

## **Coping with Cyberbullying: Differences Between Victims, Bully-victims and Children not Involved in Bullying**

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### **ABSTRACT**

This study investigated the relationship between the use of coping strategies to deal with daily stressors in general ( $n=325$ ) and the use of coping strategies to deal with cyberbullying in particular ( $n=88$ ) among children aged 11 and 12 years. Additionally, it investigated the impact of coping strategies on depression and health in victims of cyberbullying ( $n=88$ ). The results showed that victims differed significantly from bully-victims (i.e. victims that also bully) and from children not involved in cyberbullying, in that they use certain emotion-focused coping strategies for daily stressors in general more than others. Additionally, this study investigated among victims of cyberbullying the relation between coping strategies in daily life, cyberspecific coping, depressive feelings and health complaints. Coping through emotional expression, avoidance and depressive coping in daily life will lead to more cyberspecific depressive coping when confronted with cyberbullying. This in turn will lead to more depressive feelings and/or health complaints for victims of cyberbullying. These results stress the importance of teaching children how to stand up for themselves and employ effective coping strategies to deal with stress in daily life in general and to deal with cyberbullying in particular. Copyright © 2012 John Wiley & Sons, Ltd.

*Key words:* coping strategies; cyberbullying; depression; health complaints; daily stress; antisocial behaviour

The Internet is an important medium used by children and adolescents to keep in contact with one other. According to the EU Kids Online survey, conducted among a random stratified sample of 25 142 children aged 9–16 years, 93% of children and adolescents use the Internet at least weekly and 60% daily (Livingstone, Haddon, Gorzog, & Olafsson, 2011). For the majority of these children and adolescents, social media such as chat rooms,

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Facebook and instant messengers are critical tools in the maintenance of their social life (Kowalski, Limber, & Agatston, 2008). These tools have numerous benefits but are not free of disadvantages. In fact, among the EU Kids Online study participant, 15–20% reported feeling distressed, uncomfortable or threatened by or through the Internet and/or social media (Livingstone et al., 2011). This is not unsurprisingly. The Internet is a powerful weapon for antisocial behaviour such as sending hate mail or threats, spreading rumours and sexual and racial harassment. This behaviour is frequent with about 20% of European teens online reporting having been harassed through the Internet (Livingstone et al., 2011).

One form of antisocial behaviour on the Internet is cyberbullying. Cyberbullying can be defined as an aggressive, intentional act carried out by a group or individual, using electronic forms of contact, repeatedly and over time, against a victim who cannot easily defend him or herself (Smith et al., 2008). Approximately 2–14% of European children and adolescents online have experienced bullying online (Livingstone et al., 2011). The most frequent manifestations of cyberbullying are name calling, rumour spreading and abusive comments on instant messengers, in chat rooms and through email for victims 11–13 years old (Dehue, Bolman, & Völlink, 2008; Price & Dalgleish, 2010) and on social network sites for victims aged 13 years and older (Price & Dalgleish, 2010).

There is convincing evidence that being cyberbullied has a significant impact on one's well-being. Both victims and bully-victims (i.e. adolescents that bully and have been bullied) report feeling depressed, hurt, lonely, insecure, worried, hopeless, embarrassed, threatened, anxious, frustrated, angry, socially inept and stressed more non-victims. They also report lower self-esteem and more interpersonal, behavioural and physical problems (Baker & Tanrikulu, 2010; Beran & Li, 2007; Breguet, 2007; Didden et al., 2009; Hoff & Mitchell, 2009; Katzer, Fetchenhauer, & Belschak, 2009; Mishna, McLuckie, & Saini, 2009; Patchin & Hinduja, 2006; Raskauskas, 2010; Tokunaga, 2010; Topcu, Erdur-Baker, & Çapa-Aydin, 2008; Vandebosch, van Cleemput, Mortelmans, & Walrave, 2006; Wolak, Mitchell, & Finkelhor, 2007; Ybarra, Mitchell, Wolak, & Finkelhor, 2006). Smith et al. (2008) found that cyberbullying using pictures/video clips and phone calls have more impact on the victim than traditional forms of bullying. Cyberbullying can have such a detrimental impact on children's well-being that some consider committing suicide and others actually do commit suicide (Patchin & Hinduja, 2006).

Evidently, the negative impact of cyberbullying on the mental and physical health of children and adolescents is substantial. This impact can, however, be mitigated, at least to some extent, by the application of beneficial coping strategies (Machmutow, Perren, Sticca, & Alsaker, 2012; Perren et al., 2012). Coping can be defined as the cognitive and behavioural efforts employed to reduce, master or tolerate internal and external demands that are consequences of stressful events (Lazarus & Folkman, 1984). In order to cope effectively with stressful events, one requires several discrete emotion-based developmental tasks such as recognising danger and frustration tolerance. Lazarus and Folkman (1987) postulate that coping has two main functions: to change the actual terms of the troubled person-environmental relationship (problem-focused coping) and to regulate emotional distress (emotion-focused or cognitive coping).

According to Lazarus and Folkman (1987), an event is not harmful, threatening or challenging itself; it is the evaluation of an event that provides the meaning. Individuals

evaluate how important the situation is for their well-being. For example, they may perceive and evaluate an event as a challenge, as harmful or as a serious threat. This cognitive motivational evaluation process is called the primary appraisal (Lazarus & Folkman, 1987). The primary appraisal process has been shown to influence the intensity of the experienced emotions such that when a situation is highly relevant to one's well-being, it elicits a more intense emotional response (Smith & Kirby, 2009). In a secondary cognitive appraisal process, individuals form beliefs about the power they have to change the situation. In general, individuals tend to use emotion-focused coping when they believe that they can do little to change the stressful situation or when resources are limited. In contrast, when individuals think they have enough resources or when they perceive the situation to be controllable, problem-focused coping is more likely (Lazarus & Folkman, 1984).

In the context of cyberbullying, it is likely that non-victims of cyberbullying perceive cyberbullying as something that is changeable and thus would expect to apply problem-solving coping strategies such as social support seeking. Victims and bully-victims, however, are probably more likely to evaluate cyberbullying as less changeable. They may feel that they have no choice but to accept the situation, which would result in application of more emotion-focused coping, which can take form as avoidance, escape, anger, feeling helpless or feeling depressed. Also, given previous research that individuals tend to first utilise problem-focused coping and then, when the situation appears unchangeable, emotion-focused coping (Olafssen & Johansdottir, 2004; Zapf & Gross, 2001), it is likely that the longer one experiences cyberbullying, the more likely they are to employ emotion-focused coping strategies.

Lazarus and Folkman (1987), in their Transactional Model of Stress, also outline how coping strategies can mediate the relationship between, on the one hand, a stressful experience such as cyberbullying and psychological well-being and physical health, on the other hand. As a rule, individuals that employ problem-focused coping strategies adapt better to stressful situations than individuals that use passive emotion-focused coping strategies (Lazarus & Folkman, 1987). At the same time, Lazarus (1993) emphasises that one must consider the adequacy of a coping strategy within the context that it is applied. With respect to cyberbullying, trying to solve the problem is likely more advantageous than reacting by denying and avoiding the problem, withdrawing from social situations, blaming oneself or accepting cyberbullying as just part of one's life.

The importance of exploring the coping strategies employed by victims of cyberbullying and their mediating impact on psychological well-being and health is derived from comparable research on traditional bullying that has demonstrated that victims who try to tackle the problem directly by, for example, doing things differently so the bullying does not occur again (problem-focused coping) experience less health complaints than victims who seek to avoid the stressor by, for example, trying to forget about what happened or acting as if the bullying never occurred (emotion-focused coping) (Burton, Stice, & Seeley, 2004; Cassidy & Taylor, 2005; Hunter, Mora-Merchan, & Ortega, 2004; Smith, Shu, & Madsen, 2001). Lodge and Frydenberg (2007), in their study on cyberbullying among adolescent girls aged 11–17 years, found that girls who use apprehensive (i.e. excessive worry, tension reduction, and self-blame) or avoidant (i.e. ignoring it, keeping it from others, and not seeking help) coping strategies, thus strategies that are emotion-focused, experience poorer well-being.

Lazarus and Folkman (1987) further contend that if coping strategies have an effect of mental and physical well-being, then they have a substantial degree of stability over

occasions and time. This is supported by Riebel, Jäger, and Fischer (2009), who found the same coping strategies as a response on different forms of cyberbullying. Their principal component analyses revealed that victims used social/technical coping (e.g. I address the problem with the school), aggressive coping (e.g. I threaten to beat up the bully), cognitive coping (e.g. I wonder why the bully does that) and helpless/avoidant coping (e.g. I don't know what to do).

Interestingly, Bolman, Eppingbroek, and Völlink (2012) found, in their study with victims of cyberbullying, that emotion-focused coping is associated with more health complaints and more depression, whereas the use of problem-focused coping is not linked to depression nor to health complaints. This study also showed no association between the use of emotion-focused or problem-focused coping to deal with stressful situations in daily life (general coping) and depression or health complaints. Perhaps, victims who tend to use emotion-focused coping in daily life also tend to use emotion-focused coping when faced with cyberbullying and this, in turn, affects their mental and physical health well-being. This implies the absence of a direct effect of general coping strategies on mental and physical health and suggests that, in victims of cyberbullying, the impact of coping in general on psychological and physical well-being is fully mediated by the coping strategies used to deal with cyberbullying in particular.

In this study, we investigate, in adolescents, both copings in general, thus coping as applied to stressful situations in daily life and coping as it pertains specifically to cyberbullying. We first explore whether boys and girls are equally represented among victims of cyberbullying and bully-victims and then investigate whether victims, bully-victims and children not involved in bullying as a victim or perpetrator vary with regard to their use of coping strategies. We hypothesise that victims and bully-victims use more general emotion-focused coping strategies than children not involved in bullying, who tend to use more problem-focused coping strategies in general (H1). We also hypothesise that general coping strategies are positively correlated with similar cyberbullying-specific coping strategies. As such, we expect that adolescents who tend to use problem-focused coping strategies in general also use problem-focused coping strategies to deal with cyberbullying and that adolescents that tend to use emotion-focused coping strategies in general also use emotion-focused coping to deal with cyberbullying (H2). Further, we hypothesise that, in victims of cyberbullying, general emotion-focused coping indirectly results in more depression (H3) and physical health complaints (H4) through the application of emotion-focused coping strategies to deal with cyberbullying.

## METHOD

### *Participants, procedure and design*

A cross-sectional mail-out survey was completed by 325 year seven students enrolled in three state schools in South England city. Participants were aged 11 ( $n = 163$ ; 50.2%) or 12 years ( $n = 162$ ; 49.8%) and slightly more girls (53%) than boys (47.7%) participated.

In order to recruit participants, we contacted the school board and/or management of all secondary state schools in South England city ( $n = 21$ ) by letter and asked them to participate. The letter included a short description of the study, its aim and the importance of participation. A week after the letter was sent, we phoned the schools and followed up. This yielded a cooperation rate of 15%. Most schools declining participation mentioned

already that they were participating in a number of research projects as their reason for not wanting to be part of this study. Those schools that agreed to participate subsequently received the surveys along with instructions for both the participants and their teachers (i.e. how to supervise the completion of the surveys in the classroom). In the teacher's instruction, we explicitly asked them to apply due care in acquiring the data because children can become very upset about cyberbullying and to remind their pupils that the survey is anonymous, that their participation is voluntarily and that there are no wrong answers. Prior to distribution, the survey was pre-tested with 17 members of the target population (who were subsequently excluded from the study) on clarity, completeness and correctness. This study was approved by the Ethics Committee at the Open University of the Netherlands' School of Psychology.

### Measures

*Cyberbullying.* Victimization of cyberbullying was assessed by four items from Smith, Mahdavi, Carvalho, and Tippett's (2006) Cyberbullying Questionnaire. These were 'have you (been) cyberbullied by mobile phone in the past couple of months? (nasty text messages sent to you, nasty mobile phone pictures and video clips sent to you or others, or nasty or silent phone calls)' and 'have you (been) cyberbullied through the internet in the past couple of months? (abusive emails or bullying on websites, in chat rooms, or through messages on instant messaging services such as MSN Messenger, Yahoo Messenger or ICQ). Items were scored on a 4-point scale as follows: (i) I have not (been) cyberbullied; (ii) it has only happened once or twice; (iii) several times; and (iv) very often. Scores on the two items were subsequently summed and a higher overall score was considered indicative of greater cyberbullying.

*Coping strategies.* Both coping strategies applied in general and coping strategies used specifically to deal with cyberbullying were assessed. The former were measured using a validated version of the Utrecht Coping List for Adolescents (UCL-A; Bijstra, Jackson, & Bosma, 1994; Schreurs, Van de Tellegen, & Brosschot, 1993) that contains 44 items distributed across seven subscales: (i) avoidance coping (e.g. 'I'll try to avoid the problem as much as I can', eight items); (ii) optimistic coping (e.g. 'I say to myself that it's not as bad as it seems', five items); (iii) coping through emotional expression (e.g. 'I show that I am angry about the person who is causing the problem', three items); (iv) depressive coping (e.g. 'I am going to sit somewhere on my own', seven items); (v) coping by seeking social support (e.g. 'I share my worries with somebody', six items); (vi) palliative coping (e.g. 'I go out to try to forget my worries for a while and do something else', eight items); and (vii) coping through confrontation (e.g. 'I look at the problem from different sides', seven items). Five of the seven subscales measure passive coping (i.e. avoidance coping, optimistic coping, coping through emotional expression, depressive coping and palliative coping) and the remaining two measure active coping (i.e. coping by seeking social support and coping through confrontation). For all items, the participants were asked to indicate how they generally react to problem situations and for each of the 47 items, how frequently they use that particular approach to problem situations: rarely or never (i); sometimes (ii); often (iii); or very often (iv). A higher score on a subscale is indicative of a greater tendency to use that particular form of coping in

general. The UCL-A is a frequently used measure of coping and has a good reliability and validity (Evers, Van Vliet-Mulder, & Groot, 2000).

To measure coping with cyberbullying in particular, we adapted the UCL-A such that the problem of cyberbullying was specified in the items (e.g. 'I pretend the cyberbullying didn't happen' to measure cyberbullying-specific avoidance coping or 'I show that I am angry about the person who is cyberbullying me' to measure cyberbullying-specific coping through expression of emotions). This scale was, prior to data acquisition, evaluated for appropriateness by two experts in cyberbullying and by the adolescents that took part in the pre-test ( $n = 17$ ). In line with the UCL-A, our cyberbullying-specific scale includes five subscales measuring passive coping [i.e. avoidance coping (three items), optimistic coping (three items), coping through emotional expression (five items), depressive coping (five items) and palliative coping (two items)] and two subscales that measure active coping [i.e. coping by seeking social support (three items) and coping through confrontation (three items)]. An additional subscale was added to measure aggressive coping (two items). For each of the 26 items, the participants were asked to indicate if and how often they dealt with cyberbullying as described by the item on a 4-point scale: (i) rarely or never; (ii) sometimes; (iii) often; and (iv) very often. A higher score on a subscale was considered indicative of a greater tendency to use that particular form of coping to deal with cyberbullying. The internal validity of the subscales was verified by principal component analyses (see data analyses).

*Depression.* Depression was assessed using the short version of the Children's Depression Inventory (Kovacs, 2004), which comprises 10 items. An example of an item is 'sometimes I am sad; I am often sad; I am always sad'. Each answer indicates the absence of depressive symptom (0), a mild depressive symptom (1) and a clear depressive symptom (2). A higher sum score is considered indicative of more depressive symptoms.

*Health complaints.* Health complaints were measured using an English version of the short Questionnaire on Experienced Health Complaints (VOEG, Joosten & Drop, 1987). This is a checklist that measures the presence of psychological or physical health complaints by asking the participants whether or not they suffered from a particular health complaint in the past couple of months. The original version of the VOEG comprises 21 dichotomous items. Given the age of our study population and sample, we removed an item measuring 'tightness of the chest' along with two comparable questions about stomach complaints. Scores for the remaining 18 items were summed and a higher score was considered indicative of more health complaints. An example of an item is 'during the past couple of months did you have any of the following complaints: headache'. (yes or no).

*Demographic variables.* In addition to the aforementioned, age and gender were assessed. Cronbach's alphas, the number of items per scale, the mean scores and the standard deviations for all of the aforementioned scales are shown in Table 1.

### Data analyses

A principal component analysis (PCA) with orthogonal rotation (Varimax) was first conducted on the 26 items contained in our cyberbullying-specific coping list.

The PCA verified the assumed structure of eight scales among the 26 items contained in the cyberbullying-specific coping list. The Kayser–Meyer–Olkin measure verified the

Table 1. Scales and their Cronbach's alpha

Scale	Items	$\alpha$	$M$	$SD$
Cyberbullying	2	.68	2.6	1.2
Avoidance coping	8	.59	15.79	3.6
Optimistic coping	5	.55	10.02	2.8
Coping through emotional expression	3	.64	6.39	6.4
Depressive coping	7	.65	12.50	3.6
Coping by seeking social support	6	.79	12.80	4.1
Palliative coping	8	.64	18.56	4.4
Coping through confrontation	7	.63	13.46	3.5
Depression	10	.82	5.6	3.9
Health complaints	18	.85	6.5	4.3

sampling adequacy for the analysis,  $KMO = .77$ , which is good (see Field, 2009). Bartlett's test of sphericity,  $X^2(300) = 982.74$ ,  $p = .000$ , indicated that correlations between items were sufficiently large for PCA. Seven components had Eigenvalues over Kaiser's criterion of 1. However, the screen plot showed inflections that justified retaining three components that together explained 48% of the variance. Factor loadings after rotation (see Table 2) suggest the same three components: (i) one that represents a depressive/emotional expression coping style; (ii) one that represents an avoidance/palliative coping style; and (iii) one that represents coping through social support seeking. These three subscales were thus constructed and included in the hierarchical multiple regression and mediation analyses.

Subsequently, chi-square analyses were used to determine possible gender differences in the victimisation of cyberbullying. ANOVA were conducted to determine whether victims, bully-victims and children not involved in cyberbullying use different coping strategies. Pearson correlations were performed to examine relationships between general and cyberbullying-specific coping strategies. Further, two hierarchical multiple regression analyses were conducted among victims of cyberbullying for the dependent variables depression ( $n = 78$ ) and health complaints ( $n = 80$ ). Mediation analyses were then conducted in accordance with Preacher and Hayes (2008) who use the distribution of the product to determine the importance of the direct effect (versus the total effect) and bootstrapping resembling procedures (1000 iterations; 95% bias corrected).

## RESULTS

### *Gender differences in cyberbullying*

Comparisons of the observed and expected numbers of adolescents that had been cyberbullied at least once in the months prior to the study (victims), adolescents that were both victims and perpetrators of cyberbullying in the months prior to the study (bully-victims) and adolescents that were neither victims or bullies (non involved adolescents), separated by gender, revealed that, in this sample, the percentage of girls that had been victims or bully-victims of cyberbullying is higher than the percentage of boys,  $\chi^2(4, n = 304) = 22.5$ ,  $p = .000$ .

Table 2. Summary of explorative factor analysis results for the cyberbullying-specific coping questionnaire ( $n=90$ )

Item	Rotated factor loadings		
	Depressive/emotional coping	Seeking social support	Avoidance/palliative coping
I get upset when I have been cyberbullied.	.83		
I am very afraid that this will happen again.	.79		
I don't want to go to school anymore.	.79		
I wish that I could stay in my bed for the whole day.	.77		
I feel very upset and I think that I am worthless.	.76		
I think that it always happens to me and I feel powerless.	.76		
I cry.	.75		
I can't think of anything other than being bullied and why they did it to me.	.74		
I don't do anything about it.	.61		
I let the bullying just happen to me	.58		
I get angry about the bullying.	.56		
I beg them to stop.	.53		
I think it's just a game with the computer or telephone; it doesn't hurt me personally.	-.44		
I accept it even if I don't like it.			.77
I ignore the cyberbullies.			.76
I think the bullies have nothing better to do.			.49
I ask an adult (teacher, parents) for help.		.77	
I ask friends for help.		.76	
I feel the need to talk about the bullying with somebody I trust.		.72	
Eigenvalues	7.24	2.59	2.11
% of variance	28.98	10.34	8.45
$\alpha$	.91	.76	.57

### *Differences in general coping strategies*

The ANOVA revealed that the three groups (victims, bully-victims and adolescents not involved in cyberbullying) differ significantly with respect to three general coping strategies, namely, expressing emotions,  $F(2, 294)=4.76, p=.009$ , depressive coping,  $F(2, 294)=15.96, p=.000$  and palliative coping,  $F(2, 294)=5.24, p=.006$ . Post hoc analyses (see Table 3) showed that bully-victims tend to express more emotions (e.g. anger and annoyance) when confronted with stress in daily life than adolescents not involved in cyberbullying ( $p=.011$ ), that victims of cyberbullying use depressive coping more than adolescents not involved in cyberbullying ( $p=.000$ ) and that bully-victims use less palliative coping than both victims ( $p=.007$ ) and adolescents not involved in cyberbullying ( $p=.008$ ). This suggests that bully-victims are less inclined to seek distraction when

Table 3. Mean scores and standard deviations for coping strategies

	Not involved	Victims	Bully-victims
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
Avoidance coping	16.2 (3.9) <sub>a</sub>	16.4 (3.7) <sub>a</sub>	15.7 (3.5) <sub>a</sub>
Optimistic coping	9.9 (2.8) <sub>a</sub>	10.4 (2.9) <sub>a</sub>	9.1 (2.1) <sub>a</sub>
Coping through emotional expression	6.1 (2.4) <sub>a</sub>	6.6 (2.2) <sub>ab</sub>	7.5 (2.5) <sub>b</sub>
Depressive coping	11.8 (3.2) <sub>a</sub>	14.5 (4.1) <sub>b</sub>	13.2 (3.9) <sub>ab</sub>
Palliative coping	18.8 (4.3) <sub>a</sub>	19.2 (4.7) <sub>a</sub>	16.1 (4.5) <sub>b</sub>
Coping by seeking social support	12.7 (4.0) <sub>a</sub>	13.4 (4.6) <sub>a</sub>	11.7 (4.3) <sub>a</sub>
Coping through confrontation	13.5 (3.6) <sub>a</sub>	13.6 (3.5) <sub>a</sub>	11.9 (3.2) <sub>a</sub>

Note: Mean scores for coping strategies with different subscripts differ significantly,  $p < .05$ .

confronted with stress. In addition, no differences in the use of active problem-focused coping strategies (i.e. coping by seeking social support and coping through confrontation) between victims, bully-victims and adolescents not involved in cyberbullying were found. Also, no differences were found between the three groups in their use of avoidance coping and optimistic coping. This partially supports Hypothesis 1.

#### Correlation analyses

Correlation analyses among cyberbully victims ( $n=88$ ) showed that general avoidance coping, general coping through emotional expression and general depressive coping correlate positively with cyberbullying-specific depressive coping ( $r = .36, p = .000$  and  $r = .26, p = .003$ ;  $r = .69, p = .000$ , respectively; see Table 4). The more cyberbully victims employ depressive or avoidance coping or cope through emotional expression in daily life, the more they use depressive coping to deal with cyberbullying. Both the general problem-focused coping strategies (i.e. seeking social support and coping through confrontation) did not correlate with the cyberbullying-specific emotion-focused coping strategies. Further, we found a strong correlation between cyberbullying-specific problem-focused coping and the general problem-focused coping strategies of coping by seeking social support ( $r = .75, p = .000$ ) and coping through confrontation ( $r = .36, p = .000$ ). The more cyberbully victims cope with daily stress by seeking social support or through confrontation, the more likely they are to also seek social support for cyberbullying. These findings all support Hypothesis 2. We also found optimistic coping in daily life to be positively related to cyberbullying-specific palliative coping ( $r = .30, p = .000$ ). This too partially supports Hypothesis 2. These results suggest that victims of cyberbullying who employ depressive coping also use more avoidance coping and coping through emotional expression.

In contrast to our expectations, cyberbullying-specific coping by seeking social support was significantly related to optimistic coping in general ( $r = .31, p = .000$ ) and palliative coping in general ( $r = .31, p = .000$ ); thus, the more victims use optimistic or palliative coping to deal with daily stress, the more inclined they are to seek social support when confronted with cyberbullying.

#### Effects of general coping strategies on depression and health

Before testing for mediation (Hypotheses 3 and 4), we performed two hierarchical multiple regression analyses whereby the general and cyberbullying-specific coping strategies that

Table 4. Pearson correlations of the main variables ( $n = 88$ )

	1	2	3	4	5	6	7	8	9	10	11
1. Avoidance coping	.25*										
2. Optimistic coping	.19	.07									
3. Coping through emotional expression	.42***	.18***	.22***								
4. Depressive coping	.27*	.40***	.39***	.18*							
5. Coping by seeking social support	.37*	.53***	-.01	.22***	.35***						
6. Palliative coping	.08	.56***	.09	.13*	.45***	.40***					
7. Coping through confrontation	.36***	-.06	.26*	.69***	.14	-.02	-.14				
8. Cyberbullying-specific depressive coping	.28*	.30***	.05	.16	.20	.32**	.08	.10			
9. Cyberbullying-specific palliative coping	.15	.31***	-.13	.14	.75***	.31***	.36***	.20	.14		
10. Cyberbullying-specific coping by seeking social support	.28***	-.04	.15***	.48***	-.13*	-.09	-.19	.67***	-.07	-.08	
11. Depressive feelings	.29***	.07	.13*	.47***	-.04	.03	-.04	.60***	.03	-.04	
12. Health complaints											

Note:

\* $p < .05$ .

\*\*\* $p < .001$ .

showed significant bivariate correlations with depression and/or health complaints were included as predictors (see Table 4). In the depression model (see Table 5), 49% of the variance was explained,  $R^2 = .49$ ,  $F(5, 73) = 13.99$ ,  $p = .000$ , with the frequency of cyberbullying (step 1) explaining 8% of the variance,  $R^2 = .08$ ,  $F(1, 77) = 6.36$ ,  $p = .05$ , the three general coping strategies (step 2) another 21%,  $R^2 = .21$ ,  $F_{\text{change}}(3, 74) = 7.17$ ,  $p = .000$  and the cyberbullying-specific coping strategy, namely, depressive coping, (step 3) an additional 21% of the variance,  $R^2 = .21$ ,  $F_{\text{change}}(1, 73) = 29.31$ ,  $p = .000$ . In step 2, the frequency of cyberbullying and general depressive coping were significant predictors, and in step 3, cyberbullying-specific depressive coping was the only significant predictor.

In the health model (see Table 5), 43% of the variance was explained,  $R^2 = .43$ ,  $F(1, 75) = 10.03$ ,  $p = .000$ , with frequency of cyberbullying (step 1) explaining 8% of the variance,  $R^2 = .08$ ,  $F(1, 79) = 6.67$ ,  $p = .01$ , the general coping strategies (step 2) 28%,  $R^2 = .28$ ,  $F_{\text{change}}(3, 76) = 10.77$ ,  $p = .000$ , and cyberbullying-specific depressive coping (step 3) another 8%,  $R^2 = .08$ ,  $F_{\text{change}}(1, 73) = 29.31$ ,  $p = .000$ . In step 2, the frequency of cyberbullying and general depressive coping strategy were the only significant variables and in step 3, cyberbullying-specific depressive coping was the only significant variable. This clearly demonstrates the important predictive role of cyberbullying-specific depressive coping for health complaints and depression of cyberbully victims.

### Mediation analyses

The regression analysis did not show a significant relation between general avoidance coping and general coping through emotional expression and the dependent variables. This

Table 5. Summary of the hierarchical regression analyses among cyberbullying victims for depression ( $n = 78$ ) and health complaints ( $n = 80$ )

Predictors	Depression			Health complaints		
	$\beta$	<i>SE B</i>	$\beta$	$\beta$	<i>SE B</i>	$\beta$
Step 1						
Frequency of cyberbullying	1.05	.42	.28*	.101	.39	.28*
Step 2						
Frequency of cyberbullying	.83	.38	.22*	.75	.34	.21*
Coping through emotional expression	-.02	.21	-.01	.19	.18	.10
Avoidance coping	.16	.15	.12	.20	.13	.16
Depressive coping	.44	.13	.40*	.42	.12	.40***
Step 3						
Frequency of cyberbullying	.29	.34	.08	.44	.33	.12
Coping through emotional expression	-.07	.18	-.04	.17	.17	.09
Avoidance coping	.10	.13	.07	.18	.12	.14
Depressive coping	-.03	.14	-.03	.14	.14	.13
Cyberbullying-specific depressive coping	.35	.07	.67***	.20	.06	.41*

Note: Depression:  $R^2 = .08^*$  for step 1;  $\Delta R^2 = .21^{***}$  for step 2;  $\Delta R^2 = .21^*$  for step 3.

Health complaints:  $R^2 = .08^{**}$  for step 1;  $\Delta R^2 = .28^{***}$  for step 2;  $\Delta R^2 = .08$  for step 3.

\* $p < .05$ .

\*\*\* $p < .0001$ .

can be attributed to the influence of the other variables, because the correlations between these variables were significant. Therefore, we performed six mediation tests using that data from cyberbullying victims with general coping through emotional expression, general avoidance coping and general depressive coping as the independent variables, cyberbullying-specific depressive coping as the mediator and depression (H3) and health complaints (H4) as the dependent variables. These mediation analyses were tested using the bootstrap method developed by Preacher, Rucker, and Hayes (2007). In total, 1000 bootstrap samples resulted in 95% confidence intervals for all six mediation analyses.

Figure S1 and S2 display the results of the mediation analyses whereby we tested whether cyberbullying-specific depressive coping mediates the relationship between the general coping strategy emotional expression, on the one hand, and depression (Figure 1) or health complaints (Figure 2), on the other hand. The results show that cyberbullying-specific depressive coping does not mediate the relationship between general coping through emotional expression and depression ( $p = .08$ ) but does mediate the relationship between general coping through emotional expression and health complaints. The more victims of cyberbullying cope with daily stressors through emotional expression, the more likely they are to apply depressive coping to deal with cyberbullying, which results in more health complaints.

Figures 3 and 4 show the mediation analyses whereby we investigated whether cyberbullying-specific depressive coping mediates the relationship between general avoidance coping, on the one hand, and depression (Figure 3) or health complaints (Figure 4),

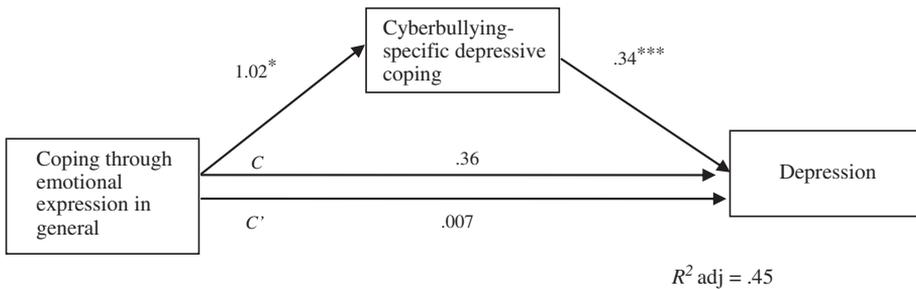


Figure 1. Direct ( $C'$ ) and indirect ( $C$ ) effect of coping through emotional expression in general on depression among cyberbullying victims ( $n = 86$ ).

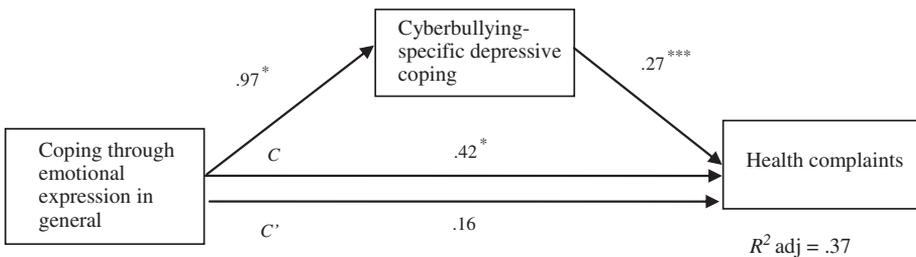


Figure 2. Direct ( $C'$ ) and indirect ( $C$ ) effects of coping through emotional expression in general on health complaints among cyberbullying victims ( $n = 87$ ).

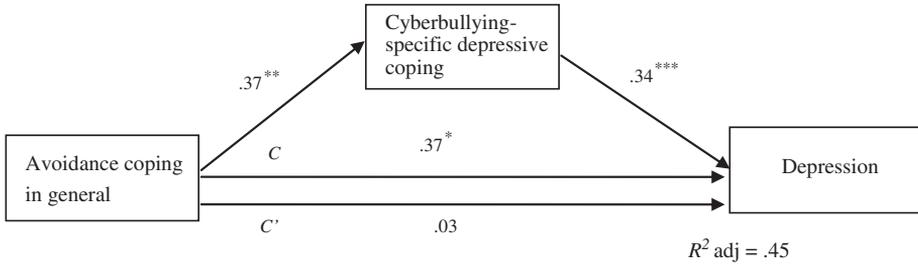


Figure 3. Direct (C') and indirect (C) effect of avoidance coping in general on depression among cyberbullying victims (n = 80).

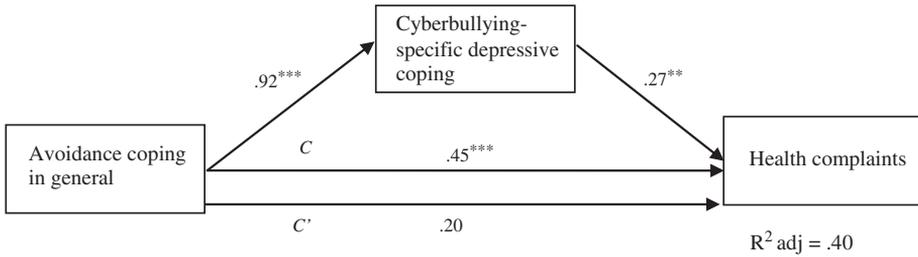


Figure 4. Direct (C') and indirect (C) effect of avoidance coping in general on health complaints among cyberbullying victims (n = 82).

on the other hand. The results show that cyberbullying-specific depressive coping indeed mediates the relationship between general avoidance coping and depression and between general avoidance coping and health complaints.

Figures 5 and 6 show the results of the mediation analyses in which we explored whether cyberbullying-specific depressive coping mediates the relationship between general depressive coping, on the one hand, and depression (Figure 5) or health complaints (Figure 6), on the other hand. Indeed, we found that the more victims of cyberbullying use depressive coping to deal with stress in daily life, the likely they also are to use cyberbullying-specific depressive coping to deal with cyberbullying, and that this results in greater depression and more health complaints.

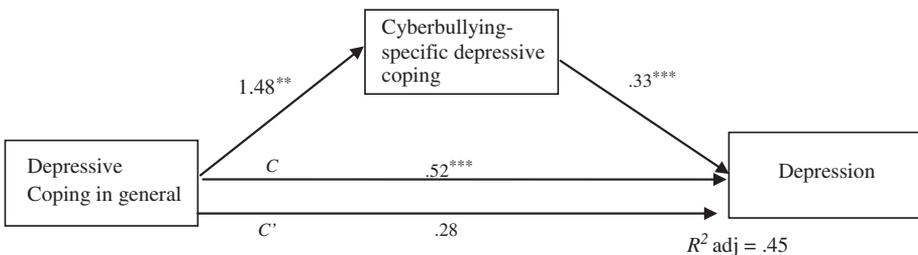


Figure 5. Direct (C') and indirect (C) effect of depressive coping in general on depression among cyberbullying victims (n = 86).

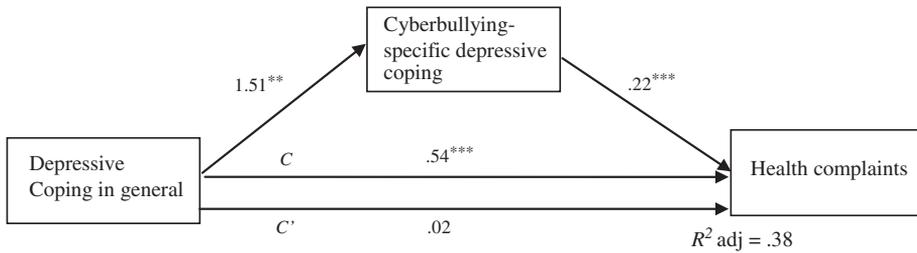


Figure 6. Direct ( $C'$ ) and indirect ( $C$ ) effect of a depressive coping in general on health complaints among cyberbully victims ( $n = 87$ ).

In short, our hypotheses that emotion-focused coping in general indirectly results in more depression (H3) and physical health complaints (H4) through the application of emotion-focused coping strategies to deal with cyberbullying was supported by the meditation analyses. With the exception of the analysis whereby cyberbullying-specific depressive coping was posited to mediate the relationship between general coping through emotional expression and depression, all other mediation analyses supported these hypotheses.

## DISCUSSION

The findings of this study indicate that cyberbullying victims, bully-victims and children not involved in bullying aged 11 and 12 years differ with respect to the coping strategies they use to handle stressful situations in their daily life. We found that, compared with children not involved in bullying, children who are both victims and perpetrators of cyberbullying (bully-victims) more frequently react to stressful situations in general by expressing emotion (e.g. getting angry or irritated) and less frequently employ palliative coping (e.g. thinking on something else). This suggests that bully-victims react aggressively to not only cyberbullying but also to other stressful situations. This, combined with findings that aggression during childhood is one of the strongest predictors of aggression during adulthood (Broidy et al., 2003), point to the need to encourage in children self-reflection, the regulation of emotions and the application of problem-focused coping strategies in response to stress.

As expected, we found that victims of cyberbullying score highest on depressive coping. They internalise problems and feel worthless and powerless after being cyberbullied. This is in line with the previous research showing that a large number of cyberbullying victims use passive emotion-focused coping strategies (Lodge & Frydenberg, 2007; Wilton, Craig, & Pepler, 2000) such as wishful thinking and mental distraction. Dehue et al. (2008) also established that victims tend to react to cyberbullying by pretending to ignore it, actually ignoring it or by retaliating, thus becoming bully-victims. Studies on traditional bullying further show that internalising and coping passively (e.g. through behavioural withdrawal, mental withdrawal, denial, avoidance, acquiescence and self-blame) is generally ineffective. Although they may halt bullying for a while, they do not solve the problem (Wilton et al., 2000). As such, victims tend to remain vulnerable to bullying and abuse. In the long term, this results in a vicious cycle whereby bullies continue to bully and victims continue to cope passively and thus ineffectively.

Surprisingly, we found no differences between the three groups in their use of the two problem-focused coping strategies of seeking social support and confrontation. In a study by Dehue et al. (2008), almost one-third of the cyberbullying victims reported not talking about the cyberbullying with others, thus, not seeking social support. In fact, that study showed that both cyberbullying victims and children not involved in bullying scored relatively low on social support. With the sum of scores ranging from 6 to 24, victims had a mean score of 11.9 and children not involved in bullying scored 12.7. These low scores and our finding that there were no differences in social support between the three groups may suggest that most children aged 11 and 12 years simply do not discuss feelings or negative experiences.

Given findings from a study by Bolman et al. (2012) whereby no significant effect of general emotion-focused coping on mental and physical health was found, we hypothesised that emotion-focused coping strategies indirectly affect the psychological and physical well-being of cyberbullying victims through their use of cyberbullying-specific emotion-focused coping strategies. Our results indeed support this contention. In fact, we found that the use of three general coping strategies, namely, coping through emotional expression, avoidance coping and depressive coping, are strong indicators for the use of depressive coping to deal with cyberbullying. Also, we found that victims of cyberbullying do use more emotional-focused coping than others. Perhaps victims of cyberbullying perceive online and offline bullying as something that cannot be changed and thus employ emotion-focused coping strategies (more frequently) to deal with the stress they experience as a result of cyberbullying. This can be seen as the secondary appraisal in which one forms beliefs about one's power to change the situation. However, more research is needed to determine if cyberbullying victims do indeed perceive cyberbullying as unchangeable.

Also, in line with the transactional theory of stress as posited by Lazarus and Folkman (1984), we found that when victims tend to use depressive coping to deal with cyberbullying, they also experience more depression and health complaints. This finding that depressive coping in general and depressive coping to deal with cyberbullying are most strongly related to depression and health complaints is not unsurprising. In fact, depressive coping as measured in this study is likely similar to depression as assessed by the Children's Depression Inventory. As such, it is quite possible that coping with cyberbullying through depressive coping is the same as feeling depressed after having been cyberbullied. Future research should seek to clarify this.

Lastly, and in contrast to Lazarus and Folkman (1984), we did not find a significant relationship between the cyberbullying-specific problem-focused coping, on the one hand, and depression and health complaints in victims of cyberbullying, on the other hand. Future research should seek to replicate or disprove this so as to bring more clarity to the impact of problem-focused coping on depression and health.

Our study has a few limitations. The first is the number of cyberbullied children included in the study, namely, 90. This may have affected the predictive power of the variables in the regression analyses. Another shortcoming concerns the measurement of coping strategies. Cyberbullying-specific coping was measured using a newly developed instrument that has yet to be validated. An additional shortcoming is that our study focused on secondary appraisals. Primary appraisals, with their accompanying personal interpretation of the stressful situation, are also important (Lazarus, 1999). Further, our study made use of self-reported measures only. Self-reported measures have advantages but tend to

result in higher prevalence rates compared with other measures (Baldry & Farrington, 2000). A fourth shortcoming is the cross-sectional nature of the study. As such, causality cannot be definitively established. Additional caution in the interpretation of the results is called for as our study sample, namely, 11 and 12 year-old children enrolled in state schools, may differ from the general population of 11 and 12 year olds. A final limitation is that we did not differentiate between different forms of cyberbullying. This is relevant as Smith, Mahdavi, Carvalho and Tippett (2006) have shown that the impact of cyberbullying depends on the forms of cyberbullying one has experienced. In fact, in their study with 92 adolescents aged 11–16 years, participants reported that bullying through pictures, videos and phone calls is more detrimental than traditional bullying, that the impact of bullying through websites and text messaging is on par with the impact of traditional bullying, and that bullying in chat rooms, through instant messengers and email are less damaging to the victim. We recommend that future research differentiate between the different forms of cyberbullying when measuring the prevalence, impact and effect of coping strategies.

Despite these limitations, our study findings contribute substantially to the literature on cyberbullying and coping among children and adolescents by showing that the use of emotion-focused coping to deal with cyberbullying negatively impacts mental and physical health. In fact, in their totality, our findings point to the need to encourage children to use problem-focused coping strategies by showing them that feeling helpless and using emotion-focused strategies to deal with stress in general and cyberbullying in particular is ineffective and detrimental to their psychological and physical well-being. Children should be encouraged such that they develop and display greater self-confidence and employ effective coping strategies to solve problems in daily life and halt cyberbullying.

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