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Review

From theory to practice: Cyberbullying theory and its application to intervention

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ABSTRACT

Cyberbullying perpetration has emerged as a world-wide societal issue; however, the majority of the research testing the predictors of cyberbullying behavior and the interventions that claim to reduce cyberbullying have inadequately applied sound theoretical reasoning. To assist education administrators, intervention specialists, social scientists, and others, we review the postulates of a recently developed theory that is unique to cyberbullying – the Barlett and Gentile Cyberbullying Model (BGCM). Specifically, we delve into the need for such a theory and how other similar theories may be inadequate in predicting cyberbullying above and beyond traditional bullying. Then we describe the learning-based theoretical foundation that helped to build the BGCM before reviewing research that validates such theoretical tenants. Finally, we conclude with how the BGCM can inform intervention efforts to hopefully reduce cyberbullying.

Contents

"He who loves practice without theory is like the sailor who boards ship without a rudder and compass and never knows where he may cast." - Leonardo da Vinci

Theory is the essential focal point of scientific method. Theory guides the derivation of testable hypotheses and, once tested via data collection and results analyzed, theory can be validated, modified, or falsified for future testing – creating a continual scientific loop. Most importantly, valid parsimonious theory is crucial to predict future behaviors, which has implications for interventions aimed at changing behavior. Indeed, if the psychological mechanisms essential to a behavior can be learned and understood with replicated effects to validate theory, then professionals can use this empirical evidence to inform interventions.

The use of theory has been paramount for understanding social

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phenomena; however, there has been substantially less theory-driven research devoted to the study of cyberbullying perpetration (defined as repeated harmful behavior directed at a person or a group of people via electronic mediums; Tokunaga, 2010) despite the (1) vast amount of published research on cyberbullying effects, (2) the number of recent interventions aimed at reducing cyberbullying, and (3) the societal importance of understanding and reducing cyberbullying. Akin to the da Vinci quote at the beginning of this manuscript, we contest that interventions aimed at reducing cyberbullying can be more successful if theory is used in their derivation. The General Aggression Model, Theory of Planned Behavior, Theory of Reasoned Action, and General Strain Theory have recently been applied to predict cyberbullying behavior; however, Barlett (2016) argued that these theories are not unique to the online world and, thus, offer no explanatory power above and beyond traditional bullying.

To assist researchers, practitioners, school psychologists, and intervention specialists, the current review will focus on and describe one theory used to elucidate the psychological processes involved in cyberbullying: the Barlett and Gentile Cyberbullying Model (BGCM; Barlett & Gentile, 2012). The BGCM is a newly proposed theory that elucidates the psychological mechanisms to predict cyberbullying that are unique to the online world. To our knowledge, the BGCM is the only psychological model that explicitly offers theoretical predictions that are unique to the online world. To elaborate on the BGCM, this review will discuss (1) the need for a theory that uniquely predicts cyberbullying perpetration, (2) the past literature that inspired the creation of the BGCM, (3) the postulates of the BGCM, (4) limitations of the BGCM, and (5) the applied intervention-focused extensions of the BGCM. Overall, by describing the BGCM in sufficient detail with supporting empirical evidence, we hope that intervention specialists will have a clearer picture of how cyberbullying theory can inform curriculum to reduce cyberbullying behavior.

1. The Barlett and Gentile Cyberbullying Model: The need

The BGCM is a learning-based psychological model that explains the psychological processes involved in cyberbullying. The ability to predict cyberbullying perpetration is important to informing interventions aimed at reducing its frequency. To our knowledge, BGCM is the only published theory that is specific to cyberbullying and clearly differentiates cyber from traditional bullying, and highlighting such differences allows intervention specialists to tailor their curriculum to specifically target cyberbullying frequency. Such theoretically driven intervention efforts are desperately needed. For instance, Microsoft (2012) found that 37% of youth aged 8–17 reported being cyber-victimized while 54% indicated being concerned about being cyber-victimized. Further, meta-analytic findings have suggested that being cyber-victimized is related to depression, low self-esteem, anxiety, loneliness, low life satisfaction, increase drug and alcohol use, conduct problems, lower prosocial behavior, stress, and suicide ideation (Kowalski, Giumetti, Schroeder, & Lattanner, 2014). These findings highlight the need for empirical work to inform interventions aimed at reducing cyberbullying.

Unfortunately, much research focused on predicting cyberbullying perpetration has been largely atheoretical. For instance, research has shown simple correlations between cyberbullying perpetration and narcissism (e.g., Goodboy & Martin, 2015), empathy (e.g., Topcu & Erdur-Baker, 2012), trait aggression (e.g., Ang, Huan, & Florell, 2014), and time spent online (e.g., Park, Na, & Kim, 2014) to list a few; however, the causal explanation for the processes detailing why or for whom such relations are likely are absent. Although we believe that this research is important, the lack of theoretical underpinnings does limit their application.

Even though the majority of cyberbullying research has been atheoretical, there are few studies that have applied broader aggression and attitude-based theories to predict cyberbullying behavior. For instance, Doane, Pearson, and Kelley (2014) applied the Theory of Reasoned Action (TRA) and found that positive attitudes towards cyberbullying, empathy towards cyber-victims, and injunctive/descriptive norms regarding cyberbullying predicted one's intention to harm others online, which predicted cyberbullying perpetration. Other studies have found evidence for the application of the Theory of Planned Behavior (e.g., Heirman & Walrave, 2012), General Aggression Model (Kowalski et al., 2014), and General Strain Theory (e.g., Patchin & Hinduja, 2011) to predict cyberbullying. Thus, it appears as though research that purports to predict cyberbullying via existing psychological theories and models is headed in the right direction; however, the tenets of these theories cannot reliably differentiate traditional bullying from cyberbullying perpetration, an important theoretical limitation.

In our opinion, a valid psychological model that predicts cyberbullying must do so in lieu of the high degree of overlap between cyber and traditional bullying. In their meta-analysis, Kowalski et al. (2014) showed that the effect size between traditional and cyber bullying was $r = 0.45$ (95% CI: .41 to .48) – a fairly stable and medium to large effect that was assessed in 70 studies sampling 136,105 individuals. In addition, research has shown that traditional bullies also tend to be classified as cyberbullies (e.g., Wang, Iannotti, & Luk, 2012). Finally, work in the traditional bullying domain has also applied the postulates of Theory of Reasoned Action (e.g., Salmivalli & Voeten, 2004) and General Strain Theory (e.g., Moon, Hwang, & McCluskey, 2011) and found similar psychological processes as the literature from the cyberbullying domain using these theories. Therefore, we argue that an adequate cyberbullying theory should be unique to the online world – a key strength of the BGCM that we return to later.

2. The Barlett and Gentile Cyberbullying Model: The inspiration

The BGCM was inspired by the theoretical underpinnings of two social-cognitive learning theories: distal General Aggression (Anderson & Bushman, 2002) and General Learning Models (Gentile et al., 2009). Both of these models predict that experiences with, or exposure to, any stimulus is a learning trial in which an individual likely pairs cognitive, affective, and arousal-based feelings with the social and behavioral outcomes of said stimulus in the immediate situation. For instance, if a child is provoked and their aggressive retaliation (e.g., pushing) feels good and there are no negative social consequences (e.g., getting pushed back or getting in trouble with adults), then that child likely learns that it is acceptable to push others when provoked. The General Aggression and Learning Models further predict that continued positively reinforced learning with the same, or similar, stimuli will eventually foster the development of several learned outcomes, including positive attitudes towards the behavior, behavioral scripts, and various perceptual and attributional biases. Such learned outcomes will likely become automatic and easily acceptable helping to shape one's personality.

The learning postulates of these aforementioned theories are critical to the BGCM, and Barlett and Gentile (2012) began to delve into the research that examined what individuals likely learn after attacking others online that differs from traditional bullying. In their review, Vanderbosch and Van Cleemput (2008), posited that traditional and cyberbullying differ in the non-physical nature of cyberbullying, but also the (1) irrelevance of one's physical stature that is imperative for the power imbalance in traditional bullying,

and (2) perceived anonymity afforded to online aggressors are likely two learned consequences of cyberbullying others. Juxtaposed with the aggression-based learning theories, these differences were believed to be key psychological outcomes learned after several experiences with positively reinforced cyber-attacks.

Overall, the BGCM was based upon learning-based aggression theory combined with literature explicating the differences between cyber and traditional bullying perpetration. Although the next section will outline the details of the BGCM, the learning predictions applied to the cyberbullying domain suggest that after a cyber-attack, the aggressor likely learns that they are more anonymous online and that the online world affords aggressive actions by anyone independent of physical size. Continued cyber-attacks further reinforces these notions and, once learned, help to facilitate the development of positive attitudes towards cyberbullying, which likely predict subsequent cyberbullying behavior.

3. The Barlett and Gentile Cyberbullying Model: The postulates

Theory is, and should be, always evolving to incorporate new research findings or insights. With the ever-changing electronic landscape, this notion is especially important. Currently, there are four temporal postulates of the BGCM that are important to discuss, which are displayed in Fig. 1. We believe that with continued research testing the BGCM along with future work showing the key variables and/or psychological processes involved in cyberbullying the BGCM will likely be modified. However, the current BGCM is outlined below:

3.1. Postulate 1

The first BGCM tenet is that the ability and self-efficacy of engaging in cyberbullying behavior are developed from several early learning trials. Each time an individual aggresses against another using technology serves as a learning trial in which the aggressor likely learns that (1) they are perceived as more anonymous to the victim, (2) any physical size differences between the cyber-victim and the cyberbully are irrelevant, (3) the non-physical nature of online aggression will not leave any physical marks (e.g., bruises or scars) on the victim, (4) the aggressor does not have to physically see the direct effect of their harm on the victim, and (5) it will be difficult for the aggressor to be identified by parents and authorities, making it easier to cause harm while not be punished. Each additional cyber-aggressive behavior serves as continued learning trials where these (and possibly other) outcomes become internalized. After several cyber-aggressive experiences these outcomes will eventually become automatic and easily accessible for future use.

3.2. Postulate 2

The second BGCM postulate is that after the aforementioned learned outcomes become automatic and accessible then positive

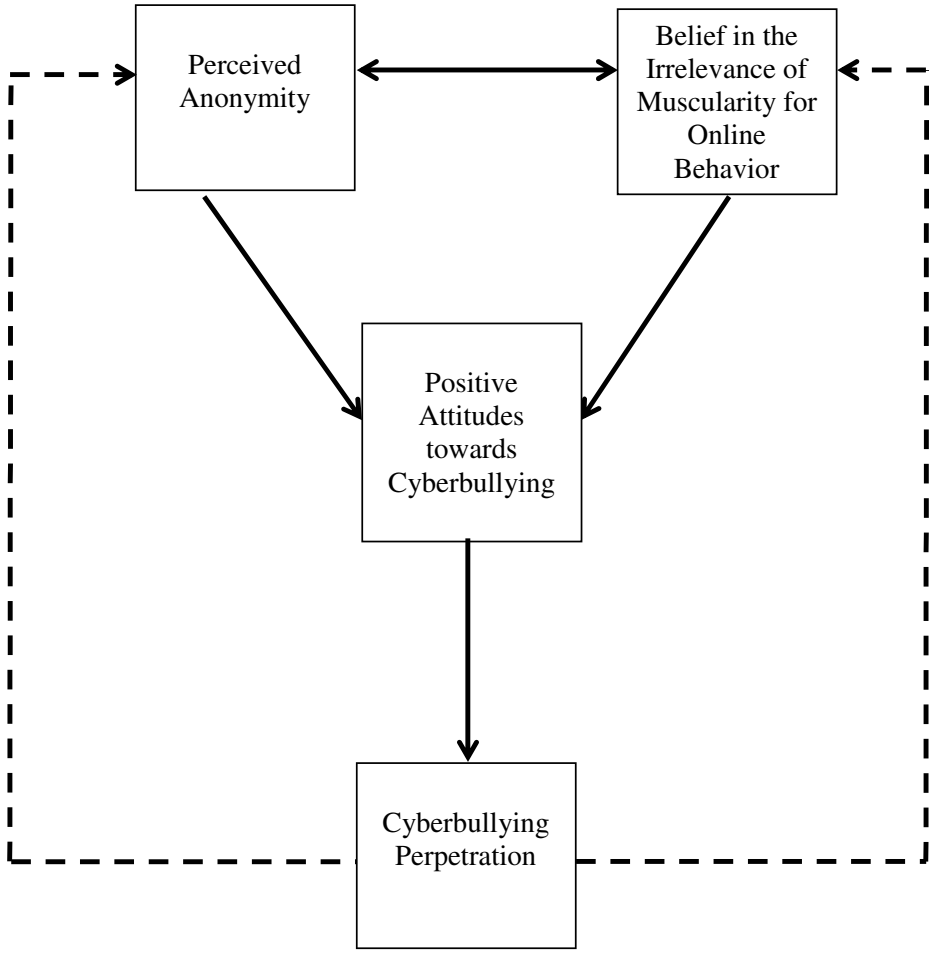

Fig. 1. The Barlett and Gentile Cyberbullying Model. Single headed arrows represent causal temporal relations and the double headed arrow represents a correlated relationship. Finally, the dashed lines represent a hypothesized feedback loop.

attitudes towards cyberbullying will likely be formed. Multiple theoretical models predict how early experiences aid in attitude development. For instance, both the General Aggression (Anderson & Bushman, 2002) and General Learning Models (Gentile et al., 2009) assume that behavior is a function of several decision, attributional, and psychological processes borne from situational and personality predictors. Further, if the behavior is positively reinforced (e.g., Bandura, Ross, & Ross, 1963) then the situationally based stimulus-behavior pairing will be learned to help form positive attitudes towards that stimuli (see also the Value Account Model of attitude formation; Betch, Plessner, Schwieren, & Gutig, 2001). In support of these postulates, Barlett and Gentile (2012; Study 2) showed that cyberbullying reinforcement by the assailants friends and family significantly correlated with pro-cyberbullying attitudes ($r = 0.57$, $p < .001$) and cyberbullying behavior ($r = 0.32$, $p < .01$).

Crucial to this BGCM postulate are the relationships between perceived anonymity, the belief in the irrelevance of muscularity of online bullying (BI-MOB), cyberbullying attitudes, and cyberbullying perpetration. Several researchers have posited the importance of perceived anonymity as a key difference between cyber and traditional bullying (e.g., Mishna, Saini, & Solomon, 2009; Smith et al., 2008; Vanderbosch & Van Cleemput, 2008), which has implications for the BGCM. Indeed, using hypothetical bullying scenarios on Swiss youth, Sticca and Perren (2013) showed that anonymous cyberbullying was perceived as more harmful than traditional bullying. Corroborating the BGCM, correlational (e.g., Barlett & Gentile, 2012; Barlett, 2015a) and longitudinal (e.g., Barlett, 2015b; Barlett, Gentile, & Chew, 2016) research has shown that perceived anonymity is related to aggressive attitudes, and additional studies showed that perceived anonymity predicted subsequent cyberbullying perpetration (Wright, 2013; 2014).

The belief in the irrelevance of muscularity during online bullying (BI-MOB) is also an important learned outcome of early cyber-aggressive behaviors that likely predict the development of subsequent cyberbullying attitudes. In their review Thomas, Connor, and Scott (2015) noted that the evidence for including power imbalance (the belief that more powerful youth bully others) in cyberbullying is mixed and not well substantiated. Barlett, Prot, Gentile, and Anderson (2017) conducted both correlational and longitudinal studies with a college-aged sample to determine whether the power differential as it pertains to cyberbullying is about one's physical stature or technological self-efficacy. Results showed (1) BI-MOB predicted cyberbullying perpetration and attitudes (see also Barlett & Gentile, 2012), and (2) these relations were retained while statistically controlling for technological ability that may cause harm (e.g., sending and/or creating computer viruses). In other words, evidence suggests that the belief in the irrelevance of one's physical strength in the online world is an important predictor of cyberbullying attitudes relative to the belief in one's ability to cause harm online.

3.3. Postulate 3

The third postulate is that once cyberbullying attitudes have been successfully integrated as a part of one's personality, these attitudes will predict subsequent behavior. There is a rich psychological history showing that attitudes predict behavior, which coincides with several theoretical frameworks including: the MODE model (e.g., Fazio, 1990), the Elaboration Likelihood Model (e.g., Petty & Cacioppo, 1986), the Theory of Planned Behavior (e.g., Ajzen, 2002), and the Theory of Reasoned Action (e.g., Ajzen & Fishbein, 2000). Results from several meta-analyses have concluded that the effect size between attitudes and behavior is positive ($r = 0.52$, Glasman & Albarracin, 2006; $r = 0.38$, Kraus, 1995; $r = 0.47$, Kim & Hunter, 1993). Specific to the cyberbullying domain, myriad correlational (Barlett & Gentile, 2012; Barlett, 2015a; Boulton, Lloyd, Down, & Marx, 2012; Doane et al., 2014) and longitudinal (Barlett, 2015b; Barlett, Chamberlin, & Witkower, 2017; Barlett et al., 2016; Barlett, Gentile, Anderson, Suzuki, Sakamoto, Kumazaki, & Katsura, 2014) studies have shown that pro-cyberbullying attitudes are related to cyberbullying perpetration. Further, cyberbullying attitudes have been shown to predict the intention to cyberbully others (Heirman & Walrave, 2012) and the expectation that one would cyberbully in the future (Lazuras, Barkoukis, Ourda, & Tsorbatzoudis, 2013).

3.4. Postulate 4

The final postulate is not depicted in Fig. 1, because it is implicit in the model, but key to the theoretical importance of the BGCM. The tenets of the BGCM explain cyberbullying incrementally over traditional bullying. Recall that one key limitation to the research that has applied existing psychological theory to cyberbullying predictors is the inability to distinguish cyber and traditional bullying. One argument against this postulate is that as long as researchers can reliably show theoretical relations between cyberbullying and other predictors then any incremental validity above and beyond traditional bullying is moot. However, we argue here that, although traditional and cyberbullying perpetration are highly correlated (e.g., Barlett & Gentile, 2012), the psychologically learned outcomes of anonymity and the belief that one's physical stature in the online world is inconsequential juxtaposed with the non-physical nature of cyberbullying does, indeed, highlight the importance of making such distinctions. Further, the profiles of cyber and traditional bullies may not be as similar as once theorized (see Kubiszewski, Fontaine, Potard, & Auzoult, 2015). Barlett and Gentile (2012) showed that the correlation between positive cyberbullying attitudes and behavior was significantly stronger than the correlation between positive cyberbullying attitudes and traditional bullying perpetration despite the significant relation between both types of bullying. These findings show support for this postulate while highlighting the strength of the relations in BGCM.

3.5. Overall

The four postulates of the BGCM have each received recent empirical support. To date there are only two published papers that have tested all BGCM tenets. First, Barlett and Gentile (2012) used a correlational study with emerging adults and found that anonymity and BI-MOB predict positive cyberbullying attitudes, which predicts subsequent cyberbullying behavior; however, the correlational nature of the data do not allow for causal claim to be made about the temporal ordering of the variables. To correct this, Barlett, Chamberlin, et al. (2017) used a three-wave longitudinal design with emerging adults. Measures of anonymity and BI-MOB were completed at Wave 1, positive cyberbullying attitudes was measured at Wave 2 (approximately two months later), and cyberbullying perpetration was assessed at Wave 3 (approximately two months after Wave 2). Using path modeling analyses, results showed strong longitudinal support for BGCM by showing that Wave 1 variables significantly positively predicted Wave 2 positive cyberbullying attitudes, which predicted Wave 3 cyberbullying perpetration. In order to rule out alternative hypotheses, Barlett, Chamberlin, et al. (2017) also statistically controlled for Wave 1 cyberbullying and traditional bullying perpetrations.

4. The Barlett and Gentile Cyberbullying Model: Limitations

Although the BGCM has been shown to be a valid psychological

theory to predict cyberbullying behaviors, there are some limitations and additional questions that future research needs to address. First, the full version of the BGCM has only been validated in emerging adults (Barlett & Gentile, 2012; Barlett, Chamberlin, et al., 2017). Although certain BGCM postulates have been validated with youth, such as the link between anonymity perceptions and cyberbullying (Barlett, 2015b) and the relationship between positive cyberbullying attitudes and behavior (Barlett & Chamberlin, in press), evidence for the validity of the full BGCM in youth has not been tested. This is important because most of the published cyberbullying interventions are applied to children (e.g., Ortega-Ruiz, Del Rey, & Casas, 2012; Toshack & Colmar, 2012; Wolfer et al., 2014) and research has suggested that cyberbullying perpetration is more likely in youth compared to emerging adults (Sevcikova & Smahel, 2009). Future three-wave longitudinal studies are needed to fill this void in the literature.

Second, the BGCM is a mediated model: positive cyberbullying attitudes mediate the relation between anonymity and BI-MOB and cyberbullying perpetration. Although several studies have shown this effect (e.g., Barlett et al., 2016, 2017) the BGCM does not yet posit moderated mediation relations. Despite this limitation, we believe that the BGCM can be modified to include personality differences in its theorizing. Many personality variables have been shown to correlate with cyberbullying perpetration, such as normative aggressive beliefs, trait anger, narcissism, frequency of Internet use, and moral disengagement (see Kowalski et al., 2014). A modified version of the BGCM could show that the tenets of the model are stronger for those high (versus low) on any of these (and perhaps other) previously mentioned personality traits. Furthermore, since BGCM is a learning-based model of cyberbullying, perhaps the creation and automatization of positive cyberbullying attitudes is faster for participants high on these personality variables. Future research should test this important limitation.

Third, recall that the BGCM posits that the learning processes that are germane to causing future cyberbullying start with a single positively reinforced cyber-attack. We believe that this is the most understudied but most important BGCM claim. No data that we are aware of has tested youth who are young enough to not have been exposed to or taught about cyberbullying. If youth at a very young age, who presumably have never attacked another using technology or been taught about the negative consequences of attacking another online, could be tested and followed over time, researchers could pinpoint the first time they attacked another online (if it occurred at all), which would allow for an examination of the learning processes of BGCM to be tested. Selecting the appropriate age to begin such a study would be paramount.

Fourth, more empirical work is needed to examine the learned outcomes from cyber-attacking others. It is unlikely that anonymity and BI-MOB are the only two learned outcomes. Barlett, Prot, Anderson, and Gentile (2016) ruled out computer self-efficacy or skills as a learned outcome and Barlett and Helmstetter (in press) showed that harmful online disinhibition does not add any incremental validity to the BGCM; however, more work is needed to test and plausibility of additional learned outcomes that predict positive cyberbullying attitudes.

5. The Barlett and Gentile Cyberbullying Model: The potential applications

We stated earlier that the motivation behind the derivation and testing of the BGCM was to empirically elucidate the psychological processes involved in cyberbullying perpetration with the goal of informing intervention efforts to reduce cyberbullying frequency. Myriad papers have described the (in)effectiveness of efforts to reduce cyberbullying in terms of (1) youth (Kraft & Wang, 2009; Parris, Varjas, Meyers, & Cutts, 2012; Paul, Smith, & Blumberg, 2012), social worker (Slovac & Singer, 2011), and teacher (Mishna et al., 2009; Stauffer, Heath, Coyne, & Ferrin, 2012; Yilmaz, 2010) perceptions of what may or may not be effective, (2) the role that school administrators have in utilizing and implementing interventions (Beale & Hall, 2007; Bhat, 2008; Diamanduros, Downs, & Jenkins, 2008), and (3) commentary regarding what such interventions should include (Chan & Wong, 2015; Couvillon & Ilieva, 2011); however, the majority of this work does not include data, rather simply discourse.

We argued previously that the high correlation between traditional and cyberbullying may inhibit our theoretical understanding of the psychological processes of online bullying; however, one advantage of such a relationship is that intervention specialists can apply traditional bullying interventions to attempt to reduce cyberbullying; however, some have argued that cyberbullying interventions are lacking the same methodological rigor as traditional bullying interventions. For instance, Della Cioppa, O'Neil, and Craig (2015) rated 12 cyberbullying intervention programs using a scoring system originally created for traditional bullying and found a *lack* of scientific merit in cyberbullying reduction programs. Although the lack of scientific merit afforded the 12 evaluated cyberbullying intervention programs in the Della Cioppa et al. (2015) review is troubling, none of their scoring criteria involved the application of theory, which is perhaps why several published cyberbullying interventions have been unsuccessful (see Mishna, Cook, Saini, Wu, & MacFadden, 2011).

The paucity of research that has attempted to validate cyberbullying interventions has been mixed. Several published interventions that have been successful at reducing cyberbullying have incorporated existing theory into their curriculum. For instance, Scultze-Krumbholz, Schultze, Zagorscak, Wolfer, and Scheithauer (2016) showed that cyberbullying decreased for participants who received an intervention that incorporated the Theory of Planned Behavior in their Media Heroes program (see also Wolfer et al., 2014). Further, cyberbullying was reduced in a sample of college-aged US participants who received a video-based intervention program guided by the Theory of Reasoned Action (Doane, Kelley, & Pearson, 2016). Conversely, those interventions that have failed to show differences in mean level changes in cyberbullying over time for participants in the control vs. intervention group failed to incorporate theory (e.g., Cross et al., 2016).[1]

Based on the evidence, it is clear that theoretically based cyberbullying interventions are important. Although we would be remiss to ignore the cyberbullying interventions that have shown success that do not clearly incorporate theory (ViSC Social Competence Program: Gradinger, Yanagida, Strohmeier, & Spiel, 2015; Cyberprogram 2.0: Garaigordobil & Martinez-Valderrey, 2015, ConRed: Ortega-Ruiz et al., 2012), we believe that cyberbullying interventions should be created (or modified) to incorporate theory - and none have instilled the postulates of the BGCM. This is expected given how evidence for the BGCM has only recently been examined; however, such applied BGCM extensions are transparent. For instance, intervention curriculum focused on teaching and demonstrating that IP addresses can be linked back to a single user and/or how mobile phone applications can be traced back to the very phone a given "anonymous" statement was posted, then, according to BGCM, anonymity perceptions should decrease leading to the decrease in the development and accessibility of cyberbullying attitudes and, hopefully, subsequent behavior.

[1] Although the mean level change was not significant, Cross et al. (2016) showed that the Cyber Friendly Schools Program was effective using longitudinal growth curve analyses.

Additionally, targeting the belief that the power imbalance is a non-factor in cyberbullying could lead to pro-cyberbullying attitudes in intervention efforts should also have similar effects. These examples illustrate how theory and practice can be juxtaposed to reduce cyberbullying; however, few intervention curricula have made such strides.

6. Final remarks

As the accessibility to the Internet and continued online communication grow, individuals will likely use these tools to harm others. Like the quote by Leonardo da Vinci at the start of the article, we believe that interventions designed to reduce cyberbullying that do not adequately use theory are aimlessly attempting to change behavior without much success. This is not the fault of intervention specialists or school administrators, because few empirical works testing the psychological processes involved in cyberbullying incorporate theory. Therefore, the bulk of this article was used to explain the postulates and review evidence for the Barlett Gentile Cyberbullying Model. We hope that others can apply the BGCM to interventions to hopefully reduce cyberbullying perpetration for a safer future for youth

Compliance with ethical standards

The authors declare that they have no conflict of interest.

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