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Reference:

DeSmet Ann, Bastiaensens Sara, Van Cleemput Katrien, Poels Karolien, Vandebosch Heidi, Cardon Greet, De Bourdeaudhuij Ilse.- Deciding whether to look after them, to like it, or leave it : a multidimensional analysis of predictors of positive and negative bystander behavior in cyberbullying among adolescents
Computers in human behavior - ISSN 0747-5632 - 57:398(2016), p. 398-415
Full text (Publishers DOI): <http://dx.doi.org/doi:10.1016/j.chb.2015.12.051>

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ARTICLE *in* COMPUTERS IN HUMAN BEHAVIOR · APRIL 2016

Impact Factor: 2.69 · DOI: 10.1016/j.chb.2015.12.051

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Deciding whether to look after them, to like it, or leave it: a multidimensional analysis of predictors of positive and negative bystander behavior in cyberbullying among adolescents

Authors. Ann DeSmet^a Sara Bastiaensens^b, Katrien Van Cleemput^b, Karolien Poels^b, Heidi Vandebosch^b, Greet Cardon^a, Ilse De Bourdeaudhuij^{a*}

Affiliations. ^a Ghent University, Department of Movement and Sport Sciences, Watersportlaan 2, B-9000 Ghent, Belgium

^b University of Antwerp, MIOS, Department of Communication Studies

Keywords: Adolescent, bystander, cyberbullying, moral disengagement, behavior change theories, Bystander Intervention Model, multilevel analysis

Abstract.

Background. Positive bystander behavior in cyberbullying among adolescents may effectively mitigate cyberbullying and its harm for the victim. Limited, scattered, and sometimes only qualitative research is available on predictors of positive (e.g. defending, comforting or reporting) and negative (e.g. passive bystanding, joining, reinforcing) bystander behavior in cyberbullying. A multidimensional model and multilevel analysis were therefore applied in this study. **Methods.** A sample of 1979 adolescents in 7th-9th grade, in 16 schools and 158 classes participated in the study. Analyses were performed in MLwiN 2.32. **Results.** Analyses confirmed the multifaceted nature of bystander behavior and behavioral intention. No school level effects, and only limited class effects were found. Strongest individual predictors of positive bystander behavior were a positive intention, and friendship with the victim. Intention for positive bystander behavior was most predicted by positive outcome expectations of their actions for the victim. Negative bystander behavior was most predicted by intentions for negative behavior, and moral disengagement attitudes. Intentions to act as a negative bystander were most predicted by positive attitudes towards passive bystanding and a lack of skills (social, empathic, coping). Moral disengagement at classroom level also predicted positive behavior and behavioral intentions, and negative behavioral intentions, but not negative behavior. Information days for pupils on cyberbullying was a significant school-level predictor of the intention to act as a positive bystander. **Conclusions.** Future research and interventions should take the multidimensional nature of cyberbullying bystander behavior into account. Implications for research and practice are discussed.

1. Introduction

Cyberbullying is generally defined as bullying performed via electronic or digital media. It is an intentional act to hurt, socially isolate or cause distress to a victim, which may occur repeatedly, or result in repeated harm by continued exposure (Kiriakidis & Kavoura, 2010; Tokunaga, 2010). Prevalence rates were summarized in a meta-analysis across 80 studies to 15% for cyberbullying victimization and 16% for cyberbullying perpetration (Modecki, Minchin, Harbaugh, Guerra, & Runions, 2014). Rates may, however, be even higher as cyberbullying is often underreported by victims, for fear of losing Internet privileges, shame or perceived lack of self-reliance (Hinduja & Patchin, 2012; Price & Dalgleish, 2010). Most prevalence studies on cyberbullying have been conducted among teenagers, overall showing a peak in prevalence among 12-15 year olds (Tokunaga, 2010).

Cyberbullying's prevalence is lower than that of traditional, offline, bullying, but its psychosocial impact appears to be higher (Campbell, Spears, Slee, Butler, & Kift, 2012; Schneider, O'Donnell, Stueve, & Coulter, 2012; Sourander, 2010). Cyberbullying perpetration and victimization are related to diverse psychosocial, physical and mental health problems, such as stress, suicidal ideation, depression, anxiety, loneliness, substance abuse, reduced life satisfaction, reduced self-esteem, somatic problems and lower academic achievement (Kowalski, Giumetti, Schroeder, & Lattaner, 2014).

In traditional bullying intervention programs, it is advocated to view bullying as a group process, in which bystanders or witnesses play a key role (Pozzoli & Gini, 2013; Salmivalli, 2010). Bystanders can provide negative or positive reinforcement to the bully, and thus respectively end or sustain the bullying cycle. Reporting to adults, defending or comforting the victim, challenges the bully's power and results in negative reinforcement for the bully's actions (Salmivalli, 2010). This is considered positive bystander behavior. These actions also strengthen the victim's mental resilience (Sainio, Veenstra, Huitsing, & Salmivalli, 2011). Joining and assisting (e.g. forwarding, adding nasty comments), and reinforcing (e.g. laughing) can provide positive feedback to the bully, and encouragement to continue (Salmivalli, 2010). Also passive bystanding provides positive feedback to the bully, since the bully and victim may consider this as a silent form of approval of the bullying (Kowalski et al., 2012). These are considered negative forms of bystander behavior, since they sustain or aggravate the bullying (Salmivalli, 2010; Salmivalli, Voeten, & Poskiparta, 2011).

In cyberbullying, research on bystander behavior is still limited. Bystander interventions in cyberbullying, may, nevertheless, be important. First, bystanders are present in the majority of cyberbullying cases (Wegge, Pabian, & Vandebosch, 2012). Second, perpetrators of cyberbullying are driven by interpersonal motives and peer feedback on their social status (Festl & Quandt, 2013; Sticca, Ruggieri, Alsaker, & Perren, 2013; Vanden Abeele & De Cock, 2013; Wegge, Vandebosch, Eggermont, & Pabian, 2014). In sum, as in traditional bullying, targeting bystanders may be a successful approach to end cyberbullying and its harm. Certain programs that used bystander or peer support were, indeed,

effective in reducing victimization from cyberbullying (Menesini, Nocentini, & Palladino, 2012; Palladino, Nocentini, & Menesini, 2012; Salmivalli, Kärnä, & Poskiparta, 2011).

Due to the specific affordances of electronic media, such as connectivity, visibility, social feedback, persistence and accessibility (Fox & Moreland, 2015), the nature of bystander behavior in cyberbullying may, nevertheless, differ from that in traditional bullying. With a reduced online visibility of social cues, bystanders are not able to see the harm the victim experiences. Furthermore, bystanders in cyberbullying are not able to provide small non-verbal feedback to a bully as in traditional bullying, and a more determined action is needed to show positive bystander behavior. This could reduce the likelihood of positive bystander behavior in cyberbullying (Obermaier, Fawzi, & Koch, 2014). This physical distance may, on the other hand, precisely increase positive bystander behavior, since bystanders fear less physical retaliation (Obermaier et al., 2014).

Specific research on cyberbullying bystander behavior is therefore needed. The scarce existing research is, moreover, fragmented across studies each examining only a few predictors. Traditional bullying research, however, has indicated that a multidimensional model was needed to predict bystander behavior (Pozzoli & Gini, 2013). The present study aimed to examine bystander behavior in cyberbullying and its predictors, using a multidimensional model.

1.1. Theoretical model

A multidimensional model in traditional bullying bystander behavior (Pozzoli & Gini, 2013) was based on the Bystander Intervention Model (Latane & Darley, 1970) and on elements from behavior change theories, such as attitudes, skills and self-efficacy. The Bystander Intervention Model states that a bystander experiences five phases in the decision-making process on whether or not to intervene as a bystander: 1) awareness of the incident; 2) interpretation of the incident as an emergency; 3) accepting the responsibility to intervene; 4) knowledge and belief in the ability to intervene; and 5) performing the intervention. The decision process can, moreover, be influenced by contextual factors, often labeled as the bystander effect, which are described in four mechanisms: self-awareness (e.g. who else is present), social cues (e.g. what others are doing), blocking (e.g. others' actions making their actions impossible) and diffusion of responsibility (e.g. their actions are dependent on the size of bystander population) (Wong-Lo & Bullock, 2014).

The Bystander Intervention Model can be considered as a process model, that represents stages of change towards the adoption of positive bystander behavior. Stage models, however, do not explain why a person progresses from one stage to the next. When aiming to design interventions to promote positive bystander behavior, insight is needed in how adolescents can progress through these stages towards the desired behavior. Behavior change theories have been applied to understand the underlying reasons for stage change: determinants such as e.g. attitudes, self-efficacy, skills and subjective norms can

effectively predict a change to a next stage (see e.g. Courneya & Bobick, 2000; Godin, Lambert, Owen, Nolin, & Prud'homme, 2004). These determinants can predict change at each stage, but the contribution of each determinant may vary per stage (Courneya & Bobick, 2000). In bystander behavior, some determinants were hypothesized to relate stronger to certain stages (Obermaier et al., 2014; Pozzoli & Gini, 2013), as represented by the location of circles in Fig. 1.

Behavior change theories do not only explain what influences behavior and predicts stage change, but also provide levers for changing behavior, for example by proposing change methods (e.g. modeling, advance organizers, guided practice) appropriate for specific determinants. This is especially valuable when aiming to design interventions to change bystander behavior. Behavior change programs founded on behavior change theories recognizing both individual and environmental determinants, were indeed more effective than those not applying these theories (Glanz & Bishop, 2010).

To encompass a wider representation from behavior change theories to these stage changes, we extended this multidimensional process model from traditional bullying (Pozzoli & Gini, 2013), and applied both the Reasoned Action Approach (TRA²) (Fishbein & Ajzen, 2010) and Social Cognitive Theory (SCT) (Bandura, 2007), two behavioral theories, to the steps in the Bystander Intervention Model. Combining theories is encouraged in health promotion to grasp the complexity of behavior change (Bartholomew, Parcel, Kok, Gottlieb, & Fernández, 2011; Lustria, Cortese, Noar, & Glueckauf, 2009). Reasoned Action Approach (TRA²) merges the former Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975) and Theory of Planned Behavior (TPB) (Ajzen, 1991) and states that behavior is determined by behavioral intention, on the condition that there is a facilitating environmental context, and that sufficient personal skills are available to translate this intention into behavior. Intention is in its turn influenced by attitudes, perceived norms and self-efficacy to perform the behavior (Fishbein & Ajzen, 2010) (see Fig. 1). TRA² also recognizes the importance of background variables, which may not be changeable, but can influence beliefs and can provide information for a targeted approach to at-risk groups (Bartholomew et al., 2011). SCT shares most determinants with TRA² but also provides methods for change, useful in intervention development. Furthermore, SCT has been applied to study moral behavior, documenting moral disengagement attitudes (Bandura, 2002) which can avoid self-condemnation when behavior is not in accordance with moral values (Bandura, 2004).

The model as shown in Fig. 1, includes environmental influences from the perspective of the individual (e.g. perceived influence of social factors, presence of environmental barriers and facilitators). It can, however, also be used to study the determinants of the behavior of each environmental agent (e.g. schools, teachers, parents) that influences the individual's behavior (e.g. what determines parental support for defending behavior).

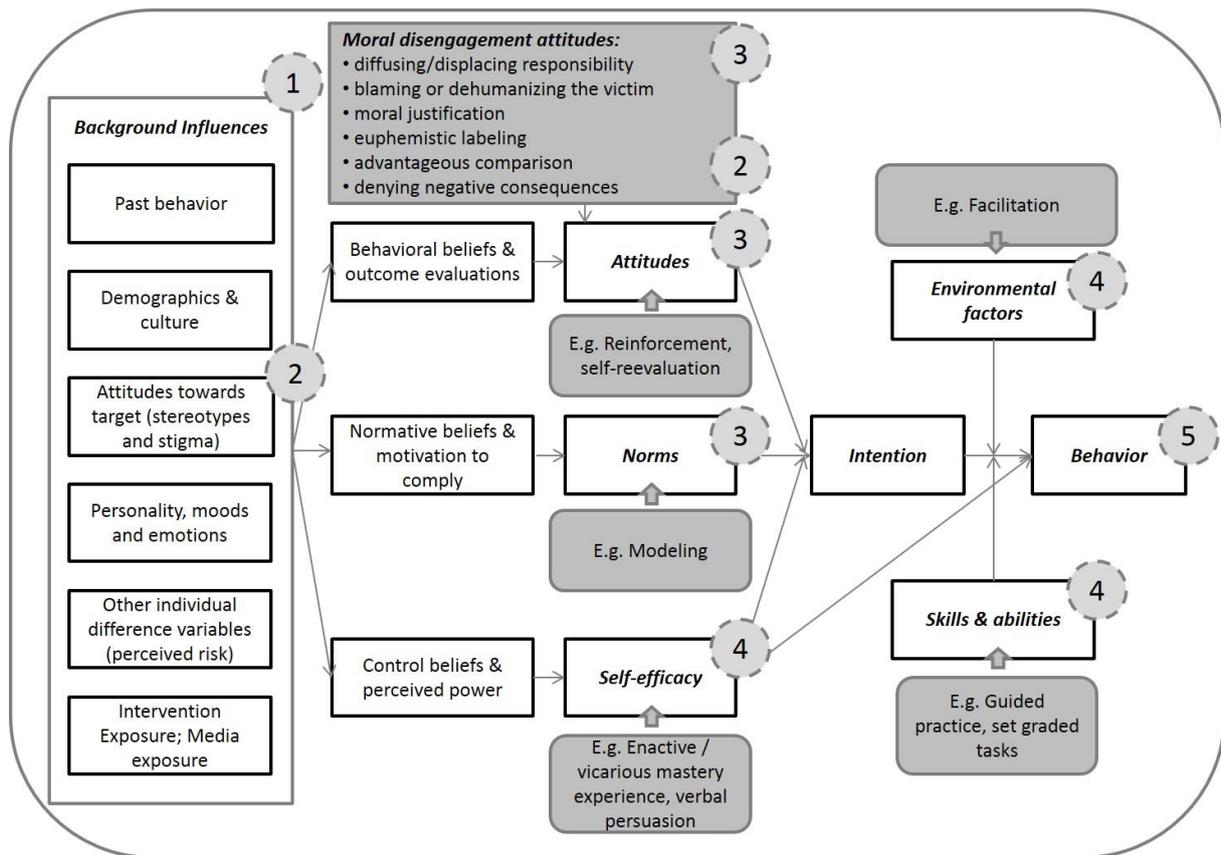


Fig. 1. Theoretical model for predicting bystander behavior in cyberbullying.

Legend: White boxes represent elements from Reasoned Action Approach (Fishbein, 2008). Grey boxes are additions from Social Cognitive Theory (Bandura, 2007). The circles with dotted lines represent the stages in the Bystander Intervention Model (Latane & Darley, 1970).

Past qualitative or quantitative research on bystander behavior in cyberbullying among adolescents showed the influence of gender (Bastiaensens et al., 2014), age (Olenik-Shemesh, Heiman, & Eden, 2015; Van Cleemput, Vandebosch, & Pabian, 2014), past involvement as bully (Barlińska, Szuster, & Winiewski, 2013) or victim (Van Cleemput et al., 2014), general prosocial behavior (Machackova, Dedkova, Sevcikova, & Cerna, 2013), emotional loneliness (Olenik-Shemesh et al., 2015), the presence and behavior of others (Bastiaensens et al., 2014; Bastiaensens et al., 2015b), social support (Olenik-Shemesh et al., 2015), attitudes towards cyberbullying (Jones, Manstead, & Livingstone, 2011; Machackova et al., 2013; Obermaier et al., 2014), moral disengagement attitudes (DeSmet et al., 2014; Price et al., 2014), group norms (Jones et al., 2011), perceived norms (Bastiaensens et al., 2015a; DeSmet et al., 2014), self-efficacy towards performing the behavior (DeSmet et al., 2014), and empathic skills (Barlińska et al., 2013; Van Cleemput et al., 2014).

Environmental factors, such as school (Gini, Pozzoli, Borghi, & Franzoni, 2008) and class climate (Pozzoli, Gini, & Vieno, 2012) have been associated with bystander behavior in traditional bullying, but to our knowledge, no research yet exists on these environmental influences for cyberbullying bystander behavior. Research in health promotion has, however, shown that interventions based on a socio-ecological perspective which recognizes the interacting influences of both personal and environmental factors, yield larger effects in the community (Sallis, Owen, & Fisher, 2008). This perspective is also reflected in a whole-school Approach, considered the most effective form of intervention against traditional bullying (Ttofi & Farrington, 2011). A multilevel study assessing not only individual factors but also environmental factors could clarify whether these socio-ecological perspectives and whole-school approaches hold promise in tackling cyberbullying as well.

With limited, scattered, and sometimes only qualitative research currently available, there is a need for a multidimensional and multilevel quantitative assessment of predictors. A systematic review of cyberbullying intervention and prevention programs (Van Cleemput et al., in preparation) showed that the large majority of programs aimed to change behavior by focusing on one or two dimensions, e.g. social or empathic skills. This may stem from applying a personal deficit model, where people are assumed to be lacking certain skills to perform the behavior. From a behavioral change theoretical perspective, several dimensions which are theoretically assumed as predictors of behavior are first tested together, and next reduced to fewer dimensions based on those with the largest weight. A study investigating a larger set of determinants and assessing the relative weight of each predictor, can provide recommendations on where change is most needed, and can lead to the highest gain in behavior change. These insights are required as building blocks for effective interventions to promote positive bystander behavior and reduce negative bystander behavior in cyberbullying.

1.2. The present study

This study examined predictors of bystander behavior and behavioral intention in cyberbullying among adolescents, using a multidimensional theoretical model inspired by the Bystander Intervention Model (Latane & Darley, 1970), Reasoned Action Approach (Fishbein & Ajzen, 2010) and Social Cognitive Theory (Bandura, 2007). Since the study aimed to provide suggestions for interventions to promote positive bystander behavior, it examined determinants of a stage transition to actual behavior, and a stage transition to behavioral intention, which is documented in health behavior literature as the strongest predictor of behavior (Webb & Sheeran, 2006).

The study investigated individual behavior, and environmental influences as perceived by the individual. Further environmental influences are captured in the use of a multilevel analysis, distinguishing the levels of the school, the class, and the individual. Class influences consisted of aggregated moral disengagement attitudes, as shown in previous research on traditional bullying to be of influence in bystander behavior (Gini, Pozzoli, & Bussey, 2015). School variables were derived from a short survey

filled out by the school administrator, and consisted of information on school size and population, specific challenges, experience with cyberbullying, the school's approach against cyberbullying and perceived needs in addressing cyberbullying. Applying the model to examine determinants of the behavior of environmental agents, such as parents and educators, lies beyond the scope of this article. The study focuses on 7th-9th graders (12-15y), where cyberbullying prevalence is high (Slonje, Smith, & Frisé, 2013; Tokunaga, 2010). The study investigated behavioral intention among all participants, and behavior, only among those who have witnessed cyberbullying in the past six months. Research questions were: 1) to what extent do environmental factors explain (intentions for) positive and negative bystander behavior in cyberbullying?; 2) to what extent do individual factors explain (intentions for) positive and negative bystander behavior in cyberbullying?; 3) which are the strongest predictors of (intentions for) this positive and negative bystander behavior?

We hypothesized that: 1) that school- and class-level factors influence bystander behavior, as in traditional bullying (Gini et al., 2015); 2) that conform behavior prediction theories (e.g. (Fishbein & Ajzen, 2010), both behavioral intention and behavior are predicted by multiple dimensions; 3) that in line with findings on several health behaviors (Webb & Sheeran, 2006), intention is the strongest predictor of behavior; 4) and that attitudes are the strongest predictor of behavioral intention, as in other research on cyberbullying bystander (Obermaier et al., 2014).

2. Methods

2.1. Participants and procedure

A stratified sample was drawn of secondary schools in [region info omitted], by average income level (low, medium, high) of the municipalities where schools were located. Within each income level, schools were drawn at random from a government database of secondary schools. If a school declined, it was replaced at random by another school from this income level. Each school was requested to allow data collection among all 7th-9th graders, or in classes whose teacher was absent, to ensure a random selection. Information was provided by the school to parents prior to data collection, with the possibility to decline (passive informed consent). Adolescents were asked for active informed consent prior to data collection. The study was approved by the Ethics Committee of the [region info omitted] University Hospital.

Sixteen schools out of the twenty-five schools that were contacted, agreed to participate (response rate 64%). Those not participating could not be reached, were not interested, or overwhelmed by requests for survey participations and mentioned lack of time. Data were collected between October 2012 – February 2013. Parental and individual informed consent was obtained for 94% of adolescents. Parental information and consent was organized by the schools at least one week prior to data collection. Adolescents were asked for their participation after receiving information on the study from the

researcher. Those who declined participation received a replacement task during the time others were filling out the survey. An initial sample of 2004 respondents was obtained. Seventeen participants were removed after checking data for satisficing, and for unreliable answers to open-ended questions, leaving a sample of 1987 adolescents. For a further eight respondents, no class information was available, resulting in a final sample of 1979 adolescents. Data-collection took place at school during school hours. Filling out the self-completion, written questionnaire lasted between 20 and 50 minutes, depending on the individual participant. Teachers were present to manage the class, but did not supervise data-collection or answer questions from the adolescents, which was the sole responsibility of the researchers, who were present during all data-collection.

2.2. Measures

2.2.1. Individual-level variables

Behavior and behavioral determinant questions were designed in accordance to the question templates to measure constructs of behavior change theories (Fishbein & Ajzen, 2010). Face validity and readability was assessed prior to administration among ten adolescents. Factor analyses (Principal Component Analysis, Varimax rotation) were performed in SPSS 22, for behavior and determinant questions not part of a validated scale. Reliability was assessed for multi-item scales by calculating Cronbach alpha in SPSS 22.

The questionnaire first included questions on socio-demographic information, followed by questions on their experience as victim, bully or witness. Questions on actual behavior and the friendship with victim and bully related to the last time(s) they witnessed someone was cyberbullied, and were only asked among those who indicated having witnessed cyberbullying at least once in the past six months. The questionnaire next contained questions on behavioral intentions and other behavioral determinants, which were asked in relation to general views on cyberbullying and not related to a single incident (e.g. 'laughing when someone who gets cyberbullied, is according to me good – bad'). Behavioral intentions in cyberbullying bystander behavior inquired about what they thought they would do, next time they witnessed a cyberbullying incident.

2.2.1.1. Dependent variables

Bystander behavior and behavioral intentions

One question assessed whether adolescents had witnessed cyberbullying in the past 6 months, on a 5-point scale. Four follow-up questions assessed which type of cyberbullying they had witnessed (e.g. hurtful messages or images were sent to someone, hurtful messages or images were sent about someone to others, social exclusion, impersonation or sending viruses). These questions follow the same format

as the cyberbullying victimization and perpetration questions (Solberg & Olweus, 2003). Cyberbullying bystanders were considered those who had witnessed cyberbullying at least once, in general or for one of these types. Ten items measured specific bystander reactions (yes/no) and behavioral intentions on a 5-point scale. The content of these items was based on prior qualitative research (DeSmet et al., 2014).

Factor analysis on the items of behavioral intention resulted in three dimensions. The item measuring passive bystanding, loaded on several of the dimensions and was retained as a separate single item-dimension, resulting in four factors: 1. 'supportive bystanding behavior' including defending, reporting and comforting (5 items, $\alpha=0.77$); 2. 'reinforcing behavior', such as forwarding and laughing (2 items, $\alpha=0.73$); 3. 'non-supportive private behavior' such as deleting it (1 item); and 4. 'passive bystander behavior' (1 item). Items measuring behavior were summed accordingly to the factors of behavioral intention, creating 4 groups of types of bystander behavior.

2.2.1.2. Independent variables

Background variables

Background variables included age, gender, family living situation, socio-economic status, relation with the bully or victim (only for those who have witnessed an incident), and prior experiences as bully or victim in traditional bullying or cyberbullying. These demographic variables were derived from the questionnaire of the Health Behavior in School-Aged Children (HBSC), and also comprised the validated scales 'Family Affluence Scale' to measure socio-economic status (Boyce, Torsheim, Currie, & Zambon, 2006), and the KIDSCREEN scale (Ravens-Sieberer et al., 2010), to measure quality-of-life and well-being, which also addresses mood (10 items, $\alpha=0.81$, e.g. 'Did you feel lonely?'). Questions on bullying and cyberbullying involvement were preceded by a definition of bullying, distinguishing it from unintentional acts or arguments between children of equal power, and were rated on a frequency scale reflecting involving in the past six months (Solberg & Olweus, 2003). One general item was used, followed by four specific incident items. These together formed one dimension in principal component analysis (5 items, $\alpha=0.78$, e.g. 'How often did you see that hurtful things were sent to someone, such as insults, nasty remarks, threats,...'). Additionally, we asked for their perceived personal importance of their mobile phone and of the Internet (e.g. 'How important is the Internet in your life?') on a 1-6 Likert scale.

Moral disengagement attitudes

Moral disengagement attitudes are ways to avoid self-condemnation when behavior is not in accordance with an individual's moral values (Bandura, 2004). Literature documents the following four categories of moral disengagement attitudes: 1) cognitive restructuring, which comprises moral justification (e.g. serving a higher purpose), euphemistic labeling (e.g. using terms that make it sound better), advantageous comparisons (e.g. referring to other, worse situations); 2) minimizing one's role, which

comprises diffusion of responsibility (e.g. spread thinly across group members) and displacement of responsibility (e.g. placed onto others); 3) blaming (e.g. considering the victim provoked it) or dehumanizing the victim (e.g. belief that the victim does not deserve any better), and 4) denying negative consequences (e.g. claiming no harm results from bullying) (Bandura, 2002).

Eighteen moral disengagement items were drawn from Hymel et al. (Hymel, Rocke-Henderson, & Bonanno, 2005), and reduced using principal component analysis to 4 factors: factor 1: 'Cognitive restructuring' (10 items, $\alpha=0.85$, e.g. 'Bullying can be a good way to solve problems'); factor 2: 'Blaming the victim' (3 items, $\alpha=0.63$, e.g. 'Some kids get cyberbullied because they deserve it'); factor 3: 'Denying responsibility' (1 item, 'It is my responsibility to intervene when I see someone gets cyberbullied' (inverse)); factor 4: 'Displacing responsibility' (1 item, 'It is the responsibility of adults at school to protect youngsters against cyberbullying'). We could not find a separate factor for the category of 'denying negative consequences' suggested in literature. Displacing responsibility and diffusing responsibility, both part of the same category of minimizing one's role as suggested in literature, formed separate dimensions in principal component analysis. Items were rated on a scale from 1 to 5.

Attitudes and outcome expectations towards specific bystander behavior

Attitudes are tendencies to respond positively or negatively to someone, something, or towards performing a behavior (Bartholomew et al., 2011), and can be cognitive, affective or conative. Five attitude items (i.e. good – bad; mean – friendly; easy – difficult; fun – not fun; cowardly - courageous) were evaluated for each of the following bystander behaviors: laughing, doing nothing, telling the bully they are not amused, comforting the victim or giving advice, reporting it to adults. For every behavior, a one-factor solution was found. The attitude item 'is difficult-easy' was removed as the scales were more consistent without this item (based on remaining four items, α 'laughing'=0.81, α 'doing nothing'=0.86, α 'telling bully they are not amused'=0.75, α 'comforting or giving advice to victim'=0.79, α 'reporting to adults'=0.80). Items were rated on a scale from 1 to 7.

Eight items were used to measure the outcome expectations and motivations for their bystander behavior. These were reduced using principal component analysis to 3 factors: 1) 'to help the victim' (3 items, $\alpha=0.70$, e.g. 'I do this not to make it even worse for the victim'); 2) 'for personal gains' ($\alpha=0.69$, 3 items, e.g. 'I do this to make more friends'); and 3) 'for personal protection' ($\alpha=0.80$, 2 items, e.g. 'I do this not to get bullied myself'). Items were rated on a scale from 1 to 5.

Perceived norm

Perceived norms comprise injunctive or subjective norms (e.g. what you think others expect you to do) and descriptive norms (e.g. what you perceive others do) (Fishbein, 2008). Five items, measured on a 5-point Likert scale, measured perceived norm, reduced in principal component analysis to two

dimensions. Since neither dimension achieved a satisfactory internal consistency (dimension 1: $\alpha=0.46$, 3 items; dimension 2: $\alpha=0.22$, 2 items) only the highest loading items were retained and 2 single-item dimensions were created. These were: 1) 'support for positive bystander behavior' (1 item, 'My parents would approve if I tell the bully to stop'); and 2) 'social pressure to join in' (1 item, 'My friends pressure me to join in'). Items were rated on a scale from 1 to 5.

Self-efficacy to perform bystander behavior, and bystander effect on self-efficacy

Self-efficacy is the belief in one's capabilities to perform the behavior (Bartholomew et al., 2011). Three items measured a general sense of self-efficacy related to intervening as a bystander. Principal component analyses indicated two dimensions were present: 1) 'self-efficacy to end cyberbullying' (2 items, 1 highest loading item retained due to low α , 'I know how I can make the cyberbullying stop'; and 2) 'self-efficacy to make their own choice' (1 item, 'It is entirely up to me to choose if I join in the cyberbullying or not').

Specific self-efficacy, and what influences this, was measured for several behaviors: not joining in, telling the bully to stop, comforting or providing advice. Seven self-efficacy items for not joining in were reduced to one factor in principal component analysis ($\alpha=0.79$, 7 items, e.g. 'I find it hard not to join in when I don't know the victim well or don't like the victim'). Seven self-efficacy items on telling the bully to stop were reduced in a two factor solution in principal component analysis: 1) incident characteristics influencing self-efficacy (4 items, $\alpha=0.76$, e.g. 'I find it hard to tell the bully to stop when I think that the victim may have provoked it'), 2) social influences to self-efficacy (3 items, $\alpha=0.73$, e.g. 'I find it hard to tell the bully to stop when others don't say anything either'). Nine self-efficacy items on comforting or providing advice were reduced to two factors in principal component analysis: 1) incident characteristics (3 items, $\alpha=0.73$, e.g. 'I find it hard to comfort the victim or give advice when I am not sure that cyberbullying is intended to harm'), and 2) social characteristics (4 items, $\alpha=0.73$, e.g. 'I find it hard to comfort the victim or give advice when I am afraid of the bully'). Items with multiple high loadings were removed. Items were rated on a scale from 1 to 5.

Skills (coping skills, empathic skills, social skills) and environmental factors

The following variables are part of validated scales. The subscales were constructed based on these validated scales, no factor analyses were conducted here.

Skills are real or perceived abilities to perform the behavior, that can be trained or taught. In health promotion, these may, for example, comprise decision-making skills (e.g. coping) and life skills (e.g. social interaction, empathic skills) (Tones & Green, 2004).

The affective empathy subscale of the Dutch version of the Interpersonal Reactivity Index was used to measure empathic skills (e.g. 'I am often concerned about people who are less fortunate than me') (De

Corte et al., 2007). This subscale with 7 items had low internal consistency ($\alpha=0.56$), which was improved to $\alpha=.63$, when removing 3 negatively phrased items. Items were rated on a scale from 1 to 5. A social skills scale was adapted from the MESSY questionnaire (Matson, Rotatori, & Helsel, 1983; Méndez, Hidalgo, & Inglés, 2002). Seven highest loading items for inappropriate skills and seven highest loading items on appropriate skills were used. Both the ‘inappropriate skills’ subscale ($\alpha=0.80$) and the ‘appropriate skills’ subscale ($\alpha=0.80$) had good internal consistency. Items were rated on a scale from 1 to 5.

Coping skills were measured using the coping scale for children and adolescents by Brodzinsky (Brodzinsky et al., 1992). The subscale ‘assistance seeking’ showed sufficient reliability (4 items, $\alpha=0.62$, e.g. ‘I asked someone in my family for help’). All other subscales showed good reliability (Cognitive-Behavioral Problem-solving, 8 items, $\alpha=0.79$, e.g. ‘I thought of the problem and tried to figure out what I should do about it’; Cognitive Avoidance, 11 items, $\alpha=0.82$, e.g. ‘I tried not to think about it’; Behavioral Avoidance, 6 items, $\alpha=0.73$, ‘I stayed away from things that reminded me of the problem’). Items were rated on a scale from 0 to 3.

Parental awareness of mobile phone activities and of activities on the Internet were asked separately for mother and father, using a question format derived from parental monitoring scales by Patterson and Stouthamer-Loeber (Patterson & Stouthamer-Loeber, 1984).

2.2.2. Class-level variables

Aggregated scores were calculated per class on their moral disengagement attitudes. Every pupil in a certain class of a school received the average score on the four moral disengagement attitudes mentioned above. Aggregated moral disengagement attitudes at class level have shown to influence bystander behavior in traditional bullying (Gini et al., 2015).

2.2.3. School-level variables

Each school received a short questionnaire, which was filled out by the school administrator. We hypothesized that the school size and population, problem perception and unmet needs, and approaches used against cyberbullying would be of influence in adolescent bystander behavior (Polanin, Espelage, & Pigott, 2012). This questionnaire contained the following questions:

- Type of education offered:
 - General education (yes/no)
 - Vocational education (yes/no)
 - Technical education (yes/no)
- Number of pupils at their school in lower grade (7th – 8th grade)
- Number of pupils at their school in medium grade (9th – 10th grade)

- Whether the school faces special challenges (e.g. many non-native speakers among the pupils) (yes/no)
- The extent to which cyberbullying is experienced as a problem among pupils at their school, rated on a 1-5 Likert scale (certainly not a problem-certainly a problem)
- Whether or not the school recently experienced a cyberbullying incident (yes/no)
- Whether the school uses a specific approach against cyberbullying (yes/no)
- Which approach (yes/no, more than one can apply):
 - No-blame approach (open conversation with victim and bully)
 - Peer mediation (pupils are trained to resolve conflicts)
 - Curriculum approach (classes on cyberbullying integrated in course curriculum)
 - Checking e-mail traffic
 - Prohibiting use of mobile phones at school
 - Specific intervention package given at school (e.g. 'Vlindernet')
 - Information day for pupils (e.g. on Internet safety)
 - Information day for parents (e.g. on Internet safety)
 - Professional education for educators
 - Central point for notification of incidents (e.g. dedicated care teacher or coordinator)
 - Notifying parents of victims and bullies when incidents occur
- The extent to which existing approaches against cyberbullying meet their needs, rated on a 1-5 point scale (1. not at all – 5. completely meet needs)

2.3. Analysis

Descriptive analyses, scale construction and normality checks were conducted in SPSS 22. Given the large sample size, the dependent variables were checked for normality assumptions based on skewness and kurtosis values close to 0, a normal curve distribution, Q-Q plot values close to the 45 line, and no outlier z-scores, which were removed (Ghasemi & Zahediasl, 2012). For scales not approximating a normal distribution (i.c. supportive behavior showing a positive skew), data were square-root transformed (Bland & Altman, 1996). The negative behavior and behavioral intention scales (passive behavior, reinforcing, non-supportive behavior) were summed to represent one scale for negative behavior and one scale for negative behavioral intention, as normality could not be approximated on the separate types of behavior. Several types of positive or negative bystander behavior have been grouped in previous research (Olenik-Shemesh et al., 2015). Normality per level was assessed using a normal score plot (Jones & Subramanian, 2012), which showed a normal distribution for eleven out of twelve conditions (4 variables at 3 levels). Independent variables were checked for multi-collinearity prior to analysis, and in case of multi-collinearity ($r \geq .6$), only the item with the highest correlation with the dependent variables was retained. Significant multi-collinearity ($r=.63$) was found between incident

factors affecting self-efficacy for comforting (retained), and incident factors affecting self-efficacy to confront the bully (dropped); and between how much their mother knows about their activities in mobile phone texting (retained) and how much their father knows of these activities (dropped) ($r=.62$).

At school level, significant multi-collinearity was found between offering general education and vocational education ($r=-.67$) and was very high between offering technical education and vocational education ($r=.59$). Only the type of education offered which influenced the dependent variable the most was retained in the model.

Multilevel analyses were performed, using MLwiN 2.32, since the dataset had a hierarchical structure of 1979 children nested within 158 classes, nested within 16 schools. First, a null model with intercept only compared a single-level (i.e. individual) with a multi-level solution (individual, class and school) for each of the dependent variables (1. supportive bystander behavior; 2. behavioral intention for supportive bystander behavior; 3. negative bystander behavior; 4. behavioral intention for negative bystander behavior). Next, these null models formed a basis of comparison for the next models that include the first predictors from the theoretical model. The predictors were added in a stepwise approach, to represent the phases in the Bystander Intervention Model (models a, b, c, d, e). Variables in step 1 mainly reflect correlates of incident awareness (e.g. Internet and mobile phone importance), variables in step 2 reflect the interpretation of an incident as an emergency (e.g. cognitive restructuring the incident by rationalizing what is happening), variables in step 3 relate to the acceptance of responsibility to intervene (e.g. perceived norms), step 4 reflects knowing how to intervene and having the capability to do so (e.g. skills and self-efficacy) and step 5 contains the intention to actually perform the behavior. A last step also includes the significant class- or school-level factors in the model. Continuous predictors were centered around the grand mean. Age and gender of pupil were also used in every model as covariates, since some variables, such as empathy, are known to have different levels by age and gender (Endresen & Olweus, 2001; Hawk et al., 2013), and no norm scores were available here. Each model was compared to the previous step in the model to assess the improvement in explained variance. In a final step (models e, f, or g), only the covariates age and gender, and (borderline) significant predictors from the last model (models d, e or f) which includes all steps in the theoretical model, were retained, to form the most parsimonious and interpretable model. If the resulting final model comprised non-significant predictors, the model was tested again without these predictors. The level of significance for all analyses was set at 0.05. Beta-coefficients reported are unstandardized and cannot be used to deduct

the relative weight of the predictor, which was instead based on the significance level and underlying Chi² value.

3. Results

3.1. Descriptive results

Socio-demographic information on the participants is provided in Table 1. Table 2 contains descriptive statistics on behavioral determinants, and Table 3 shows correlations between scale variables. Of the 1979 participants, 1052 (52.9%) had witnessed someone getting cyberbullied in the past six months. They were asked to indicate whether or not they reacted in a certain way when this happened, and could have used several types of behavior. The most frequently used behavior was negative behavior, i.e. passive bystanding: those having witnessed cyberbullying, most often did nothing (55.1%). The second most often used behavior was a form of positive behavior that supports the victim: 48.7% comforted and gave advice to the victim. As for other forms of positive behavior, 38.9% asked their friends not to join in, but a smaller group defended the victim by telling the bully personally (26.0%) or online (24.7%) that they did not appreciate it, or reported it to adults or older siblings (20.7%). As forms of non-supportive behavior to the victim, we found that some immediately deleted it (41.3%). Few laughed with it, while not letting anyone notice (14.6%). Few showed reinforcing behavior, with 10.4% of bystanders laughing while letting the bully notice, and very few forwarded it to others (1.8%). Some overlap existed between positive and negative forms of behavior, with e.g. 31% of those who witnessed a cyberbullying incident showing both a form of supportive behavior towards the victim and passive behavior, 33% showing both positive behavior towards the victim and private non-supportive behavior ('deleting it'), and 6% showing both supportive behavior towards the victim and reinforcing behavior towards the bully. For 41.6% of those witnessing a cyberbullying incident, the victim was a good friend, and for 36.3%, the bully was a good friend.

Behavioral intentions on bystander behavior in a future cyberbullying incident were studied among all participants (n=1979). Adolescents rated this on a 5-point scale (1=completely disagree; 2=rather disagree; 3=do not agree nor disagree; 4=rather agree; 5=completely agree). Intentions were highest for three forms of positive behavior, namely comforting and giving advice (M=3.73, SD=1.17), asking friends not to join in (M=3.69, SD=1.27), and the intentions to report to adults or older siblings (M=3.12, SD=1.26). The average intentions to defend by letting the bully know online (M=2.90, SD=1.27) or personally (M=2.89, SD=1.29) that they did not appreciate it, were just below a neutral position on the 5-point scale ('not agree, but also do not disagree'). Above a neutral point on the scale was the average intention to immediately delete it (M=3.09, SD=1.35) and much lower for laughing while not letting anyone know (M=1.66, SD=1.01). The average intentions to ignore the incident were below a neutral point on the scale and more situated towards a point of disagreement they would act as such next time

they witness a cyberbullying incident ($M=2.48$, $SD=1.18$). Behavioral intentions were low for laughing while letting the bully know ($M=1.33$, $SD=0.80$) and for forwarding it to others ($M=1.30$, $SD=0.75$).

Table 1. Descriptive statistics on background variables

	Participants (n=1979)
Step 1: background variables	
	M (SD)
Age	13.61 (1.03)
Quality of life	3.91 (0.60)
Personal importance of Internet	4.36 (1.23)
Personal importance of mobile phone	4.51 (1.38)
	n (%)
Grade	
7 th grade	611 (31.0)
8 th grade	653 (33.2)
9 th grade	705 (35.8)
Gender	
Boys	911 (47.3)
Girls	1017 (52.7)
Type of education	
Vocational	316 (16.2)
Technical	607 (31.1)
General	1028 (52.7)
Living situation	
With both parents	1399 (70.8)
Other living situation	577 (29.2)
Family affluence	
Low-medium	439 (22.4)
High	1518 (77.6)
Country of birth	
[region info omitted]	1881 (95.2)
Abroad	95 (4.8)
Traditional bullying involvement	
Victim at least once in past 6 months	408 (20.8)
Victim 2-3 times per month	128 (6.5)
Bully at least once in past 6 months	433 (22.0)
Bully 2-3 times per month	85 (4.3)
Cyberbullying involvement	
Victim at least once in past 6 months	182 (9.2)
Victim 2-3 times per month	45 (2.3)
Bully at least once in past 6 months	138 (7.0)
Bully 2-3 times per month	29 (1.5)

Table 2. Descriptive statistics on behavioral determinants

	Participants (n=1979)
	M (SD)
Step 2: moral disengagement	
Cognitive restructuring	1.98 (0.68)
Blaming the victim	2.73 (0.90)
Denying responsibility	3.39 (1.07)
Diffusing responsibility	3.53 (1.13)
Step 3: attitudes and norms	
Positive attitude towards laughing	1.54 (0.80)
Positive attitude towards passive bystanding	2.74 (1.20)
Positive attitude towards defending	5.14 (1.25)
Positive attitude towards comforting the victim	6.06 (0.99)
Positive attitude towards reporting	5.17 (1.26)
Expecting benefits for victim	3.69 (0.90)
Expecting personal gains	1.88 (0.81)
Expecting personal protection	2.80 (1.14)
Perceived norm for defending	3.76 (1.09)
Perceived norm for joining	1.48 (0.90)
Step 4: self-efficacy (SE), skills and facilitators	
Self-efficacy to end cyberbullying	2.81 (1.21)
Self-efficacy in having a choice	3.96 (1.34)
Bystander effect (social factors affect SE to comfort)	2.54 (0.92)
Bystander effect (incident factors affect SE to comfort)	2.44 (0.90)
Bystander effect (social factors affect SE to confront)	2.97 (1.11)
Bystander effect (incident factors affect SE to confront)	2.53 (0.89)
Bystander effect (factors affect SE to not join in)	2.37 (0.83)
Appropriate social skills	4.07 (0.68)
Inappropriate social skills	1.82 (0.70)
Empathic skills	3.27 (0.75)
Assistance seeking coping skills	1.18 (0.69)
Cognitive behavioral problem-solving coping skills	1.09 (0.59)
Cognitive avoidance coping skills	1.10 (0.58)
Behavioral avoidance coping skills	0.89 (0.64)
Mother's awareness of Internet activities	1.35 (0.68)
Mother's awareness of mobile phone activities	0.76 (0.75)
Father's awareness of Internet activities	1.05 (0.76)
Father's awareness of mobile phone activities	0.57 (0.69)

3.2. Null model

A multilevel solution did not outperform a single-level solution in explaining negative bystander behavior ($\chi^2(1)=0.074$, $p=0.786$), but did outperform a single-level solution in explaining the behavioral intention for negative bystander behavior ($\chi^2(1)=8.072$, $p=0<.01$), in explaining positive bystander behavior ($\chi^2(1)=25.839$, $p=0<.001$) and explaining the intention for positive bystander behavior ($\chi^2(1)=40.348$, $p=0<.001$).

3.3. Predicting positive bystander behavior and behavioral intention

The random part of the null model to explain *positive bystander behavior*, revealed that the variance at school-level (6.0%, $\chi^2(1)=3.80$, $p=0.051$) and at class-level (3.4%, $\chi^2(1)=2.19$, $p=0.139$) were not significantly different from zero. School-level variance was marginally significant. Variances at individual level (90.6%, $\chi^2(1)=389.61$, $p<0.001$) were, however, significantly different from zero.

Positive bystander behavior was mostly predicted by a higher intention to act as a positive bystander (Table 3). Whether the victim was a friend, however, was also a strong predictor of positive bystander behavior. Positive bystander behavior was moreover predicted by the individual-level factors of a higher self-efficacy to end cyberbullying, by a less positive attitude towards passive bystanding and a more positive attitude towards comforting the victim and (borderline significant) by the bystander being a girl. At class and school level, only the class-aggregated scores of moral disengagement attitudes in which adolescents blame the victim were a significant predictor of positive bystander behavior: the higher the average scores of victim blaming were in a class, the lower the positive bystander behavior. When examining school-level factors separately, a school offering vocational education, and checking pupils' email traffic at school, were significant predictors (Appendix A). These were no longer significant predictors in the full model with other class-level and individual-level predictors.

The random part of the null model to explain *behavioral intention for positive bystander behavior*, revealed that the variance at school-level was not significantly different from zero (2.4%, $\chi^2(1)=2.91$, $p=0.088$, marginally significant), but that variances at class-level (3.7%, $\chi^2(1)=7.53$, $p<.01$) and at individual level (93.9%, $\chi^2(1)=906.94$, $p<0.001$) were. Significance of class-environment differences disappeared when entering background factors as predictors to the model.

Higher intentions for positive bystander behavior were mostly predicted by the expectation that these actions would benefit the victim. Those who had been cybervictimized themselves had higher intentions to use positive bystander behavior. Age significantly predicted positive bystander intention: older adolescents in the age range of 7th – 9th graders less intended to perform positive bystander behavior. As shown in Table 4, several attitudes and moral disengagement attitudes were significant predictors of the intention to perform positive bystander behavior. In general, having lower moral disengagement attitudes; more positive attitudes towards positive behavior and negative attitudes towards negative

behavior; and being motivated by the expectation that their actions would benefit the victim, but not by motives of self-protection, significantly related to a higher intention to show positive bystander behavior. A higher sense of self-efficacy to end cyberbullying also related to a higher behavioral intention for positive bystander behavior. Appropriate social skills related to higher behavioral intention for positive bystander behavior. Presumably due to a variety of positive bystander behaviors (e.g. reporting, comforting), both a lower cognitive avoidance and a higher behavioral avoidance, were significantly associated with a higher behavioral intention for positive bystander behavior. Interestingly, when adolescents perceived their mothers to be more aware of their Internet activities, positive bystander behavioral intention was also significantly higher.

One class-level factor and one school-level factor significantly predicted the intention to show positive bystander behavior: these intentions were higher when the school organized an information day for pupils, and when the aggregated scores at class-level of moral disengagement attitudes where they denied responsibility, were lower.

3.4. Predicting negative bystander behavior and behavioral intention

A single-level model was used to explain *negative bystander behavior*. Negative bystander behavior was largely explained by the intention to act as a negative bystander. Apart from their intentions, this behavior was moreover predicted by stronger moral disengagement attitudes of cognitive restructuring, and lower attitudes of blaming the victim. Negative bystander behavior was borderline significantly higher among boys than among girls (Table 5). When examining school-level factors separately, a school organizing an information day for pupils related to lower negative bystander behavior (Appendix A). None of the class-level or school-level factors were, however, significant predictors when added to the model of individual-level predictors.

The random part of the null model to explain *behavioral intention for negative bystander behavior*, revealed that the variance at school-level was not significantly different from zero (0.1%, $\chi^2(1)=0.041$, $p=0.840$), but that variances at class-level (2.7%, $\chi^2(1)=4.68$, $p=0.031$) and at individual level (97.2%, $\chi^2(1)=884.37$, $p<0.001$) were. These variances at class-level remained significant after the addition of other characteristics to the model (Table 6). Intention for negative bystander behavior was higher when there was a more positive attitude towards passive bystanding, when adolescents expected more personal gains and personal protection from their actions, when inappropriate social skills were higher, and when empathic skills and problem-solving coping skills were lower.

When examining school-level factors separately, reporting incidents to parents of victims and bullies was related to lower intention for negative bystander behavior (Appendix A). None of the class-level or school-level factors were, however, significant predictors when added to the model of individual-level predictors.

Table 3. Multilevel predictive model for positive bystander behavior (Model 1)

Parameter	Null model	Model 1a	Model 1b	Model 1c	Model 1d	Model 1e	Model 1f	Model 1g
Fixed part	β (SE)	β (SE)	β (SE)	β (SE)	β (SE)	β (SE)	β (SE)	β (SE)
<i>Intercept</i>	1.01 (0.06)	0.95 (0.09)	0.90 (0.08)	0.85 (0.08)	0.81 (0.09)	0.89 (0.08)	1.01 (0.04)	0.09 (0.04)
Individual-level factors								
<i>Step 1: background factors</i>								
Gender (reference: girl)		-0.22 (0.07)**	-0.16 (0.07)*	-0.07 (0.06)	-0.05 (0.08)	-0.06 (0.07)	-0.11 (0.05)*	0.09 (0.05) ^o
Age		-0.07 (0.04) ^o	-0.08 (0.03)*	-0.06 (0.03)	-0.06 (0.03) ^o	-0.05 (0.03) ^o	-0.04 (0.03)	-0.03 (0.02)
SES (reference: high)		0.02 (0.08)	-0.02 (0.08)	-0.05 (0.07) ^o	0.01 (0.08)	0.05 (0.08)		
Living with both parents (reference: no)		0.11 (0.07)	0.11 (0.07) ^o	0.12 (0.06) ^o	0.20 (0.07)**	0.20 (0.07)**		
CB perpetration		-0.07 (0.06)	0.00 (0.06)	0.06 (0.06)	0.04 (0.06)	0.05 (0.06)		
CB victimization		0.14 (0.05)**	0.15 (0.05)**	0.13 (0.04)**	0.11 (0.05)*	0.08 (0.05)		
Quality of life		-0.04 (0.06)	-0.08 (0.05)	-0.10 (0.05)*	-0.11 (0.06) ^o	-0.10 (0.05) ^o		
Personal importance of Internet		-0.03 (0.03)	-0.03 (0.03)	-0.01 (0.03)	-0.01 (0.03)	0.00 (0.03)		
Personal importance of mobile phone		-0.02 (0.03)	0.00 (0.03)	0.01 (0.03)	0.02 (0.03)	0.02 (0.03)		
Victim was a good friend (reference: no)		0.41 (0.07)***	0.39 (0.07)***	0.31 (0.06)***	0.26 (0.07)***	0.14 (0.07)*	0.28 (0.05)***	0.27 (0.05)***
Bully was a good friend (reference: no)		-0.04 (0.07)	0.04 (0.07)	0.06 (0.07)	0.05 (0.07)	0.05 (0.07)		
<i>Step 2: moral disengagement</i>								
Cognitive restructuring			-0.06 (0.06)	0.16 (0.07)*	0.09 (0.08)	0.11 (0.07)		
Blaming the victim			-0.10 (0.04)*	-0.10 (0.04)*	-0.03 (0.05)	0.00 (0.04)		
Denying responsibility			-0.10 (0.03)***	-0.05 (0.03) ^o	-0.05 (0.03) ^o	-0.04 (0.03)		
Diffusing responsibility			0.02 (0.03)	0.03 (0.03)	0.07 (0.03)*	0.07 (0.03)**		
<i>Step 3: attitudes and norms</i>								
ATT towards laughing				-0.04 (0.04)	-0.09 (0.05)*	-0.06 (0.04)		
ATT towards passive bystanding				-0.08 (0.03)**	-0.08 (0.03)**	-0.07 (0.03)*	-0.07 (0.02)***	-0.07 (0.02)***
ATT towards defending				0.03 (0.03)	0.02 (0.03)	0.01 (0.03)		
ATT towards comforting the victim				0.07 (0.03)*	0.09 (0.03)**	0.08 (0.03)**	0.06 (0.02)*	0.06 (0.02)*
ATT towards reporting				0.01 (0.03)	-0.01 (0.03)	-0.02 (0.03)		
OUTC benefits for victim				0.20 (0.04)***	0.13 (0.04)**	0.03 (0.04)		
OUTC personal gains				-0.03 (0.04)	-0.01 (0.04)	-0.03 (0.04)		
OUTC personal protection				-0.10 (0.03)***	-0.11 (0.03)***	-0.07 (0.03)*		
PN for defending				-0.02 (0.03)	-0.07 (0.03)*	-0.06 (0.03)*		
PN for joining				0.06 (0.03) ^o	0.04 (0.04)	0.01 (0.03)		
<i>Step 4: self-efficacy, skills and facilitators</i>								

SE to end cyberbullying						0.10 (0.03)***	0.08 (0.03)**	0.09 (0.02)***	0.09 (0.02)***
SE in having a choice						-0.03 (0.03)	-0.03 (0.02)		
BE (social factors affect SE to comfort)						0.04 (0.05)	0.01 (0.04)		
BE (incident factors affect SE to comfort)						-0.09 (0.04)*	-0.08 (0.04)°		
BE (social factors affect SE to confront)						-0.05 (0.04)	-0.02 (0.03)		
BE (factors affect SE to not join in)						0.09 (0.05)°	0.07 (0.05)		
Appropriate SK						-0.01 (0.06)	-0.04 (0.06)		
Inappropriate SK						0.01 (0.06)	-0.01 (0.06)		
Empathic skills						-0.05 (0.05)	-0.05 (0.05)		
Assistance seeking CS						0.09 (0.05)°	0.05 (0.05)		
Cognitive behavioral problem-solving CS						0.06 (0.06)	0.07 (0.06)		
Cognitive avoidance CS						-0.01 (0.07)	0.03 (0.06)		
Behavioral avoidance CS						-0.04 (0.06)	-0.04 (0.06)		
Mother's awareness of mobile phone activities						-0.01 (0.05)	-0.00 (0.05)		
Mother's awareness of Internet activities						0.06 (0.06)	0.02 (0.05)		
Father's awareness of Internet activities						0.00 (0.05)	0.02 (0.04)		

Step 5: Behavioral intention

Intention for positive bystander behavior							0.27 (0.04)***	0.27 (0.03)***	0.27 (0.03)***
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School and class-level factors

MD attitudes, blaming the victim (class-level)									-0.25 (0.08)***
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Random factors	σ² (SE)								
School-level variance	0.04 (0.02)°	0.01 (0.01)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.01 (0.01)	0.00 (0.01)
Class-level variance	0.02 (0.01)	0.02 (0.02)	0.03 (0.02)	0.02 (0.02)	0.02 (0.02)	0.01 (0.01)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Individual-level variance	0.53	0.42 (0.03)***	0.39 (0.03)***	0.32 (0.03)***	0.29 (0.03)***	0.27 (0.02)***	0.34 (0.02)***	0.33 (0.02)***	0.33 (0.02)***
Deviance Test model	2052.55	923.40***	874.16***	768.23***	600.53***	554.60***	1185.87***	1175.20***	1175.20***
χ (df)		1129.15 (10)	49.24 (4)	105.93 (10)	167.70 (16)	45.93 (1)	631.27 (35)	10.67 (1)	10.67 (1)

CB: cyberbullying; MD: moral disengagement; ATT: positive attitude; OUTC: outcome expectation; PN: perceived norm; SE: self-efficacy; BE: bystander effect; SK: social skills; CS: coping skills

Note. Values in parentheses are standard errors. β coefficients are unstandardized and their values cannot be interpreted relatively to other predictors

° p < .10, *p < .05; **p < .01, ***p < .001.

Table 4. Multilevel predictive model for positive bystander behavioral intention (Model 2)

Parameter	Null model	Model 2a	Model 2b	Model 2c	Model 2d	Model 2e	Model 2f
Fixed part	β (SE)	β (SE)	β (SE)	β (SE)	β (SE)	β (SE)	β (SE)
<i>Intercept</i>	3.26 (0.05)	3.32 (0.06)	3.11 (0.15)	3.24 (0.05)	3.24 (0.05)	3.27 (0.03)	3.23 (0.03)
Individual-level factors							
<i>Step 1: background factors</i>							
Gender (reference: girl)		-0.15 (0.05)**	-0.07 (0.05)	0.00 (0.04)	0.01 (0.05)	0.00 (0.04)	-0.02 (0.04)
Age		-0.10 (0.03)***	-0.09 (0.02)***	-0.04 (0.02) ^o	-0.02 (0.02)	-0.04 (0.02)*	-0.05 (0.02)*
SES (reference: high)		0.09 (0.06)	0.07 (0.05)	-0.00 (0.05)	0.02 (0.06)		
Living with both parents (reference: no)		-0.01 (0.05)	0.01 (0.05)	0.01 (0.05)	0.03 (0.05)		
CB perpetration		-0.27 (0.06)***	-0.12 (0.06)*	-0.07 (0.05)	-0.08 (0.06)		
CB victimization		0.22 (0.05)***	0.20 (0.05)***	0.15 (0.04)***	0.15 (0.05)***	0.14 (0.04)***	0.14 (0.04)***
Quality of life		0.10 (0.04)*	0.04 (0.04)	0.04 (0.03)	0.06 (0.04)		
Personal importance of Internet		-0.05 (0.02)*	-0.04 (0.02)*	-0.03 (0.02) ^o	-0.03 (0.02)		
Personal importance of mobile phone		-0.04 (0.02) ^o	0.01 (0.02)	0.01 (0.02)	0.01 (0.02)		
<i>Step 2: moral disengagement</i>							
Cognitive restructuring			-0.28 (0.04)***	-0.05 (0.04)	-0.05 (0.05)		
Blaming the victim			-0.09 (0.03)**	-0.08 (0.03)**	-0.09 (0.03)**	-0.07 (0.02)**	-0.07 (0.02)**
Denying responsibility			-0.16 (0.02)***	-0.08 (0.02)***	-0.06 (0.02)**	-0.09 (0.02)***	-0.08 (0.02)***
Diffusing responsibility			0.01 (0.02)	-0.00 (0.02)	0.00 (0.02)		
<i>Step 3: attitudes and norms</i>							
ATT towards laughing				-0.07 (0.03)*	-0.08 (0.03)*	-0.12 (0.03)***	-0.10 (0.03)**
ATT towards passive bystanding				-0.12 (0.02)***	-0.12 (0.02)***	-0.11 (0.02)***	-0.13 (0.02)***
ATT towards defending				0.03 (0.02) ^o	0.03 (0.02)		
ATT towards comforting the victim				0.05 (0.02)*	0.05 (0.03) ^o		
ATT towards reporting				0.04 (0.02)*	0.04 (0.02)*	0.07 (0.02)***	0.07 (0.02)***
OUTC benefits for victim				0.31 (0.03)***	0.29 (0.03)***	0.32 (0.03)***	0.28 (0.03)***
OUTC personal gains				0.03 (0.03)	0.03 (0.03)		
OUTC personal protection				-0.11 (0.02)***	-0.08 (0.02)***	-0.09 (0.02)***	-0.10 (0.02)***
PN for defending				0.03 (0.02)	0.03 (0.02)		
PN for joining				0.04 (0.02)	0.03 (0.03)		
<i>Step 4: self-efficacy, skills and facilitators</i>							
SE to end cyberbullying					0.05 (0.02)***	0.04 (0.02)*	0.02 (0.02)*
SE in having a choice					-0.01 (0.02)		

BE (social factors affect SE to comfort)					0.02 (0.03)		
BE (incident factors affect SE to comfort)					-0.06 (0.03)*	-0.07 (0.02)**	
BE (social factors affect SE to confront)					-0.01 (0.02)		
BE (factors affect SE to not join in)					0.05 (0.03) ^o		
Appropriate SK					0.09 (0.04)*	0.13 (0.03)***	0.12 (0.03)***
Inappropriate SK					0.07 (0.04) ^o	0.07 (0.03)*	
Empathic skills					0.01 (0.03)		
Assistance seeking CS					0.04 (0.04)		
Cognitive behavioral problem-solving CS					0.02 (0.04)		
Cognitive avoidance CS					-0.09 (0.04)*	-0.08 (0.04)*	-0.10 (0.04)*
Behavioral avoidance CS					0.07 (0.04) ^o	0.07 (0.04)*	0.08 (0.04)*
Mother's awareness of mobile phone activities					0.01 (0.03)		
Mother's awareness of Internet activities					0.08 (0.04)*	0.09 (0.03)**	0.07 (0.03)*
Father's awareness of Internet activities					-0.02 (0.03)		
Class- and school-level factors							
MD attitudes, denying responsibility (class-level)							-0.13 (0.06)*
Information day for pupils at school (school-level)							0.13 (0.05)**
Random factors							
	σ² (SE)						
School-level variance	0.02 (0.01) ^o	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Class-level variance	0.03 (0.01)**	0.02 (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.00 (0.01)
Individual-level variance	0.78	0.74 (0.03)***	0.65 (0.03)***	0.52 (0.02)***	0.49 (0.02)***	0.50 (0.02)***	0.49 (0.02)***
Deviance Test model	5132.84	3813.63***	3554.14***	3117.99***	2507.36***	3053.40***	2743.66***
χ (df)		1319.21 (8)	259.49 (4)	436.15 (10)	610.53 (16)	546.04 (21)	309.74 (0)

CB: cyberbullying; MD: moral disengagement; ATT: positive attitude; OUTC: outcome expectation; PN: perceived norm; SE: self-efficacy; BE: bystander effect; SK: social skills; CS: coping skills

Note. Values in parentheses are standard errors. β coefficients are unstandardized and their values cannot be interpreted relatively to other predictors

^o p < .10, *p < .05; **p < .01, ***p < .001.

Table 5. Single level predictive model for negative bystander behavior (Model 3)

Parameter	Null model	Model 3a	Model 3b	Model 3c	Model 3d	Model 3e	Model 3f
Fixed part	β (SE)	β (SE)	β (SE)	β (SE)	β (SE)	β (SE)	β (SE)
<i>Intercept</i>	1.06 (0.02)	1.10 (0.09)	1.09 (0.09)	1.08 (0.09)	1.01 (0.10)	1.01 (0.10)	0.98 (0.03)
<i>Step 1: background factors</i>							
Gender (reference: girl)		0.12 (0.07)*	0.11 (0.07)	0.11 (0.07)	0.15 (0.09) ^o	0.14 (0.08) ^o	0.10 (0.05) ^o
Age		-0.01 (0.03)	-0.01 (0.03)	-0.01 (0.04)	-0.02 (0.04)	-0.04 (0.04)	-0.00 (0.02)
SES (reference: high)		-0.03 (0.09)	-0.02 (0.08)	0.00 (0.09)	0.02 (0.10)	0.02 (0.09)	
Living with both parents (reference: no)		-0.03 (0.07)	-0.03 (0.07)	-0.01 (0.07)	0.01 (0.09)	-0.02 (0.08)	
CB perpetration		0.04 (0.06)	-0.08 (0.05)	-0.07 (0.07)	-0.02 (0.07)	0.01 (0.07)	
CB victimization		-0.10 (0.05)*	-0.06 (0.06)	-0.07 (0.05)	-0.09 (0.06)	-0.09 (0.05) ^o	
Quality of life		-0.10 (0.06) ^o	0.04 (0.03)	-0.06 (0.06)	-0.02 (0.07)	-0.07 (0.07)	
Personal importance of Internet		0.03 (0.03)	-0.01 (0.03)	0.03 (0.03)	0.03 (0.04)	0.02 (0.03)	
Personal importance of mobile phone		-0.01 (0.03)	-0.08 (0.06)	-0.02 (0.03)	-0.03 (0.03)	-0.01 (0.03)	
Victim was a good friend (reference: no)		-0.15 (0.07)*	-0.14 (0.07)*	-0.14 (0.07) ^o	-0.16 (0.08) ^o	-0.16 (0.08)*	
Bully was a good friend (reference: no)		0.01 (0.07)	-0.02 (0.07)	-0.05 (0.08)	0.01 (0.08)	0.03 (0.08)	
<i>Step 2: moral disengagement</i>							
Cognitive restructuring			0.21 (0.07)**	0.16 (0.08)*	0.24 (0.09)**	0.19(0.08)*	0.09 (0.04)*
Blaming the victim			-0.11 (0.05)*	-0.13 (0.05)**	-0.12 (0.06)*	-0.11 (0.05)*	-0.08 (0.03)*
Denying responsibility			0.02 (0.03)	0.02 (0.03)	0.03 (0.03)	0.04 (0.03)	
Diffusing responsibility			0.01 (0.03)	-0.01 (0.03)	-0.01 (0.03)	0.01 (0.03)	
<i>Step 3: attitudes and norms</i>							
ATT towards laughing				0.02 (0.05)	0.02 (0.05)	0.03 (0.05)	
ATT towards passive bystanding				0.03 (0.03)	0.05 (0.04)	0.04 (0.04)	
ATT towards defending				-0.01 (0.03)	-0.02 (0.03)	-0.02 (0.03)	
ATT towards comforting the victim				-0.05 (0.04)	-0.07 (0.04)*	-0.05 (0.04)	
ATT towards reporting				-0.03 (0.03)	-0.01 (0.03)	-0.01 (0.03)	
OUTC benefits for victim				0.07 (0.04)	0.09 (0.05) ^o	0.07 (0.05)	
OUTC personal gains				0.03 (0.05)	0.05 (0.05)	0.03 (0.05)	
OUTC personal protection				0.03 (0.03)	-0.04 (0.04)	-0.08 (0.04)*	
PN for defending				0.02 (0.03)	0.04 (0.04)	0.03 (0.04)	
PN for joining				0.02 (0.04)	0.03 (0.03)	0.04 (0.04)	
<i>Step 4: self-efficacy, skills and facilitators</i>							
SE to end cyberbullying					0.02 (0.03)	0.03 (0.03)	

SE in having a choice					-0.05 (0.03) [°]	-0.06 (0.03)*	
BE (social factors affect SE to comfort)					0.09 (0.05)	0.08 (0.05)	
BE (incident factors affect SE to comfort)					-0.10 (0.05) [°]	-0.13 (0.05)*	
BE (social factors affect SE to confront)					0.09 (0.04)*	0.07 (0.04)	
BE (factors affect SE to not join in)					-0.07 (0.06)	-0.05 (0.05)	
Appropriate SK					0.04 (0.07)	0.06 (0.07)	
Inappropriate SK					0.00 (0.01)	-0.02 (0.07)	
Empathic skills					-0.03 (0.06)	-0.03 (0.06)	
Assistance seeking CS					0.00 (0.06)	0.03 (0.06)	
Cognitive behavioral problem-solving CS					-0.03 (0.07)	0.01 (0.07)	
Cognitive avoidance CS					0.02 (0.08)	0.05 (0.07)	
Behavioral avoidance CS					0.11 (0.07)	0.04 (0.07)	
Mother's awareness of mobile phone activities					0.06 (0.06)	-0.06 (0.06)	
Mother's awareness of Internet activities					-0.04 (0.07)	0.06 (0.06)	
Father's awareness of Internet activities					-0.05 (0.05)	-0.03 (0.05)	
<i>Step 5: intention</i>							
Intention for negative bystander behavior						0.13 (0.02)***	0.12 (0.01)***
Random factors	σ² (SE)						
Individual-level variance	0.53	0.49 (0.03)***	0.47 (0.03)***	0.45 (0.03)***	0.42 (0.03)***	0.37 (0.03)***	0.45 (0.03)***
Deviance Test model	1935.68	943.66***	903.79***	864.28***	682.76***	636.41***	1563.69***
χ (df)		992.02 (10)	39.87 (4)	39.51 (10)	181.25 (16)	46.35 (1)	927.28 (37)

CB: cyberbullying; MD: moral disengagement; ATT: positive attitude; OUTC: outcome expectation; PN: perceived norm; SE: self-efficacy; BE: bystander effect; SK: social skills; CS: coping skills

Note. Values in parentheses are standard errors. β coefficients are unstandardized and their values cannot be interpreted relatively to other predictors

[°] p < .10, *p < .05; **p < .01, ***p < .001.

Table 6. Multilevel predictive model for negative bystander behavioral intention (Model 4)

Parameter	Null model	Model 4a	Model 4b	Model 4c	Model 4d	Model 4e	Model 4f
Fixed part	β (SE)	β (SE)	β (SE)	β (SE)	β (SE)	β (SE)	β (SE)
<i>Intercept</i>	6.89 (0.06)	6.89 (0.12)	6.96 (0.12)	6.98 (0.12)	6.91 (0.13)	6.86 (0.08)	6.89 (0.08)
Individual-level factors							
<i>Step 1: background factors</i>							
Gender (reference: girl)		0.29 (0.11)**	0.17 (0.11)***	0.09 (0.11)	-0.02 (0.13)	0.06 (0.11)	-0.00 (0.11)
Age		0.08 (0.06)	0.07 (0.06)	0.02 (0.05)	-0.02 (0.06)	0.02 (0.05)	-0.01 (0.05)
SES (reference: high)		-0.18 (0.13)	-0.11 (0.13)	-0.10 (0.12)	-0.09 (0.14)		
Living with both parents (reference: no)		-0.13 (0.12)	-0.17 (0.12)	-0.18 (0.11)	-0.05 (0.13)		
CB perpetration		-0.11 (0.11)	-0.05 (0.11)	-0.00 (0.11)	0.13 (0.11)		
CB victimization		0.24 (0.14) [°]	-0.08 (0.14)	-0.16 (0.14)	-0.18 (0.14)		
Quality of life		-0.01 (0.09)	0.10 (0.09)	0.10 (0.09)	0.11 (0.10)		
Personal importance of Internet		0.17 (0.05)***	0.14 (0.05)**	0.08 (0.05)	0.06 (0.05)		
Personal importance of mobile phone		-0.01 (0.04)	-0.08 (0.04) [°]	-0.08 (0.04)*	-0.07 (0.05)		
<i>Step 2: moral disengagement</i>							
Cognitive restructuring			0.65 (0.10)***	0.24 (0.11)*	0.04 (0.12)		
Blaming the victim			0.05 (0.07)	0.05 (0.07)	0.00 (0.07)		
Denying responsibility			0.18 (0.05)***	0.08 (0.05) [°]	0.08 (0.05)		
Diffusing responsibility			-0.06 (0.05)	-0.03 (0.04)	-0.06 (0.05)		
<i>Step 3: attitudes and norms</i>							
ATT towards laughing				0.12 (0.08)	0.09 (0.08)		
ATT towards passive bystanding				0.28 (0.05)***	0.27 (0.05)***	0.37 (0.04)***	0.37 (0.04)***
ATT towards defending				0.01 (0.05)	0.03 (0.05)		
ATT towards comforting the victim				-0.06 (0.06)	-0.09 (0.06)		
ATT towards reporting				-0.09 (0.05) [°]	-0.10 (0.05)		
OUTC benefits for victim				-0.07 (0.07)	-0.04 (0.07)		
OUTC personal gains				0.19 (0.07)**	0.16 (0.08)*	0.26 (0.07)***	0.25 (0.07)***
OUTC personal protection				0.26 (0.05)***	0.24 (0.05)***	0.25 (0.05)***	0.25 (0.05)***
PN for defending				0.03 (0.05)	0.06 (0.05)		
PN for joining				0.06 (0.06)	0.03 (0.07)		
<i>Step 4: self-efficacy, skills and facilitators</i>							
SE to end cyberbullying					-0.05 (0.05)		
SE in having a choice					-0.02 (0.04)		

BE (social factors affect SE to comfort)					0.04 (0.08)		
BE (incident factors affect SE to comfort)					0.08 (0.07)		
BE (social factors affect SE to confront)					0.02 (0.06)		
BE (factors affect SE to not join in)					0.03 (0.08)		
Appropriate SK					-0.08 (0.10)		
Inappropriate SK					0.22 (0.10)*	0.30 (0.08)***	0.30 (0.08)***
Empathic skills					-0.14 (0.09) ^o	-0.21 (0.07)**	-0.21 (0.07)**
Assistance seeking CS					-0.06 (0.09)		
Cognitive behavioral problem-solving CS					-0.23 (0.10)*	-0.19 (0.07)*	-0.19 (0.09)*
Cognitive avoidance CS					0.01 (0.11)		
Behavioral avoidance CS					0.12 (0.10)		
Mother's awareness of mobile phone activities					-0.11 (0.10)		
Mother's awareness of Internet activities					0.11 (0.08)		
Father's awareness of Internet activities					0.08 (0.08)		
Class- and school- level factors							
MD blaming the victim (class-level)							0.63 (0.18)***
Random factors							
School-level variance	0.00 (0.02)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Class-level variance	0.11 (0.05)*	0.15(0.06)*	0.11 (0.05)*	0.07 (0.05)	0.07 (0.05)	0.12 (0.05)*	0.10 (0.05)*
Individual-level variance	4.09	3.77 (0.15)***	3.54 (0.14)***	3.23 (0.13)***	2.96 (0.13)***	3.24 (0.13)***	3.23 (0.13)***
Deviance Test model	8120.56	6144.94***	5935.42***	5639.03***	4552.48***	5827.75***	5816.31***
χ (df)		1975.62 (8)	209.54 (4)	296.39 (10)	1086.55 (16)	1275.27 (30)	11.44 (1)

CB: cyberbullying; MD: moral disengagement; ATT: positive attitude; OUTC: outcome expectation; PN: perceived norm; SE: self-efficacy; BE: bystander effect; SK: social skills; CS: coping skills

Note. Values in parentheses are standard errors. β coefficients are unstandardized and their values cannot be interpreted relatively to other predictors

^o p < .10, *p < .05; **p < .01, ***p < .001.

4. Discussion

This study aimed to investigate a multidimensional and multilevel model of bystander behavior and behavioral intentions in cyberbullying. Several findings were in line with previous research. First, adolescents most often stood by passively and ignored the incident (Dillon & Bushman, 2015; Shultz, Heilman, & Hart, 2014; Van Cleemput et al., 2014; Vandebosch, Van Cleemput, Mortelmans, & Walrave, 2006). Second, comforting and giving advice were the most often used positive forms of bystander behavior (Machackova et al., 2013). Third, high behavioral intentions for both comforting and laughing with it may seem contradictory, but both positive and negative bystander behavior have previously been reported to occur jointly (DeSmet et al., 2012; DeSmet et al., 2014). Fourth, behavior and intentions for negative bystander behavior other than passive bystanding, were substantially lower (Van Cleemput et al., 2014; Vandebosch et al., 2006). In contrast with earlier research that investigated bystander responses to one particular given case (Bastiaensens et al., 2015b), adolescents equally defended publicly or in private.

A first and second research question explored to what extent respectively environmental and individual factors explained bystander behavior and bystander behavioral intentions. We hypothesized that, as in traditional bullying, school- and class-level factors would influence bystander behavior. Our results confirmed this hypothesis, but the contribution of these factors to explaining bystander behavior was not very strong. Although a multilevel null model outperformed an individual level null model for positive behavior and behavioral intention, the contribution of school level and class level in explaining the outcomes was no longer significant after adding individual background variables, which appeared to explain the differences between classes and schools. Only for the intention to use negative bystander behavior, a class-level effect remained significant in the final model and could not be explained by individual level predictors. Class-level factors and school-level factors were also included. School-level factors were only significant in a full model when explaining positive bystander behavioral intention, which was higher when the school organized cyberbullying information days for pupils on e.g. Internet safety. Only this school factor significantly related to bystander behavior in cyberbullying, whereas other school approaches did not. Class-level factors consisted of aggregated scores of moral disengagement attitudes. Lower levels of victim blaming predicted a higher occurrence of positive bystander behavior, and a lower intention to act as a negative bystander. Intentions to act as a positive bystander were higher when class-aggregated scores of denying responsibility were lower. The significance of class-aggregated moral disengagement attitudes are in line with findings from traditional bullying (Gini et al., 2015). Qualitative research showed adolescents often expressed intentions to act as a positive bystander, but remained vague in how to precisely do so (DeSmet et al., 2014). Programs on Internet safety often also include online coping strategies and information on digital citizenship (i.e. appropriate, responsible use of technology) (Van Cleemput et al., 2013). Possibly, these strategies may help in the execution of positive intentions, e.g. in providing advice to victims on how to prevent or

react when being cyberbullied. This would also suggest that a component dedicated to Internet use is needed, in addition to targeting e.g. attitudes, social skills, coping skills and empathy.

For negative bystander behavior, only individual differences, and not environmental factors, explained the outcome. These limited environmental influences are contrary to findings on negative bystander behavior in traditional bullying (Gini et al., 2015), and to some research on class-level influences on cyberbullying victimization and perpetration (Festl, Scharnow, & Quandt, 2013), but in line with the limited multilevel analyses conducted so far on cyberbullying involvement, relating to cyberbullying perpetration (Pabian & Vandebosch, 2014), and cyberbullying perpetration and victimization (Festl, Scharnow, & Quandt, 2014). This smaller role of schools in negative cyberbullying bystander behavior compared to traditional bullying, may relate to an explicit mention of school context in the measures for traditional bullying (Gini et al., 2015), but not in those for cyberbullying (Festl et al., 2013; Festl et al., 2014; Pabian & Vandebosch, 2014). It may also reflect the general perception of adolescents that school educators cannot adequately handle cyberbullying and therefore do not discourage negative bystander behavior (DeSmet et al., 2014). It may, furthermore, relate to the location where cyberbullying is witnessed, i.e. mainly outside of school, despite being largely intertwined with school life (Smith et al., 2008). While schools are often uncertain whether they could legally intervene in activities outside of school (McNamara & Moynihan, 2010), they do have a duty to look after the children's welfare and well-being (Campbell, Butler, & Kift, 2008). Schools should, therefore, install policies and prevention programs to encourage and facilitate positive bystander behavior, and discourage negative bystander behavior in cyberbullying. Educators could, moreover, install class rules against cyberbullying (Grigg, 2010; Heirman et al., 2015), to reduce pro-cyberbullying class norms that may increase the intention to engage in negative bystander behavior. In sum, this provided only partial support for our first hypothesis that environmental factors would influence bystander behavior and intentions.

A third research question examined which the strongest predictors were of bystander behavior and of behavioral intention. Findings indicated ample support for a multidimensional model for behavior and behavioral intentions of bystander behavior in cyberbullying, confirming our second hypothesis. As hypothesized in this model, bystander behavior and behavioral intention were determined by several factors. These factors spanned elements from the different theories that constructed our model, namely Reasoned Action Approach (e.g. attitudes towards the behavior, self-efficacy, skills, environmental factors), Social Cognitive Theory (e.g. moral disengagement attitudes) and the Bystander Intervention Model (e.g. bystander effect in class-level influences). These findings lend support to the usability of the model to study bystander behavior in cyberbullying.

In this study, *positive bystander behavior* was only examined among those who had witnessed cyberbullying in the past six months. It was predicted most by behavioral intentions to act as a positive bystander, in line with general health behavior literature pointing to intention as a strong predictor of behavior (Webb & Sheeran, 2006), and lending support to our third hypothesis. The victim being a good friend of the bystander, was, however, also a strong predictor of positive bystander behavior. Several

other factors predicted higher positive bystander behavior as well, independent of intention (in decreasing order of importance): having a higher self-efficacy to end cyberbullying, less positive attitudes towards doing nothing, more positive attitudes towards comforting, and being a girl. These other factors underline that despite positive intentions, adolescents may not act as a positive bystander, depending on the context and on a lack of supportive attitudes and self-efficacy.

The importance of attitudes (Obermaier et al., 2014) and of gender (Bastiaensens et al., 2014) are in line with previous research on cyberbullying bystander behavior. To our knowledge, the role of friendship and self-efficacy to perform positive bystander behavior had not been previously studied in quantitative research. Qualitative research suggested adolescents always stick up for a good friend, even if circumstances are unclear or if they are faced with popular, strong bullies (DeSmet et al., 2012; DeSmet et al., 2014). They may consider the risk of being isolated when not sticking up for a friend as more threatening and as putting themselves at risk for cybervictimization. The number of friends one has was, however, not found to be a protective factor against cybervictimization (Wang, Iannotti, & Nansel, 2009). Boys less often acted as a positive bystander. As in traditional bullying (Rock & Baird, 2012), gender differences mainly related to a lower use of reporting and comforting, and not of assertively defending. This is assumed to be caused by different socialization processes between boys and girls, in which it is less accepted for boys to be caring and more expected of them to be confrontational (Rock & Baird, 2012).

Intentions for positive bystander behavior were assessed among all adolescents in the present study, and were mostly predicted by the expectation that these actions would benefit the victim. As this outcome expectation is part of the construct of attitudes, this lends support to our fourth hypothesis. Those who had been cybervictimised themselves had higher intentions to use positive bystander behavior. Higher intentions were, moreover, associated with (in decreasing order of importance) negative attitude towards passive bystanding, not expecting personal protection, a more positive attitude towards reporting, not denying responsibility, higher appropriate social skills, a more negative attitude towards laughing, having been cybervictimised themselves, and lower moral disengagement attitudes of blaming the victim. Higher intentions for positive bystander behavior were also associated with higher self-efficacy to end cyberbullying, more behavioral but less cognitive avoidance coping skills, and with being younger in our age group of 7th to 9th graders. When mothers were more aware of their child's Internet activities, intentions for positive bystander behavior were higher. The importance of own cybervictimization experiences (Van Cleemput et al., 2014), younger age (Van Cleemput et al., 2014), appropriate social skills (Machackova et al., 2013), and attitudes (Obermaier et al., 2014), are consistent with earlier research findings. Unlike previous research, we could not find a significant influence of a bystander effect (e.g. incident or social factors that influence self-efficacy to intervene), which, however, also in previous research was not a very strong predictor (Bastiaensens et al., 2014),

Several of the predictors found to influence positive bystander behavior, have not been previously studied in relation to cyberbullying bystander behavior, i.e. outcome expectations, moral disengagement

attitudes, maternal awareness of cyber-activities, coping skills and self-efficacy. These will be discussed in more detail below.

Higher intentions for positive bystander behavior were associated with an expectation that their actions would benefit the victim. In traditional bullying, positive bystander behavior lowered psychosocial harm for the victim (Sainio et al., 2011). Although it is generally not recommended for victims to show their hurt to the bully since this reinforcement to the bully also further increases depressive symptoms of cybervictims (Machmutow, Perren, Sticca, & Alsaker, 2012), it may be advocated that cybervictims express to bystanders how their positive behavior can alleviate the victim's psychosocial problems.

As in traditional bullying bystander research (Gini, 2006; Obermann, 2011; Thornberg & Jungert, 2013), moral disengagement attitudes significantly predicted bystanders' behavioral intentions. This confirms qualitative research findings on bystanders in cyberbullying (DeSmet et al., 2012; DeSmet et al., 2014), and suggests that regardless of limited physical contact with a victim in cyberbullying, bystanders still need to use cognitive strategies to justify their actions and reduce their feelings of shame and guilt. A lower use of victim blaming and of denying responsibility related to a higher intention for positive bystander behavior. Not only at individual level, but also at class-aggregated level, moral disengagement attitudes influenced bystander behavior. Although moral disengagement is often viewed as one latent construct (Bandura, Barbanelli, Caprara, & Pastorelli, 1996), and has been studied as such in bystander behavior in traditional bullying (Gini, 2006; Obermann, 2011; Thornberg & Jungert, 2013), our findings suggest that it is useful to consider moral disengagement forms separately, since these types provide more detailed opportunities for behavior change interventions. A recent meta-analysis indicated a general lack of research on specific moral disengagement mechanisms and aggressive behavior (Gini, Pozzoli & Hymel, 2014). Our research findings support the call for more studies investigating moral disengagement as a multidimensional construct.

Parental awareness of their activities on the Internet had a positive influence on the intention to display positive bystander behavior. Parental monitoring has been associated in previous research with cyberbullying perpetration and victimization (Festl et al., 2014). Research on bystander behavior in traditional bullying found a relation between positive bystander behavior and attachment to the mother (Nickerson, Mele, & Princiotta, 2008). It was hypothesized that via a better communication with parents, adolescents receive role modeling on how to help others (Nickerson et al., 2008), and a better internalization of prosocial messages throughout their development of empathy and prosocial behavior (Waller, Gardner, & Hyde, 2013). Possibly, for cyberbullying, this parental role may be even larger than in traditional bullying, since cyberbullying mainly takes place in the home setting (Slonje & Smith, 2008).

Positive bystander behavioral intention was associated with more assistance seeking coping skills, as in traditional bullying (Batanova, Espelage, & Rao, 2014), and was presumably related to the inclusion of reporting behavior in this summarized index of positive bystander behavior. This type of behavior may also explain why both lower cognitive avoidance, but higher behavioral avoidance coping related to a

higher intention for positive bystander behavior. Reporting the incident to others may make adolescents feel they did not avoid the subject, while at the same time transferring the responsibility to intervene to others.

Self-efficacy to perform positive bystander behavior did not strongly relate to behavioral intentions, and was stronger associated with behavior itself. This is consistent with the Reasoned Action Approach, which assumes an influence of self-efficacy on behavior via behavioral intention, but also a direct influence of self-efficacy on behavior (Fishbein, 2008).

In the present study, *negative bystander behavior* was also only examined among adolescents who had witnessed cyberbullying in the past six months. Using more negative bystander behavior was only predicted by a higher intention to use negative bystander behavior, by lower moral disengagement attitudes of blaming the victim, but by higher moral disengagement attitudes of cognitive restructuring. Again, this confirms the hypothesized importance of intentions in predicting behavior. This implies that with high intentions for negative bystander behavior, higher levels of cognitive restructuring further increases the occurrence of negative bystander behavior. Lower attitudes of blaming the victim related to more intentions of positive bystander behavior, and to a higher use of negative bystander behavior, but not to higher intentions of negative bystander behavior. Possibly, this finding results from some adolescents with positive intentions and low attitudes of blaming the victim, who still performed negative behavior due to lack of other supportive factors. These adolescents would not have deliberately intended to use negative bystander behavior. A higher use of cognitive restructuring was associated with more negative bystander behavior, and not with positive bystander behavior. Similar findings were noted in cyberbullying perpetration, where only moral justification (a form of cognitive restructuring) associated with cyberbullying perpetration, whereas other forms of moral disengagement did not (Pornari & Wood, 2010).

Intentions for negative bystander behavior were examined among all adolescents in the present study. These were most predicted (in decreasing order of importance) by a positive attitude towards passive bystanding, by higher expectations that these actions will provide self-protection and yield personal gains, having more inappropriate social skills, by lower empathic skills and lower problem-solving coping skills. The role of attitudes (Jones et al., 2011) and empathy are in line with earlier research (Barlińska et al., 2013; Barlińska, Szuster, & Winiewski, 2015; Van Cleemput et al., 2014). That attitudes were the most important predictor lends support to the fourth hypothesis. Social self-efficacy, which strongly resembled perceived social skills, did not differentiate in earlier research between those who had provided help and those who did not intervene. It did differentiate between reasons for not intervening: social self-efficacy was higher among those not intervening because they did not consider it their business, than among those not intervening for fear (Olenik-Shemesh et al., 2015). Little research is yet available on other predictors of negative bystander behavior. As in traditional bullying bystander research (Pozzoli & Gini, 2010), using less problem-focused coping skills was associated with more negative bystander behavioral intentions. Motives of self-protection as a predictor for negative bystander

behavior are in line with findings from qualitative research (DeSmet et al., 2012; DeSmet et al., 2014). Our findings, however, also pointed to expectations of bystanders that their negative behavior would help them increase their popularity status and make friends. This is, however, in contradiction with perceptions of adolescents, who instead considered ‘defenders’ as most popular (DeSmet et al., 2012; DeSmet et al., 2014).

Some predictors found in other studies, such as perceived norms (Bastiaensens et al., 2015a), or cyberperpetration (Barlińska et al., 2013) were not confirmed in our study. By using the multidimensional model, some of the variance explained by these predictors may have been captured by other dimensions, such as the relation to the victim, or moral disengagement attitudes as shared determinants between cyberperpetration and bystander behavior. Some factors not previously explored in studies, such as family affluence, quality of life, relation to the bully, family living status, perceived importance of the Internet or mobile phone, did not significantly predict cyberbullying bystander behavior when other factors were accounted for.

In sum, our studies confirmed the influence of various predictors on positive and negative bystander behavior and behavioral intention. Presumably due to the use of a multidimensional model, the influence of some predictors could not be confirmed, as these may have been covered by other factors. Furthermore, some yet unexplored factors significantly related to bystander behavior and behavioral intentions. The significant predictors of positive and negative bystander behavior in cyberbullying showed large convergences with predictors of bystander behavior in traditional bullying, but also shows some divergences in how these factors related to bystander behavior that warrant further investigation. In cyberbullying, for example, using more behavioral avoidance coping strategies related to positive bystander behavioral intention, whereas in traditional bullying bystander behavior, avoidance strategies only related to negative bystander behavior. In cyberbullying, empathy also appears to be a less strong predictor than in traditional bullying bystander research. These findings suggest a lower emotional involvement of bystanders showing positive behavior in cyberbullying compared to those in traditional bullying, which may relate to specific affordances of online media. This needs further exploration.

The multidimensional nature of cyberbullying bystander behavior indicates prevention and intervention programs should work on several, important predictors to maximize the chance of changing cyberbullying bystander behavior. These predictors differ between positive and negative bystander behavior, and both will need attention in a prevention or intervention program. More specifically, prevention and intervention programs to increase positive bystander behavior should focus on increasing intentions to act as a positive bystander, and on factors that facilitate the translation of this intention into behavior. Interventions should clearer point out the harm for the victim, and how positive bystander behavior can reduce this harm. To translate the intentions into positive bystander behavior, training is needed to increase adolescents’ feelings of self-efficacy in ending cyberbullying, e.g. by guided practice with feedback, using increasingly difficult cyberbullying situations (Bartholomew et al., 2011). Adolescents’ perceptions that it is OK not to respond to cyberbullying should be changed, and emphasis

is needed that passive bystanding may increase the harm for the victim (Kowalski et al., 2012). Techniques of perspective taking may aid in attitude change (Bartholomew et al, 2011), and clarify positive attributes of comforting, and negative consequences of passive bystanding. Especially for boys, it may be useful for interventions to support adolescents in generating their own strategies to comfort and report cyberbullying, as currently used in the KiVa program (Williford et al., 2013). This may lead to strategies more consistent with their self-image.

The intention for negative bystander behavior was largely driven by a lack of skills, such as social skills, empathic skills and problem-solving coping skills. These are also the focus of several current anti-cyberbullying programs (see e.g.(Palladino et al., 2012; Wölfer et al., 2013), and these programs may provide inspiration on how to reduce intentions to act as a negative bystander. A peer-led intervention against cyberbullying confirmed that cybervictimization was reduced by increasing peer educators' problem-solving skills (Palladino et al., 2012). Interventions, furthermore, need to reduce moral disengagement attitudes, which may cause negative bystander behavior regardless of lower intentions to do so.

5. Strengths and limitations

Our study investigated a multidimensional model of predictors, based on several theoretical models which have proven useful in explaining cyberbullying, bullying and bystander behavior. The breadth of predictors allowed to pinpoint those elements most likely to effect a change in bystander behavior when addressed in prevention and intervention programs, while cancelling out the potential influence of third variables. The large sample size allowed the reliable testing of such an elaborate model. Including both intention and behavior related to a specific incident, provided insights in adolescents' general inclination to act in a positive or negative way as a bystander, and in context-specific influences related to a real-life incident.

Some limitations should also be noted. Some dimensions were measured by few items and these scales may be optimized by testing a larger item-pool. The study provided limited understanding in what distinguished between classes. Class pro-bullying norms (Pozzoli et al., 2012) or lack of teacher support for positive bystander behavior (Hektner & Swenson, 2012) may contribute to class influences, as was demonstrated in traditional bullying. Pro-bullying norms in class were only examined via aggregated scores of moral disengagement in this study and not via adolescents' perceptions. Examining adolescents' perceptions of class norms, teacher practices, and school climate may contribute to a better understanding of the class-level effects. More multi-informant research may also be valuable, where perceptions of school staff and adolescents are combined to explain multilevel results. Such a multi-informant approach may also be used in future research to assess actual bystander behavior, to avoid potential social desirability answers. Several arguments can, however, be put forward to favor a self-report measure among adolescents for the time being: 1) no evidence was found of social desirability

answers on cyberbullying bystander behavior in qualitative work (DeSmet et al., 2014); 2) it is yet unclear if parents and educators are able to provide a clear indication of adolescents' behavior in cyberbullying incidents due to underreporting of cyberbullying by adolescents (Hinduja & Patchin, 2012; Price & Dalglish, 2010), a lack of a school policy to a.o. record incidents and educator reluctance to communicate about cyberbullying incidents at school (DeSmet et al., 2015); 3) and not all bystander behavior is furthermore visible to peers, and this visibility also affects the choice of bystander behavior (Brody, 2013). Future research wishing to use a multi-informant approach to assess bystander behavior in cyberbullying should thus also investigate sources of potential variance between these multiple informants. Due to low occurrence and little variation in some negative bystander behaviors (e.g. joining, assisting), our combined measure of negative bystander behavior mainly reflects the most common form of negative bystander behavior, i.c. passive behavior. Future research may be needed on larger samples to perform multilevel analyses that distinguish between types of negative bystander behavior, or using a hurdle or zero-inflated model in a Generalized Linear Model analysis (GLM).

It seems that bystander behavior in cyberbullying is mostly explained by individual factors. Possibly, bystander behavior would also differ between incident types. This information was not included in our study and future research should investigate potential differences in determinants by incident type. Further research is needed to explore bystanders' emotional involvement when witnessing cyberbullying, and if these processes warrant a different approach to how bystander behavior is changed in traditional bullying.

6. General conclusions

This study was the first to investigate adolescent cyberbullying bystander behavior from a multidimensional and multilevel perspective. Bystander behavior in cyberbullying was predicted by several dimensions, of which the strongest predictors were intentions and attitudes. This underlines the need for interventions focusing on several factors, whereas most current cyberbullying programs are limited in scope and mainly focus on knowledge (Van Cleemput et al., in preparation). Assuming a broader scope, that also targets behavioral attitudes, outcome expectations, social skills, empathic skills, coping skills, moral disengagement attitudes, self-efficacy and parental monitoring, may thus improve the effectiveness to address bystander behavior and reduce cyberbullying. Our study was moreover the first to document a relation between cyberbullying bystander behavior and several determinants in a quantitative analysis (e.g. self-efficacy to end cyberbullying, coping skills, moral disengagement attitudes, and parental monitoring). Although most evidence was found for individual-level factors, class-norms on blaming the victim and denying responsibility, and information days at school for pupils to e.g. increase Internet Safety also influenced bystander behavior. This emphasizes the need to address cyberbullying within a school context, and to improve adolescent bystander behavior in a whole-school approach, involving adolescents, peers, parents and educators.

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