International Journal of Bullying Prevention (2020) 2:6–15
https://doi.org/10.1007/s42380-019-00039-1

ORIGINAL ARTICLE

Styles of Bystander Intervention in Cyberbullying Incidents

Natasha Moxey[1] · Kay Bussey[1]

Published online: 14 October 2019

Abstract

Cyber bystanders may reduce the frequency and impact of cyberbullying incidents they witness. Recent evidence indicates that bystanders can employ constructive (e.g. comforting the victim) or aggressive (e.g. threatening the bully) strategies when intervening in cyberbullying incidents. The aim of this study was to develop a questionnaire to measure aggressive and constructive forms of bystander intervention (the Styles of Bystander Intervention Scale), as well as to investigate the influence of moral disengagement on these behaviours. Participants were 301 ethnically diverse Australian adolescents aged 12–17 years (M_{age} = 14 years 6 months), who completed a self-report survey to examine bystander intervention styles and the associations with moral variables. The Styles of Bystander Intervention Scale demonstrated adequate reliability and effectively distinguished between aggressive and constructive forms of intervention. The results indicated that higher moral disengagement was significantly associated with aggressive bystander responses, and lower moral disengagement was significantly associated with constructive responses. These results highlight the need to differentiate between aggressive and constructive bystander intervention and the importance of investigating psychological factors related to these intervention styles.

Keywords Adolescents · Cyberbullying · Bystander · Moral disengagement

Bystanders have the potential to attenuate the effects of bullying by intervening in episodes they witness. Bystander intervention has typically been conceptualized as a unidimensional prosocial construct that involves defending the victim (Pronk et al. 2019). However, it is apparent that some bystanders employ aggressive intervention strategies, such as threatening the bully or posting humiliating images online (Burton et al. 2013; DeSmet et al. 2012; DeSmet et al. 2014; DeSmet et al. 2016; Macháčková and Pfetsch 2016; Reijntjes et al. 2016). These findings call for greater differentiation and clarification of bystander intervention styles. To address this issue, the present study aims to develop a comprehensive measure of bystander intervention to capture its multidimensionality: the Styles of Bystander Intervention Scale.

Although bystanders play a role in traditional bullying, this study specifically examines bystander intervention in cyberbullying episodes, as cyberbullying has escalated due to increased accessibility to the Internet and smartphones (Cassidy et al. 2013). Despite adolescents showing similar behaviour in cyber and traditional bullying roles, cyberbullying warrants specific study due to its unique context (Antoniadou et al. 2019). Some authors have suggested an online disinhibition effect contributes to online aggression, whereby individuals are more likely to engage in aggressive behaviour due to the anonymity, large audience and obscured impacts on victims afforded by the online context (Dooley et al. 2009; Kokkinos and Voulgaridou 2017; Kowalski et al. 2014; Slonje and Smith, 2008). Cyberbullying is related to negative outcomes for victims and bullies including depression, anxiety, substance abuse, delinquency, suicidality, relationship disruption and lower academic performance (Cassidy et al. 2013; Hinduja and Patchin 2013; Kowalski 2008; Kowalski et al. 2014; Schneider et al. 2012; Von Marées and Petermann 2012; Ybarra and Mitchell 2004). To attenuate these negative impacts, it is crucial to implement interventions to prevent and reduce the prevalence of cyberbullying.

Although cyberbullying interventions have been developed, there is little evidence for their efficacy to reduce the frequency and impact of cyberbullying (Cassidy et al. 2013; Cross et al. 2015). Contrastingly, some interventions for traditional bullying have reduced bullying by up to 20% (Cassidy et al. 2013). Although there are many possible explanations for the greater efficacy of anti-bullying programs for traditional rather than cyberbullying, one possible

✉ Kay Bussey
kay.bussey@mq.edu.au

[1] Department of Psychology, Centre for Emotional Health, Macquarie University, Sydney, NSW 2109, Australia

explanation is that in contrast to cyberbullying interventions, some traditional bullying interventions have placed a greater focus on equipping bystanders to defend victims (Saarento et al. 2015).

Based on the apparent success of including bystanders in traditional bullying interventions, it is possible that a greater focus on bystanders could improve the outcomes of cyberbullying interventions. Bystanders may be effective targets for interventions as they are present in the majority of cyberbullying incidents and perpetrators tend to be motivated by peer feedback on their behaviour (DeSmet et al. 2016; Festl and Quandt 2013; Sticca et al. 2013; Vanden Abeele and de Cock 2013). Therefore, interventions that equip bystanders to defend their peers may reduce cyberbullying incidents.

However, in both the traditional and cyberbullying context, it is apparent that not all bystander behaviour is prosocial (Luo and Bussey 2019; Pronk et al. 2019; Reijntjes et al. 2016). Sometimes bystanders intervene aggressively, for example, by threatening the bully or posting humiliating images online (Burton et al. 2013; DeSmet et al. 2012; DeSmet et al. 2014; DeSmet et al. 2016; Macháčková and Pfetsch 2016; Reijntjes et al. 2016). Moreover, previous studies have demonstrated that cyberbullying roles tend to be highly fluid, with adolescents commonly involved in several roles in the same cyberbullying incident (DeSmet et al. 2014; DeSmet et al. 2016; Van Cleemput et al. 2014). These findings suggest that bystander intervention involves multiple dimensions which could inform the development of effective cyberbullying programs. In the past, the focus has been on aggressive bystander behaviour aimed at supporting the bullying whereby the bystander joins in or assists the bully. However, it is apparent that aggressive intervening can be used to censure the bully when interveners direct their aggressive responding to the bully rather than to the victim.

Bystander intervention can also differ according to its target (Reijntjes et al. 2016) and its style (Luo and Bussey 2019). A study conducted by Reijntjes et al. (2016) examined two possible targets of bystander intervention: the bully and the victim. Unlike victim-oriented intervention, bully-oriented intervention was correlated with bullying behaviour and the motivation to increase one's own social standing. A further study conducted by Luo and Bussey (2019) revealed that adolescents can employ constructive (i.e. prosocial) and aggressive styles of intervention in cyberbullying scenarios, with moral disengagement relating to aggressive but not constructive intervention. The present study aims to extend this research by developing the Styles of Bystander Intervention Scale, a more robust measure of cyber bystander intervention that differentiates between specific styles and targets of intervention.

The Styles of Bystander Intervention Scale investigates three styles of bystander intervention: aggressive, constructive victim-focused, and constructive bully-focused. These styles are based on those proposed by Luo and Bussey (2019); however, the constructive style has been further categorized into victim and bully focused to account for evidence from the Reijntjes et al. (2016) study. The items for the Styles of Bystander Intervention Scale were abstracted from the literature, particularly qualitative data describing online bystander behaviours (Bussey and Fitzpatrick 2015; DeSmet et al. 2012; DeSmet et al. 2014; DeSmet et al. 2016; Macháčková and Pfetsch 2016) and other preliminary investigations (Luo and Bussey 2019). Aggressive intervention is defined as any aggressive behaviour targeted at the perpetrator in retaliation to a cyberbullying incident, such as spreading rumours or making threats (DeSmet et al. 2012; DeSmet et al. 2014; DeSmet et al. 2016; Luo and Bussey 2019; Macháčková and Pfetsch 2016). Constructive interventions are similar to defending behaviours, as previously identified in the literature (DeSmet et al. 2016). Constructive bully-focused intervention is defined as any assertive behaviour targeted at the perpetrator, such as telling the bully to stop picking on others or encouraging the bully to apologize to their victim (Cassidy et al. 2013; DeSmet et al. 2012; DeSmet et al. 2014; DeSmet et al. 2016). Constructive victim-focused intervention is defined as any behaviour that supports the victim, such as providing comfort or offering advice (Cassidy et al. 2013; DeSmet et al. 2012; DeSmet et al. 2014; DeSmet et al. 2016). Preliminary evidence suggests that aggressive responses can escalate cyberbullying incidents (Datta et al. 2016; DeSmet et al. 2016), whereas constructive responses can stop bullying (Pronk et al. 2019).

In view of the foregoing analysis, it is apparent that bystanders may play a role in either reducing or escalating cyberbullying and therefore different factors may be associated with the different types of bystander intervention. One factor that may be especially relevant in this differentiation is moral disengagement (Bussey et al. 2015; Kowalski et al. 2014; Wang et al. 2016; Wang et al. 2017), defined as a set of self-regulatory mechanisms by which individuals disengage self-sanctions to justify or excuse their immoral conduct (Bandura 2016; Bandura et al. 1996). Moral disengagement seeks to explain the circumstances where people with sound moral reasoning behave immorally or fail to act morally (Bandura 2016). Some authors have suggested that the social distance and possible anonymity afforded by the cyber context may facilitate moral disengagement mechanisms, and therefore increase the likelihood of online aggression (Runions and Bak 2015). Therefore, moral disengagement mechanisms will be investigated in the context of aggressive and constructive bystander styles of intervention.

Extant literature demonstrates that higher moral disengagement predicts aggressive behaviour, including cyberbullying (Gini 2006; Gini et al. 2011; Gini et al. 2014; Obermann 2011; Sijtsema et al. 2014; Thornberg and Jungert 2014). Although this research has mostly linked disengagement with bullying

behaviour, it is possible that moral disengagement is also associated with aggressive bystander intervention. In contrast, moral disengagement is not expected to be related to bully- and victim-focused constructive interventions, which are consistent with the prototypical view of bystander intervention as a prosocial activity. Studies have demonstrated that lower moral disengagement predicts prosocial behaviour (Bandura et al. 1996; Barchia and Bussey 2011; Caravita et al. 2012; Gini 2006; Gini et al. 2011; Haddock and Jimerson 2017; Mazzone et al. 2016; Thornberg et al. 2015). That is, it is expected that moral disengagement will be differentially related to aggressive and constructive intervention styles.

To address the aims of this study, a questionnaire was administered to adolescents as high rates of cyberbullying are prevalent amongst this group. The first aim was to develop a measure of bystander intervention that differentiates between aggressive, constructive victim-focused, and constructive bully-focused styles. The second aim was to investigate the influence of moral disengagement on the tendency to intervene aggressively or constructively in cyberbullying incidents. It was hypothesised that higher moral disengagement would predict greater aggressive intervention whereas lower moral disengagement would predict greater constructive victim-focused and constructive bully-focused intervention.

This study also examined grade and gender effects in cyber intervention behaviours. Previous studies in traditional bullying have found that females are more likely to defend victims than are males (Gini et al. 2015; Reijntjes et al. 2016; Salmivalli et al. 1996; Trach et al. 2010) and younger students are more likely to defend than are older students (Datta et al. 2016; Stevens et al. 2000). Findings on grade and gender effects for bystander intervention in cyberbullying have been inconsistent (Allison and Bussey 2017; Barlińska et al. 2013; Bussey et al. 2015; Caravita et al. 2012; Datta et al. 2016; Macháčková et al. 2013; Van Cleemput et al. 2014). This inconsistency may be due to the increased anonymity of the cyber context, as adolescents perceive less pressure to exhibit age and gender-typical behaviours than in traditional bullying contexts. However, as aforementioned, conceptualizing cyber bystander intervention as a multidimensional construct may provide further clarity on age and gender effects. Therefore, the present study will also investigate the relationship of grade and gender with aggressive, constructive victim-focused and constructive bully-focused intervention styles.

Method

Participants

An initial sample of 304 Australian high school students participated in this study. Three participants were removed because they completed less than 80% of the survey. The remaining sample of 301 participants included 200 students from grade 8 (116 female; $M_{age} = 13.8$, $SD = 0.4$) and 101 students from grade 10 (51 female; $M_{age} = 15.8$, $SD = 0.4$). These students were recruited from ten independent, co-educational secondary schools, as part of a larger investigation into cyberbullying. The students were predominantly from upper middle class families (Australian Curriculum Assessment and Reporting Authority 2017) with an ethnic composition of approximately 58.9% Anglo/Celtic, 17.0% European, 5.3% East/South East Asian and 18.8% were from other ethnic groups.

Measures

Cyberbullying Perpetration and Victimization Two scales developed by Gámez-Guadix et al. (2014) were used to assess the frequency of participants' cyberbullying perpetration and victimization. The scales were based on the perpetrator and victimization subscales of the Cyberbullying Questionnaire (CBQ; Calvete et al. 2010), with items updated to account for newer technologies.

A 14-item scale (Gámez-Guadix et al. 2014) was used to measure the frequency of cyberbullying perpetration. Participants rated "how often in the last school term have you performed the following behaviors". Examples of these items included "posting or sending humiliating images of another kid" and "deliberately excluding someone from an online group". Participants rated each item on a 6-point Likert scale (1 = *it has not happened at all* to 6 = *many times a week*). The scores on individual items were summated to give an overall perpetration score between 14 and 84, with higher scores indicating higher levels of perpetration. Cronbach's alpha for this study was .97 and has previously been reported as .90 (Gámez-Guadix et al. 2014).

A 9-item scale (Gámez-Guadix et al. 2014) was used to measure the frequency of cyberbullying victimization. The original victimization scale of the CBQ had fourteen items; however, a study conducted by Allison and Bussey (2017) revealed that five items did not load adequately onto the theorized one factor solution and were subsequently deleted. The items were similar to the perpetration measure; however, participants were asked to respond to the items by rating "how often in the last school term have the following behaviors happened to you". Examples of these items included "Other people have posted humiliating images of me on the Internet" and "Other people have deliberately excluded me from an online group". Participants rated each item on a 6-point Likert scale (1 = *it has not happened at all* to 6 = *many times a week*). The scores on individual items were summated to give an overall victimization score between 9 and 54, with higher scores indicating higher levels of victimization. Cronbach's alpha for this study was .91 and has previously been reported as .79 (Gámez-Guadix et al. 2014).

Moral Disengagement The 16-item Cyber Bullying Moral Disengagement Scale (Bussey and Fitzpatrick 2014) was used to measure moral disengagement. The scale was based on the Moral Disengagement Scale (Bandura et al. 1996), with items reworded to refer to cyberbullying. Examples of these items included "It's alright to send mean messages to a kid using a mobile phone or the Internet if they have poked fun at your friends" and "It's OK to cyberbully a kid who behaved like a jerk". Participants rated each item on a 5-point Likert scale (1 = *strongly disagree* to 5 = *strongly agree*) to indicate how much they agreed with the statement. The scores on individual items were summated to give an overall moral disengagement score from 16 to 80 for each participant, with higher scores indicating higher moral disengagement. Cronbach's alpha for this study was .93 and has previously been reported as .91 (Allison and Bussey 2017).

Styles of Bystander Intervention Scale A 15-item self-report scale based on Luo and Bussey's (2019) defending self-efficacy measure was developed for this study to assess styles of bystander intervention. Participants rated each item on a 5-point Likert scale (1 = *never* to 5 = *always*) in response to the question "Last term, how often did YOU respond online to a kid who was bullying?" The measure consisted of three subscales: aggressive, constructive victim-focused and constructive bully-focused intervention. Each subscale consisted of five items, which described bystander responses to cyberbullying incidents. Examples of the items included "by making threats to the bully" (aggressive), "by encouraging the kid to report being picked on" (constructive victim-focused) and "by telling the bully to stop picking on other kids" (constructive bully-focused). The factor analysis of this measure is reported in the results section.

As will be seen in the results, there was no difference between constructive victim-focused and constructive bully-focused intervention; therefore, these two subscales were combined into a 10-item subscale of overall constructive intervention. The final measure consisted of two subscales: aggressive intervention and constructive intervention. The scores on the aggressive subscale were summated to give a total score from 5 to 25. The scores on the constructive subscale were summated to give a total score from 10 to 50. Higher scores indicated a greater propensity for the student to engage in aggressive or constructive bystander behaviours. Cronbach's alphas were .86 for the aggressive intervention subscale and .96 for the constructive intervention subscale.

Procedure

Ethical approval for this study was granted by the Macquarie University Ethics Review Committee. Students, their parents and school principals provided informed written consent for students to participate in the study. Approximately 43% of the eligible students participated in this study, which is similar to other school-based studies using an active participant and parent consent process (Allison and Bussey 2017; Barchia and Bussey 2011).

Students completed the 45-min questionnaire in class during term 2 of the school year under exam-like conditions. The questionnaires were administered online via Qualtrics or in a paper format at the school's request. A total of 5.3% ($n = 16$) of the participants completed the paper survey. All students were provided with brief definitions of bullying and cyberbullying, adapted from Olweus (1993). The questionnaire was ordered in two pre-set formats that separated similarly worded measures to avoid confusion. Participants were randomly allocated to one of the two formats, ensuring that an equal number of participants completed each set. After the completion of the questionnaire, all students were provided with a debrief statement and the option to make an appointment with the school counsellor if they experienced distress as a result of completing the survey. A total of 4.7% ($n = 14$) of the participants indicated they wished to make an appointment.

Missing Data

Small amounts of participant data were missing for individual items (range 0–3.3%). The expectation-maximization procedure in SPSS was used to impute missing data for individual missing items before scale computation. The expectation-maximization procedure was identified as the preferred method for imputing data that is not missing at random, when compared with other common methods such as pair-wise deletion, list-wise deletion or mean substitution (Allison 2002; Enders 2001; Schafer and Graham 2002).

Results

Data Analytic Strategy

The results are presented in four sections. First, the exploratory factor analysis for the Styles of Bystander Intervention Scale is presented. Second, MANOVA results are reported to examine grade and gender effects. Third, correlations between all continuous variables are presented to examine bivariate relationships. Lastly, separate hierarchical regressions are reported to test the association between moral disengagement and bystander intervention styles.

The assumption of normality was violated for all continuous variables. All variables were positively skewed and leptokurtic, except for constructive cyber intervention, which was platykurtic. Therefore, bootstrapping analyses were conducted to provide confidence intervals and bias-corrected *p*-values. Bootstrapping has been shown to provide robust

results when the assumption of normality is violated and is preferred compared with other methods, such as transformations and relying on the robustness of *F*-tests and *t* tests (Field and Wilcox 2017). Despite a high correlation between cyber perpetration and victimization, there was no evidence for multicollinearity.

Prior to examining bivariate correlations, a mixed model analysis with school as a random factor was conducted to assess the potential clustering effect within schools. The random factor was not significant and therefore school effects were not accounted for in subsequent analyses.

Exploratory Factor Analysis

An exploratory factor analysis with principal axis factoring and oblimin rotation was performed on the 15-item Styles of Bystander Intervention Scale. Bartlett's test of sphericity was significant, indicating the data were sufficiently correlated ($\chi^2(301) = 3728.94$, $p < .001$). The Kaiser-Meyer-Olkin measure of sampling adequacy was .92, indicating the sample size was sufficient to conduct the analysis. Oblimin rotation was used as it was assumed the factors would be correlated.

The factor analysis yielded a two-factor model, which loaded onto aggressive and constructive styles of intervention. The analysis revealed no difference between constructive victim-focused and constructive bully-focused intervention; therefore, these two factors were combined into a measure of overall constructive bystander intervention. The aggressive intervention factor consisted of five items and the constructive intervention factor consisted of ten items. No items were removed from the scale as all items had loadings greater than .40 and there were no cross loadings. Loadings are reported in Table 1. Both aggressive and constructive intervention scales demonstrated good internal consistency, with Cronbach's alphas of .86 and .96, respectively.

Gender and Grade Effects

A 2 × 2 factorial MANOVA was conducted with grade and gender as between subject factors to investigate gender and grade effects on the continuous variables. The dependent variables entered in the analysis were the measures of cyberbullying perpetration, cyberbullying victimization, aggressive intervention, constructive intervention and moral disengagement. The MANOVA results were interpreted at an alpha level of .05. The estimated marginal means and standard errors are presented in Table 2. The multivariate test revealed a significant effect of gender on the measures, $\Lambda = 0.93$, $F(6, 292) = 3.58$, $p = .002$. Follow-up analyses showed males reported significantly more frequent cyberbullying perpetration [$F(1, 297) = 7.17$, $p = .008$, $\eta_p^2 = 0.024$], victimization [$F(1, 297) = 5.68$, $p = .018$, $\eta_p^2 = 0.019$], aggressive intervention [$F(1, 297) = 13.15$, $p < .001$, $\eta_p^2 = 0.042$] and higher moral disengagement [$F(1, 297) = 12.28$, $p = .001$, $\eta_p^2 = 0.040$] than did females. The multivariate test also revealed a significant effect of grade on the measures, $\Lambda = 0.96$, $F(6, 292) = 2.15$, $p = .048$. Follow-up analyses showed grade 8 students reported significantly more frequent constructive intervention than did grade 10 students [$F(1, 297) = 6.64$, $p = .010$, $\eta_p^2 = 0.022$]. There was no significant interaction between gender and grade.

Bivariate Correlations

Bivariate Pearson correlations between scales are presented in Table 3. Since the MANOVA revealed significant grade and gender effects, these variables were controlled for. Almost all scales were positively correlated, with the exception of constructive intervention, which was not correlated with cyberbullying perpetration or moral disengagement.

Hierarchical Regression Analyses

Two hierarchical regression analyses were conducted to investigate the role of moral disengagement in aggressive and constructive intervention styles. All continuous variables were centred prior to conducting the analyses (Aiken and West 1991). Results were interpreted with an overall alpha level of .05.

Aggressive Intervention The model predicting to aggressive intervention was examined first. Grade and gender were entered as control variables at step one as the MANOVA revealed significant grade and gender effects. Constructive intervention, cyberbullying perpetration and cyberbullying victimization were entered as control variables at step two, as these have been previously found to be associated with aggressive intervention (Barlińska et al. 2013; Luo and Bussey 2019; Van Cleemput et al. 2014). Moral disengagement was entered at step three. The results of this analysis are shown in Table 4.

The overall model significantly predicted aggressive intervention ($R^2 = .43$, $F(7, 293) = 31.37$, $p < .001$). Additionally, gender, constructive intervention and moral disengagement emerged as significant individual predictors of aggressive intervention. Specifically, males and those who reported higher constructive intervention reported more frequent aggressive intervention behaviour. Consistent with the hypothesis, higher moral disengagement scores were associated with aggressive intervention. This relationship remained significant even when controlling for grade, gender, cyberbullying perpetration, cyberbullying victimization and constructive intervention.

Constructive Intervention A similar model that was used for aggressive intervention was reproduced with constructive intervention as the outcome variable. Aggressive intervention was entered at step two to replace constructive intervention as a control variable. The results of this analysis are shown in Table 5.

Table 1 Factor loadings for exploratory factor analysis with oblimin rotation of Styles of Bystander Intervention Scale

Item	Intervention style	
	Constructive	Aggressive
1. By telling the kid you think that what the bully did is not OK	*.98*	− .23
2. By comforting the kid and telling them that it is not their fault that they were picked on	*.95*	− .20
3. By encouraging the kid to report being picked on	*.95*	− .18
4. By telling the bully to stop picking on other kids	*.93*	− .10
5. By telling the bully that picking on the other kid was mean and wrong	*.92*	− .19
6. By telling the bully that picking on other kids is hurtful to them	*.88*	− .09
7. By telling the kid to ignore the mean things that were said	*.86*	− .08
8. By encouraging the bully to say sorry to the kid they picked on	*.85*	− .13
9. By giving the kid advice	*.84*	− .06
10. By telling the bully to "back off"	*.68*	.09
11. By writing embarrassing jokes or comments about the bully	− .27	*.99*
12. By sharing humiliating images or videos of the bully	− .32	*.95*
13. By spreading rumours or gossip about the bully	− .14	*.86*
14. By making threats to the bully	− .09	*.72*
15. By saying mean things about the bully	.02	*.61*

Factor loadings > .40 are in italics

The overall model significantly predicted constructive intervention ($R^2 = .16$, $F(7, 293) = 8.04$, $p < .001$). Additionally, grade, gender, perpetration, victimization, aggressive intervention and moral disengagement emerged as significant individual predictors of constructive intervention. Specifically, grade 8 students, females, those who reported lower cyberbullying perpetration and those who reported higher cyberbullying victimization and aggressive intervention reported more frequent constructive intervention behaviours. Consistent with the hypothesis, moral disengagement scores were negatively related to constructive intervention. This relationship remained significant even when controlling for grade, gender, cyberbullying perpetration, cyberbullying victimization and aggressive intervention.

Discussion

This study has demonstrated that bystander intervention in cyberbullying scenarios is multidimensional. Bystander intervention can be both constructive and aggressive. Constructive intervention involves the defender assisting and comforting the victim while also trying to reason with the bully to stop. In contrast, aggressive intervention involves defenders fighting back against the bullying using aggressive tactics. The Styles of Bystander Intervention Scale developed in this research reliably distinguishes these two forms of intervention. Although bystanders who intervene have typically been viewed positively and their behaviour conceptualized as prosocial, this study shows that this is not always the case.

The Styles of Bystander Intervention Scale loaded onto two factors: aggressive and constructive intervention. The results did not differentiate between constructive intervention directed to the bully versus the victim, contrasting with findings from a study on traditional bullying (Reijntjes et al. 2016). The present study used self-report whereas Reijntjes et al. (2016) used peer report to measure intervention behaviours, possibly explaining the differences in results between studies. Despite the lack of support for the distinction between bully-

Table 2 Estimated marginal means and standard errors of all variables

Variable	Males ($n = 134$)	Females ($n = 167$)	F-value	Grade 8 ($n = 200$)	Grade 10 ($n = 101$)	F-value	Total ($n = 301$)
Perpetration	16.77 (0.59)	14.60 (0.56)	7.17**	15.82 (0.47)	15.56 (0.66)	0.10	15.69 (0.57)
Victimization	12.07 (0.45)	10.60 (0.42)	5.68*	11.66 (0.36)	11.01 (0.50)	1.13	11.33 (0.44)
Constructive intervention	25.05 (1.05)	26.89 (0.99)	1.63	27.83 (0.84)	24.11 (1.17)	6.64**	25.97 (1.01)
Aggressive intervention	7.17 (0.24)	5.98 (0.23)	13.15***	6.63 (0.19)	6.52 (0.27)	0.12	6.58 (0.23)
Moral disengagement	26.48 (0.87)	22.32 (0.81)	12.28***	23.91 (0.69)	24.89 (0.96)	0.68	24.40 (0.84)

Standard errors are in parentheses. Degrees of freedom for each variable (1, 297)

*$p < .05$; **$p < .01$; ***$p < .001$

Table 3 Correlations of participant roles with moral disengagement

Variable	1.	2.	3.	4.	5.
1. Perpetration	–				
2. Victimization	.79***	–			
3. Constructive intervention	.03	.15**	–		
4. Aggressive intervention	.43***	.41***	.30***	–	
5. Moral disengagement	.56***	.46***	.05	.55***	–

Gender and grade are covariates

*$p < .05$; **$p < .01$; ***$p < .001$

and victim-focused constructive intervention in this study, there was clear evidence for the distinction between aggressive and constructive styles of intervention. In support of this distinction, the present study showed that different bullying roles were associated with aggressive and constructive styles of intervention. Perpetration was moderately positively correlated with aggressive intervention but negatively correlated with constructive intervention, indicating that adolescents who intervene aggressively are also likely to cyberbully others. This is unsurprising considering aggressive intervention and bullying perpetration are both aggressive behaviours. This differential relationship of aggressive and constructive intervention styles to bullying perpetration further underscores the importance of viewing cyber bystander intervention as two distinct forms.

This study's investigation of aggressive and constructive forms of bystander intervention contributes to the broader literature on bullying roles (Caravita et al. 2012; DeSmet et al. 2016; Obermann 2011; Salmivalli 2010; Salmivalli et al. 1996; Van Cleemput et al. 2014). Identifying specific roles and associated psychological factors has contributed to the development of effective, targeted anti-bullying programs. For example, programs targeted at increasing anti-bullying attitudes in bystanders have been associated with significant reductions in traditional bullying (Saarento et al. 2015). The effects of these programs have been attributed to identifying specific bullying roles and targeting the psychological factors associated with these roles. The differentiation between aggressive and constructive bystander intervention may contribute to the identification of related psychological factors and the development of more targeted and effective cyberbullying programs. Therefore, programs should address psychological factors involved in a range of cyberbullying behaviours, such as moral disengagement.

Although prior studies have investigated the role of psychological factors in unidimensional bystander intervention behaviours, this study was the first to examine the relationship of moral disengagement to aggressive and constructive forms of intervention with a reliable measure of intervention styles (Allison and Bussey 2017; Bussey et al. 2015; DeSmet et al. 2012; DeSmet et al. 2014; DeSmet et al. 2016; Luo and

Table 5 Hierarchical multiple regression analyses predicting constructive bystander intervention from moral disengagement

	Constructive bystander intervention				
Variable	Step 1	Step 2	Step 3	*SE*	95% CI
Grade	− 1.80*	− 1.59	− 1.51*	0.62	[− 2.689, − 0.177]
Gender	1.32	2.79*	2.67*	1.27	[0.158, 4.973]
Perpetration	–	− 0.60**	− 0.51**	0.21	[− 1.010, − 0.216]
Victimization	–	0.68**	0.67**	0.21	[0.202, 1.285]
Aggressive	–	1.42***	1.62***	0.26	[1.086, 2.247]
MD	–	–	− 0.15*	0.07	[− 0.286, 0.027]
R^2	.03	.15	.16		
ΔR^2	.03*	.13***	.01***		

Unstandardized regression coefficients (*B*), standard errors (*SE*) and confidence intervals (CI) are from bootstrapped analyses. *Aggressive*, aggressive bystander intervention; *MD*, moral disengagement

*$p < .05$; **$p < .01$; ***$p < .001$

Table 4 Hierarchical multiple regression analyses predicting aggressive bystander intervention from moral disengagement

	Aggressive bystander intervention				
Variable	Step 1	Step 2	Step 3	*SE*	95% CI
Grade	− 0.05	0.09	0.02	0.13	[− 0.258, 0.309]
Gender	− 1.21***	− 0.92**	− 0.68*	0.27	[− 1.188, − 0.190]
Perpetration	–	0.14***	0.05	0.06	[− 0.056, 0.209]
Victimization	–	0.05	0.04	0.06	[− 0.079, 0.148]
Constructive	–	0.06***	0.06***	0.01	[0.037, 0.080]
MD	–	–	0.12***	0.04	[0.054, 0.171]
R^2	.05	.31	.43		
ΔR^2	.05***	.26***	.12***		

Unstandardized regression coefficients (*B*), standard errors (*SE*) and confidence intervals (CI) are from bootstrapped analyses. *Constructive*, constructive bystander intervention; *MD*, moral disengagement

*$p < .05$; **$p < .01$; ***$p < .001$

Bussey 2019; Van Cleemput et al. 2014). In the present study, moral disengagement was differentially related to aggressive and constructive intervention, providing further evidence for the differentiation between the two forms of intervention. In support of the hypotheses, higher moral disengagement proneness was related to increased aggressive bystander intervention and lower moral disengagement proneness was related to constructive bystander intervention.

These results parallel previous research. The relationship between higher moral disengagement and aggressive intervention findings is consistent with the many studies that have demonstrated a link between high moral disengagement and aggressive behaviour (Gini 2006; Gini et al. 2011; Gini et al. 2014; Obermann 2011; Sijtsema et al. 2014; Thornberg and Jungert 2014). However, this study extends the literature by showing that moral disengagement strategies can be used to justify a range of aggressive behaviours, including in the context of reacting to bullying situations online. Furthermore, the relationship between lower moral disengagement and constructive intervention is consistent with the findings in some previous studies (DeSmet et al. 2012; DeSmet et al. 2014; Luo and Bussey 2019;Van Cleemput et al. 2014). In contrast, other studies have not found a link between cyberdefending and moral disengagement (Allison and Bussey 2017; Bussey and Fitzpatrick 2015; DeSmet et al. 2016). These inconsistent findings may be a result, in part, of the use of more general measures of cyber defending that include both constructive and aggressive responses to cyberbullying. It therefore appears that constructive intervention when measured separately from aggressive intervention is weakly associated with lower levels of moral disengagement. As supported by these findings, interventions targeted at reducing the use of moral disengagement strategies in adolescents may promote more constructive and less aggressive online behaviours.

A further point of interest is the high correlations between cyber victimization and perpetration, and aggressive and constructive intervention styles. Previous studies have demonstrated that cyberbullying roles tend to be highly fluid, with adolescents commonly involved in several roles in the same cyberbullying incident (DeSmet et al. 2014; DeSmet et al. 2016; Van Cleemput et al. 2014). Here, the fluidity extends to the styles of intervention used by bystanders. This fluidity in roles tends to be more prominent in cyberbullying than traditional bullying (Antoniadou et al. 2019), possibly because of the increased anonymity and obscured impact on victims in the online world.

The results also revealed grade and gender differences in intervention styles. Grade 8 students reported higher constructive intervention than did grade 10 students. These results converge with previous studies that have shown younger adolescents are significantly more likely to help in bullying scenarios than are older adolescents (Allison and Bussey 2017; Datta et al. 2016; Stevens et al. 2000). Males in the study reported higher moral disengagement, cyberbullying perpetration, victimization, and aggressive intervention behaviours than did females. These findings are consistent with previous studies that have found that males score higher on measures of moral disengagement and aggressive behaviour than do females (Bandura 2002; Gini et al. 2015; Perren and Gutzwiller-Helfenfinger 2012; Thornberg and Jungert 2014; Wang et al. 2016). Females reported higher constructive intervention behaviours than did males. These findings are consistent with previous studies showing that females are more likely to defend than males in traditional bullying scenarios (Gini et al. 2015; Salmivalli et al. 1996; Trach et al. 2010).

There are some limitations arising from this study. First, the cross-sectional nature of this study means that the possibility of bidirectional effects cannot be eliminated. Clarifying the direction of the relationship between moral disengagement and cyber bystander intervention behaviours may be achieved through a longitudinal study. Second, the lead question for the Styles of Bystander Intervention Scale did not directly specify whether participants were to report on their behaviours towards the bully or the victim. It is possible this may have contributed to the lack of differentiation between constructive bully-focused and victim-focused intervention in this sample. However, this is unlikely since participants were explicitly asked about their responses to the bully and the victim separately for each item. Third, due to the use of self-report, it is possible that participants over-endorsed socially desirable behaviours, such as constructive intervention. To potentially reduce this problem, future studies could use an experimental design where participants respond to a simulated cyberbullying incident. Fourth, the current study, as with most of the extant research, uses a general measure of moral disengagement. Future research may be better served by using a contextualized measure of moral disengagement to reflect the cyber bystander context.

To conclude, this study provides support for the distinction between aggressive and constructive bystander intervention styles, challenging prior conceptualizations of intervention as a unidimensional construct. The development of the Styles of Bystander Intervention Scale makes a unique contribution to the literature, providing the possibility for further investigation into psychological factors related to aggressive and constructive bystander intervention. This study was also the first to investigate the influence of moral disengagement on aggressive and constructive intervention with a reliable measure of intervention styles, providing practical implications for the development of effective interventions to reduce cyberbullying. For example, the findings imply that interventions designed to lower individual moral disengagement may decrease aggressive and increase constructive responses to cyberbullying. This has the potential to reduce cyberbullying incidents, as it could prevent cycles of aggressive reactions to online posts. Identifying further psychological factors related to aggressive and constructive intervention styles could

provide a strong foundation for developing effective interventions to prevent and reduce the impact of cyberbullying.

Acknowledgements We thank Emma Jackson, Niamh Kenny, Aileen Luo, and Tomas Wee for assistance with data collection.

Compliance with Ethical Standards

Ethical approval for this study was granted by the Macquarie University Ethics Review Committee. Students, their parents and school principals provided informed written consent for students to participate in the study.

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