

# Predicting adolescent perpetration in cyberbullying: An application of the theory of planned behavior

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This study aims to contribute to the research field on cyberbullying by offering a comprehensive theoretical framework that helps to predict adolescents' perpetration of cyberbullying. One thousand forty-two pupils from 12 to 18 years old in 30 different Belgian secondary schools participated in two surveys within a three-month interval. Structural equation modeling was used to test whether the overall model of theory of planned behavior (TPB) helps to predict adolescents' self-reported perpetration in cyberbullying. Overall, the present study provides strong support for the theoretical utility of the TPB in cyberbullying research. The model accounted for 44.8% of the variance in adolescents' behavioral intention to cyberbully and 33.2% of the variance in self-reported cyberbullying perpetration. We found a strong positive relationship between adolescents' attitude towards cyberbullying and their behavioral intention to perpetrate it. Perceived behavioral control and subjective norm, the other two TPB-constructs, were also significant albeit relatively less important predictors of adolescents' intention to cyberbully. The finding that adolescents' attitude is the most important predictor of perpetration, entails that prevention and intervention strategies should aim at reducing the perceived acceptability of cyberbullying among adolescents by converting neutral or positive attitudes towards this anti-social behavior into negative evaluations.

*Cómo predecir la perpetración adolescente del ciberacoso escolar: aplicación de la Teoría de la Conducta Planificada.* El objetivo de este estudio es contribuir al campo de investigación del ciberacoso escolar mediante un marco teórico exhaustivo que ayude a predecir la perpetración del ciberacoso escolar en adolescentes. Participaron 1.042 alumnos con edades comprendidas entre los 12 y los 18 años de treinta escuelas belgas de Educación Secundaria diferentes en dos encuestas autoadministradas en un intervalo de tres meses. Se utilizaron modelos de ecuaciones estructurales para probar si el modelo general de la Teoría de la Conducta Planificada (TCP) ayuda a predecir la perpetración del ciberacoso escolar de los adolescentes obtenida por autoinforme. En general, el presente estudio confirma firmemente la utilidad teórica de la TCP en la investigación del ciberacoso escolar. El modelo representa el 44,8% de la varianza de la intención conductual del ciberacoso escolar en adolescentes y el 33,2% de perpetración del ciberacoso escolar obtenida por autoinforme. Encontramos una fuerte relación positiva entre la actitud de los adolescentes hacia el ciberacoso escolar y su intención de perpetrarlo. La norma subjetiva y el control conductual percibido, los otros dos constructos de la TCP, fueron también predictores significativos de la intención de los adolescentes, aunque contribuyeron significativamente menos en varianza explicada.

The permeation of ICT in society has come with many benefits, especially for age groups eagerly using these devices such as children and adolescents. Young people can, by using digitalized media, engage in a broad variety of activities such as entertainment, education, information and communication (Livingstone, Haddon, Görzig, & Ólafsson, 2011). Despite the creation of benefits for today's generation of young people, there has been negative media coverage and public concern related to their use of digital media.

Next to some online content risks (e.g., exposure to sexually explicit or violent content), contact risks such as cyberbullying have emerged as a new societal problem tarnishing the image of an empowered young generation of digital kids.

Reviewing literature on cyberbullying reveals that there is a broad range of definitions available, with some studies (e.g., Juvonen & Gross, 2008) broadly defining cyberbullying as "the use of Internet or other digital communication devices to insult or threaten someone" (p. 497). Some studies, however, are more restrictive in defining cyberbullying, as they have applied Olweus' (1994) traditional bullying criteria of repeated, intentional and harmful behavior to cyberbullying (Smith et al., 2008, p. 376): "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."

Noteworthy, the prevalence rates of cyberbullying found in diverse studies tend to differ strongly between countries, partially due to different operationalization and measurements of cyberbullying (Tokunaga, 2010). For example, Kowalski and Limber (2007) asking for students' involvement as cyberbullying perpetrator *in the last couple of months* found relatively low prevalence of cyberbullying with 4.1% of respondents as perpetrators and 6.8% as victimized perpetrators, whereas in a Turkish study (Aricak et al., 2008) no time frame was being used and a much higher prevalence was found with 35.7% of students admitting perpetration. Although prevalence rates between countries are difficult to compare, research clearly has established that cyberbullying is a widespread problem in schools worldwide (Tokunaga, 2010).

There has been a steady increase in studies focusing on possible predictors for victimization and perpetration of cyberbullying. Research so far has identified a variety of determinants of cyberbullying perpetration. Examining gender and age as predictors has yielded mixed results: Some studies found more cyberbullying by males and by 12- to 15- years old pupils (e.g., Erdur-Baker, 2010; Vandebosch & Van Cleemput, 2009), whereas other researchers did not find significant gender and age differences (e.g., Hinduja & Patchin, 2008; Smith et al., 2008). Furthermore, some studies have found that ICT-related factors such as frequency of ICT-use (e.g., Walrave & Heirman, 2011), level of computer and Internet skills (e.g., Vandebosch & Van Cleemput, 2009) and patterns of risky Internet usage (e.g., Erdur-Baker, 2010) help in predicting cyberbullying perpetration. Also poor academic performance (Ybarra & Mitchell, 2004) and low perceived social support (Calvete, Orue, Estévez, Villardón, & Padilla, 2010) have been associated with perpetrator roles in cyberbullying. Finally, several studies have found evidence of a strong reciprocity between victimization and perpetration in cyberbullying, with victims of cyberbullying having higher chances of becoming a cyberbully themselves (e.g., Dehue, Bolman, & Völlink, 2008).

The aforementioned studies into cyberbullying determinants are important, because they allow researchers to make profiles of cyberbullies (Anderson & Hunter, 2012; del Rey, Elipe, & Ortega, 2012; Palladino, Nocentini, & Menesini, 2012; Wachs, Wolf, & Pan, 2012) and thereby provide policymakers and school practitioners with valuable information about the pupils to whom intervention efforts should be targeted (Paul, Smith, & Blumberg, 2012; Vandebosch, Beirens, D'Haese, Wegge, & Pabian, 2012). Despite their importance, it is remarkable that the majority of studies so far have taken an overweighing empirical angle on perpetration in cyberbullying. In a recent review on cyberbullying, Tokunaga (2010) stated that "the indifference of cyberbullying researchers to already established theories in new technology, mass media, and traditional bullying research is perplexing" (p. 285). Moreover, he suggested that the theory of planned behavior (TPB) might be a promising framework in this regard. The present study aims to contribute to the research field in this regard. We believe that testing this TPB theory may provide valuable information to colleagues involved in cyberbullying research, policymakers and practitioners. The TPB, originally developed by Ajzen and Fishbein, has human behavior as its main focus, and it helps to explain which influences affect an individuals' involvement in specific behaviors. Three determinants of behavioral intention are discerned: attitude, subjective norm (SN) and perceived behavioral control (PBC). The attitude-concept is defined as "the degree to which a person has a favorable or unfavorable

evaluation or appraisal of the behavior in question" (Ajzen, 1991, p. 188). Subjective norm refers to the "perceived social pressure to perform or not to perform the behavior" (Ajzen, 1991, p. 188). PBC is defined as "the perceived ease or difficulty of performing the behavior" (Ajzen, 1991, p. 188). The TPB states that behavior is a direct function of behavioral intention, which subsequently is determined by an individual person's attitude, subjective norm and perceived behavioral control. A common finding in TPB-studies is that the more favorable one's attitude and subjective norm is towards a specific behavior and the larger the degree of perceived behavioral control, the more motivated an individual will be to perform this behavior.

There have been two considerations in applying this theory to the context of adolescents' role as perpetrator in cyberbullying. First, given that research (Salmivalli, 1999) found that social factors, such as peer influence and bystander roles, are important in traditional bullying, we considered it very important to examine this for cyberbullying. The TPB incorporates this social factor by means of the concept of subjective norm. A second reason is that by closely examining how the three TPB-antecedents affect adolescents' behavioral intention to cyberbully, we get valuable information on which prevention programs and intervention strategies are appropriate in tackling cyberbullying.

#### Attitude towards cyberbullying

The TPB proposes that attitudes towards behavior emerge from the behavioral beliefs that people hold. According to Ajzen (1991), behaviors we believe as having desirable outcomes are valued with a positive attitude, while we address negative attitudes towards behaviors that are perceived as having mainly negative outcomes.

In the context of traditional bullying, some studies examined the predictive value of attitudinal factors. For instance, minors who consider aggressive behavior as justified when someone deserves it, are more inclined to actually behave aggressively (e.g., Bosworth, Espelage, & Simon, 1999). Similar findings can be found in cyberbullying literature. Calvete and colleagues (2010) and Williams and Guerra (2007) found a positive relation between respondents' scores on a "justification of violence"-scale, with high scores reflecting the respondents' tendency to think about aggression as appropriate, and their involvement as perpetrator in cyberbullying. Similar results were found in a Flemish study showing that the majority of self-reported cyberbullies thought that their electronic bullying actions were funny, while the majority of self-reported victims did not see the humor of it and perceived these actions as hurtful (Vandebosch & Van Cleemput, 2009).

A first objective of the present study is therefore to examine whether adolescents' attitude towards cyberbullying helps to predict their motivation to engage in this form of deviant online behavior.

#### Subjective norm on cyberbullying

The typical relationship that has been found in previous studies examining the predictive value of subjective norm on behavioral intention, is that the more an individual thinks that important others think he should perform the behavior, the more motivated an individual will be to comply with the pressure exerted by these others. Conversely, the more an individual thinks that significant others will react in a negative way, the less motivated the individual

will be to perform the disapproved behavior (Ajzen, 1991). In the context of traditional bullying it has been found that children who have friends sharing positive attitudes towards bullying, are more likely to act as perpetrators themselves (Espelage & Swearer, 2003; Fleming & Towey, 2002). Also the school climate significantly predicts students' involvement as a bully, especially in schools with above-average bullying rates and where teachers have neutral or accepting attitudes towards bullying (Fleming & Towey, 2002). So far, this normative standard held by significant others has been largely ignored in most studies exploring cyberbullying among teenagers and children. Williams and Guerra (2007), however, found that cyberbullying among adolescents was significantly related with normative beliefs held by peers approving of cyberbullying. A second objective of the present study therefore is to examine whether adolescents' perceived subjective norm on cyberbullying predicts their behavioral intention to perform it.

#### Perceived behavioral control on cyberbullying

Although it seems odd, at first sight, to assess adolescents' perception of the ease of cyberbullying, an American study (Kowalski, Limber, & Agatston, 2008) showed that students who would otherwise not perform as traditional bullies become cyberbullies because they think, due to the anonymity, that they are invisible, which removes concerns of being caught and socially punished. Aricak and colleagues (2008) stated in this context that "the ability to anonymously interact on the Internet contributes to a lower self-awareness in individuals and may lead them to react impulsively and aggressively to other individuals online" (p. 258). Moreover, cyberbullying often occurs without receiving visual feedback from the cybervictim, which entails that perpetrators do not have to witness the suffering they are causing by their acts (Hinduja & Patchin, 2008). An additional aspect potentially facilitating cyberbullying in comparison with traditional bullying is the 24/7-attainability by digital media. This entails that boundaries of time and place no longer exist for potential bullies to reach their targets (Kowalski & Limber, 2007). As a third objective of this study we therefore want to examine whether adolescents who perceive cyberbullying as easy to perform, will show higher intent to perform it.

#### Predicting cyberbullying from behavioral intention

Intentions indicate "how much of an effort an individual is planning to exert in order to perform the behavior" (Ajzen, 1991, p. 181). Except for behaviors that are largely out of an individual's behavioral control, it has been found that the intent to perform a particular behavior is the strongest predictor of its actual performance (Ajzen, 1991). As an individual's choice to engage in cyberbullying mainly relies within his own volitional will, a final objective of this study is to verify whether intention to cyberbully is a significant predictor of adolescents' self-reported perpetration of cyberbullying.

### Method

#### Participants

In total 1,042 respondents (519 males, 523 females,  $M_{age} = 15.47$ , age range 12-18 years) completed two self-administered

questionnaires within a three-month interval. A random stratified cluster sample was applied to recruit the respondents. From each of the five Flemish provinces in Belgium, six schools were randomly selected. Subsequently, within each selected school three classes were selected to participate in the study. The following sampling criteria were used: educational grade (first, second and third grade) and the three Belgian schooling types (general secondary education; technical or artistic training; vocational training). All pupils from the selected classes were asked for their permission to take part in the survey study. The survey procedure was explained by a researcher. The students were assured verbally that their responses were anonymous and confidential, and that no information would be passed on to teachers, parents or fellow pupils.

#### Instruments

We developed a questionnaire containing scales, validated in previous research, testing TPB in other contexts and applied these measures to adolescent cyberbullying perpetration. The variables included in the questionnaire were operationalized as recommended by Ajzen (2011). All of the TPB-items were assessed using 6-point Likert-scales with item responses ranging from 1 (*Strongly disagree*) to 6 (*Strongly agree*), except for attitude and self-reported cyberbullying perpetration, as described below.

*Self-reported cyberbullying perpetration.* Cyberbullying perpetration was explained to the respondents 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." Following this brief definition, respondents were asked: "How often have you cyberbullied someone you know personally online or offline during the last three months?" Respondents could answer this question with *never*, *only once* or *several times*. In correspondence with previous studies (Kowalski & Limber, 2007; Slonje & Smith, 2008), the questionnaire asked for perpetration involvement during the last three months.

*Intention to cyberbully.* The questionnaire included four items that measured behavioral intention (e.g., "There is considerable chance that I will cyberbully someone in the course of the present school year"). Mean scores of the items are presented in Table 1. Cronbach's alpha was .84.

*Attitude towards cyberbullying.* Respondents rated their evaluation of cyberbullying by means of the following four semantic differential 7-point scales: "What do you think about cyberbullying?" Item 1: *Disadvantageous – Advantageous*; Item 2: *Not pleasant – Pleasant*; Item 3: *Bad – Good*; Item 4: *Harmful – Not Harmful*. The item responses ranged between 1 and 7. The scale was reliable ( $\alpha = .86$ ). Summating the scores of the four items yielded a possible score ranging from 4 (very negative attitude) to 28 (very positive attitude). A sum score of 16 indicated a neutral attitude. In our sample approximately nine out of ten (89.4%) respondents held a negative attitude towards cyberbullying and the average attitude of adolescents towards cyberbullying was negative ( $M = 6.86$ ;  $SD = 4.83$ ).

*Subjective norm on cyberbullying.* The questionnaire contained two items that measured subjective norm (e.g., "Most people who are important in my life, do not perpetrate cyberbullying"). High response values on these items indicate that respondents perceived negative social pressure and disapproval from significant others to perform cyberbullying. The scale was reliable ( $\alpha = .77$ ).

*Perceived importance of the opinion of peers, parents and teachers/other school personnel.* Three items were used to measure the perceived importance of the opinion of each category of significant others – peers, parents, teachers and other school personnel - with regard to the role of ICT in respondents’ lives (e.g., “I attach much importance to the opinion of my peers on ICT-related matters”). Our analyses revealed that adolescents attach most importance to the opinions and reactions of their friends and peers ( $M= 4.35$ ;  $SD= 1.19$ ), followed by their parents ( $M= 3.99$ ;  $SD= 1.38$ ) and finally teachers or other school personnel ( $M= 3.15$ ;  $SD= 1.36$ ).

*Perceived behavioral control.* The questionnaire contained three items that measured perceived behavioral control (e.g., “Cyberbullying is easy to perform”). High response values on these items indicate that respondents have high PBC (i.e., they perceive cyberbullying as easy to perform). Cronbach’s alpha was .83.

*Procedure*

In January 2011, respondents had to complete a first questionnaire including the measures for attitude, subjective norm and perceived behavioral control on cyberbullying. Three months later, in April 2011, a follow-up questionnaire was administered which included measures to assess adolescents’ self-reported cyberbullying perpetration in the period since the first questionnaire. Respondents’ birth dates were used to link the answers provided on both questionnaires. In situations where two or more respondents within the same class had the same birth date, their handwritings were compared to make a match between the two questionnaires. If comparing the handwriting offered no decisive evidence on who had completed the questionnaires, cases were deleted from further analyses.

*Table 1*  
Descriptives of the study variables

|                  | Cronbach's $\alpha$ | Valid N | Mean | SD   | Range |
|------------------|---------------------|---------|------|------|-------|
| <i>Attitude</i>  | .86                 |         |      |      |       |
| Item 1           |                     | 967     | 1.57 | 1.26 | 1-7   |
| Item 2           |                     | 964     | 1.77 | 1.51 | 1-7   |
| Item 3           |                     | 962     | 1.66 | 1.39 | 1-7   |
| Item 4           |                     | 968     | 1.89 | 1.64 | 1-7   |
| <i>SN</i>        | .77                 |         |      |      |       |
| Item 1           |                     | 966     | 4.68 | 1.63 | 1-6   |
| Item 2           |                     | 970     | 4.71 | 1.63 | 1-6   |
| <i>PBC</i>       | .83                 |         |      |      |       |
| Item 1           |                     | 978     | 4.33 | 1.72 | 1-6   |
| Item 2           |                     | 983     | 4.11 | 1.77 | 1-6   |
| Item 3           |                     | 981     | 4.78 | 1.48 | 1-6   |
| <i>Intention</i> | .84                 |         |      |      |       |
| Item 1           |                     | 982     | 1.87 | 1.35 | 1-6   |
| Item 2           |                     | 984     | 1.63 | 1.10 | 1-6   |
| Item 3           |                     | 981     | 1.60 | 1.10 | 1-6   |
| Item 4           |                     | 960     | 2.10 | 1.56 | 1-6   |
| Cyberbullying    | NA                  | 861     | 1.15 | .45  | 1-3   |

Note: SN= Subjective norm; PBC= Perceived Behavior Control

*Data analysis*

To investigate the hypothesized relationships among the TPB-constructs, structural equation modeling (SEM) was applied to the collected data using Mplus 6 (Muthén & Muthén, 2010). The data were analyzed using the two-step approach suggested by Anderson and Gerbing (1988). First, a measurement model was tested to examine whether the observed variables reliably reflect the hypothesized latent variables in the research model. In the second phase, the structural paths in the research model were tested in order to assess the adequacy with which the research model predicts adolescents’ behavioral intention to cyberbully and their self-reported perpetration of cyberbullying after a three-month interval. We estimated one structural model. Respondents’ behavioral intention to cyberbully someone and their self-reported cyberbullying behavior were entered as endogenous variables in the model. Because self-reported cyberbullying perpetration is a not normally distributed categorical dependent variable, WLSMV was used as a non-normal, robust estimator in SEM-analyses.

*Results*

In total 12.1% ( $n= 104$ ; valid N= 861) of respondents reported that they had cyberbullied someone they know online or offline once (8.7%;  $n= 75$ ) or several times (3.4%;  $n= 29$ ) in the last three months preceding the second questionnaire. Regarding victimization 6.3% ( $n= 54$ ; valid N= 858) reported that they were cyberbullied once (4.7%;  $n= 40$ ) or several times (1.6%;  $n= 14$ ) during the last three months. In support of early research our study points to an interesting interrelation in perpetrator and victim roles in cyberbullying, as we found that of the 54 self-reported victims of cyberbullying in our study, 29 admitted that they had cyberbullied someone once ( $n= 22$ ) or several times ( $n= 7$ ) during the last three months.

*Measurement model*

Table 2 displays the correlations between the latent constructs in the model. The measurement model provided a good fit for the data  $\chi^2(59)= 226.95$ ,  $p<.001$ ; CFI= .97, RMSEA= .053 (CI: .046 - .061), SRMR= .038. All factor loadings were significant and above .532 (see Figure 1).

*Structural model*

We display the model fit results of the structural model in figure 1. Overall, fit indices indicate an acceptable fit for the TPB as research model. Although chi-square was significant, other

*Table 2*  
Correlations between latent constructs

| Measure                 | 1        | 2        | 3    | 4 |
|-------------------------|----------|----------|------|---|
| 1. Attitude             | –        |          |      |   |
| 2. Subjective norm      | -.366*** | –        |      |   |
| 3. PBC                  | -.110*** | .207***  | –    |   |
| 4. Intention cyberbully | .647***  | -.324*** | .050 | – |

Note: N= 1,042.  
\*\*\*  $p<.001$

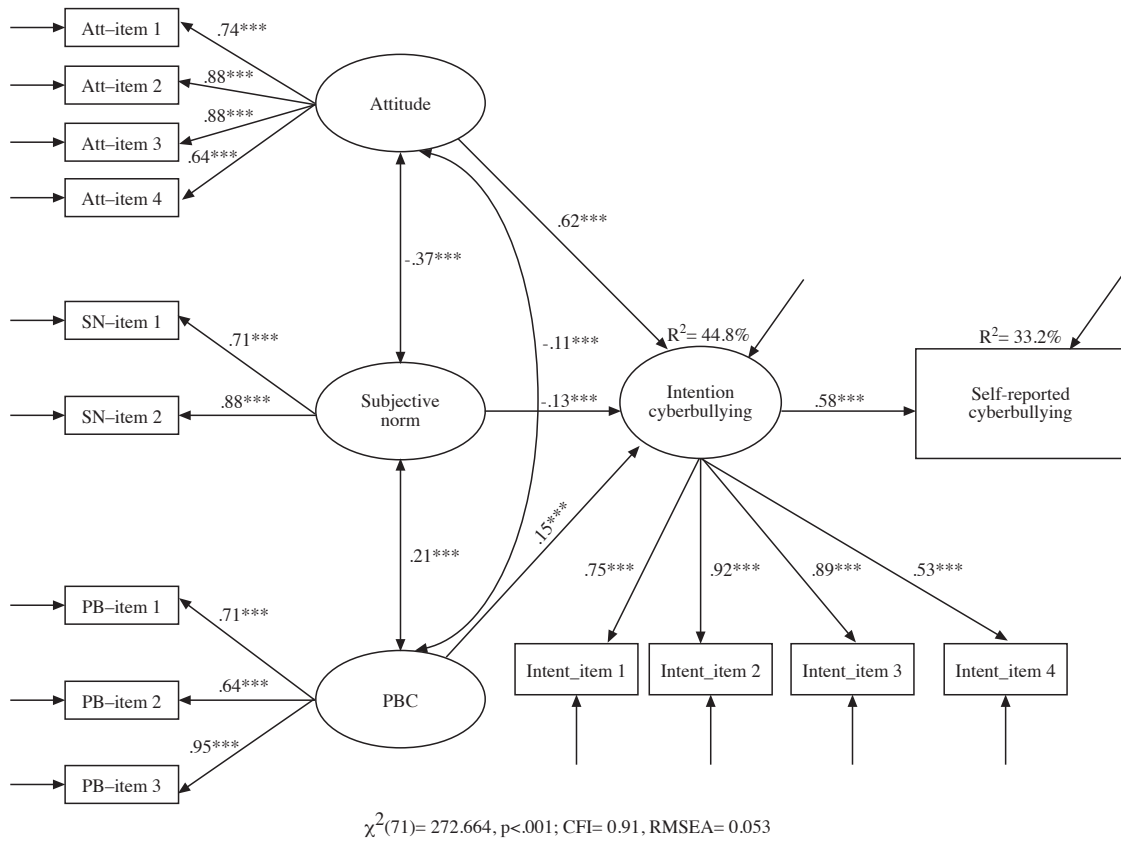


Figure 1. The theory of planned behavior applied to adolescent perpetration in cyberbullying

fit indices less susceptible to large sample size all indicate good model fit (Kenny, 2011). Our analyses revealed that the three main factors – attitude, subjective norm and perceived behavioral control- explained 44.8% in total variance of adolescents’ intention to perform cyberbullying. Behavioral intention accounted for 33.2% of variance in self-reported cyberbullying perpetration.

As table 3 shows, our analyses revealed that attitude is the most important predictor of adolescents’ behavioral intention to perpetrate cyberbullying ( $\beta = .62, p < .001$ ), indicating that the more favorable adolescents’ attitude is towards cyberbullying, the more they show the intention to perform cyberbullying.

Furthermore, subjective norm was significantly associated with cyberbullying ( $\beta = -.13, p < .001$ ), whereby adolescents perceiving a negative social pressure from significant others in their lives, showed less intention to engage in cyberbullying. Third, perceived behavioral control was found to significantly affect teenagers’ intention to cyberbully ( $\beta = .15, p < .001$ ), with adolescents perceiving cyberbullying as an easy to perform behavior as being more inclined to do it.

The outcomes of our analyses showed that in correspondence with the TPB, the self-reported cyberbullying perpetration was strongly determined by adolescents’ behavioral intention to perform it ( $\beta = .58, p < .001$ ).

Discussion

Cyberbullying is an emerging societal problem in countries where technologically advanced media are ready accessible to

| Table 3<br>Unstandardized and standardized parameter estimates |                  |         |        |                    |                    |
|--|------------------|---------|--------|--------------------|--------------------|
| Results for measurement model                                  |                  |         |        |                    |                    |
| Observed variable  | Latent construct | $\beta$ | B      | SE                 | Two-tailed p-value |
| Att_item1  | Attitude         | 0.740   | 1.000  |                    |                    |
| Att_item2  | Attitude         | 0.883   | 1.423  | 0.067              | .000               |
| Att_item3  | Attitude         | 0.877   | 1.300  | 0.055              | .000               |
| Att_item4  | Attitude         | 0.642   | 1.125  | 0.060              | .000               |
| SN_item1   | Subjective norm  | 0.714   | 1.000  |                    |                    |
| SN_item2   | Subjective norm  | 0.883   | 1.236  | 0.119              | .000               |
| PB_item1   | PBC              | 0.709   | 1.000  |                    |                    |
| PB_item2   | PBC              | 0.642   | 0.936  | 0.065              | .000               |
| PB_item3   | PBC              | 0.952   | 1.160  | 0.121              | .000               |
| Intent_item1   | Intention        | 0.747   | 1.000  |                    |                    |
| Intent_item2   | Intention        | 0.916   | 0.996  | 0.038              | .000               |
| Intent_item3   | Intention        | 0.891   | 0.964  | 0.039              | .000               |
| Intent_item4   | Intention        | 0.532   | 0.820  | 0.056              | .000               |
| Results for structural model                                   |                  |         |        |                    |                    |
| Path   |                  | $\beta$ | B      | Two-tailed p-value |                    |
| Attitude to intention  |                  | 0.616   | 0.666  | .000               |                    |
| Subjective norm to intention                                   |                  | -0.129  | -0.112 | .000               |                    |
| PBC to intention   |                  | 0.145   | 0.120  | .000               |                    |
| Intention to Self-reported cyberbullying                       |                  | 0.576   | 0.570  | .000               |                    |

young people. In reviewing the current literature, we found that cyberbullying researchers so far have mainly examined their topic of interest in absence of theory (Tokunaga, 2010).

Our results suggest that the TPB provides a sound theoretical framework for predicting adolescent cyberbullying perpetration. From the relative weights of each structural model path, we can derive which TPB-antecedent —attitude, subjective norm or perceived behavioral control— is most important in predicting adolescent cyberbullying perpetration. This is highly relevant information for intervention purposes, as the greater the relative weight of a given factor, the more likely it is that changing that factor will influence intentions and behavior (Ajzen, 2011). In this study we found that attitude was the strongest predictor of adolescents' behavioral intention to perpetrate cyberbullying followed by perceived behavioral control and subjective norm. An implication of this finding is that interventions aimed at tackling cyberbullying among school pupils should primarily focus on converting neutral or positive attitudes towards cyberbullying into negative attitudes. Prevention programs should warrant that the majority of adolescents persist in thinking negative about cyberbullying.

In schools facing the consequences of cyberbullying incidents, the main challenge of intervention strategies should be to detect pupils holding neutral and positive attitudes on cyberbullying and to promote perspective-taking skills and activities to help them understand the impact of their behaviors on victimized students (Mason, 2008).

Although subjective norm and PBC were less important than attitude in predicting adolescents' perpetration of cyberbullying, it would be a mistake to ignore these significant predictors in designing prevention programs and intervention strategies. With regard to subjective norm, our analyses support the notion that adolescents care about the opinion of significant others, with adolescents perceiving negative social pressure towards cyberbullying as showing lower intent to perform it. This finding counts in favor of involving these significant others in prevention programs tackling cyberbullying and thus supports the call made by various scholars for a *whole school approach* towards bullying (e.g., Olweus, 1994). The central entity within this approach is the school, as the schoolground is the most common place where all relevant actors in cyberbullying can potentially meet: school direction, teachers, parents, fellow pupils and so forth. Implementing a whole school

program in tackling general bullying behavior or, more specifically, cyberbullying involves various stages, starting from collectively acknowledging that bullying is a problem within a specific school, to collectively working out anti-bullying initiatives. It is crucial that students' voices are being heard in setting up possible ways to intervene. In support of this statement is our finding that adolescents attach much importance to the opinion of their peers on ICT-related matters. Also previous research revealed that victimized students were more inclined to tell their friends about what happened to them, rather than telling it to their parents or teachers (Aricak et al., 2008; Smith et al., 2008).

The finding that PBC is positively related with the intention to perform cyberbullying, suggests that it is possible that students are motivated to engage in cyberbullying, partially because they think it is easy to perform or at least they feel that there are few constraints that hinder them from perpetrating it. In this paper, we have discussed three potential triggering aspects of digital media in cyberbullying: online anonymity, the 24/7-attainability and a lack of visual feedback from the cybervictim when real pain is caused by digital actions. Integrating media education within an anti-cyberbullying program may change students' perception that cyberbullying is easy to realize due to anonymity, by clearly showing that identities can be retraced using IP-addresses. Another important insight to be disseminated is that virtual acts of cyberbullying cause real pain and suffer for the victim (Kowalski et al., 2008). Given the importance of adolescents' attitudes towards cyberbullying, more research is needed in order to identify possible factors that foster violence-approving beliefs.

One potential weakness of the present study is that, given the clustering in the present study's sample design, we cannot exclude that some of the main effects found were in fact mediated by variables of the levels to which the respondents belong (class, school or province). A possible venue for future research is to apply multilevel SEM (MSEM), which could contribute relevant information to the analyses about the amount of variability that can be explained by level-variables.

In discussing cyberbullying, a crucial insight is that ICT are not the cause of it happening, but rather adolescents' decision to use these devices in an anti-social way. While using ICT in an anti-social way can have devastating effects on adolescents, using ICT in a prosocial way can foster their mental development and well-being tremendously.

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