

To appear in Journal of Technology in Behavioral Science - DOI: 10.1007/s41347-018-0082-2.

Macaulay, P. J. R., Boulton, M. J., Betts, L.R., (2018). Comparing early adolescents' positive bystander responses to cyberbullying and traditional bullying: The impact of severity and gender. *Journal of Technology in Behavioural Science [In Press]*

Comparing early adolescents' positive bystander responses to cyberbullying and traditional bullying: The impact of severity and gender

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Author disclosure statement

On behalf of all authors, the corresponding author states that there is no conflict of interest.

The research complies with ethical standards and ethical approval was granted for the research by University of Chester.

Abstract

Young people are frequently exposed to bullying events in the offline and online domain. Witnesses to these incidents act as bystanders and play a pivotal role in reducing or encouraging bullying behaviour. The present study examined 868 (47.2% female) 11-13-year-old early adolescent pupils' bystander responses across a series of hypothetical vignettes based on traditional and cyberbullying events. The vignettes experimentally controlled for severity across mild, moderate, and severe scenarios. The findings showed positive bystander responses (PBRs) were higher in cyberbullying than traditional bullying incidents. Bullying severity impacted on PBRs, in that PBRs increased across mild, moderate, and severe incidents, consistent across traditional and cyberbullying. Females exhibited more PBRs across both types of bullying. Findings are discussed in relation to practical applications within the school. Strategies to encourage PBRs to all forms of bullying should be at the forefront of bullying intervention methods.

Keywords: cyberbullying; bullying; bystander; adolescence; severity

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Bullying is a sub-set of aggressive behaviour that involves repeated and intentional attempts to damage/distress a weaker victim by a more powerful perpetrator (Olweus 1978, 1993). It can manifest in many different ways and a key distinction is drawn between 'traditional' and 'cyber' forms. The former take place in real-world contexts, often face-to-face, whereas the latter are delivered via electronic communication media (Bauman & Bellmore, 2015). The two forms of bullying are recognised as major public health concerns (Allison & Bussey, 2016), which are associated with psychological distress (Hawker & Boulton, 2000; Brewer & Kerslake, 2015), depressive symptoms (Tynes, Rose, & Williams, 2010), and in worst cases, suicide (Hinduja & Patchin, 2010). While bullying often appears in early childhood, adolescence is a time when both traditional and cyber forms become especially prominent as the peer group grows in importance (Brown, Mory, & Kinney, 1994) and teenagers become frequent users of electronic communication devices (i.e., mobile phones, laptops etc.) (Pew Research Centre, 2013).

Relative to traditional bullying, cyberbullying is characterised by anonymity and an almost unlimited capacity to reach victims (Slonje & Smith, 2008; Slonje, Smith, & Frisé, 2013; Smith et al., 2008). Such differences have led scholars to recommend investigations that directly compare the two forms within the same sample (Boulton, Hardcastle, Down, Simmonds, & Fowles, 2014; Machackova & Pfetsch, 2016; Sticca & Perren, 2013). While bullying is often regarded as a dyadic process, more attention is being placed on those that are present and witness a bullying incident, but do not actively participate, also known as bystanders. Specifically, it is how bystanders respond to both forms of bullying that may act to precipitate versus attenuate bullying and/or its negative effects. Such responses can take a positive or negative form depending on how the bystander chooses to react. For example,

positive responses can foster help-seeking and emotional support for victims (DeSmet et al., 2014; Erreygers, Pabian, & Vandebosch, 2016; Pöyhönen, Juvonen, & Salmivalli, 2012), whereas negative responses encourage the perpetrator or at least fail to challenge the bullying act and provide tacit support for it (Holfeld, 2014; Jones, Mitchell, & Turner, 2015; Tsang, Hui, & Law, 2011). Clearly, understanding what precipitates prosocial bystander responses can help inform anti-bullying interventions.

Extant research is inconsistent with regards to whether bystanders would be more likely to intervene in traditional versus cyberbullying. On the one hand, adolescents report increased positive bystander behaviour for traditional than for cyberbullying incidents (Patterson, Allan, & Cross, 2016). This was attributed to the physical presence and authority figures in the offline environment. The online environment lacks clearly defined rules and presence of authority figures, making it easier for bystanders online to ignore the incident (Patterson et al., 2016). On the other hand, the online environment provides increased anonymity and autonomy to young people (Wong-Lo & Bullock, 2014). It is these characteristics that allow young people to choose how to respond and control their self-presentation online (Madell & Muncer, 2007; Valkenburg & Peter, 2011). This perceived control online allows bystanders to positively intervene through communication technology in a private manner (Bastiaensens et al., 2015; Wong-Lo & Bullock, 2014).

Moreover, Latane and Darley's well-known social psychological research on diffusion of responsibility (DOR) for intervening to help someone in distress also leads to conflicting expectations about relative bystander support for victims of traditional versus cyberbullying (Latane & Darley 1976; see Hogg & Vaughn, 2011). They found that the presence of other 'onlookers' tends to reduce a person's willingness to intervene in a positive way via DOR (e.g., 'there is no need for me to help since someone else will'). This could imply that the *physical presence* of co-onlookers of traditional bullying would lead to less

positive bystander behaviour relative to cyberbullying. On the other hand, the likely greater number of *virtual co-onlookers* of cyberbullying might lead to less positive behaviour than for traditional bullying incidents for the same reason.

Researchers have also considered moderator variables that could influence bystander responses to traditional versus cyberbullying, and severity of the bullying incident and gender have been implicated. Young people are known to make evaluations about the likely impact of different types of bullying on victims (Chen, Cheng, & Ho, 2015; Williams & Guerra, 2007) and so severity is thought to influence the bystander responses they make. However, again there is inconsistency in extant research and theory. On the one hand, an onlooker of more severe acts of bullying may experience greater shame for not intervening in a positive manner (Bandura, 1986; Cappadocia, Pepler, Cummings & Craig, 2012). Consistent with this line of thinking, some studies report that young people tend to offer help for more as opposed to less severe cyberbullying (Bastiaensens et al., 2014, 2015; Obermaier, Fawzi, & Koch, 2016) and traditional bullying (Cappadocia et al., 2012; Forsberg et al., 2018). On the other hand, research has shown that many young people are aware that siding with victims runs the risk of becoming targeted by the bullies (Boulton, 2013). It would be conceivable that adolescents may be less inclined to offer help as bystanders of more as opposed to less severe episodes of bullying because of the greater risk. But even that intuitively appealing notion is challenged because while some studies have found that adolescents regard cyberbullying as *more* serious than traditional bullying (Sobba, Paez & Benseel, 2017; Sticca & Perren, 2013), others have found that they are *more* inclined to intervene positively in the former (Bastiaensens et al., 2015; Madell & Muncer, 2007; Wong-Lo & Bullock, 2014). So, while the ‘helping victims is risky’ hypothesis may be applicable for traditional bullying, perhaps because positive bystander responses are potentially highly visible, the anonymous nature of online activity may provide opportunities to safely intervene on behalf of victims in severe

acts of cyberbullying (Madell & Muncer, 2007; Obermaier et al., 2016). Despite these inconsistencies in the body of research on bystander responses to bullying, findings do seem to be consistent with theory and evidence to suggest that the behaviour of young people around bullying is the product of them weighing up the risks and the benefits of different course of action (Boulton, Boulton, Down, Sanders, & Craddock, 2017; Newman, 2008). Thus, while the severity of a bullying incident is highly likely to moderate bystander responses, more research is needed to elucidate the details. In particular, does the influence of severity act in a similar or dissimilar way for traditional versus cyberbullying?

Considering the influence of gender on bystander behaviour, females tend to have more positive attitudes to providing peer support in general compared to males (Boulton, 2005; Cowie, 2000). This has also been found in relation to both traditional and cyberbullying (Bastiaensens et al., 2014; Cao & Lin, 2015; Gini, Pozzoli, Borghi, & Franzoni, 2008). This body of evidence suggests that the moderating role of gender is such that females will be more likely than males to exhibit positive bystander responses (PBRs) to bullying. However, the extent to which this holds true for cyber versus traditional bullying warrants further study.

Turning to the current study, the extant literature provides a clear rationale for further examination of young people's PBRs in a way that allows direct comparisons of traditional and cyberbullying, females versus males, and less versus more severe incidents. These three factors were examined as main effects with the following associated hypotheses/research questions:

1. PBRs will be higher in cyberbullying than traditional bullying (Bastiaensens et al., 2015; Madell & Muncer, 2007; Wong-Lo & Bullock, 2014).
2. Females will exhibit more PBRs than males (Bastiaensens et al., 2014; Cao & Lin, 2015; Gini et al., 2008).

3. Due to inconsistencies in extant findings, it was tested if PBRs would vary as a function of severity. As severity increases, the ‘helping victims is risky’ hypothesis (Boulton, 2013) predicts *less* PBRs, whereas the hypothesis that there would be greater shame associated with not helping (Bandura, 1986; Cappadocia et al., 2012) predicts *more* PBRs.

In addition, interaction effects were tested in order to examine:

4. if the influence of severity acts in a similar or dissimilar way on PBRs to traditional versus cyberbullying, i.e., would there be an interaction between type of bullying and severity?
5. whether gender acts as a moderator of participants’ tendencies to intervene positively in traditional versus cyberbullying, i.e., would there be an interaction between type of bullying and gender?
6. whether gender acts as a moderator of participants’ tendencies to intervene positively as a function of severity, i.e., would there be an interaction between severity and gender?

Method

Participants

The local Ethics Committee approved this study. Data were collected from 868 early adolescents aged 11-13 years (47.2% female) drawn from two secondary schools in the UK, across school year 7 and school year 8. The sample recruited in the current study reflects that of those in middle school in the USA, between 6th and 7th grades. The sample were recruited from urban schools based in the UK, Midlands, in the city and districts of Birmingham. Ethnicity data were not solicited at the request of the schools, but they are typical state-

funded schools with around 1,000 students from a range of ethnic and socio-economic backgrounds. Consent from participants and parents/guardians/head teachers was obtained.

Measures

As in previous studies (Bastiaensens et al., 2014; Patterson, Allan, & Cross, 2017; Price et al., 2014) bystander responses were assessed in relation to six hypothetical vignettes. The three scenarios for traditional (verbal) bullying, and the three scenarios for cyberbullying, each contained a mild, moderate, and severe incident. The level of bullying severity for both traditional and cyberbullying vignettes was differentiated by the intensity of the mean/aggressive comment, the repetitive nature of the incident, and the extent to which the victim was upset. Such factors in the literature are known to impact perceived severity and increase negative feelings for the victim (Gini & Espelage, 2014; Palladino et al., 2017; Wright et al., 2017), and as such, formed the rationale for the development of the severity categories for the vignettes. After each scenario had been read out by the researcher (to overcome any literacy/comprehension issues), participants were asked “What would you do in this situation? List as many things as you can think of”. Participants were encouraged to carefully think how they would respond and to write down their individual ideas as they came to them. Participants had about 15-20 minutes to consider these key questions, far more than is usually afforded to open questions incorporated into self-report questionnaires. Prior studies have shown that adolescents typically provide rich data when this method is adopted (Boulton et al., 2017).

A coding frame was developed to allow quantitative analysis of participants’ responses. To develop this coding frame, prior research on bystander responses was consulted and reviewed (DeSmet et al., 2014; Erreygers et al., 2016; Patterson et al., 2016; Pöyhönen et al., 2012), which identified four specific common categories of positive response, shown in Table 1 with their operational definitions and exemplars of vignettes. The

coding frame was reviewed by members of the school staff responsible for e-safety at the participating schools for additional views on the identified codes. Coding was conducted by two independent researchers. Inter-coder reliability across 120 responses from males and females to scenarios of different levels of severity yielded a Cohen's Kappa of .623, regarded as 'substantial' (Peat, Mellis, Williams, & Xuan, 2002; Viera & Garrett, 2005). Examples of responses are, 'Go and find a teacher straight away to tell them what happened' and 'Go to the person who has been bullied and make sure they are okay', which were coded respectively as 'Seek help from a trusted adult and/or teacher' and 'Provide emotional support and comfort the victim'. Additional examples can be seen in Table 1. To operationalise participants' PBRs for each vignette, the number of responses from each of the four codes was tallied, giving each vignette a possible range of 0 to 4.

[Table 1 near here]

Procedure

Data were collected on a whole-class basis. Teachers were present but took no active part in proceedings. Participants received a questionnaire and were seated to ensure privacy. Their right to not take part or withdraw at any time was explained. They were informed that there were no right or wrong answers and encouraged to offer their own personal views. So that students and researchers had a shared understanding of key constructs, and to provide a context for the questions, the researcher discussed and defined 'bystander', 'traditional bullying' and 'cyberbullying'.

Statistical analysis

To address the hypotheses/research questions, a 2 x 3 x 2 (type of bullying [traditional, cyber] x severity [mild, moderate, severe] x gender [male, female]) mixed ANOVA was performed along with follow-up tests. Type of bullying and severity were repeated measures and PBRs the dependent variable. Partial eta squared (η^2) to determine

effect size followed Cohen's (1988) small ($\eta^2 = 0.01$), medium ($\eta^2 = 0.06$), and large ($\eta^2 = 0.14$) effect level recommendations. The main effects are presented before describing if and how these were qualified by interaction effects.

Results

Confirming hypothesis 1, PBRs were significantly higher in cyberbullying ($M = 3.86$, $SD = 1.79$) than traditional bullying ($M = 3.27$, $SD = 2.19$), Wilk's Lambda = 0.97, $F(1,866) = 23.64$, $p < .001$, partial $\eta^2 = .03$.

Confirming hypothesis 2, females ($M = 8.66$, $SD = 3.31$) exhibited significantly more PBRs than males ($M = 6.32$, $SD = 3.43$), $F(1,866) = 104.33$, $p < .001$, partial $\eta^2 = .11$.

For research question 3, PBRs did vary significantly as a function of severity, Wilk's Lambda = 0.73, $F(2,865) = 160.55$, $p < .001$, partial $\eta^2 = .27$. Post-hoc pairwise comparisons indicated PBRs for severe ($M = 2.85$, $SD = 1.44$) > than for moderate ($M = 2.51$, $SD = 1.35$) > than for mild ($M = 2.07$, $SD = 1.36$) bullying, all $p < .001$.

For research question 4, there was a significant interaction between type of bullying and severity, Wilk's Lambda = 0.92, $F(2,865) = 36.39$, $p < .001$, partial $\eta^2 = .08$. The nature of this interaction was probed with pairwise comparisons between traditional and cyberbullying at each of the three levels of severity; whereas there was no difference at mild (traditional: $M = 1.01$, $SD = .90$; cyber: $M = 1.06$, $SD = .75$) and severe (traditional: $M = 1.45$, $SD = .95$; cyber: $M = 1.40$, $SD = .77$) levels, at moderate levels PBRs were significantly higher for cyber ($M = 1.40$, $SD = .77$) than for traditional bullying ($M = 1.11$, $SD = .85$). In traditional bullying, there was a significant difference between each pair of severity level, all $p < .001$. Whereas in cyberbullying, each pair of severity level was significant, all $p < .001$, with the exception of moderate and severe, not significant. Figure 1 shows the interaction between type of bullying and severity on participants' PBRs.

For research question 5, there was no evidence for an interaction between gender and type of bullying, Wilk's Lambda = 1.00, $F(1,866) = .16, p > .05$.

For research question 6, there was a significant interaction between gender and severity, Wilk's Lambda = .98, $F(2,865) = 7.04, p < .001$, partial $\eta^2 = .02$. The nature of this interaction was probed with pairwise comparisons between females and males at each of the three levels of severity; for severe levels, PBRs were significantly higher among females ($M = 3.34, SD = 1.36$) compared to males ($M = 2.41, SD = 1.36$), $t(866) = -10.10, p < .001$. At moderate severity, females ($M = 2.93, SD = 1.27$) had significantly higher levels of PBRs than males ($M = 2.13, SD = 1.30$), $t(866) = -9.16, p < .001$. The mean difference at mild bullying severity indicated females ($M = 2.38, SD = 1.30$) compared to males ($M = 1.78, SD = 1.36$), $t(866) = -6.67, p < .001$ were significantly more likely to exhibit PBRs. The nature of this interaction illustrates that females offer increasingly more PBRs than males as bullying severity increases. Figure 2 shows the interaction between gender and severity on participants' PBRs.

[Figure 1 and 2 near here]

Discussion

This study set out to examine the influence of severity and gender on early adolescents' reported willingness to support victims of bullying, and to directly compare traditional versus cyberbullying. In line with previous studies, our main effects analysis showed that the participants reported a greater willingness to intervene positively in cyber than traditional bullying (Bastiaensens et al., 2015; Madell & Muncer, 2007; Wong-Lo & Bullock, 2014), and females did so more than males (Bastiaensens et al., 2014; Cao & Lin, 2015; Gini et al., 2008). A linear main effect of severity was obtained, with PBRs declining significantly from severe through moderate to mild cases. This is an important finding

because it provides a direct test between two competing predictions derived from theory. It runs counter to the ‘helping victims is risky’ hypothesis (Boulton, 2013) but is consistent with the view that onlooker of more severe acts of bullying may experience greater shame for not intervening in a positive manner (Bandura, 1986; Cappadocia et al., 2012).

The finding that the effect of severity was qualified by type of bullying is a further contribution of the research. The main difference was that at moderate levels, PBRs were significantly higher for cyber than for traditional bullying, but that PBRs did not differ at mild and severe levels. Put another way, the threshold for relatively high amounts of PBRs ‘kicked in’ at moderate levels of severity for cyberbullying but at severe levels of severity for traditional bullying. These results have important practical implications. They suggest that with relatively little prompting on the part of adults (parents and teachers in particular), early adolescents could be persuaded to act on their apparent tendencies to support victims of cyberbullying but that efforts to encourage more widespread PBRs to traditional bullying may need to be substantial. Verbal bullying was chosen as an exemplar of traditional bullying and prior research has shown that many young people and adults fail to see this as ‘serious’, at least relative to physical traditional bullying (Boulton et al., 2014; Jacobsen & Bauman, 2007; Maunder, Harrop, & Tattersall, 2010).

Research has identified that cyberbullying is often regarded as *more* serious than its traditional counterpart (Sobba et al., 2017; Sticca & Perren, 2013) and in line with the current study, early adolescents feel more inclined to offer PBRs in the former. The finding that females were more likely than males to offer PBRs in both forms of bullying and at all levels of severity could be explained by their more proactive attitudes to provide peer support (Boulton, 2005; Cowie, 2000) and their stronger belief that bullying is ‘serious’ (Molluzzo & Lawler, 2012). Based on this, we suggest that efforts to communicate/reinforce the notion that *all* forms of bullying *are* serious may support the belief among young people that,

correspondingly, all forms of bullying merit PBRs, especially amongst males. However, future research should explore whether these attitudes translate into their actual behaviour when acting as a positive bystander for both forms of bullying. A previous study showed that such beliefs may be engendered effectively by allowing older students to teach their younger peers about such matters (Boulton et al., 2016). This, in turn, may promote and encourage future PBRs across all pupils.

While the findings suggest the frequency of PBRs are similar across both forms of bullying, in particular, across levels of bullying severity, early adolescents were more likely to exhibit these behaviours in the online domain. It could be that early adolescents perceive cyberbullying incidents to be more public, a recognised feature attributed to the wider audience online (Slonje & Smith, 2008; Slonje et al., 2013), and as such, offer more PBRs due to the increased perceived impact on the victim (Chen & Cheng, 2017; Sticca & Perren, 2013). In addition, the ability to conceal one's identity in the online domain could influence bystander intentions. On the one hand, the anonymity online could hinder PBRs (Barlińska, Szuster & Winiewski, 2013), while on the other hand, the feature could create a platform for bystanders to positively intervene in a safe and responsible manner (Dredge, Gleeson, & De La Piedad Garcia, 2014; Madell & Muncer, 2007). Due to different reporting systems in the online and offline domain, adults can provide examples to young people on how to safely record and report witnessed incidents.

As noted in the Introduction, extant theory (Latane & Darley 1976; see Hogg & Vaughn, 2011) suggests bystanders evaluate the incident severity and make decisions about (non)-intervention at least partly on the basis of DOR. In the original research, DOR was regarded as being a simple linear function of the sheer number of co-onlookers. When it comes to bullying, this simple approach needs to be refined because, as the current study noted, DOR may also be influenced by perceived severity and in the cyber domain, co-

onlookers are not actually physically present. The findings showed that early adolescents exhibited more PBRs in cyber compared to traditional bullying, even though the former tend to be associated with a wider audience and hence a greater number of cyber bystanders. The online domain creates challenges for bystanders, especially when evaluating the severity of the incident, as bystanders could misinterpret the severity of the event. However, consistent across both forms of bullying, PBRs increased with severity, attributed due to the greater shame experienced by bystanders by not intervening for *more* as opposed to *less* severe incidents (Bandura, 1986). Research has shown how reduced self-efficacy can impact on bystander intentions (Thornberg & Jungert, 2013), highlighting the role of social-cognitive theories/principles to encourage PBRs. Practical applications of this suggest schools should implement intervention strategies to encourage active reflection and discussion on appropriate bystander responses through role play and activities. This can enable early adolescents to practice and gain the skills necessary to be a positive bystander in both online and offline domains.

Some limitations of the current study need to be noted. Responses to vignettes are only proxies for social behaviour (Bellmore, Ma, You, & Hughes, 2012). Despite this, young people have shown consistency in their stated intentions (Turiel, 2008) and so vignette methodology has some merits. In addition, while the vignettes provide a good measure of attitudes and what early adolescents think they would do when faced with particular situations, it is also possible these may not reflect their actual attitudes and behaviours. However, prior research on the relationship between what we say we do and what we actually do outlines the need to provide contextualised information to increase participants' accuracy between their real and hypothetical choices (FeldmanHall et al., 2012). As outlined in the Method section, key constructs were discussed to enhance understanding and provide context

for the vignettes. Such procedures demonstrate the steps that were taken to increase the accuracy of the participants' responses.

In addition, self-report data could reflect social desirable responses, with early adolescents overestimating their PBRs. However, steps were taken to minimise this possibility. While only verbal bullying was used to depict traditional bullying vignettes, this form of bullying has been recognised as the most prevalent of the traditional methods, and identified to most overlap with cyberbullying (Vandebosch & Van Cleemput, 2009; Waasdorp & Bradshaw, 2015). However, future research should compare bystander responses between different subsets of traditional and cyber forms of bullying. This would illustrate any discrepancy on PBRs across physical, verbal, relational and cyber forms of bullying. In particular, how PBRs vary according to the online platform and/or digital device used would aid future anti-cyberbullying initiatives when developing new social networks or devices.

In summary, this study offers a unique comparison of PBRs between cyber and traditional bullying by considering the influence of bullying severity and gender. The findings contribute to research on bystanders by showing that early adolescents' report increased PBRs in cyber than traditional bullying, with more PBRs as bullying severity increases across both types of bullying, particularly among females. This suggests the severity of bullying is an important predictor on subsequent bystander intentions, and so merits further investigation. They add to the growing body of knowledge that can be used to encourage more PBR among young people as an important way to combat bullying and its negative effects.

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Table 1: Information used to code participants responses and associated vignettes across levels of bullying severity.

Code	Operational Definition	Examples
Seek help from a trusted adult and/or teacher	Responses illustrate an awareness to seek help from a trusted adult and/or teacher after witnessing the incident.	<i>'Seek help from a teacher'</i> <i>'Try and find a known adult or parent to help'</i> <i>'Report the incident to an adult straight away'</i>
Seeking help from a friend and/or someone your own age	The response considers the need to seek help from a friend and/or peer of similar age. These responses can also include siblings.	<i>'Seek help from a close friend who I trust'</i> <i>'Report the incident to my brother or sister'</i> <i>'Go and find help from someone else online'</i>
Directly intervene to support the victim and stop the perpetrator.	Responses that indicate the child would intervene to stop the bully and help the victim.	<i>'Send the bully a message to stop'</i> <i>'Go up to the bully and stop them'</i> <i>'Tell the bully to say sorry'</i>
Provide emotional support and comfort the victim	Responses where the child provides emotional support to the victim, providing comfort and reassurance.	<i>'Make sure the victim is feeling okay'</i> <i>'Go to the person being bullied for support'</i> <i>'Send a message to see if they are okay'</i>
Bullying severity	Phrase used to depict [traditional/cyber] bullying vignettes	
Mild	Imagine a situation where you are [in the school playground/online] and you witnessed a school pupil [shouting/sending] <u>not so aggressive/mean comments</u> to another pupil. You have noticed this has happened <u>once</u> [in the school playground/online] and that the pupil has looked <u>not so upset about this</u> recently.	
Moderate	Imagine a situation where you are [in the school playground/online] and you witnessed a school pupil [shouting/sending] <u>fairly aggressive/mean comments</u> to another pupil. You have noticed this has happened <u>several times</u> [in the school playground/online] and that the pupil has looked <u>fairly upset about this</u> recently.	
Severe	Imagine a situation where you are [in the school playground/online] and you witnessed a school pupil [shouting/sending] <u>very aggressive/mean comments</u> to another pupil. You have noticed this has happened <u>everyday</u> [in the school playground/online] and that the pupil has looked <u>very upset about this</u> recently.	

Fig. 1 Interaction between type of bullying and bullying severity on early adolescents' PBRs

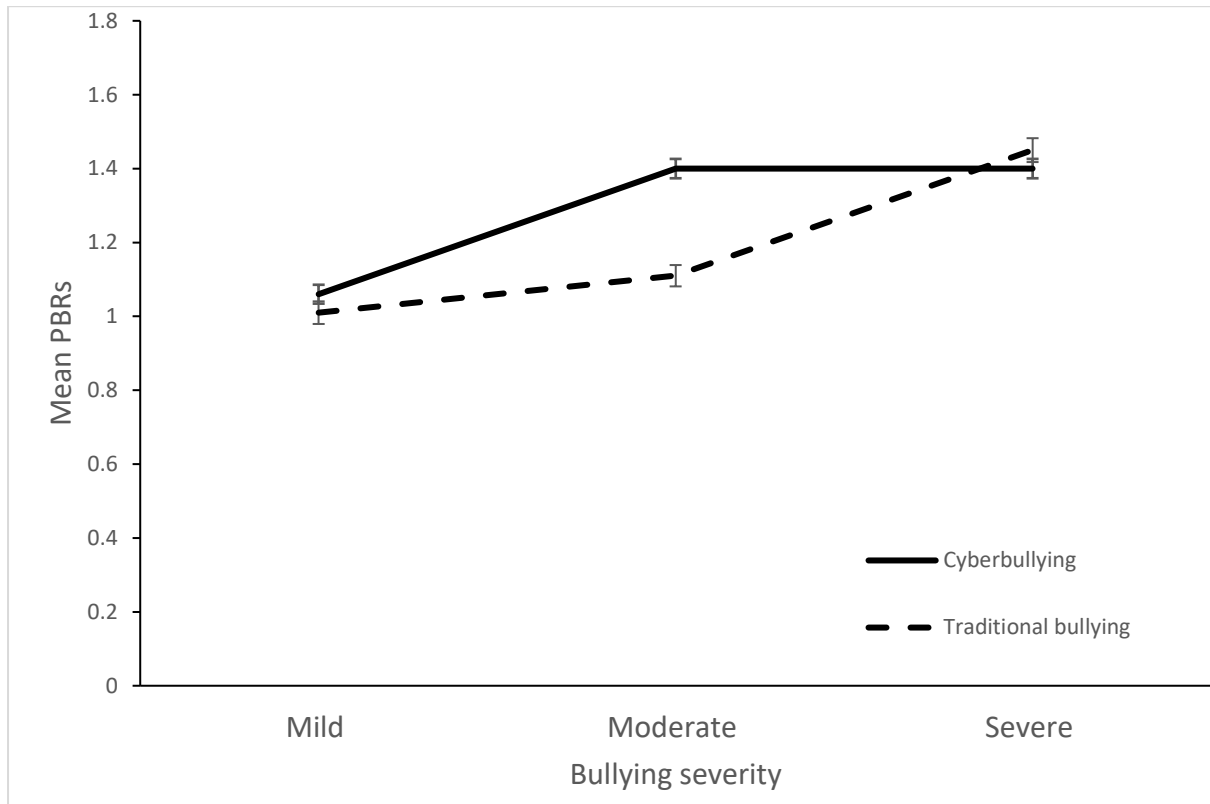


Fig. 2 Interaction between gender and bullying severity on early adolescents' PBRs

