



Research Report

Predictors of cyberbullying perpetration among college students: An application of the Theory of Reasoned Action



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ARTICLE INFO

Article history:

Available online 17 April 2014

Keywords:

Cyberbullying
Attitudes
Descriptive norms
Injunctive norms
College students

ABSTRACT

The present study tested the Theory of Reasoned Action (TRA) as an explanation for cyberbullying perpetration among 375 (128 male, 246 female) college students. Empathy toward cyberbullying victims was also included in the models. Participants completed the cyberbullying perpetration scale of the Cyberbullying Experiences Survey (Doane, Kelley, Chiang, & Padilla, 2013) that assesses four types of cyberbullying (deception, malice, public humiliation, and unwanted contact). Across all four models, results showed that lower empathy toward cyberbullying victims predicted more favorable attitudes toward cyberbullying perpetration, more favorable attitudes toward cyberbullying predicted higher intentions to cyberbully, and higher cyberbullying intentions predicted more frequent perpetration of cyberbullying behaviors. Injunctive norms regarding cyberbullying (e.g., perception of peers' approval of cyberbullying perpetration) predicted intentions to engage in malice and unwanted contact behaviors. The results demonstrate that the TRA is a useful framework for understanding cyberbullying perpetration.

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1. Introduction

A growing body of literature shows that victims and perpetrators of cyberbullying are at greater risk for experiencing a myriad of mental health problems including depressive symptoms (Bonanno & Hymel, 2013), suicidal ideation (Bonanno & Hymel, 2013; Hinduja & Patchin, 2010), and suicide attempts (Hinduja & Patchin, 2010). Despite awareness of the mental health risks associated with cyberbullying, few studies have applied a theoretical framework to understanding the perpetration of cyberbullying. To inform prevention/intervention of cyberbullying behaviors, we applied the Theory of Reasoned Action to explain cyberbullying perpetration among college students.

1.1. Cyberbullying prevalence

Obtaining accurate estimates of the rates of cyberbullying is difficult due to variation in the definition of cyberbullying and discrepancies in its measurement (see Rivers & Noret, 2010, for a discussion). Across studies, the assessment windows (i.e., time frames over which the behaviors occurred), modes of communication

included (e.g., cell phones, computer, e-mail), and specific types of behaviors assessed have been inconsistent. With measurement limitations in mind, in a review article, Tokunaga (2010) found 20–40% of youth reported that they had been cyberbullied. Although the percentages have varied, a number of studies have reported those who have been both a victim and a perpetrator of cyberbullying (e.g., about 10%, Hemphill, Tollit, & Kotevski, 2012; 12%, Hinduja & Patchin, 2009; 7%, Kowalski & Limber, 2007; 26%, Mishna, Khoury-Kassabri, Gadalla, & Daciuk, 2012). The overlap between cyberbullying victimization and perpetration could be in part explained by Hinduja and Patchin's (2009) study which found that revenge against bullies was the most frequently reported reason for cyberbullying perpetration.

Fewer studies have examined college students' experiences of cyberbullying; however, recent studies have found between 9% and 11% of U.S. college students have been "cyberbullied" (Kraft & Wang, 2010; Schenk & Fremouw, 2012; Walker, Sockman, & Koehn, 2011) or have experienced repeated harassment, insults, or threats through e-mail or instant messaging (Finn, 2004). Finding slightly higher estimates of cyberbullying victimization, MacDonald and Roberts-Pittman (2010) found 21.9% of college students had been a victim of cyberbullying, whereas 8.6% had been a perpetrator of cyberbullying. In contrast, Aricak (2009) and Dilmac (2009) found over half (54.4% and 55.3%, respectively) of Turkish college students had been cyberbullied in their lifetime, and

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approximately one-fifth (19.7% and 22.5%, respectively) had cyberbullied others. Although prevalence rates among college students vary widely, all studies suggest that a substantial portion of college students are victims and/or perpetrators of cyberbullying.

1.2. Theory of Reasoned Action

Although several recent studies have examined rates of cyberbullying, few studies have employed established theories to explain cyberbullying behavior. One notable exception was Heirman and Walrave's (2012) application of the Theory of Planned Behavior (Ajzen, 2012) in a sample of Belgian adolescents. When originally proposed, the Theory of Reasoned Action (TRA) was applied to behaviors for which individuals have complete control (Ajzen, 2012). TRA was later expanded to include the perception of one's ability to perform a behavior (i.e., perceived behavioral control) and renamed the Theory of Planned Behavior (TPB; Ajzen, 2012). Because college students have access to the Internet and cell phones, nearly all college students have the ability to engage in cyberbullying. Specifically, in the United States, 98% of young adults use the Internet (Pew Internet & American Life Project, 2013), 97% of young adults use their cell phone for texting (Duggan & Rainie, 2012), and cyberbullying can be perpetrated anonymously. Therefore, we believed that the TRA was the most appropriate theory for our purposes. TRA posits that one's attitude toward a behavior and subjective norms of the behavior influence behavioral intentions, which in turn influence behavior (Ajzen, 1985).

1.2.1. Attitudes toward behavior

Attitudes involve how positively or negatively a person evaluates a behavior (Ajzen, 1985). According to Olweus (1993), bullies often have more positive attitudes toward violence and low empathy toward victims. Both studies of childhood (Elledge et al., 2013) and college students (Barlett & Gentile, 2012; Boulton, Lloyd, Down, & Marx, 2012) have supported this argument. For instance, at both the individual and classroom level, Finnish children who had more positive attitudes toward victims were less likely to report having cyberbullied others (Elledge et al., 2013). Among college students in the United Kingdom, those with less accepting attitudes toward bullying were less likely to report engaging in social networking, text, physical, or verbal bullying (Boulton et al., 2012). In addition, less accepting attitudes toward perpetrators predicted less likelihood of verbal or social exclusion bullying (i.e., purposely excluding someone from friends or activities). Social exclusion bullying was also predicted by feeling sorry for victims. Recently, Barlett and Gentile (2012) found both more accepting attitudes toward strength differential (e.g., higher acceptability of "weaker" and "smaller" people cyberbullying bullies to get even) and more accepting attitudes toward anonymity (e.g., greater comfort level with cyberbullying individuals regardless of whether they know the person) predicted more positive attitudes toward cyberbullying perpetration, which in turn predicted cyberbullying perpetration.

1.2.2. Perceived norms

Initially, the term subjective norms (i.e., the degree to which individuals perceive that others apply pressure to engage in the behavior) was used to describe perceived norms in the TRA (Ajzen, 1985). More recently, perceived norms have been expanded to include both subjective norms (i.e., now referred to as injunctive norms, the perception of others' approval or disapproval of a behavior) and descriptive norms (i.e., the perception that others actually perform the behavior; Fishbein & Ajzen, 2010). Although their definitions of normative beliefs differed from the definitions used in the TRA, previous research has examined normative beliefs

concerning cyberbullying (Ang, Tan, & Mansor, 2011; Werner, Bumpus, & Rock, 2010; Williams & Guerra, 2007). For example, in a sample of youth, Williams and Guerra found that believing bullying and bystander behavior (i.e., encouraging others to engage in bullying behaviors) is morally acceptable significantly predicted both traditional and Internet bullying. In addition, Barlett and Gentile (2012) found that cyberbullying reinforcement (i.e., positive reinforcement of cyberbullying perpetration) predicted cyberbullying perpetration.

To our knowledge, no studies have examined the relationship between descriptive norms regarding cyberbullying (i.e., perceptions of others' engagement in cyberbullying behavior) and cyberbullying behavior. However, a meta-analysis examining associations between attitudes, subjective norms, descriptive norms, perceived behavioral control, and intentions to engage in a wide range of behaviors found attitudes was the strongest predictor and descriptive norms was the second strongest predictor of intentions to engage in various behaviors (Rivis & Sheeran, 2003). Interestingly, the association between descriptive norms and intentions was stronger for younger (i.e., youth and undergraduate students) vs. older samples.

1.3. Empathy

Although empathy is not explicitly included in the TRA or TPB, Ajzen (2011) has indicated that the association between other factors and specific behaviors may be mediated by the TRA/TPB constructs. Empathy appears to be associated with cyberbullying. For instance, as compared to adolescents not involved in cyberbullying, German adolescents who were either victims or perpetrators of cyberbullying reported lower levels of empathy (Schultze-Krumbholz & Scheithauer, 2009). Although Schultze-Krumbholz and Scheithauer measured overall empathy, three studies distinguished between affective and cognitive empathy as predictors of cyberbullying. Specifically, in a sample of Italian adolescents, Renati, Berrone, and Zanetti (2012) found that compared to victims of cyberbullying and compared to those not involved in cyberbullying, perpetrators of cyberbullying were significantly lower on affective empathy (i.e., experiencing others' emotions). However, no differences in affective empathy were found between cyberbullying perpetrators and those who were both victims and perpetrators of cyberbullying. Cognitive empathy (i.e., understanding others' emotional perspectives) did not differ significantly between groups. Moreover, among Turkish adolescents, Topcu and Erdur-Baker (2012) found that the combination of affective and cognitive empathy mediated the relationship between gender and cyberbullying perpetration. In a study of Singaporean adolescents, participants with low levels of affective empathy and high levels of cognitive empathy reported less frequent cyberbullying compared to those with low levels of affective empathy and low levels of cognitive empathy (Ang & Goh, 2010). In addition, among boys with high levels of affective empathy, boys with high cognitive empathy reported less frequent cyberbullying perpetration than boys with low cognitive empathy. In contrast, for girls with high levels of affective empathy, there was no difference in cyberbullying perpetration between those with high and low cognitive empathy. In contrast to studies that have assessed general empathy, Steffgen, König, Pfetsch, and Melzer (2011) examined empathy in the context of cyberbullying (e.g., "I find websites that make fun of other people funny/amusing;" p. 645) among adolescents in Luxembourg. Perpetrators of cyberbullying reported significantly lower levels of empathy associated with cyberbullying as compared to victims of cyberbullying and participants not involved in cyberbullying.

1.4. Theory-based explanation for cyberbullying behavior

In the only published study to apply the TPB to cyberbullying behavior, Heirman and Walrave (2012) found more favorable cyberbullying attitudes, more positive perceived subjective norms about cyberbullying, and higher perceived behavioral control (i.e., “cyberbullying is easy to perform”) each predicted higher cyberbullying intentions. Importantly, attitudes toward cyberbullying was the strongest predictor of cyberbullying intentions. Moreover, intention to cyberbully predicted cyberbullying perpetration.

1.5. Present study

The purpose of the present study was to test whether the TRA explained each of four types of cyberbullying perpetration (deception, malice, public humiliation, and unwanted contact) in a sample of college students. Hypothesis 1: Attitudes toward cyberbullying, injunctive norms, and descriptive norms were expected to predict cyberbullying intentions, which in turn were expected to predict cyberbullying behaviors. Hypothesis 2: The effect of empathy toward cyberbullying victims on cyberbullying intentions was expected to be mediated by the TRA constructs (i.e., attitudes toward cyberbullying, injunctive norms, and descriptive norms).

2. Method

2.1. Participants and procedure

All freshmen ($n = 3187$) and sophomores ($n = 3128$) between the ages of 18 and 23 attending a large university in southeastern Virginia received an e-mail inviting them to participate in an anonymous online survey about negative communication experiences through electronic devices. The online survey was part of a larger

cyberbullying prevention study (Doane, Kelley, & Pearson, 2013). The gender distribution of the traditional-aged freshman and sophomore population was approximately equal (50.5% female). Race in the larger population of traditional-aged students was 54.0% White and 30.1% African American. The mean age of traditional-aged freshmen and sophomores at the university was 19.12 ($SD = 1.11$).

Among the 375 respondents, 246 were females; 128 were males (1 respondent did not report gender). The mean age of the sample was 19.05 years ($SD = 1.01$). Most identified their racial/ethnic group as White (60.8%) or African American (22.1%). Compared to the larger population of traditional-aged freshman and sophomore classes at the university, students who participated in the present study were significantly more likely to be female and White. However, the average age of the invited students and the subgroup who participated did not significantly differ.

As an incentive to participate, all students were entered into a raffle for a \$25 Amazon.com gift certificate. In addition, students enrolled in psychology courses were offered research credit for their participation. Prior to data collection, the study was approved by the participating university's Institutional Review Board. Participants read a description of the study and provided informed consent prior to their participation.

2.2. Measures

Internal consistency estimates for all measures are presented in Table 1.

2.2.1. Cyberbullying Experiences Survey (CES)

Cyberbullying behavior was assessed using the 20-item perpetrator scale of the CES (Doane, Kelley, Chiang, & Padilla, 2013). The perpetration scale consists of four factors: malice (e.g., “Have you sent a rude message to someone electronically?”, 6 items), deception (e.g., “Have you pretended to be someone else while

Table 1
Descriptive statistics and bivariate correlations.

	Behavior	Intentions	Attitudes	Injunctive norms	Descriptive norms	M	SD	α
<i>Deception</i>								
Behavior	–					.27	.61	.87
Intentions	.77**	–				.11	.50	.95
Attitudes	.58**	.64**	–			.21	.53	.91
Injunctive norms	.53**	.51**	.58**	–		.46	.89	.87
Descriptive norms	.46**	.43**	.46**	.57**	–	.67	1.08	.89
Empathy	–.09	–.08	–.25**	–.20**	–.12*	3.77	1.52	.93
<i>Malice</i>								
Behavior	–					.83	.98	.91
Intentions	.72**	–				.40	.86	.92
Attitudes	.66**	.69**	–			.43	.79	.96
Injunctive norms	.65**	.65**	.68**	–		.89	1.17	.94
Descriptive norms	.56**	.50**	.53**	.70**	–	1.53	1.46	.95
Empathy	–.32**	–.33**	–.40**	–.39**	–.23**	3.67	1.54	.98
<i>Public humiliation</i>								
Behavior	–					.24	.59	.84
Intentions	.72**	–				.13	.56	.94
Attitudes	.57**	.70**	–			.26	.64	.86
Injunctive norms	.45**	.49**	.66**	–		.55	1.02	.88
Descriptive norms	.42**	.39**	.50**	.62**	–	1.01	1.36	.91
Empathy	–.13*	–.13*	–.28**	–.25**	–.18**	3.81	1.49	.90
<i>Unwanted contact</i>								
Behavior	–					.13	.52	.97
Intentions	.93**	–				.09	.46	.98
Attitudes	.70**	.72**	–			.16	.52	.96
Injunctive norms	.66**	.65**	.67**	–		.28	.65	.94
Descriptive norms	.48**	.45**	.47**	.62**	–	.48	.91	.96
Empathy	–.13*	–.12*	–.24**	–.24**	–.14**	3.87	1.51	.98

* $p < .05$.

** $p < .01$.

talking to someone electronically?”, 3 items), public humiliation (e.g., “Have you posted an embarrassing picture of someone electronically where other people could see it?”, 3 items), and unwanted contact (e.g., “Have you sent an unwanted pornographic picture to someone electronically?”, 8 items). All items are answered on a 6-point response scale ranging from (0) “Never” to (5) “Every day/Almost Every day.” The CES has demonstrated convergent validity with Ybarra, Diener-West, and Leaf’s (2007) measure of Internet harassment and the Cyberbullying Assessment Instrument (Hinduja & Patchin, 2009).

2.2.2. Empathy toward cyberbullying victims

Although some cyberbullying researchers have asked participants to complete a global measure of empathy (e.g., Schultze-Krumbholz & Scheithauer, 2009) or general measures of affective and cognitive empathy (e.g., Renati et al., 2012), our approach was similar to Steffgen et al.’s (2011) study in which they measured empathy in the context of cyberbullying. More precisely, we opted to measure empathy specifically toward victims of cyberbullying. Empathy toward cyberbullying victims was measured by having participants rate how sorry they feel for a person who has experienced each of the 20 CES cyberbullying behaviors (e.g., “I feel very sorry for a person who has been [teased by others electronically].” Each item was answered on a 6-point scale ranging from (0) “Does not apply at all” to (5) “Applies exactly.” The method of assessing empathy was based on work by Endresen and Olweus (2001).

2.2.3. Attitudes, injunctive norms, descriptive norms, and intentions measures

Based on suggestions by Ajzen (2006), participants were asked questions that assess attitudes toward cyberbullying, perceived injunctive and descriptive norms concerning cyberbullying, and intentions to cyberbully for each of the 20 cyberbullying perpetration items on the CES (Doane et al., 2013). According to Ajzen, attitude toward a behavior involves evaluating the performance of the behavior. In addition, evaluation consists of two components: instrumental and experiential. Ajzen recommends that adjective scales representing both components as well as overall evaluation be included. Therefore, to assess attitudes toward cyberbullying, the item “For me, to [tease someone electronically] in the forthcoming month is” was repeated for all 20 behaviors and answered on three 6-point scales ranging from (0) “bad” to (5) “good” (i.e.,

overall evaluation), (0) “harmful” to (5) “beneficial” (i.e., instrumental evaluation) and (0) “unenjoyable” to (5) “enjoyable” (i.e., experiential evaluation). All three sets of attitude items were averaged to create attitude composite scores. To measure injunctive norms, the item “My peers would _____ of my [teasing someone electronically] in the forthcoming month,” was repeated for each behavior and was answered on a 6-point scale ranging from (0) “disapprove” to (5) “approve.” To measure descriptive norms, the item “My peers [tease others electronically]” was asked for each behavior. Responses were scored on a 6-point scale from (0) “completely false” to (5) “completely true.” To measure intention to cyberbully, the item “I intend to [tease someone electronically] within the next month” was answered on a 6-point scale ranging from (0) “extremely unlikely” to (5) “extremely likely” for all 20 perpetration behaviors.

2.3. Data analysis plan

Path analysis using Mplus 7.1 (Muthén & Muthén, 1998–2012) was conducted to examine the predictive effects of TRA constructs on cyberbullying behaviors. Specifically, in four separate models predicting each of the four types of cyberbullying behaviors derived from the CES (i.e., malice, deception, public humiliation and unwanted contact), empathy was modeled as a predictor of attitudes, injunctive norms, descriptive norms, intentions and behavior; attitudes, descriptive norms, and injunctive norms were modeled as predictors of intentions and behaviors; and intentions were modeled as a predictor of behaviors (see Fig. 1). To ensure our results are not due to demographic differences, we controlled for age and gender (1 = male, 2 = female). These covariates were entered as predictors of all other variables in the models. As recommended by mediation experts (Fritz & MacKinnon, 2007; Preacher & Hayes, 2004, 2008), we examined the total, direct, and indirect effects of predictor variables on outcomes using the bias-corrected bootstrap based on 10,000 bootstrapped samples (Efron & Tibshirani, 1993). Bootstrapping creates empirically-derived sampling distributions from which statistical tests are based. Importantly, bootstrapping does not rely on the assumption that indirect effects are normally distributed and provides a powerful test of mediation (Fritz & MacKinnon, 2007). Across all models, parameters were estimated using maximum likelihood estimation, and missing data were handled using full information maximum likelihood, which is more efficient and has less bias than

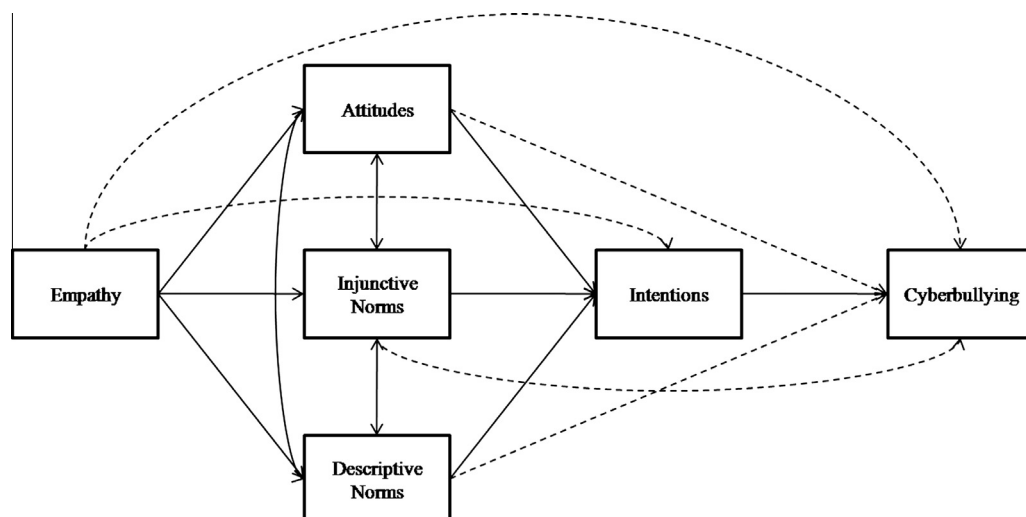


Fig. 1. Depicts the theoretical model (path analysis model) tested for each of the four cyberbullying behaviors. Solid lines indicate paths expected to be significant based on the Theory of Reasoned Action; dotted lines indicate paths that were tested but not directly expected based on the Theory of Reasoned Action.

alternative procedures (Enders, 2001; Enders & Bandalos, 2001). Given that all models were fully saturated (i.e., $df = 0$), model fit statistics are not reported.

3. Results

3.1. Descriptives and correlations

Data from one participant, who endorsed the most extreme score for every behavior, intention, and norms item, was excluded from all analyses. Descriptive statistics and bivariate correlations between all study variables are shown in Table 1.

3.2. Path models

The direct effects (i.e., standardized regression coefficients) for each path analysis model are summarized in Fig. 2. Across all four models, the TRA-based model accounted for a substantial portion of the variance in both cyberbullying intentions ($.465 < R^2 < .581$) and cyberbullying behaviors ($.543 < R^2 < .872$). The strongest associations were between attitudes toward cyberbullying and cyberbullying intentions ($.46 < \beta s < .68$) and cyberbullying intentions and all four types of cyberbullying behaviors ($.42 < \beta s < .85$).

The total, direct, and indirect effects (i.e., mediated effects) of attitudes toward cyberbullying, injunctive norms, and descriptive norms on cyberbullying behaviors, as well as the effects of empathy on cyberbullying intentions and behaviors are summarized in Table 2. Attitudes toward cyberbullying had a total effect on all four types of cyberbullying behaviors. In addition, for three of the four cyberbullying behaviors (i.e., deception, public humiliation, and unwanted contact), cyberbullying intentions “fully” mediated the cyberbullying attitudes-cyberbullying perpetration association. In contrast to the other models, results revealed both an indirect effect via intentions and a direct effect of attitudes toward cyberbullying on cyberbullying behaviors that involved malice. That is, more positive attitudes toward cyberbullying had a direct positive effect on the perpetration of cyberbullying behaviors that involved malice.

Injunctive norms, that is, perceptions of peers’ approval of cyberbullying, had a total effect on deception, malice, and unwanted contact behaviors (but no significant total effect on public humiliation). For deception behaviors, neither the direct nor indirect effect via intentions reached statistical significance. However, for both malice and unwanted contact, cyberbullying intentions “fully” mediated the predictive effects of injunctive norms on these cyberbullying behaviors. Nonetheless, it should be noted that the size of the direct effect of injunctive norms on malice was of similar magnitude of the indirect effect (even though the direct effect was not significant).

Descriptive norms, that is, perceptions of peers’ perpetration of cyberbullying behavior, had total effects on deception, malice, and public humiliation. Specifically, perceiving one’s peers as more likely to engage in these behaviors was associated with one’s own reports of engaging in these behaviors. Descriptive norms did not have a significant total effect on unwanted contact. For cyberbullying behaviors that involved deception, neither the direct nor indirect effect via cyberbullying intentions reached statistical significance. For both malice and public humiliation, only the direct effects of descriptive norms of these cyberbullying behaviors were significant.

The pattern of relationships between empathy and TRA constructs was consistent across all models. Empathy predicted attitudes, injunctive norms, and descriptive norms in all four models. The predictive effects of empathy on cyberbullying intentions and cyberbullying behaviors were fully mediated by TRA

constructs. Specifically, the predictive effects of empathy on cyberbullying intentions was significantly mediated by attitudes in all four models, and significantly mediated by injunctive norms in the malice and unwanted contact models. Similarly, the double-mediated path of empathy on cyberbullying behaviors via attitudes and intentions was significant across all four models. Other significant indirect effects of empathy on cyberbullying were not consistent across all models and are summarized in Table 2.

4. Discussion

The purpose of the present study was to examine TRA as a theoretical framework to explain cyberbullying perpetration. In a recent study, Heirman and Walrave (2012) found that attitudes, subjective norms, and perceived behavioral control predicted cyberbullying intentions, which in turn predicted cyberbullying behaviors. Heirman and Walrave defined cyberbullying as “intentionally hurting or harming someone you personally know online or offline through the use of digital media such as the Internet or mobile phone,” p. 616). Each construct was measured as related to the definition they provided. The present study extended their work in three ways. First, we examined whether the components outlined in the TRA would yield associations with a broader four-factor measure of cyberbullying developed with college students (Doane et al., 2013). In keeping with recommendations for testing TRA/TPB-based models (Ajzen, 2006), each attitude, descriptive norm, and injunctive norm measure was matched to these cyberbullying behavior items. This procedure allowed for the examination of the TRA across four distinct types of cyberbullying. Second, we separated perceived norms to include both injunctive norms (i.e., perceived approval of cyberbullying by others) and descriptive norms (i.e., perceived engagement in cyberbullying by others), consistent with more recent TRA/TPB theoretical models (Fishbein & Ajzen, 2010). Finally, given its association with cyberbullying, empathy toward victims was added as a distal antecedent to cyberbullying that could be explained by TRA.

Consistent with Heirman and Walrave (2012) and a previous meta-analysis of TPB studies (Rivis & Sheeran, 2003), attitudes toward cyberbullying was the most robust predictor of cyberbullying intentions for all types of cyberbullying behaviors examined. In addition, attitudes toward cyberbullying had a sizeable indirect effect on cyberbullying behaviors via cyberbullying intentions. The present study is one of only two studies on cyberbullying that have measured norms consistent with TRA/TPB models, that is, perceptions of others’ approval of cyberbullying perpetration (i.e., injunctive norms) and perceptions of others’ engagement in cyberbullying perpetration (i.e., descriptive norms).

For three of the four models, both descriptive and injunctive norms had effects on cyberbullying behaviors. In addition, the predictive effects of injunctive norms on cyberbullying behaviors were largely indirect via cyberbullying intentions, whereas descriptive norms had a direct effect on two types of cyberbullying behaviors: malice and public humiliation. It should be noted, however, that the direct effects of descriptive norms on cyberbullying behaviors were small ($\beta s = .15, .16$, for malice and public humiliation, respectively), whereas cyberbullying intentions had large direct effects on cyberbullying behaviors that involved malice and public humiliation ($\beta s < .61, .42$, respectively).

As the present study is the first study to examine TRA constructs as they predict *different* forms of cyberbullying perpetration, it is important not to over-interpret differences in the degree to which TRA constructs predicted specific forms of cyberbullying. For example, cyberbullying intentions strongly predicted cyberbullying behaviors that involved unwanted contact, whereas cyberbullying intentions moderately predicted cyberbullying

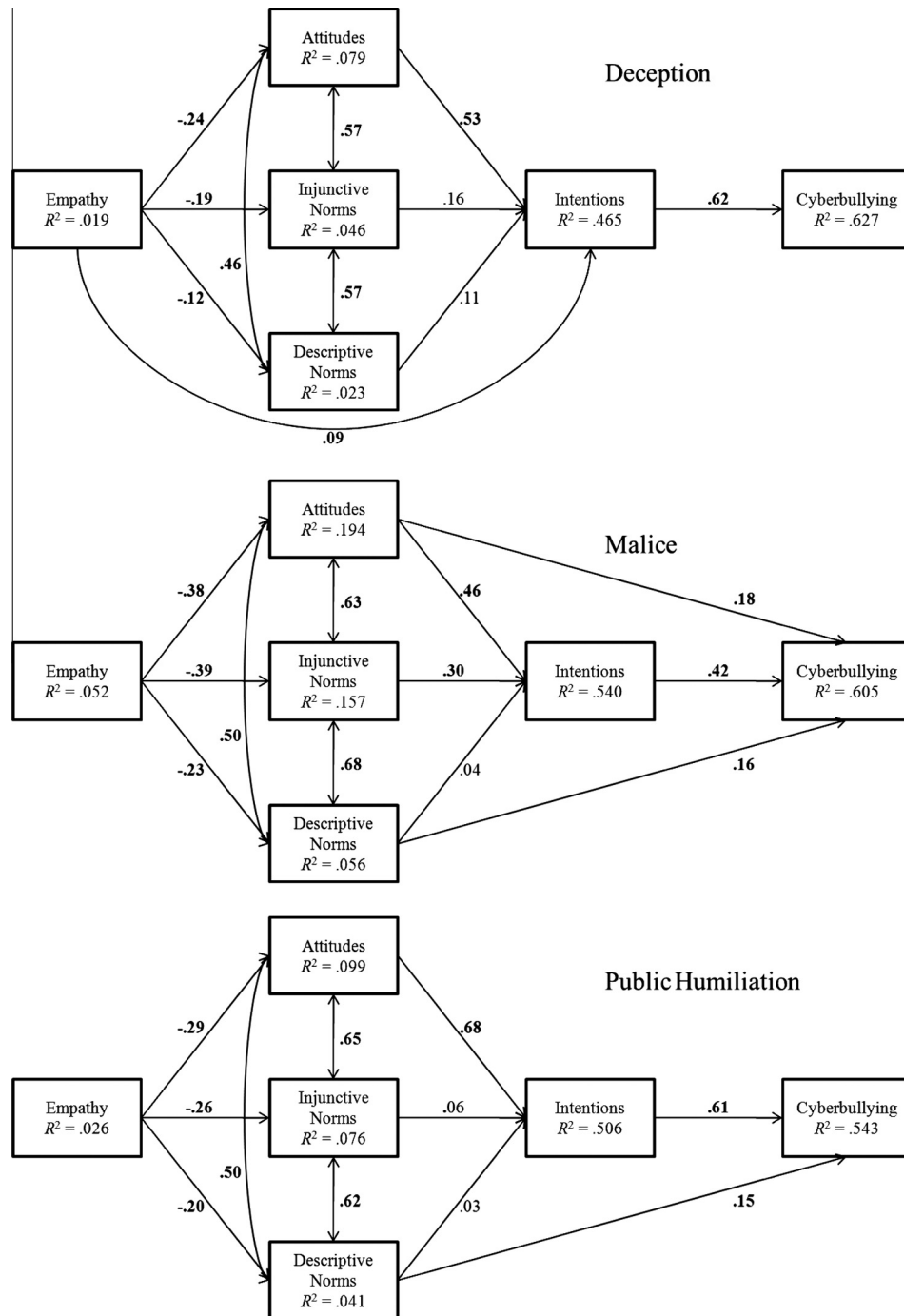


Fig. 2. Shows the observed relationships between empathy, Theory of Reasoned Action constructs, and cyberbullying behaviors for (a) deception, (b) malice, (c) public humiliation, and (d) unwanted contact. All coefficients reflect standardized regression coefficients. All paths based on the Theory of Reasoned Action are shown as well as additional significant effects that were not necessarily predicted by the Theory of Reasoned Action. Significant effects are shown in bold typeface for emphasis. Although gender and age were entered as correlated exogenous variables predicting all other variables in the model, as the effects of demographics were not of primary importance, these paths are not shown for reasons of parsimony.

behaviors that involved malice. Our results may suggest that cyberbullying behaviors involving unwanted contact are more intentional than cyberbullying behaviors that constitute malice, but additional research is needed to justify this proposition.

Results of the present study also confirm recent research demonstrating the importance of empathy in predicting cyberbullying perpetration (Ang & Goh, 2010; Renati et al., 2012; Schultze-Krumbholz & Scheithauer, 2009; Steffgen et al., 2011; Topcu & Erdur-Baker, 2012). As expected, participants with higher empathy toward

cyberbullying victims reported less positive attitudes toward cyberbullying, perceived their peers to be less accepting of cyberbullying (i.e., lower injunctive norms), and believed fewer of their peers engaged in cyberbullying (i.e., lower descriptive norms), which together predicted lower cyberbullying intentions, which in turn were associated with less frequent cyberbullying behaviors. Although empathy had a small direct effect on two of the four types of cyberbullying intentions (deception and unwanted contact), because the TRA constructs fully accounted for the empathy-

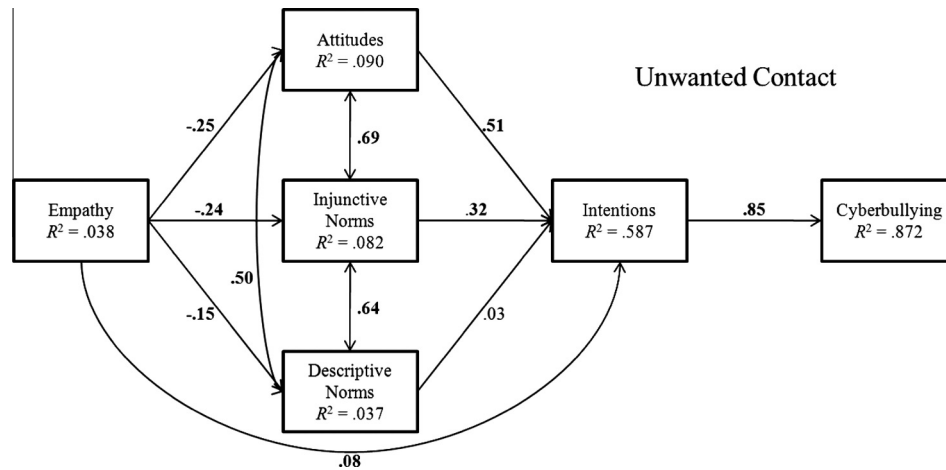


Fig. 2 (continued)

Table 2

Summary of total, indirect, and direct effects of empathy, attitudes, injunctive norms, and descriptive norms on cyberbullying behaviors.

	Deception β	Malice β	Public humiliation β	Unwanted contact β
<i>Attitudes → Behavior</i>				
Total	<u>.403</u>	<u>.374</u>	<u>.450</u>	<u>.453</u>
Indirect (Intentions)	<u>.329</u>	<u>.193</u>	<u>.415</u>	<u>.438</u>
Direct	.074	<u>.181</u>	.035	.015
<i>Injunctive norms → Behavior</i>				
Total	<u>.223</u>	<u>.260</u>	.069	<u>.340</u>
Indirect (Intentions)	.101	<u>.123</u>	.037	<u>.274</u>
Direct	.122	.137	.033	.066
<i>Descriptive norms → Behavior</i>				
Total	<u>.155</u>	<u>.176</u>	<u>.163</u>	.073
Indirect (Intentions)	.065	.017	.018	.028
Direct	.090	<u>.159</u>	<u>.145</u>	.044
<i>Empathy → Behavior</i>				
Total	-.082	-.311	-.142	-.140
Indirect (total)	-.101	-.300	-.141	-.143
Intentions	<u>.055</u>	-.014	.041	<u>.064</u>
Attitudes	-.018	-.069	-.010	-.004
Injunctive norms	-.023	-.053	-.009	-.016
Descriptive norms	-.010	-.037	-.029	-.007
Attitudes → Intentions	-.078	-.074	-.120	-.110
Injunctive norms → Intentions	-.020	-.048	-.010	-.066
Descriptive norms → Intentions	-.008	-.004	-.004	-.004
Direct	.019	-.012	-.001	.003
<i>Empathy → Intentions</i>				
Total	-.081	-.336	-.151	-.137
Indirect (total)	-.170	-.302	-.217	-.211
Attitudes	-.126	-.178	-.196	-.129
Injunctive norms	-.032	-.115	-.016	-.077
Descriptive norms	-.012	-.010	-.006	-.005
Direct	<u>.089</u>	-.033	.066	<u>.075</u>

Note. Significant effects are determined by a 95% Confidence Interval that does not contain zero and are underlined for emphasis.

cyberbullying perpetration association, the TRA model was supported. The specific indirect effects that reached statistical significance varied somewhat across the four models; therefore, future research is needed to determine the specific paths through which increased empathy relates to decreased cyberbullying behaviors.

4.1. Practical and clinical implications

The findings of the present study may inform cyberbullying prevention efforts. A variety of methods could be used to improve

cyberbullying attitudes, perceived injunctive and descriptive norms regarding cyberbullying, and empathy toward cyberbullying victims. For example, student actors could depict scenarios of common cyberbullying behaviors and illustrate the effect they have on victims in order to increase empathy. Based on the present study, it is plausible that increasing empathy toward cyberbullying victims would exert an effect on the TRA constructs that are purported to be proximal antecedents to cyberbullying perpetration. These portrayals may also illustrate students' disapproval of others who perpetrate cyberbullying (i.e., decrease perceived injunctive

norms). Furthermore, cyberbullying information such as prevalence, consequences, and news stories (e.g., cyberbullying victims who have committed suicide) could be distributed to modify attitudes and perceived norms regarding cyberbullying. Overall, our results suggest that interventions that can successfully modify the TRA constructs may also be able to effectively change cyberbullying perpetration.

4.2. Limitations and future research

It is important to note that our sample was a convenience sample of college students who volunteered to participate. A small percentage (6%) of students who were invited to participate completed the study, and these participants were more likely to be White and female compared to the larger invited group. Thus, one must be cautious when generalizing to other populations. Also, survey data was based on self-reported responses. Another important limitation of the present study is the cross-sectional design. Although strong longitudinal support for the TRA/TPB has been found for various behaviors, the present study is unable to establish temporal precedence and unable to discern whether the TRA constructs predict cyberbullying behaviors prospectively. For example, intentions to engage in behavior in the future were used to predict engagement in past behavior with the expectation that these behaviors would remain stable in the absence of an intervention. Barlett and Gentile (2012) found that cyberbullying perpetration was stable over a two month period; specifically, cyberbullying perpetration frequency at the first time point was strongly correlated with cyberbullying perpetration frequency two months later ($r = .69$). The logical next step is to conduct prospective longitudinal studies that can examine whether the patterns of prediction replicate longitudinally.

In addition, a randomized controlled trial of a TRA-based intervention (vs. a control group) would not only allow investigators to demonstrate temporal precedence, but would also enable stronger causal conclusions. Given that it seems that there would be limited variability in perceived behavioral control over cyberbullying behaviors (i.e., it was expected that everyone would have high perceived behavioral control), this variable was not assessed in the present study. Nonetheless, to test the full TPB-based model, this variable could be added in subsequent investigations. One strength of the present study is that we examined empathy toward victims of *specific* cyberbullying behaviors. Previous studies have distinguished between affective and cognitive empathy broadly as a predictor of cyberbullying (Ang & Goh, 2010; Renati et al., 2012; Topcu & Erdur-Baker, 2012). Future studies could examine these different types of empathy in relation to specific cyberbullying behaviors.

4.3. Conclusion

The present study demonstrated that TRA can be effectively applied in predicting cyberbullying perpetration. A reasonable next step would be to target TRA constructs in cyberbullying prevention/intervention programs in an effort to reduce cyberbullying intentions and behavior. Given that attitudes toward cyberbullying was the most robust predictor for all types of cyberbullying examined, prevention/intervention efforts may be most effective if they focus primarily on reducing positive attitudes toward cyberbullying. Furthermore, increasing empathy toward cyberbullying victims and decreasing favorable injunctive and descriptive norms regarding cyberbullying may in turn reduce cyberbullying intentions and engagement in cyberbullying behaviors in college students.

Appendix A. Supplementary material

Supplementary data associated with this article can be found, in the online version, at <http://dx.doi.org/10.1016/j.chb.2014.03.051>.

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