous bullying was perceived as worse than not anonymous bullying in both traditional bullying and cyberbullying, which is in line with our hypotheses. This confirms a number of previous results (Badiuk 2006; Dooley et al. 2009; Nocentini et al. 2010; Slonje and Smith 2008, Smith et al. 2008; Vandebosch and Van Cleemput 2008) that discussed anonymous forms of bullying as causing more negative emotions such as frustration, insecurity, and fear (Li et al. 2012). Our results also showed

that anonymity is more important than the medium for the perception of bullying severity, which is also in line with our hypotheses. This extends the present literature and shows that anonymity is perceived as more important than the medium itself.

Anonymous cyberbullying was found to be the form of bullying rated as most severe. This means that being threatened or humiliated by an unknown bully that uses electronic forms of contact is especially severe. One reason may be that in such a case potentially anyone could be the bully, while in traditional bullying if the bullying is anonymous the circle of potential bullies is much smaller. Another possible explanation may be that negative feelings arising from the anonymity are enhanced by the medium since such messages can potentially be received anywhere and at any time (Slonje and Smith 2008), therefore inducing a state of constant fear and helplessness. In sum, anonymity reduces the perceived control over the situation, especially in the context of cyberbullying. This may lead to increased feelings of helplessness, resulting in a higher risk for depressive symptoms (Asarnow et al. 1987; Seiffge-Krenke and Klessinger 2000). Therefore, besides publicity, anonymity may explain associations between cyberbullying experiences and depressive symptoms (Machmutow et al. 2012; Roth and Cohen 1986).

The Role of the Medium

In general, cyberbullying was perceived as worse than traditional bullying, although effect sizes were small and, most importantly, smaller than the effect size of the respective other aspect (i.e., publicity and anonymity). There are several possible reasons why cyberbullying was generally perceived as *slightly* worse than traditional bullying, independently from other aspects such as publicity and anonymity. First, since adolescents rate the Internet and mobile phones as critical to their social life (Kowalski et al. 2008), it may be that cyberbullying experiences ruin the pleasure of using such tools. Thus, cyberbullying not only causes harm by the bullying act per se, but also indirectly reduces the positive feelings associated with the use of electronic devices. Second, adolescents fear that adults lack the specific knowledge to help them in cases of cyberbullying (Bauman 2009). Accordingly, reporting to an adult might only lead to further complications. Last but not least, adolescents fear restrictions on the access to their devices, which are essential to them (Kowalski et al. 2008), if they report to have experienced cyberbullying (Bauman 2009; Blake and Louw 2010; Juvonen and Gross 2008; Mishna et al. 2009). To sum up, there are many possible reasons why cyberbullying might a priori be perceived as worse than traditional bullying. However, these reasons are not linked directly to the bullying act, but to other circumstances that arise from the cyberbullying experience.

The results regarding the role of medium differed between study 1 and 2. In study 1, the medium was found to be relevant in public bullying only, although effect sizes were small. A possible explanation may be that the control over the situation is especially low in the cyber context: While destroying a piece of paper and deleting an email are similarly easy, in the public context there is a huge difference. For instance, if there is an embarrassing picture posted on the blackboard it should be feasible to remove it, but if it is posted on Facebook then removal is much harder. Furthermore, public information will spread faster in cyberspace than in the real world, while private remains private independently from the medium. Therefore, the control over the situation is much lower in public cyberbullying as compared to public traditional bullying. Another, more methodical, explanation is the use of the terms *blackboard* versus *Facebook* in the scenarios (see Appendices 1, 2). It may be that Facebook is a priori perceived as worse than blackboard. A possible reason is that Facebook is perceived as a virtual place where all friends are, while the classroom may include only few friends. Accordingly, ratings may be biased in this direction, although we added *and all classmates can see it* in both public scenarios of study 1 in order to control for this bias. In contrast to the results of study 1, the medium was found to be relevant in both traditional and cyberbullying in study 2, although effect sizes were rather small. This might be due to differences in the content of the scenarios. Single acts of aggression were described in study 1, while repeated acts were described in study 2. Therefore, the medium may be more relevant when aggressive acts are suffered repeatedly: Repeated cyberbullying is worse than repeated traditional bullying. This suggests that the reduced time and space constrains of cyberbullying increase the perceived severity (Slonje and Smith 2008), since there is no place to hide from cyberbullying, thus again reducing controllability. In sum, the differential role of the medium is quite small and may be due to other aspects bound to the medium, rather than the medium per se.

Implications for Cyberbullying Prevention and Intervention

Our findings have some important implications for bullying prevention and intervention. The present results suggest that special attention needs to be given to public and anonymous bullying, especially in cyberbullying. A promising way to address public bullying is to work with potential bystanders: although the publicity (i.e., the number of bystanders) was found to increase the perceived severity of bullying, bystanders are also a central resource for support.

Bystanders can turn into defenders of the victim (Salmivalli et al. 2010). It is central to bolster the awareness of the seriousness of bullying, and also to encourage children and adolescents to act against it by reporting to a trusted adult, actively defending the victim, and especially by not reinforcing the bully (Salmivalli et al. 2011; Sainio et al. 2011). This also applies to the cyber context, since the potential for a large audience also means a potential for many defenders: When problematic content is posted on a website the nature of the reactions of bystanders may influence the effects of the act on the victim (e.g., make it more or less embarrassing or threatening) and also on the bully (e.g., make it more or less attractive to repeat such behaviors or to keep the material online). Observational studies showed that bystanders support victims only in 19 % of aggressive acts (Craig and Pepler 1997; Craig et al. 2000; Hawkins et al. 2001). Hence, defending behavior needs to be encouraged and trained since it can help reduce the negative consequences of bullying for the victim there.

Besides addressing public bullying, anonymous bullying also needs special attention. In order to combat anonymous bullying, it is necessary to put effort into the identification of bullies. Therefore, victims, parents and teaching staff need to be given the legal tools and support to identify the bully both in the real world an in cyberspace. Although anonymous cyberbullying was found to be perceived as worst, it is at the same time the scenario where identification of the bully is most likely because phone numbers and IP-addresses can easily be identified. Adolescents need to be aware that anonymity in cyberspace is only virtually given: For victims, it may increase perceived control and thus reduce feelings of helplessness and fear. Bullies would maybe think twice about their behavior, since almost every action leaves some kind of traces (e.g., IP-address) that can be tracked down easily. Therefore, awareness about the nonexistence of anonymity in cyberspace plays a double role in the prevention of cyberbullying and is also very important in traditional bullying.

On a more general note, our results point to the need of informing adolescents, teachers and parents about the differences in perceived severity and actual severity of different forms of bullying (Li et al. 2012). It is especially important to increase the awareness of the severity of public and anonymous cyberbullying. This awareness might have a number of effects: Adolescents might become more cautious about their online behavior (e.g., posting private information) and potential bullies would maybe think twice before, for instance, posting compromising material online. Moreover, peers, parents, and teachers might be better informed and more self-confident about what steps to take if they witness cyberbullying and about how to prevent it in the first place (Perren and Gutzwiller-Helfenfinger 2012; Salmivalli et al. 2010).

Strengths, Limitations and Conclusions

The present studies had a number of strengths. First, the sample among which the hypotheses were tested was large. Second, the participants' age matched the age range in which the prevalence of cyberbullying experiences was found to be highest (Tokunaga 2010). Third, these are the first studies that examined the perceived severity of hypothetical bullying scenarios using an experimental approach that simultaneously considered more than one aspect at a time. Lastly, the ranking tool developed for these studies proved to be a very useful and strong tool that can be used to assess the perceived severity of bullying scenarios in a very simple and intuitive way. The development of this tool enabled us to systematically explore the differential roles of the medium, publicity, and anonymity for the perceived severity of bullying scenarios. Therefore, our study design allowed us to make inferences about the relative importance of these aspects and their interactions, thereby expanding the knowledge about perceived bullying severity.

However, the present studies were not without limitations. First, the scenarios of study 1 and 2 only encompassed few types of cyberbullying and bullying (i.e., exclusion, humiliation, and threatening). Other forms of bullying should be included in future studies in order to obtain a more comprehensive picture of the differential roles of different aspects for the evaluations of bullying severity. Second, the role on individual and contextual variables, such as gender, age, and personal involvement in bullying, were not taken into account. However, we found that the results were very consistent for different forms of aggression and therefore also may be consistent with regard to individual and contextual variables. Third, the use of hypothetical scenarios may limit the external validity of our results. Fourth, in order to avoid highly complex scenarios, the role of publicity and of anonymity had to be analyzed in two separate studies. Last but not least, the focus of the present article is on perceived severity as opposed to the actual severity (e.g., internalizing symptoms of victims of different forms of bullying). Nonetheless, perceived severity can be considered as a good indicator of how severe bullying experiences are, since many adolescents have had first hand experiences or may have been confronted indirectly with the described situations. Therefore, their ratings can be considered as expert ratings of bullying severity.

Taken together, our findings show that, when it comes to choosing what is more severe, adolescents rate the publicity and the anonymity as central and the medium as peripheral aspects. Therefore, cyberbullying is not a priori perceived as worse than traditional bullying. Instead, bullying is perceived as worst if it is public (as opposed to

private) and if it is anonymous (as opposed to not anonymous). This is especially marked in the case of cyberbullying, since in cyberbullying the potential for reaching large audiences (e.g., on Facebook or other social networking sites) and anonymous bullying is much higher. Thus, the control over the situation is much lower, which may be a core aspect of the evaluation of bullying severity.

Appendix 1 Block exclusion used in study 1

Stem	Someone from your school gives a popular birthday party this evening. One of your schoolmates reads that he is not invited. He reads it…
"Closet"	… on a letter he found in his personal closet
"Email"	… in a personal email
"Blackboard"	… on the blackboard, where all classmates can see it
"Facebook"	… on a Facebook site, where all classmates can see it

Appendix 2 Block humiliation used in study 1

Stem	One of your schoolmates reads something very offensive about him. He reads it…
"Closet"	… on a letter he found in his personal closet
"Email"	… in a personal email
"Blackboard"	… on the blackboard, where all classmates can see it
"Facebook"	… on a Facebook site, where all classmates can see it

Appendix 3 Block threatening used in study 2

Stem	Since few days one of your schoolmates finds threatening messages…
"Cell phone"	… on his cell phone and he does **not** know who sent them
"Email"	… on his email account and he knows **exactly** who sent them
"Closet"	… in his closet and he does **not** know who sent them
"Desk"	… under his desk and he knows **exactly** who sent them

Appendix 4 Block humiliation used in study 2

Stem	Since few days one of your schoolmates finds offensive messages…
"Cell phone"	… on his cell phone and he does **not** know who sent them
"Email"	… on his email account and he knows **exactly** who sent them
"Closet"	… in his closet and he does **not** know who sent them
"Desk"	… under his desk and he knows **exactly** who sent them

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