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## Predicting adolescent's cyberbullying behavior: A longitudinal risk analysis



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### ABSTRACT

The current study used the risk factor approach to test the unique and combined influence of several possible risk factors for cyberbullying attitudes and behavior using a four-wave longitudinal design with an adolescent US sample. Participants (N = 96; average age = 15.50 years) completed measures of cyberbullying attitudes, perceptions of anonymity, cyberbullying behavior, and demographics four times throughout the academic school year. Several logistic regression equations were used to test the contribution of these possible risk factors. Results showed that (a) cyberbullying attitudes and previous cyberbullying behavior were important unique risk factors for later cyberbullying behavior, (b) anonymity and previous cyberbullying behavior were valid risk factors for later cyberbullying attitudes, and (c) the likelihood of engaging in later cyberbullying behavior increased with the addition of risk factors. Overall, results show the unique and combined influence of such risk factors for predicting later cyberbullying behavior. Results are discussed in terms of theory.

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### Introduction

Cyberbullying is defined as, "... any behavior performed through electronic or digital media by individuals or groups that repeatedly communicates hostile or aggressive messages intended to inflict harm or discomfort on others" (Tokunaga, 2010, pg. 278) and is an emerging societal issue. Indeed, some studies indicate that over 30% of their sample has been cyber-victimized<sup>1</sup> (e.g., Hinduja & Patchin, 2008; Huang & Chou, 2010; Li, 2007; Ybarra, Diener-West, & Leaf, 2007). Barlett and Gentile (2012) argued that the best way to inform interventions aimed at reducing cyberbullying is to study the predictors of this "new" form of antisocial behavior. If certain psychological predictors of cyberbullying can be identified and replicated using a variety of research methods on different samples, then interventions can be developed to, hopefully, decrease the influence of these predictors to reduce the likelihood of later cyberbullying. The current study used the risk factor approach (Gentile & Bushman, 2012) to test the unique and combined effects of several possible cyberbullying risk factors using a four-wave longitudinal design on an adolescent sample in an attempt to further empirically elucidate the predictors of cyberbullying behavior.

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<sup>1</sup> Citing research with prevalence rates may be problematic since various studies use different measures, sample different ages, define cyberbullying differently, and were sampled in different countries that may artificially inflate or deflate such estimates (see Rivers & Noret, 2009). Indeed, some studies report that as few as 2% of surveyed youth are cyber-victimized (Heirman & Walgrave, 2012). Thus, the reported prevalence rates here should be interpreted with caution and only serve to highlight the importance of studying cyber-behaviors.

### Risk factor approach

The current study utilized risk factor analyses to test the unique and combined influence of several variables that may predict the likelihood of cyberbullying behavior (Gentile & Bushman, 2012). This approach is akin to how professionals in the medical field often deal with and explain complex diseases. For instance, there are several risk factors for lung cancer, such as smoking behavior, exposure to asbestos, family history, and others. No one risk factor is a necessary or sufficient condition for any given disease. Indeed, there are cases where a smoker will not develop lung cancer or when a non-smoker will develop lung cancer, even though smoking is a risk factor for this disease. However, the likelihood of lung cancer will increase if an individual is a smoker, and, moreover, that likelihood will further increase with the presence of additional risk factors.

Recent research has shown that complex social behaviors (e.g., aggression) can also be studied using a risk factor lens. For instance, Gentile and Bushman (2012) found that the likelihood of later aggressive behavior was higher when several risk factors (e.g., media violence exposure, being male, hostile attribution bias, low parental monitoring) were present. In addition, this research showed that the combination of these risk factors better predicted later aggressive behavior compared to when each variable was analyzed individually. We believe that a combination of several risk factors likely contribute to cyberbullying frequency. The current study was a four-wave longitudinal study to determine the likelihood of scoring high on later cyberbullying behavior from several early possible risk factors.

### Possible risk factors

Although myriad possible risk factors of cyberbullying have been identified in the literature (see a recent meta-analysis by Kowalski et al., *in press*), we relied heavily on theory to select which variables to include in our analyses. The Barlett and Gentile (2012) model posits that cyberbullying is a function of the development and automatization of learned cyberbullying-related constructs and knowledge structures. Derived from the predictions of broader aggression (i.e., The General Aggression Model; Anderson & Bushman, 2002) and learning (i.e., The General Learning Model; Gentile, Groves, & Gentile, 2014) theories, the Barlett and Gentile (2012) model posits that each time an individual attacks another online acts as a learning trial. During each learning trial, the aggressor learns that they are anonymous and the strength differential between the bully and victim that is prominent in the traditional bullying domain is less concerning. When the same individual attacks another online again, these ideas (and perhaps others) get further reinforced and learned. Moreover, the internalization of anonymity and lack of concern regarding strength differential constructs lead to the formation of positive attitudes towards cyberbullying. Finally, as the cyberbully continues to harm others online, these attitudes get further reinforced and automatized, as well, which leads to the future cyberbullying behavior.

The Barlett and Gentile (2012) model was selected as our theoretical framework for several reasons. First, several researchers have supported the postulates of this model using both longitudinal (Barlett & Gentile, 2012; Barlett, Gentile, & Chew, *in press*; Barlett, Gentile, Anderson, Suzuki, Sakamoto, Akira, & Rui, 2014; Wright, 2013) and cross-sectional (Barlett & Gentile, 2012; Barlett, *in press*; Doane, Pearson, & Kelley, 2014; Boulton et al., 2012) research designs. Second, this theory was developed using larger and more validated psychological aggression and learning theories. Finally, the Barlett and Gentile (2012) model clearly differentiates cyber from traditional bullying techniques. Indeed, the initial development of this model incorporated the literature describing how the cyberbully is likely more anonymous than a traditional bully and how the strength differential prominent in the traditional bullying domain is removed when online (see Vanderbosch & Van Cleemput, 2008). This is advantageous because other similar theories (e.g., the Theory of Reasoned Action; Ajzen & Fishbein, 1977) cannot adequately differentiate cyber from traditional bullying practices. For instance, subjective norms, positive attitudes, perceived control, and intent (the variables common in the Theory of Reasoned Action) should be similar for cyber and traditional bullying, and, as Olweus (2012) and others (e.g., Li, 2007) have argued, cyberbullying may just be a specific form of traditional bullying behavior. The Barlett and Gentile (2012) model takes advantage of learning constructs unique to cyberbullying in its theorizing while also taking into consideration the large overlap between traditional and cyberbullying to show increases in incremental validity in its predictions (see Barlett & Gentile, 2012).

Recent empirical work has supported the postulates of this model. Indeed, using a cross-sectional study with an emerging adult sample, Barlett (*in press*) found that the relation between anonymity perceptions and cyberbullying frequency was significantly mediated by positive attitudes towards cyberbullying. This finding was replicated using a longitudinal research design (Barlett et al., *in press*). However, Barlett and colleagues are not the only ones to demonstrate the importance of cyberbullying attitudes and anonymity in cyberbullying behavior. Indeed, research by Boulton et al. (2010) and Doane et al. (2014) also showed significant positive relations between cyberbullying attitudes and behavior; whereas Wright (2013) found that anonymity is a positive predictor of later cyberbullying behavior. Therefore, we hypothesized that anonymity and cyberbullying attitudes would both be significant risk factors for cyberbullying behavior.

In addition to anonymity and positive attitudes towards cyberbullying, we posited that early cyberbullying behavior would be a risk factor for later cyberbullying behavior. Indeed, in their initial risk factor analysis, Gentile and colleagues (Gentile & Bushman, 2012) showed that early aggressive behavior was the single best predictor of later aggressive behavior. Finally, we predicted that sex of participant would be a possible risk factor. A recent meta-analysis by Barlett and Coyne (*in press*) showed that males are generally more likely to cyberbully than females, although the overall effect is small and moderated by age.

Although there are several theoretical variables that could serve as risk/protective factors, there are several methods to gauge the validity of such factors in predicting cyberbullying. The steps suggested by Gentile and Bushman (2012) were used

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