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Cyberbullying, self-esteem, empathy and loneliness

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ABSTRACT

Cyberbullying is a unique phenomenon, distinguished from traditional bullying by the speed at which information is distributed, permanence of material and availability of victims. There is however a paucity of research in this area, and few studies have examined the factors contributing to cyberbullying behaviour. The present study investigated the influence of self-esteem, empathy and loneliness on cyberbullying victimisation and perpetration. British adolescents ($N = 90$) aged 16–18 years were recruited from Further Education colleges. Participants completed the Revised Cyber Bullying Inventory (RCBI, Topcu & Erdur-Baker, 2010), the UCLA Loneliness Scale (Russell, Peplau, & Ferguson, 1978), Toronto Empathy Questionnaire (TEQ, Spreng, McKinnon, Mar, & Levine, 2009) and Rosenberg Self-Esteem Scale (Rosenberg, 1965) online. Standard multiple regressions revealed that together, loneliness, empathy and self-esteem predicted levels of cyberbullying victimisation and perpetration. Self-esteem was a significant individual predictor of cyberbullying victimisation and perpetration, such that those with low self-esteem were most likely to report experience of cyberbullying. Empathy was a significant individual predictor of cyberbullying perpetration, such that as empathy decreases, likelihood of cyberbullying perpetration increases. These findings indicate that self-esteem and empathy oriented interventions may successfully address cyberbullying behaviour.

1. Introduction

A range of research studies have documented the prevalence, causes and consequences of bullying which constitutes a critical issue within school and adolescent populations (Li, 2007; Olweus, 1993). There are therefore a range of strategies and formal policies available to address this behaviour. In recent years, a new form of bullying, termed cyberbullying has arisen, reflecting the increasing prevalence of digital technology. Though the benefits of this form of communication are acknowledged (Gross, Juvonen, & Gable, 2002), there is also the potential for substantial harm (Sabella, Hinduja, & Patchin, 2013). Definitions of cyberbullying vary, illustrating both the recency of the phenomenon and the rapid technological advances which influence the frequency and form of electronic communication. However one widely accepted definition refers to cyberbullying 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, p. 376). Thus cyberbullying is not restricted to one communication type and may involve a range of technologies such as email, instant messaging or personal websites. The psychological and emotional distress experienced by cyberbullying victims is clearly documented (e.g. Kowalski, Limber, Limber, & Agatston, 2012; Tokunaga, 2010) and includes anxiety, depression, and poor physical health. Due to the relative recency of the phenomena, it may be some time however before the long-term consequences of this behaviour are fully understood. Hence cyberbullying represents an important area of concern.

The traditional bullying literature has informed online bullying research by highlighting a range of factors which may increase the incidence of online bullying and the likely consequences of this behaviour. Cyberbullying is though a unique phenomenon that is separate but closely related to traditional bullying (Pieschl, Porsch, Kalh, & Klockenbusch, 2013). Indeed important differences between traditional bullying and cyberbullying exist. In particular, those engaged in cyberbullying are not restrained by time or space and can use multiple media platforms, such as photos, videos, slide shows and interactive polls, to target their victims (Li, 2007). Furthermore, the often anonymous nature of the interaction, speed of distribution, permanence of material and constant availability of victims can exacerbate the negative impact on bullying victims (Willard, 2007). Hence, research specifically investigating cyberbullying is required, rather than extrapolation of findings from the traditional bullying literature. The present study contributes

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to this developing research area and investigates the role of psychosocial factors in cyberbullying perpetration and victimisation.

Cyberbullying is most prevalent in the 'online' generation, which predominantly consists of children and adolescents (Kowalski et al., 2012). Estimates of cyberbullying prevalence vary widely between studies and samples (Patchin & Hinduja, 2012). For example, while Kowalski and Limber (2007) reported that 11% and 4% of students aged 11–13 years were the victims and perpetrators of cyberbullying, Li (2007) identifies victimisation and perpetration levels of 25% and 15% respectively in children aged 11–12 years. Despite inconsistencies in estimations of current prevalence, as technology continues to advance and becomes increasingly available in less developed countries, the number of individuals influenced by cyberbullying is predicted to increase. Rising prevalence of cyberbullying, combined with a paucity of available information and the suggestion that those responsible for adolescent welfare may be ill equipped to address the issue, highlight the importance of investigating the cyberbullying experience.

With regards to the source of the cyberbullying, Li (2007) comments that victims of cyberbullying are predominantly bullied by classmates (31.8%), followed by those outside the school (11.4%). A substantial number (15.9%) are bullied by multiple sources and 40.9% do not know the identity of the bully. With regards to the individuals that are most likely to experience cyberbullying either as a perpetrator or victim, the research is less clear. The traditional bullying literature identifies a range of personal characteristics associated with bullying victimisation or perpetration; these do not however consistently apply to cyberbullying. For example, whereas traditional bullies are most likely to be dominant assertive personalities that are impulsive and often aggressive (Olweus, 1993), technology may attract more socially anxious personalities and those that would not engage in bullying offline (Kowalski & Limber, 2007). Consequently the interventions intended to target those engaged in traditional bullying behaviour may not effectively address cyberbullying. The current study investigates the relationship between cyberbullying and three specific psychosocial factors relating to the presence of offline relationships, attitudes towards the self and emotional connections with others: loneliness; self-esteem and empathy. These factors were selected based on traditional bullying research and potential suitability for psychological interventions.

Perceptions of the quantity and quality of offline social relationships available may influence willingness to engage online or the form of online social interactions. In particular, loneliness which peaks during adolescence (Brennan, 1982) and is conceptualized as perceived social isolation rather than physical separation (Cacioppo & Hawkley, 2003), may impact on the propensity to perpetrate or be the target of cyberbullying. Previous research findings assessing the importance of loneliness in online behaviour are however inconsistent. For example, it has been suggested that online communications reduce loneliness by providing more opportunities to connect with others and increasing control over communication (Valkenburg & Peter, 2011) and that the Internet is favored by shy, socially anxious individuals wishing to expand their social networks in order to decrease feelings of loneliness (Russell, Flom, Gardner, Cutrona, & Hessling, 2003). In contrast, the use of technological communication has also been linked to a decrease in offline social interactions and weak, more superficial social relationships (Subrahmanyam & Lin, 2007). Though few studies have specifically addressed the relationship between cyberbullying and loneliness, Sahin (2012a) reports a relationship between loneliness and cyberbullying victimisation (but not perpetration) in secondary school children. Though Sahin (2012a) did not find a relationship between loneliness and cyberbullying perpetration, these individuals often seek and rely on social support (Srabstein & Piazza, 2008), suggesting that they might feel lonely or rejected. Thus cyberbullying may represent a form of empowerment or aggression against those perceived to have rejected their advances. Further investigation in older adolescents is required.

Social relationships provide a range of benefits that may not be available to lonely adolescents, such as the opportunity to enhance social skills. Empathy encompasses the sharing (Eisenberg & Strayer, 1987) and understanding (Cohen & Strayer, 1996) of another's emotional state. Research has consistently identified relationships between empathy and perpetration of traditional bullying or aggressive and antisocial behaviour, regardless of the type of bullying or perpetrator gender (Ciucci & Baroncelli, 2014; Jolliffe & Farrington, 2006). Specifically, those with low levels of empathy engage in more frequent or severe bullying. In contrast to traditional bullying where perpetrators are exposed to victim distress, online bullying is characterised by anonymity, and lack of direct feedback from the victim, which distances the perpetrator from the victim. Thus it may be less important that perpetrators of cyberbullying are able to distance themselves from their victim. Despite these differences, initial findings suggest that empathy is also a valid predictor of cyberbullying perpetration (Ang & Goh, 2010; Casas, Del Rey & Ortega-Ruiz, 2013; Steffgen, Konig, Pfetsch, & Melzer, 2011). Empathy also influences the likelihood that online 'bystanders' will become involved in cyberbullying (Barlinska, Szuster, & Winiewski, 2013). In comparison, relatively few studies have investigated the relationship between empathy and victimisation. Researchers have recently indicated that victims of cyberbullying report higher levels of empathy (Kokkinos, Antoniadou, & Markos, 2014; Pettalia, Levin, & Dickinson, 2013) which may reflect a greater sensitivity to perpetrator intentions in ambiguous situations. In contrast, Schultze-Krumbholz and Scheithauer (2009) suggest that adolescents that are either victims or perpetrators of cyberbullying exhibit lower levels of empathy than those that are not involved.

Self-esteem, often defined as "a favourable or unfavourable attitude towards the self" (Rosenberg, 1965 p. 15), is particularly important during adolescence when individuals experience a process of identity development. Studies investigating the relationship between traditional bullying and self-esteem have produced inconsistent findings (Patchin & Hinduja, 2010). For example, though low self-esteem is typically associated with high bullying perpetration, other researchers report that perpetrators have higher self-esteem (Salmivalli, Kaukiainen, Kaistaniemi, & Lagerspetz, 1999). Research investigating associations between self-esteem and victimisation is more consistent, and commonly indicate that victims of traditional bullying report low self-esteem (Kowalski & Limber, 2013). With regards to cyberbullying, recent research has reported that victims display lower self-esteem (Cenat et al., 2014; Chang et al., 2013), though some researchers have reported low self-esteem amongst both perpetrators and victims (Kowalski & Limber, 2013; Patchin & Hinduja, 2010) compared to those that were not involved. These inconsistencies may reflect variation in circumstance or samples and illustrate the importance of conducting additional research studies in this field.

The experience of cyberbullying (e.g. prevalence, causes and consequences) may vary widely according to context (e.g. school or the workplace) and individual factors (e.g. differences between children and older adolescents), therefore informed interventions require a more detailed understanding of this phenomenon in specific populations. British adolescents finishing compulsory education at age 16 years can choose to study (i.e. Further Education) for an additional two years before entering university or employment. This age group is of particular interest to researchers due to the paucity of research in this population and the transitional nature of these colleges, as students develop from children to adults. Hence the current study investigates the relative influence of loneliness, empathy, and self-esteem on cyberbullying perpetration and victimisation within a Further Education college sample.

2. Method

2.1. Participants

Students ($N = 90$) aged 16–18 years ($M = 17.11$, $SD = .77$) were recruited from Further Education colleges in the North West of England. This sample included 51 women and 39 men.

2.2. Materials

Participants completed a range of measures online. These included the Revised Cyber Bullying Inventory (RCBI, Topcu & Erdur-Baker, 2010), the UCLA Loneliness Scale (Russell, Peplau, & Ferguson, 1978), Toronto Empathy Questionnaire (TEQ, Spreng, KcKinnon, Mar, & Levine, 2009) and Rosenberg Self-Esteem Scale (Rosenberg, 1965). Higher scores indicate greater levels of cyberbullying victimisation or perpetration, loneliness, empathy and self-esteem.

The Revised Cyber Bullying Inventory (RCBI, Topcu & Erdur-Baker, 2010) measures both perpetration and victimisation of cyberbullying during the previous six months. Participants first rate how often 14 activities have happened to them (victimisation) and secondly how often they have directed the behaviours towards others (perpetration). Example activities include 'Insulting in online forums (like chatrooms, facebook, twitter)' and 'Sending threatening and/or hurtful text messages'. Participants report personal experience of the activities during the previous six months using a four point likert scale (0 = *never*, 1 = *once*, 2 = *twice to three times* and 3 = *more than three times*).

The UCLA Loneliness Scale (Russell, Peplau, & Ferguson, 1978) contains 20 items assessing the individual's subjective feelings of loneliness and social isolation. Participants rate the items on a four point likert scale (0 = *never*, 1 = *rarely*, 2 = *sometimes*, and 3 = *often*) corresponding to how often they experience those feelings. Statements include 'I am unhappy doing so many things alone' and 'I feel as if nobody really understands me'. The Toronto Empathy Questionnaire (TEQ, Spreng et al., 2009) is a 16 item, measure of global empathy. The questionnaire contains statements that encompass a wide range of attributes associated with the theoretical facets of empathy such as, emotion comprehension and sympathetic physiological arousal. Participants respond to statements such as 'When someone else is feeling excited, I tend to get excited too' and 'I find that I am 'in tune' with other peoples moods' using a five point likert scale. The scale assesses the frequency that the statements are considered true and ranges from 0 = *never*, 1 = *rarely*, 2 = *sometimes*, 3 = *often* to 4 = *always*).

The Rosenberg Self-Esteem Scale (Rosenberg, 1965) is a 10 item scale of global self-worth which includes both positive and negative feelings about the self. Participants respond to statements such as 'On the whole I am satisfied with myself' and 'I feel I do not have much to be proud of', on a four point likert scale (1 = *strongly disagree*, 2 = *disagree*, 3 = *agree*, 4 = *strongly disagree*). Previous research has established the validity and reliability of each questionnaire (e.g. Barnett & Womack, 2015; Cusi, MacQueen, Spreng, & McKinnon, 2011; Knight, Chisholm, Marsh, & Godfrey, 1988) and all measures demonstrated acceptable reliability in the current study: cyberbullying victimisation ($\alpha = .932$); and perpetration ($\alpha = .925$); loneliness ($\alpha = .969$); self-esteem ($\alpha = .911$); and empathy ($\alpha = .781$).

3. Results

Participants completed a range of standardised measures assessing cyberbullying (perpetration and victimisation), loneliness, empathy and self-esteem. Participants were classified as victims or perpetrators of cyberbullying if the behaviour was reported as occurring more than once during the previous six months. According to this criterion, 16.22% and 13.54% of participants were victims and perpetrators of cyberbullying respectively. The cyberbullying acts most frequently reported by perpetrators were making fun of comments in online forums, sharing private internet conversations without the other's knowledge, and insulting others in online forums. The acts most frequently experienced by victims were being insulted in online forums, comments being made fun of in online forums, and private internet conversations being shared without their knowledge. Victimisation exceeded perpetration for each cyberbullying act included. These data are shown in Fig. 1. Pearson's correlations revealed that cyberbullying victimisation was negatively related to self-esteem and positively related to cyberbullying perpetration and loneliness. Cyberbullying perpetration was positively related to cyberbullying victimisation and negatively related to empathy and self-esteem. These data are shown in Table 1.

Standard multiple regressions were conducted with loneliness, self-esteem and empathy entered as predictor variables and cyberbullying victimisation and perpetration as criterion variables. The overall model predicted level of cyberbullying victimisation ($F(3,86) = 8.138$, $p < .001$), explaining 22.1% of the overall variance ($R^2 = .221$; Adj $R^2 = .194$). Self-esteem was a significant individual predictors of victimisation ($B = -.313$, $t = -2.206$ $p = .030$) though loneliness ($B = .154$, $t = 1.085$, $p = .281$) and empathy ($B = -.197$

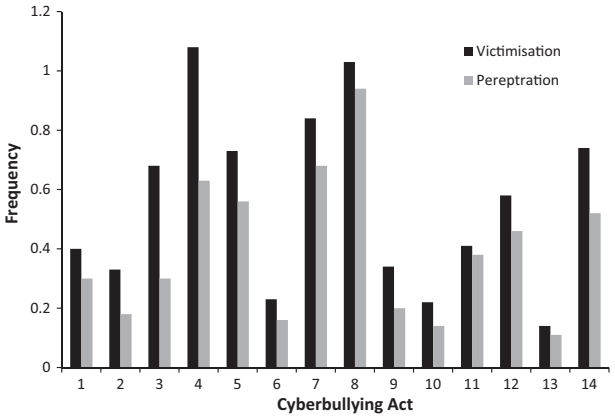

Fig. 1. Frequency of cyberbullying act victimisation and perpetration. 1 = Stealing of personal information from computer, 2 = Stealing of computer nicknames or screen names, 3 = Threatening in online forums, 4 = Insulting in online forums, 5 = Excluding in online forums by blocking others' comments or removing them, 6 = Slandering by posting fake photos on the internet, 7 = Sharing private internet conversations without the other's knowledge, 8 = Making fun of comments in online forums, 9 = Sending threatening or hurtful comments through e-mail, 10 = Stealing email access and blocking true owner's access, 11 = Stealing email access and reading personal messages, 12 = Sending threatening and/or hurtful text messages, 13 = Misleading by pretending to be other gender, 14 = Published online an embarrassing photo without a permission.

Table 1
Descriptive statistics and correlations for cyberbullying victimisation, perpetration, self-esteem, empathy and loneliness.

	1	2	3	4	5
1. Victimisation		.800**	.373**	−.169	−.416**
2. Perpetration			.110	−.379**	−.222*
3. Loneliness				.070	−.742**
4. Empathy					−.056
5. Self-esteem					
M	7.778	5.556	20.100	16.167	27.600
SD	9.283	8.359	15.405	7.122	6.428

* $p < .05$.
** $p < .01$.

$t = -2.068$ $p = .042$) were not significant. Those with low self-esteem were most vulnerable to cyberbullying victimisation. The model also predicted the extent to which adolescents engaged in cyberbullying perpetration (F (3,86) = 7.484, $p < .001$), explaining 20.7% of the overall variance ($R^2 = .207$; Adj $R^2 = .179$). Empathy ($B = -.390$, $t = -4.048$, $p < .001$) and self-esteem ($B = -.316$, $t = -2.209$, $p = .030$) were found to be a significant individual predictors of cyberbullying perpetration such that as empathy and self-esteem decrease, likeliness of involvement in cyberbullying perpetration increases. Loneliness ($B = -.098$, $t = -.681$, $p = .497$) was not a significant individual predictor of cyberbullying perpetration.

4. Discussion

The present study identified substantial levels of cyberbullying perpetration and victimisation. Prevalence was higher than reported in previous studies (Slonje & Smith, 2008), highlighting the importance of investigating the incidence of cyberbullying in each population type. The cyberbullying acts most frequently experienced by victims were being insulted in online forums, comments being made fun of in online forums, and private internet conversations being shared without their knowledge. The acts most frequently reported by perpetrators were making fun of comments in online forums, sharing private internet conversations without the other's knowledge, and insulting others in online forums. Thus interventions may prioritise these behaviours. Together, loneliness, empathy and self-esteem predicted incidence of both cyberbullying victimisation and perpetration. Self-esteem was a significant individual predictor of cyberbullying victimisation, such that those with low levels of self-esteem were most likely to report victimisation. Self-esteem and empathy were significant individual predictors of cyberbullying perpetration. Adolescents with low levels of self-esteem and empathy were most likely to engage in cyberbullying.

The relationship between cyberbullying and self-esteem identified is consistent with previous research (Kowalski & Limber, 2013; Patchin & Hinduja, 2010), though some studies have reported associations between self-esteem and victimisation only (Chang et al., 2013). Those with low self-esteem may be regarded as an 'easy target' by perpetrators; highlighting the cyclical nature of cyberbullying however, victimisation may also result in low self-esteem (Egan & Perry, 1989). These findings may demonstrate an important distinction between traditional bullying and cyberbullying. Specifically, previous research suggests that perpetrators of traditional bullying have relatively high self-esteem (Salmivalli et al., 1999) rather than the low self-esteem reported by cyberbullying perpetrators. Differences in the mode of communication selected by perpetrators may therefore reflect individual differences rather than access to and competence using digital technology only. In particular, perpetrators with high self-esteem may be least concerned with other's opinions or retaliation and hence more comfortable with face to face confrontations. In contrast, those with low self-esteem may be drawn to the relative safety and anonymity of the online environment. Additional research is required to investigate motivations for the selection of each bullying medium.

The association between empathy and cyberbullying perpetration is also consistent with previous (traditional) bullying research (Endresen & Olweus, 2002; Joliffe & Farrington, 2011; Merrell, Gueldner, Ross, & Isava, 2008). Thus the present study suggests that despite important differences between the context in which traditional bullying and cyberbullying take place, individuals who perpetrate cyberbullying display a similar lack of empathy to traditional bullies (Jolliffe & Farrington, 2006). Empathy includes both cognitive (e.g. understanding the emotions of another) and affective (e.g. experiencing the emotions of another) components, which correspond to the 'cold' and 'hot' aspects of empathy discussed by other researchers (McIllwain, 2002). Though both cognitive and affective empathy may influence social interactions, affective empathy appears to be particularly important for the development of bullying behaviour (Jolliffe & Farrington, 2011) and future research may investigate the relative role of cognitive and affective empathy in cyberbullying perpetration.

Victims and perpetrators of cyberbullying experience a range of negative outcomes (Cenat et al., 2014; Gámez-Guadix, Orue, Smith, & Calvete, 2013; Schenk, Fremouw, & Keelan, 2013) and it is important therefore to develop interventions targeted at this behaviour. These interventions are likely to be psychosocial in nature. Though automated monitoring systems may identify some instances of cyberbullying, the utility of these techniques is limited. It is therefore recommended that interventions focus on the prevention of cyberbullying and empowering victims rather than identifying bullying that has occurred (Van Royen, Poels, Daelemans, & Vandebosch, 2015). The findings of the present study suggest that self-esteem and empathy based interventions may be particularly effective. Psychological interventions can successfully increase self-esteem (Chadwick, Smyth, & Liao, 2014; Crisp, Griffiths, MacKinnon, Bennett, & Christensen, 2014) and as self-esteem predicts both perpetration and victimisation, these interventions have the potential to both reduce incidence of perpetration and increase resilience amongst victims (Sapounaa & Wolke, 2013). Empathy based interventions may be of additional benefit for perpetrators. Though it has been argued that it is not possible to 'teach' empathy (e.g. Tanrıdağ, 1992), previous empathy or emotional intelligence focused interventions have both increased empathy levels and decreased incidence of bullying behaviour (Castillo, Salguero, Fernandez-Berrocal, & Balluerka, 2013; Sahin, 2012b). Thus future research should consider the design, implementation and evaluation of appropriate cyberbullying directed interventions.

4.1. Limitations and future research

The present findings are limited by the reliance on retrospective self-report questionnaires, which may be susceptible to random or inaccurate responding (Grovle et al., 2012; Holden, Wheeler, & Marjanovic, 2012). In particular, social desirability (Logan, Claar, & Scharff, 2008) and impression management (Johnson, Sivads, & Kashyap, 2009) may influence willingness to disclose cyberbullying perpetration and thus the validity of questionnaire responses (Davis, Thake, & Vilhena, 2010). Indeed, this concern is consistent with the higher levels of cyberbullying victimisation reported by participants compared to perpetration. Self-report responses are also subject to misinterpretation. In particular, participants may misunderstand the intent of a person with whom they were interacting online (Camodeca & Goossens, 2005), leading to over or underreporting of cyberbullying (Raskauskas & Stolz, 2007). For example, comments intended to be humorous may be misinterpreted as bullying. Future research may consider the use of objective measures and content analyses, though these are subject to participants providing full access to all media (e.g. social networking sites, emails) and the monitoring process may influence the incidence or form of cyberbullying behaviour.

The present study targeted a relatively niche population (i.e. British adolescents in Further Education), resulting in a relatively small sample size. Consequently, it is not possible to engage in further analysis investigating whether self-esteem, empathy or loneliness impact on the use of specific media types or cyberbullying acts only. Previous research indicates that individuals identify themselves according to the medium of cyberbullying adopted (e.g. sending messages, creating websites) rather than as a bully or victim per se. Furthermore, motivations for specific bullying behaviour (e.g. proactive or reactive aggression) vary according

to the medium employed (Law, Shapka, Domene, & Gagne, 2012). Hence, future studies should consider those factors influencing the preference for a specific cyberbullying medium and the extent to which individuals are more distressed by cyberbullying using particular technologies. For example, while instant messaging may imply a personal connection, global comments on a website are more likely to be viewed by a large number of observers. Furthermore, cyberbullying includes a number of activity types, categorised by Willard (2005) as flaming, harassment, denigration, cyberstalking and masquerading, outing and trickery, and exclusion. The preference for particular forms of traditional aggressive behaviour is influenced by a range of factors including the relative costs or risks associated with the behaviour (Bjorkqvist, 1994; Bjorkqvist, Lagerspetz, & Kaukiainen, 1992), and this provides an important area of future cyberbullying research. Similarly, the small sample size precludes comparisons between male and female adolescents. Previous research has identified important gender differences in this area. For example, males report greater experience of traditional bullying (Hoertel, Le Strat, Lavaud, & Limosin, 2012) and cyberbullying perpetration and victimisation (Wong, Chan, & Cheng, 2014), lower self-esteem (Diseth, Meland, & Breidablik, 2014; Van Damme, Colins, & Vanderplasschen, 2014), loneliness (Ferreira-Alves, Magalhaes, Viola, & Simoes, 2014) and empathy (Christov-Moore et al., 2014; Han, Fan, & Mao, 2008). Thus future studies should consider those factors influencing bullying in male and female adolescents separately.

Bullying often occurs in the presence of others and witnesses of bullying experience a range of negative physical and psychological symptoms (e.g. Brewer & Whiteside, 2012). Cyberbullying also frequently occurs in the presence of observers (Mishna, Cook, Gadalla, Daciuk, & Solomon, 2010; Vandebosch & Van Cleemput, 2009), though compared to traditional bullying, the number of potential witnesses to online bullying is substantially increased by the permanence of electronic material and opportunities for sharing information such as retweeting (Kowalski & Limber, 2007). Those witnessing bullying, whether online or offline, have an important role in the maintenance, escalation or reduction of the bullying behaviour, depending on their reaction and willingness to intervene (Twemlow, Fonagy, Sacco, Gies, & Hess, 2001). Though relatively few studies have considered the role of those observing cyberbullying, both personal and situational factors may influence witness behaviour. For example, support is less likely to be offered to victims that react passively to the bullying (Holfeld, 2014) and most likely to be provided by observers with high levels of empathy (Freis & Gurung, 2013). Future research should obtain additional contextual information in order to establish a more comprehensive understanding of cyberbullying victimisation and perpetration which includes both the impact of the bullying experience on witnesses and those factors influencing their responses to cyberbullying.

To conclude, cyberbullying is a unique phenomenon, distinguished from traditional bullying by a range of factors including the speed at which information is distributed, permanence of material and availability of victims. The present study revealed that self-esteem, empathy and loneliness together predicted incidence of both cyberbullying victimisation and perpetration in British adolescents. Empathy and self-esteem were significant individual predictors of cyberbullying perpetration, such that adolescents with low levels of empathy and self-esteem most likely to engage in cyberbullying. Self-esteem was also a significant individual predictor of cyber victimisation, with low self-esteem predicting greater incidence of victimisation. Interventions should be developed to address cyberbullying and may benefit from the inclusion of self esteem and empathy related material. Additional research investigating variation in bullying type and context is however required.

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