The interplay of negative experiences, emotions and affective styles in adolescents' cybervictimization : a moderated mediation analysis

The Interplay of Negative Experiences, Emotions and Affective Styles in Adolescents' Cybervictimization: A Moderated Mediation Analysis

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Abstract

Cyberbullying research has uncovered several contextual and personal risk factors for cybervictimization, but their interaction has not received much attention. However, the combined influence of several individual and situational factors and the interplay between them may have a different influence on the risk of cybervictimization than each factor separately. Therefore, this longitudinal moderated mediation study, conducted among a large sample of early adolescents, examined how the events adolescents experience in daily life influence their risk of being victimized online via the emotions they experience, and whether this process is moderated by differences in adolescents' habitual tendencies to regulate their emotions (affective styles). The results indicated that negative events were directly and indirectly, via experiencing negative emotions, related to later cybervictimization. Furthermore, the association between negative events and emotions was moderated by concealing and tolerating affective styles: Adolescents who habitually concealed or tolerated their emotions were more likely to experience negative emotions associated with negative events, especially when they experienced few negative events. These findings illustrate the importance of taking person-environment-interactions into account when studying cyberbullying and support the implementation of prevention and intervention programs that assist students in developing adaptive emotion regulation and coping skills.

Keywords: cyberbullying, cybervictimization, victimization affective styles, emotion regulation

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1. Introduction

Adolescents are avid users of the internet and are often confronted with online risks such as cyberbullying (Mascheroni & Cuman, 2014). Prevalence estimates vary considerable between studies, but in general between one to four out of ten youngsters report to have been victims of cyberbullying, depending on the definition used, participants' age, country of origin, and reporting time frame (Kowalski, Giumetti, Schroeder, & Lattanner, 2014).

Research on cyberbullying has yielded important insights into the antecedents, correlates and consequences related to online victimization and perpetration (Chen, Ho, & Lwin, 2015; Guo, 2016; Kowalski et al., 2014). Many personal as well as contextual factors that influence the risk of cyberbullying victimization have been identified (Baldry, Farrington, & Sorrentino, 2015; Cross et al., 2015; Kowalski et al., 2014). Broadly, these risk factors can be categorized into two groups: factors relating to individual features, such as demographic attributes, personality traits, motives, attitudes, and affect, and factors relating to situational or contextual features, such as family dynamics, parenting styles, peer influences, school climate, and societal norms and values. As such, cyberbullying can be understood from the framework of the socioecological model (Bronfenbrenner, 1979), which views social phenomena as an interaction of social, physical, institutional, cultural, and community contexts as well as individual characteristics.

However, the interaction between individuals and their environment has largely been neglected in most studies on cyberbullying, which have focused either on personal or situational influences. Yet, it could be that some personal factors moderate the influence of contextual factors on cyberbullying involvement, and vice versa. For instance, the negative effect of a

hostile school climate on cyberbullying may be buffered among students who have an optimistic attitude, whereas it may be exacerbated among depressed students. Therefore, studying personal and contextual factors simultaneously may be important to reveal associations and interactions that do not show up when studying the factors in isolation. For this reason, this study aims to take into account the interaction of individual and situational factors by examining how the events adolescents experience in daily life might influence their risk of being victimized online through the emotions they experience and whether this process in moderated by the way adolescents respond to negative events (*affective style*).

1.1 Negative Life Events, Affective Processes, and Cyberbullying

Negative experiences in several life domains have been associated with cybervictimization (Guo, 2016). In the peer domain, one consistently found predictor of cyberbullying is previous experience with offline or online victimization (e.g., Juvonen & Gross, 2008; Kowalski et al., 2014; Li, 2007; Vandebosch & Van Cleemput, 2009; Walrave & Heirman, 2011). Peer rejection and low peer support also seem to play a role in cyberbullying (Bayraktar, Machackova, Dedkova, Cerna, & Ševcíková, 2014; Calvete, Orue, Estévez, Villardón, & Padilla, 2010; Katzer, Fetchenhauer, & Belschak, 2009). In the family domain, low parental support, poor parent-child relationships, and family conflict have been associated with cyberbullying victimization (Ortega-Barón, Buelga, & Cava, 2016; Wang, Iannotti, & Nansel, 2009; Ybarra & Mitchell, 2004). In the school domain, low support from teachers, a negative school climate, and the transition from primary to secondary school have been related to cyberbullying (Kowalski et al., 2014; Ortega-Barón et al., 2016; Price & Dalgleish, 2010). In sum, negative contextual factors, whether they are situated at home, at school, or in contact with peers, seem to increase the risk of becoming a target of negative online practices.

In addition to contextual risk factors such as negative life events, several individual characteristics have been associated with increased risk of cyberbullying involvement. Many of these involve affective or emotional factors such as emotion regulation deficits, lack of empathy, depression, and emotional intelligence (Baroncelli & Ciucci, 2014; Cappadocia, Craig, & Pepler, 2013; Gámez-Guadix, Orue, Smith, & Calvete, 2013; Hemphill & Heerde, 2014; Topcu & Erdur-Baker, 2012; Zukauskiene, Steffgen, Pfetsch, Konig, & Melzer, 2010). Research has also demonstrated the role of specific emotions such as anger and envy in predicting cyberbullying perpetration (Ak, Özdemir, & Kuzucu, 2015; den Hamer, Konijn, Aartsen, Veldhuis, & Spekman, 2015; Hoff & Mitchell, 2009; Lonigro et al., 2015). However, to the best of our knowledge, to date no longitudinal studies have examined the precipitating role of emotions in cybervictimization. Yet, when people experience negative emotions, they might become easy targets of cyberbullying (Vranjes, Baillien, Vandebosch, Erreygers, & De Witte, 2017). Distressed persons may express their emotions in a socially less accepted way, such as posting too much about their emotional state or disclosing too much negativity, which can elicit negative reactions from others (Bellur, High, & Oeldorf-Hirsch, 2008; Forest & Wood, 2012). Additionally, their emotional expression may show that they are vulnerable, making them “easy” victims (Erreygers, Vandebosch, Vranjes, Baillien, & De Witte, 2016; Vranjes et al., 2017).

We propose that one possible path to connect negative events with cyberbullying runs via the experience of negative emotions. Although there is no one-to-one correspondence between events and emotions across individuals, in general negative events (or events that would generally be evaluated as negative) do elicit negative affect (Larson & Ham, 1993). Therefore, we expect that the experience of negative events, albeit at school, at home, or with peers, will generally elicit negative emotions. Furthermore, negative emotions have been associated with

cyberbullying perpetration (den Hamer et al., 2015; den Hamer, Konijn, & Keijer, 2014; Erreygers et al., 2016; Sjursø, Fandrem, & Roland, 2014). In the current study, we aim to examine whether affective processes also play a precipitating role in cyberbullying victimization. Therefore, we hypothesize that:

H1. Negative events predict increased cyberbullying victimization via the experience of negative emotions.

1.2 Emotion Regulation and Affective Styles

People have the capacity to regulate their emotions, i.e., emotion regulation. Through emotion regulation, individuals can influence which emotions they have, their timing, their intensity and their expression (Thompson, 1994). There are many different types of emotion regulation strategies (Gross, 2014), but most research to date has been conducted on reappraisal (or changing your way of thinking about an event) and suppression (or changing your behavioral response to an event). Generally it is found that reappraisal is an adaptive strategy that tends to generate positive outcomes, whereas suppression is disadvantageous (Aldao, Nolen-Hoeksema, & Schweizer, 2010; Cutuli, 2014; Gross, 1998; Gross & John, 2003; Webb, Miles, & Sheeran, 2012). However, which emotion regulation strategy is effective is also supposed to be contingent on the specific situation or emotional cue (Haines et al., 2016; Larsen & Prizmic, 2004). For instance, seeking social support might be an adaptive strategy to cope with fear, but it is probably less effective to regulate anger.

Nevertheless, research has shown that across situations people have individual preferences to use some strategies over others. In other words, individuals seem to differ in the strategies they habitually use, or which strategies they prefer in general across situations and emotions (John & Gross, 2007). These differences in emotion regulation tendencies, or the way

in which individuals habitually use emotion regulation strategies, have been described as affective styles (Davidson, 1998). Affective styles can be seen as stable individual tendencies (or traits) to use particular emotion regulation strategies (Hofmann, Sawyer, Fang, & Asnaani, 2012). Affective styles, as individual tendencies, are proposed to influence the process from experiences to emotional response overall, as a predisposing and moderating factor, whereas emotion regulation strategies are used in specific situations and are more context-dependent (or state-like).

In the emotion literature, three affective styles have consistently been identified: concealing, adjusting, and tolerating (Hofmann & Kashdan, 2010). Adjusting refers to the tendency to regulate and re-adjust affect to accommodate to contextual demands, e.g., being able to cheer oneself up after a negative experience. Concealing refers to the habitual tendency to suppress or conceal affect, e.g., not showing to others that one is sad. Tolerating refers to an accepting and nondefensive attitude towards (potentially distressing) affect, e.g., telling oneself that it is ok to be upset.

Propensities in affective styles are associated with interindividual differences in responding to negative events, well-being, and emotional disorders (Davidson, 2004; Hofmann et al., 2012). A propensity to conceal or suppress affect generally seems to lead to negative outcomes, whereas adjusting and tolerating seem to be more adaptive forms of emotion regulation (Aldao et al., 2010; Gross & John, 2003; Hofmann & Kashdan, 2010; Ito & Hofmann, 2014). Furthermore, research consistently indicates that children who fail to adaptively regulate their emotions show increased rates of ostracism, peer rejection, and victimization, but also of aggression, bullying, and antisocial behavior (Eisenberg et al., 1995; Pope & Bierman, 1999; Schwartz & Proctor, 2000; Shields & Cicchetti, 2001).

In previous research on the association between emotion regulation and cyberbullying, it has been found that preadolescent cyberbullies consider themselves less capable of regulating their emotions (Baroncelli & Ciucci, 2014). Furthermore, adolescents who use negative emotion regulation strategies (self-blame, other-blame, rumination, and catastrophizing) to cope with anger seem to be more inclined to perform cyberbullying behavior (den Hamer & Konijn, 2016). Regarding cybervictimization, it seems that being victimized has a negative influence on subsequent emotion regulation (Feinstein, Bhatia, & Davila, 2014; Gianesini & Brighi, 2015). There is also limited evidence that emotional control (a facet of emotion regulation; the ability to manage one's emotional responses and expression) is a risk factor for later cybervictimization (Hemphill & Heerde, 2014; Hemphill, Tollit, Kotevski, & Heerde, 2015). Whether other emotion regulation tendencies influence the risk of cybervictimization, and whether affective styles moderate the association between negative emotionality and cybervictimization, are questions that have not been answered so far.

Assuming that cyberbullying is related to negative events through individuals' affective reactions to these events, we propose that the interaction between the experience of negative events and a person's affective style will influence which emotions individuals experience and their associated risk of cybervictimization. In other words, we hypothesize that the relationship between negative events and negative emotions will be moderated by affective styles.

In particular, on the one hand we expect that the association between negative experiences and negative emotions will be buffered when adolescents habitually adjust to or tolerate their emotions, as these affective styles have been linked with reductions in negative emotions (Campbell-Sills, Barlow, Brown, & Hofmann, 2006; Gross & John, 2003). On the other hand, we expect that this relationship will be exacerbated when adolescents habitually

conceal their emotions, as trait suppression has been associated with increases in negative emotions (Campbell-Sills et al., 2006; Gross & John, 2003).

H2a. The negative effect of negative events on negative emotions will be buffered if adolescents tend to adjust or tolerate their emotions.

H2b. The negative effect of negative events on negative emotions will be exacerbated if adolescents tend to conceal their emotions.

1.3 This Study

Taking all these findings together, we propose a person x context model of cybervictimization in which negative events are linked to cyberbullying victimization through negative emotions, and the relation between negative events and emotions is influenced by affective styles (*Figure 1*). This moderated mediation model integrates previous findings on the influence of contextual factors (events) and personal factors (emotions and affective styles) on victimization of cyberbullying. The model is tested longitudinally using structural equation modeling, on data from a three-wave panel survey study among early adolescents.

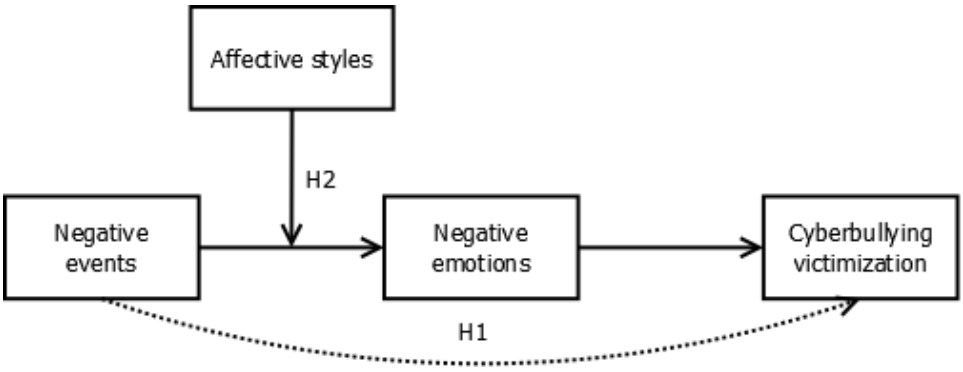

Figure 1. Conceptual model of moderated mediation: Negative events are linked with cyberbullying victimization through the experience of negative emotions, and the association between negative events and emotions is moderated by affective styles.

2. Method

2.1 Participants

This longitudinal panel study comprised three data collection waves, spaced approximately six months apart. The data were collected among early adolescents, because previous research has indicated that cyberbullying reaches a peak in this age group (Kowalski et al., 2014). The participants were recruited via their schools. Schools offering secondary education were randomly selected from the province of [region and country anonymized for peer review]. In total 30 schools were contacted and 13 agreed to participate. For the first data collection (wave 1), which took place in the second semester of the school year, all students from the first grade (equivalent to US grade 7) were surveyed. The second and third data collection (waves 2 and 3) took place during the first and second semester of the following school year, therefore all students from the second grade were surveyed in wave 2 and 3. In total 2,168 Flemish adolescents participated across the three waves. The number of participants per wave was 1,721 in the first, 1,746 in the second and 1,590 in the third wave. Due to practical issues with data collection in the schools, four classes in the first wave, two classes in the second wave, and eight classes in the third wave did not participate. Girls were slightly overrepresented in each wave (54-56%). Participants were on average 13.0 years old in wave 1, 13.6 in wave 2 and 14.1 in wave 3. The majority of the participants were in the general education track and 11 to 14% of participants were in the vocational educational track.

2.2 Procedure

After active written informed consent from the schools' principals, all elective students' parents received written information about the study and were asked to provide passive informed consent. The students themselves also received information leaflets and provided their consent.

All except 14 students received and provided consent. The study received approval by the Ethics Committee for the Social Sciences and Humanities of the [institution anonymized for peer review] (reference number [anonymized]).

The questionnaires were administered in classes during school hours in the presence of the first author and school personnel. A few schools preferred to administer the questionnaires during spare hours by their own staff, who were thoroughly informed about data collection procedures. Students completed paper-and-pencil or equivalent electronic questionnaires and were encouraged to ask any possible questions they had during administration. To maximize their feelings of anonymity and honesty, students were not asked to provide their names and confidentiality of their answers was emphasized. However, to be able to link their questionnaires across waves, students were asked to provide their gender, date of birth, and the first letters of their own first name and the first names of their parents. We explained to the students that these data would not be used to identify them but only to link their questionnaires.

2.3 Measures

2.3.1 Negative Events. Negative events were assessed with the 18 items on negative life events of the Brief Adolescent Life Events Scale (BALES; Shahar, Henrich, Reiner, & Little, 2003). The original scale consists of 36 items to assess both positive and negative life events in six life domains: family life, close friendships, peer relations and extracurricular activities, school, general performance, and health and appearance (e.g., “I argued with a family member”, “I got a bad grade in school”). The items assess experiences in the past month and have to be rated on a 4-point scale ranging from *Never* to *A lot*.

In our study participants had to rate the entire scale of 36 items (18 positive and 18 negative). However some of the statements about positive events (e.g., “I made up with a family

member") were conditional, which confused many participants: If they had not experienced the event in the past month, then they would have to answer *Never*, but this seemed to contradict their idea that if they *had* experienced the event, they would have answered otherwise (e.g., they always make up with a family member after a fight, but in the past month they did not had a fight so they could not have made up for it). In other words, low scores on these items could indicate both the non-occurrence of predisposing negative events (e.g., a fight) as well as the non-occurrence of the following positive event (e.g., making up after fighting). Therefore, only the negative event items were used in this study.

2.3.2 Negative Emotions. After the questions on experienced events, participants were asked to rate how often they had experienced each of four negative emotions (anger, jealous, anxious, and sad) in the past month on a 7-point Likert-type scale ranging from *Never* to *(Almost) all the time*.

2.3.3 Affective Styles. Affective styles were assessed using the Affective Style Questionnaire (ASQ; Hofmann & Kashdan, 2010). This scale assesses individuals' tendencies to regulate emotions on three dimensions: *Concealing*, *Adjusting*, and *Tolerating*. The *Concealing* subscale captures habitual tendencies to suppress or conceal affect (e.g., "I often suppress my emotional reactions to things"); the *Adjusting* subscale refers to the tendency to manage and re-adjust affect to accommodate to situational demands (e.g., "I can avoid getting upset by taking a different perspective on things"); and the *Tolerating* subscale comprises an accepting and tolerating attitude towards affect (e.g., "I can tolerate having strong emotions") (Hofmann & Kashdan, 2010). Participants were asked to rate how they usually behave on a 5-point Likert-type scale ranging from *Not true of me at all* to *Extremely true of me*.

2.3.4 Cyberbullying Victimization. The victimization subscale of the European Cyberbullying Intervention Project Questionnaire (Brighi et al., 2012; Del Rey et al., 2015; Schultze-Krumbholz et al., 2015) was used to measure cyberbullying victimization. Participants had to rate how often they had experienced each of 11 statements about cyberbullying victimization in the past month on a 5-point Likert-type scale ranging from *Never* to *Every day* (e.g., "Someone said nasty things to me or called me names using texts or online messages"). One item ("Someone posted embarrassing videos or pictures of me online") was excluded from analyses because participants explained they often do this to each other for fun on Facebook when it is someone's birthday.

2.4 Analysis

2.4.1 Analytic Strategy[1]**.** Exploratory factor analysis (EFA), confirmatory factor analysis (CFA), and structural equation modeling (SEM) were run in Mplus 8 (Muthén & Muthén, 2017). The items on negative experiences, affective styles, and cyberbullying were non-normally distributed ordinal variables with less than five response categories. Therefore polychoric correlations instead of Pearson correlations were computed for these items (Barendse, Oort, & Timmerman, 2015; Flora & Curran, 2004). Furthermore, we calculated ordinal alphas as reliability coefficients (Gadermann, Guhn, & Zumbo, 2012) for these scales using FACTOR (Lorenzo-Seva & Ferrando, 2006). For the CFAs of affective styles and cyberbullying, the robust weighted least squares (WLSMV) estimator was used (Barendse et al., 2015; Finney & Distefano, 2013; Flora & Curran, 2004). The emotion items were treated as continuous variables as they had more than five response categories (Finney & Distefano, 2013).

The CFA- and SEM-models were evaluated using model fit indices: chi-square (χ^2), root mean square error of approximation (RMSEA), comparative fit index (CFI), and Tucker-Lewis

index (TLI) (Hooper, Coughlan, & Mullen, 2008; Hu & Bentler, 1999). An insignificant value of the χ^2 indicates a good model fit, but the χ^2 is very sensitive to sample size and will often reject the model with large sample sizes (as is the case here). For the other indices, values of < .08 for RMSEA and ≥. 95 for CFI and TLI indicate a good model fit (Hooper et al., 2008).

2.4.2 Missing Data. Of the 2,168 adolescents who participated in at least one wave, 1,157 (53.4%) participated in all three waves, 575 (26.5%) participated in two waves, and 436 (20.1%) only participated once[2]. Of the wave 1-participants, 320 dropped out in wave 2, whereas 345 new students entered the study in wave 2. Between wave 1 and wave 2, several students dropped out because they had to repeat their grade or because they changed schools. In wave 3, 578 wave 1- and/or wave 2-participants dropped-out, whereas 102 new students entered the study.

Participants who participated in all waves were more often female (57% versus 51%) and were slightly younger (0.15 years on average) than participants who participated in one or two waves. They were also less often in the vocational education track than those who did not participate in all waves, which may (partly) be a consequence of the higher number of entire non-participating vocational education classes due to issues during data collection.

To maximize the power of our study and to retain as much data as possible, all participants – whether they participated in one, two, or three waves – were included in analyses. Full information maximum likelihood estimation (FIML) was used to handle missing data, so as to include all available observations and avoid generalizability issues that could result from using only the participants with complete data. The use of FIML to handle missing data has been consistently recommended, especially when the amount of missing data is moderate to large (Newman, 2003; Widaman, 2006). When missingness is related to MAR mechanisms (as we

propose is the case here), there appears to be no important bias in model estimation even when attrition is as high as 60% (Kristman, Manno, & Côté, 2005). Furthermore, it has been shown that estimates of associations between variables are generally not affected by attrition rate, even when more than 50% of the sample drops out (Gustavson, von Soest, Karevold, & Røysamb, 2012).

2.4.3 Measurement Models and Measurement Invariance. Participants completed the scales in each wave of data collection. To be able to compare their answers on these scales over time, longitudinal measurement invariance must hold (Widaman, Ferrer, & Conger, 2010). To test for longitudinal measurement invariance, a procedure of testing successively more restrictive models was followed (see Appendix).

2.4.4 Structural Model. After establishing (partial) measurement invariance of all concepts, we constructed the hypothesized moderated mediation model. Because we wanted to predict changes (increases or decreases) in cyberbullying victimization related to earlier experienced events, related emotions, and affective styles, we used data on events, emotions, and affective styles from one time point to predict cybervictimization six months later, controlling for earlier cybervictimization (see Figure 2). For the measurement of events and emotions, participants were asked about their experiences in the past month. With regard to cybervictimization, participants were asked about their cyberbullying experiences in the past six months. There was a time gap of six months between each wave and (past month's) emotions experienced at the later waves might have little relation to the (past month's) events that happened at the previous wave of measurement, six months earlier. Because adolescents answered the questions about their emotions after they had answered the questions on events, the reported emotions were likely linked to the experienced events in that month (i.e., reported in the

same wave). Unfortunately though, because we assessed the association between events and emotions at the same time point, no firm temporal or causal conclusions on the association can be drawn, as technically they are measured cross-sectionally. For cybervictimization, the participants were asked about their experiences in the past six months, so this period extended right up to the previous wave, lending credibility to predictive power of events and emotions of the previous wave for later cybervictimization.

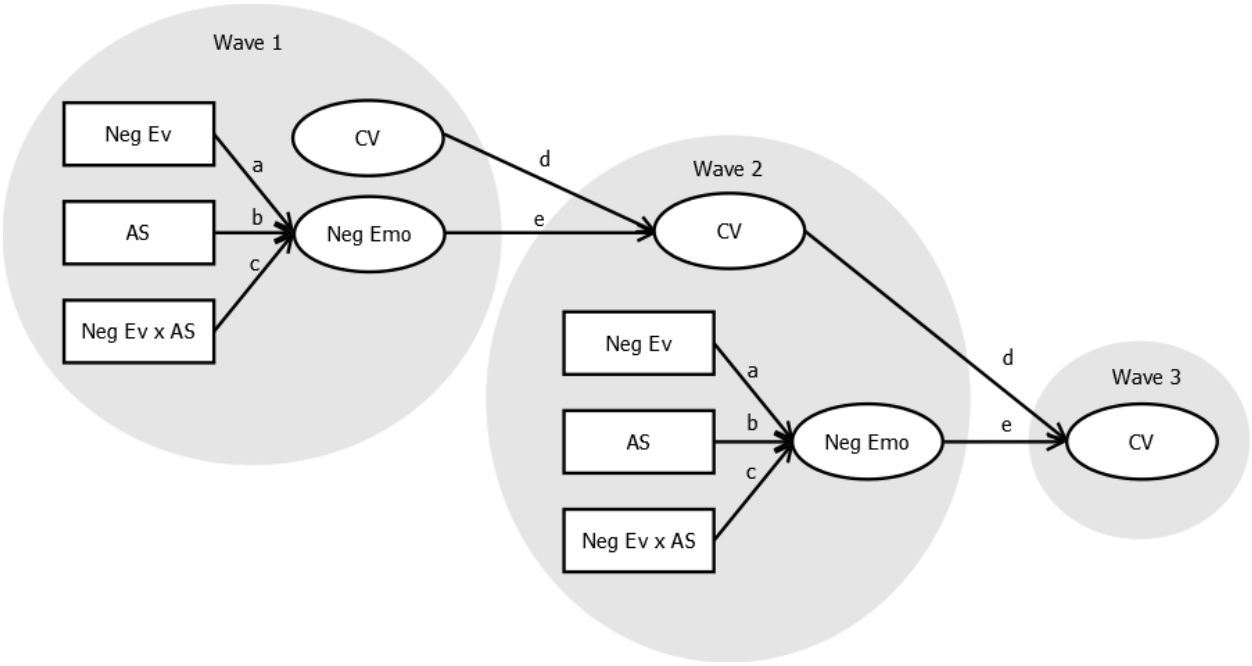

Figure 2. Structural model of moderated mediation*;* Neg Ev = negative events; AS = affective styles; CV = cyberbullying victimization; Neg Emo = negative emotions. Ellipses represent latent variables, rectangles represent manifest variables. Small caps letters indicate paths that are constrained to be equal across time. For clarity, the three subscales of affective styles (concealing, adjusting, and tolerating) are not shown, but these were entered as separate factors.

The data were collected in three measurement waves, therefore we constructed path models from wave 1 to wave 2 and from wave 2 to wave 3. Earlier cybervictimization was controlled for so that the parameter estimates of the regression coefficients of the variables of interest (negative events, negative emotions, and affective styles) would reflect the effect of these variables on the increase or decrease in later cyberbullying victimization. Equality constraints

were imposed on the factor loadings and intercepts or thresholds as discussed above to account for measurement invariance. The path coefficients were also constrained to be equal across time (a model without these constraints did not fit significantly better than the constrained model: χ^2-difference test (df = 10) = 9.289, p = .505, Δ CFI = .002).

Computational problems arose when we estimated a structural equation model with latent factor interactions between events and affective styles. Therefore, we had to rely on manifest variables (mean scores) to test the moderation effect. For events, an average score for negative achievement-related (school, work, and health and physical appearance) and negative interpersonal (family, friendship, and peer-related and extracurricular activities) events was calculated. Then these two scores were averaged to compute a composite score of negative experiences. For affective styles, mean scores were computed for each subscale (*Concealing*, *Adjusting*, and *Tolerating*). After grand-mean centering, interaction effects of these variables were computed by multiplying the negative experiences score with each of the affective styles scores.

3. Results

3.1 Descriptive Statistics

Table 1 displays the variable ranges, means, standard deviations, and reliability coefficients.

Table 1

Descriptive Statistics of the Main Variables

Variable	Item response range	Wave 1			Wave 2			Wave 3		
		M	*SD*	α	*M*	*SD*	α	*M*	*SD*	α
NEv	[1-4]	1.542	0.302	0.857	1.525	0.293	0.880	1.528	0.307	0.898
NEm	[1-7]	2.584	0.972	0.692	2.631	1.013	0.723	2.733	1.040	0.724
AS	[1-5]									
Con		2.750	0.905	0.839	2.811	0.866	0.842	2.806	0.892	0.867
Adj		3.109	1.021	0.890	3.058	0.960	0.883	3.006	0.951	0.882
Tol		3.058	1.019	-	3.083	0.998	-	3.112	0.985	-
CV	[1-5]	1.222	0.355	0.931	1.205	0.342	0.943	1.248	0.382	0.942

Note. *M* = mean, *SD* = standard deviation, α = reliability coefficient (Cronbach's alpha for negative emotions, ordinal alpha for all other variables), NEv = negative events, NEm = negative emotions, AS = affective styles, Con = concealing, Adj = adjusting, Tol = tolerating, CV = cyberbullying victimization. The reliability coefficient for tolerating was not computed because this scale consists of only two items.

3.2 Structural Equation Modeling

To test whether the experience of negative emotions, precipitated by negative events, leads to cyberbullying victimization, and whether this process is moderated by affective styles, moderated mediation structural equation modeling was used (see Figure 2). The model had an acceptable fit to the data: χ^2 (df = 1244) = 3224.547, $p < .001$, RMSEA = .027, CFI = .934, TLI = .930, $R_{CV\ wave2}^2 = .472$, $R_{CV\ wave3}^2 = .364$. Table 2 displays the direct path coefficients.

Table 2

Direct Path Coefficients of the SEM-model of Negative Events, Negative Emotions, Affective Styles, and Cyberbullying Victimization

Path	*b*	*SE*	*p*	*b** [a]	*b** [b]
Negative emotions					
Negative events	**1.898**	0.093	< .001	0.651	0.595
Concealing	**0.193**	0.022	< .001	0.211	0.187
Adjusting	**-0.536**	0.027	< .001	-0.616	-0.536
Tolerating	**0.260**	0.019	< .001	0.315	0.288
Negative events x concealing	-0.070	0.036	.050	-0.025	-0.022
Negative events x adjusting	0.033	0.043	.431	0.014	0.011
Negative events x tolerating	**-0.078**	0.030	.009	-0.032	-0.028
Cyberbullying victimization (w_{i+1})					
Negative events	**0.972**	0.181	< .001	0.175	0.155
Negative emotions	**0.188**	0.065	.004	0.098	0.096
Cyberbullying victimization	**0.515**	0.030	< .001	0.512	0.462

Note. *b* = unstandardized path coefficient, *SE* = standard error, *b** = standardized path coefficient. All variable labels refer to the first point of measurement (wave 1 for the wave 1-2-paths and wave 2 for the wave 2-3-paths), except for cyberbullying victimization w_{i+1}, which refers to the second point of measurement (wave 2 for the wave 1-2-paths and wave 3 for the wave 2-3-paths). Significant ($p < .05$) path coefficients are in bold.

[a] Standardized path coefficients of wave 1-2-pahts.

[b] Standardized path coefficients of wave 2-3-paths.

Firstly, as predicted by hypothesis 1, negative experiences were related to negative emotions, and the experience of negative emotions predicted a later increase in cyberbullying victimization. The direct association of negative events with later cyberbullying victimization was also significant.

To examine whether there was a mediation effect of negative events on later cyberbullying victimization via negative emotions, we conducted a bootstrap analysis with 1000 bootstrap draws (Zhao, Lynch Jr., & Chen, 2010). Table 3 displays the parameter coefficients of the total, indirect, and direct effects and the 95% confidence intervals around these coefficients using bias corrected bootstrap standard errors. A confidence interval that does not include zero indicates a significant effect. As can be seen in Table 3, all the effects were significant.

Table 3

Unstandardized and Standardized Total, Indirect and Direct Effects of Negative Events via Negative Emotions on Cyberbullying Victimization, With 95% Confidence Intervals Using Bias Corrected Bootstrap Standard Errors Obtained After 1000 Bootstraps

	Unstandardized		Standardized, wave 1-2		Standardized, wave 2-3	
Effect	*b*	95% CI (*b*)	*b**	95% CI (*b**)	*b**	95% CI (*b**)
Total	1.328	[0.865, 1.757]	0.239	[0.168, 0.302]	0.212	[0.140, 0.269]
Indirect	0.356	[0.014, 0.663]	0.064	[0.003, 0.119]	0.057	[0.002, 0.103]
Direct	0.972	[0.408, 1.594]	0.175	[0.078, 0.283]	0.155	[0.056, 0.242]

Note. *b* = unstandardized coefficient, *b** = standardized coefficient, CI = confidence interval. Because the paths were constrained to be equal across time, the unstandardized path coefficients were equal for wave 1-2 and wave 2-3.

As expected (H1), there was a significant indirect association of negative events with later cybervictimization via the experience of negative emotions. However, the direct path from negative events to cybervictimization was also significant, even when accounting for the indirect effect via negative emotions. This type of mediation is called complementary mediation and signifies the possible existence of another omitted mediator variable in the relationship between negative events and cybervictimization (Zhao et al., 2010).

Further, as expected affective styles were also consistently related to negative emotions: concealing related positively and adjusting negatively to experiencing negative emotions. Contrary to our expectations, tolerating was also positively related to the experience of negative emotions. In other words, adolescents who often concealed or tolerated their emotions, or did not often use adjusting strategies reported more negative emotions.

Furthermore, the association between negative events and emotions was moderated negatively by tolerating and by concealing (borderline significant at $p = .050$). Examination of the interaction plots (see Figure 3 and 4) shows that the moderating effects of concealing and tolerating affective styles on the association between negative events and emotions are most pronounced at low levels of negative events, where the threshold to experience negative emotions related to negative events is substantially lower for adolescents who habitually conceal or tolerate their emotions. When the number of negative experienced events increases, the differences in affective styles between adolescents decreasingly play a role in the association between negative events and negative emotions. Thus, it seems as if high levels of concealing or tolerating had a small exacerbating effect on the experience of negative emotions associated with negative experiences, but this effect diminished when adolescents experienced more negative experiences.

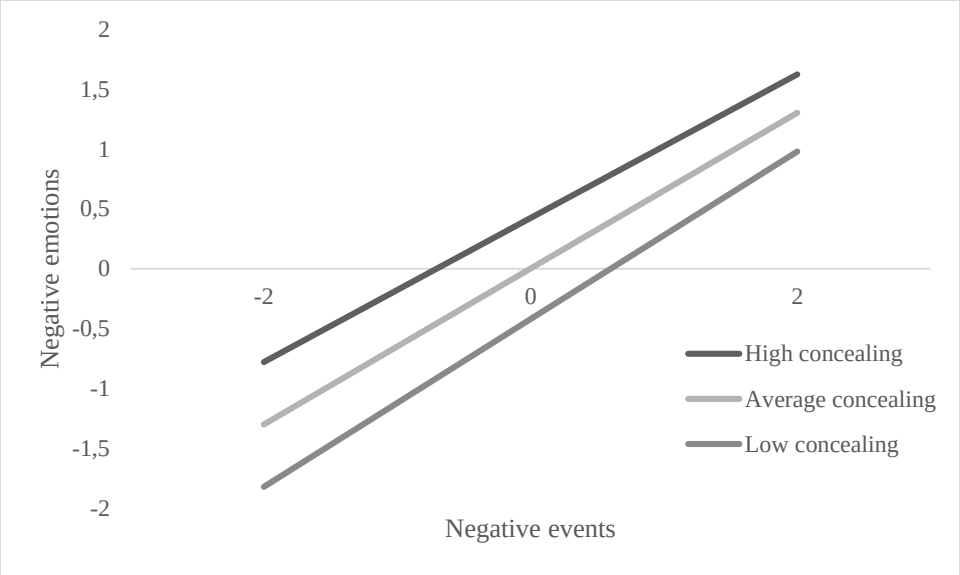

Figure 3. Interaction effect of negative events with concealing on negative emotions (standardized variables). High = 2 standard deviations above the mean; low = 2 standard deviations below the mean.

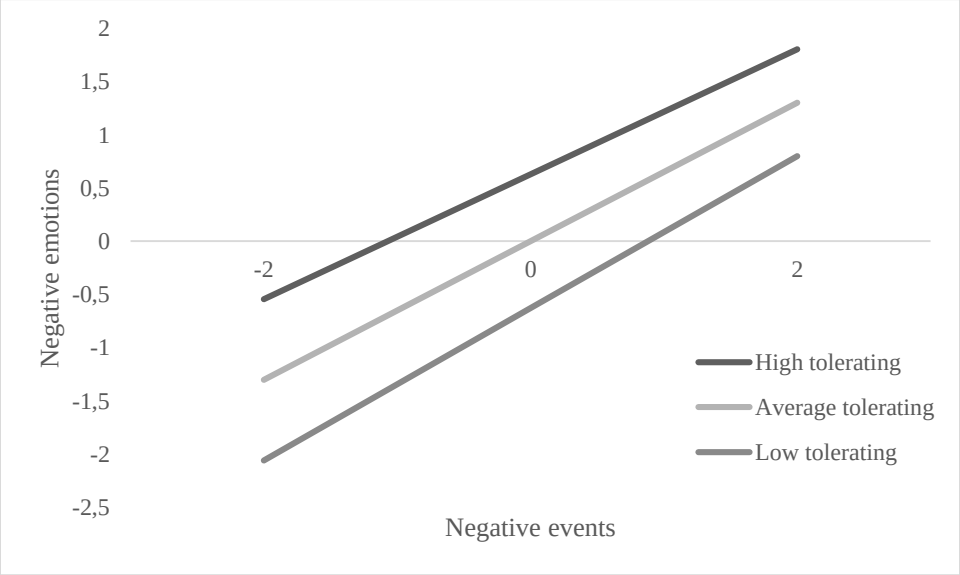

Figure 4. Interaction effect of negative events with tolerating on negative emotions (standardized variables). High = 2 standard deviations above the mean; low = 2 standard deviations below the mean.

4. Discussion

Research on cyberbullying has yielded important insights into the antecedents and consequences of this phenomenon (e.g., Kowalski et al., 2014). Personal and contextual risk

factors that increase the risk of involvement in cyberbullying are being identified (e.g., Guo, 2016), but the interplay between these factors has seldom been addressed. Therefore, the aim of this study was to examine how the interplay of adolescents' experiences of negative events (contextual factors), negative emotions, and affective styles (personal factors) influences their involvement in cyberbullying as victims. Using structural equation models, the present study examined a moderated mediation model in which adolescents' experiences of negative events, moderated by affective styles, predicted cyberbullying victimization via the experience of negative emotions. This model was tested longitudinally on data from three waves of data collection.

Overall, we found support for our model, with direct effects of negative events and affective styles on negative emotions, as well as direct and indirect effects of negative events and emotions on cyberbullying victimization. We also found partial support for moderation effects of affective styles on the association between negative events and emotions.

Firstly, as expected and in line with previous research, negative events were consistently related to negative emotions. Further, adolescents' habitual tendencies to use particular emotion regulation strategies (affective styles) were also consistently linked with negative emotions: concealing and tolerating were positively, and adjusting negatively related to negative emotions. Trying to conceal or suppress emotions has been shown previously to lead to an increase in negative emotions, whereas reappraisal (closely related to adjusting) decreases the experience of negative emotions (Campbell-Sills et al., 2006; Gross & John, 2003). Contrary to previous findings, however, tolerating was also positively related to experiencing negative emotions. In other words, adolescents who had the tendency to have a tolerating and accepting attitude towards their emotions experienced more negative emotions. Although this was not as expected,

it is plausible that accepting and tolerating your negative emotions leads to an increase in the experience of these emotions, as by accepting them, these emotions are allowed to be experienced instead of avoided or moderated. Alternatively, it could be that the Tolerating subscale, which in this study consisted of the items "It's ok if people see me being upset" and "It's ok to feel negative emotions at times", tapped into adolescents' attitudes or perceived social norms towards experiencing negative emotions. In that case, a higher score on Tolerating would indicate a more positive attitude towards experiencing negative emotions, which might be associated with less hesitance to admit experiencing these emotions, which could explain the higher reported experience thereof.

Further, there were two moderation effects of affective styles on the association between negative events and emotions. The association between negative events and the experience of negative emotions was exacerbated when adolescents habitually concealed or tolerated their emotions, especially at low levels of negative events. With an increasing number of negative events reported, the differences among adolescents who habitually concealed or tolerated their emotions at different degrees became smaller. Stated differently, adolescents' emotional reactions to negative events, related to their affective styles, differed the most when they encountered few negative events. When adolescents experienced few negative events, adolescents who habitually suppressed or tolerated their emotions were more vulnerable to experience negative emotions. As the number of negative events increased, this vulnerability factor became less influential. Hence, our findings suggest that when adolescents experience many negative events, how they regulate their emotions becomes less important in the effect on their experience of negative emotions. This finding is surprising, as previous studies have found that emotion regulation strategies generally have a higher impact on affective reactions when stress increases (Boyes, Hasking, &

Martin, 2016; Extremera & Rey, 2015; Flouri & Mavroveli, 2013; Richardson, 2017; Troy & Mauss, 2011). Perhaps there is a curvilinear relationship in which emotion regulation tendencies are generally helpful in dealing with negative events, but this effect disappears at very high levels of negative events, when the stress is too high and the negative impact too large for affective styles to be able to buffer the effect on negative emotions. Further research should be undertaken to explore this negative moderation effect in more depth.

The results of this study further indicate that negative events predict later cybervictimization and that this link is partially mediated via the experience of negative emotions. This finding connects personal with contextual risk factors in predicting cyberbullying involvement, while confirming previous research on the effects of peer, family, and school events and negative emotions on cyberbullying involvement (e.g., Guo, 2016). It suggests that experiencing negative events in several domains can increase the risk of cyberbullying victimization via the experience of negative emotions as a reaction to these events.

Whereas previous studies on the association between cybervictimization and emotions used cross-sectional data or examined the impact of being a victim of cyberbullying on emotions (Ortega et al., 2012; Sjursø et al., 2014; Spears, Slee, Owens, & Johnson, 2009), this study shows that negative emotions also *predict* later cybervictimization. Perhaps the experience and expression of negative emotions, especially fear and sadness, makes adolescents easy targets of cyberbullying, as they can come over as weak and vulnerable when displaying these emotions. Alternatively, the experience of negative emotions may motivate adolescents to engage in risky online behavior as a way to cope with these aversive feelings (Cooper, Agocha, & Sheldon, 2000), making adolescents more vulnerable to become a target of cyberbullying. Indeed, research has found that cybervictims more often engage in risky usage of digital technologies, such as

disclosing personal information online (Erdur-Baker, 2010; Peluchette, Karl, Wood, & Williams, 2015).

On the positive side, when adolescents do not experience negative feelings even though they experienced negative events, perhaps because they use adaptive affective styles such as adjusting, they may not have an increased risk of becoming involved in cyberbullying. This finding is important for intervention strategies, as it suggests that interventions could benefit from teaching adolescents how to adequately cope with negative events and emotions.

4.1 Limitations and Directions for Future Research

The findings of this study have to be interpreted in light of some limitations. Firstly, although we had longitudinal data from three waves, the time interval between these waves was too long to examine the moderated mediation model with data from all three waves. Ideally, the model should be evaluated using responses on events and affective styles at one time point, emotions at a second time point a little later, and cyberbullying involvement at a third (considerably later) time point. However, the time lag of six months between two waves in the present study was too large for the emotions to be contingent on the events of the previous wave. Therefore, we chose to opt for a model in which the data from all the waves were used with paths from wave 1 to wave 2 and from wave 2 to wave 3, so as to retain the maximum amount of information from the data and power for analysis. Future research using more appropriate time lags between events and emotions (for example, one week), could provide a more stringent test of the model.

Secondly, the Affective Style Questionnaire (Hofmann & Kashdan, 2010) has not been used in our population before the start of the study. Unfortunately, we could not replicate the factor structure of the original scale, and several items did not function well in our sample.

Further, pupils did not understand the meaning of some items. Therefore, we had to drop items to obtain a simple factor structure that replicated the original factor structure and subscales. This increased the reliability of the Adjusting and Concealing subscale, but only two items remained for the Tolerating subscale. The scale modification and shortening may have altered the scale so that it did not fully capture the essence of the original scale any more. This could also be part of the reason why analyses with the Tolerating subscale produced different results than expected. Nevertheless, we believe that this scale modification procedure was necessary to obtain coherent and reliable subscales in our sample. Future research could consider the use of another scale to measure affective styles. Additionally, future studies could assess situation-specific emotion regulation strategies and their role in the association between negative emotions and cybervictimization.

Thirdly, students were grouped within classes and classes were grouped within schools, yielding a three-level data structure. Multilevel analyses are most suited to analyze such nested data. However, we already encountered computational problems when we tried to analyze the latent moderated mediation model in Mplus, and adding the multilevel structure to this analysis increased model complexity even further. Moreover, the students changed classes (and sometimes schools) between the waves, complicating the nested structure even further. Therefore, unfortunately, we could not take the multilevel nature of the data into account in the analyses. Fortunately though, methods and statistical programs to analyze multilevel structural equation models are developing rapidly, so we hope that future studies will succeed in analyzing latent moderated mediation models with longitudinal multilevel data.

Fourthly, the generalizability of these results is subject to certain limitations. Although the study sample is representative of its population, namely 13- to 14-year-old Flemish

adolescents, the results might be different in other populations (older or younger, from different cultures). Future research could examine whether the current findings also hold in older or younger samples and samples from other cultural backgrounds.

Finally, our mediation analysis yielded evidence for complementary mediation (both the direct effect and the mediated effect of negative events on cybervictimization exist and point at the same direction). According to Zhao et al. (2010), this suggests the possible existence of a second, omitted mediator in the path from negative events to cybervictimization. To develop a full picture of the process from negative events to cybervictimization, future studies could explore other possible mediators, such as behavioral reactions (e.g., withdrawal) or maladaptive coping strategies. Moreover, the association between negative emotions and cybervictimization may also be mediated and moderated by variables not included in the present study. Future research could examine possible variables underlying this association, such as situation-specific emotion regulation strategies or social sharing tendencies.

4.2 Implications for Practice

This study shows that what adolescents experience in daily life and how they emotionally react to those experiences influences their involvement in cyberbullying as victims. This has important implications for cyberbullying prevention and intervention. On the one hand, negative events in the peer, family, and school domain seem to increase the risk of cyberbullying victimization. Cyberbullying prevention and intervention programs could therefore benefit from taking adolescents' context into account: How do the adolescents function at school, home, and with peers? Are they stressed by negative events in their daily lives? And if so, what can be done to minimize exposure to these negative events? As negative events can happen in several domains, it is important to conduct a detailed analysis of the origin of stress and to work together

with school personnel, family members, and fellow students to decrease negative experiences in adolescents' lives.

On the other hand, not all negative experiences can or should be avoided. Negative events often bring about negative emotions, and it seems that some adolescents become easy targets of cyberbullying when they experience many negative emotions. These adolescents may benefit from learning adaptive strategies to deal with negative experiences and emotions. As previous research has shown that the repertoire of adaptive emotion regulation strategies is smallest in middle adolescence (Zimmermann & Iwanski, 2014), this age group may benefit most from trainings on how to adaptively cope with negative events and emotions, and this may decrease their likelihood to become a cybervictim.

Cyberbullying intervention programs may also help building adolescents' online resilience by exploring and discussing adaptive ways of social sharing of emotions. Computer-mediated social sharing of emotions can increase positive as well as negative affect (Choi & Toma, 2014). Online interactions may increase perceived social support and thereby decrease depressive feelings; however, online interactions may also stimulate co-rumination ("extensively discussing and revisiting problems, speculating about problems, and focusing on negative feelings," Rose, 2002, p. 1830), resulting in increased depressed mood (Frison, Bastin, Bijttebier, & Eggermont, submitted). Research with older adolescents (14-18 years old) has shown that most of the time, they seem to make conscious decisions about if, how, through which communication mode, and with whom they share their emotions online and offline (Vermeulen, Vandebosch, & Heirman, 2017). This is important because when people want to receive social support online, they have to keep the norms of appropriate online social sharing in mind when expressing their needs for emotional comfort (Buehler, 2017; Waterloo, Baumgartner, Peter, &

Valkenburg, 2017). However, younger adolescents might need more guidance to understand the negative effects of co-rumination online and to learn the norms of acceptable online sharing of emotions on different platforms.

5. Conclusion

The use of digital technologies is part of daily life for most adolescents in developed countries, providing them with many opportunities to explore, develop their identities and connect to others, but also with risks such as cyberbullying (Livingstone, Haddon, Görzig, & Ólafsson, 2011). Cyberbullying victimization is associated with several risk factors, related to the individual as well as to his or her context (e.g., Guo, 2016). The findings of the present study add to the cyberbullying research by providing support for the interplay between individual and contextual factors in cybervictimization. In particular, our findings show that adolescents' experience of negative events and their negative emotional reactions to these events may make them vulnerable for cybervictimization.

These findings have important implications for practice and future research. Prevention and intervention strategies could benefit from taking the daily hassles of adolescents involved in cyberbullying into account and from teaching adolescents how to adaptively cope with negative events and regulate their emotions. Future research could examine more closely which specific types of events (e.g., peer-related, school stressors, family problems) are most likely to have an effect on cyberbullying victimization and which coping and emotion regulation strategies are most suited to buffer the effect of negative events and emotions on cybervictimization.

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Appendix

Measurement Invariance Tests

For the measure of negative events and emotions, we followed the steps outlined by van de Schoot, Lugtig, and Hox (2012). The items of these scales are (continuous) item parcels based on mean scales for negative events, or ordinal variables with more than five response categories for negative emotions, and therefore we treated them as continuous (Finney & Distefano, 2013). We used maximum likelihood estimation with robust standard errors (MLR) to control for non-normality of the data. For the measures of affective styles and cyberbullying, we followed the procedure for ordinal Likert-type scales described by Coertjens, Donche, De Maeyer, Vantournhout, and Van Petegem (2012).

To test for measurement invariance with continuous indicators, the series of successively more restrictive models consists of (1) a configural invariance (or baseline) model (with covariances between residuals of equivalent items across waves), (2) a metric invariance model (adding invariant factor loadings across waves), and (3) a scalar invariance model (adding invariant intercepts) (van de Schoot et al., 2012). To test for measurement invariance with ordinal indicators, the series of models consists of (1) a configural invariance (or baseline) model, followed by (2) an invariant factor loadings model, and (3) a model with invariant factor loadings and invariant item thresholds (Coertjens et al., 2012). Models are compared using the relative change in the comparative fit index (Δ CFI), where a value equal to or greater than |.01| indicates that the more restrictive model fits the data less well than the less restrictive model (Cheung & Rensvold, 2002). More restrictive models provide stronger evidence for measurement equivalence, but full equivalence is not necessary to make valid inferences across time, as long as at least two loadings and intercepts are equivalent over time (Byrne, Shavelson,

& Muthén, 1989). If not all loadings or intercepts/thresholds are invariant across time, this is called partial measurement invariance.

For each scale, we first evaluated the measurement model in each wave separately. Then, we evaluated measurement invariance across waves.

Negative Events

Following the steps by the authors of the scale (Shahar et al., 2003), first per life domain (family life, close friendships, peer relations and extracurricular activities, school, general performance, and health and appearance) the average of the three items was computed to create item parcels. Then, a second-order factor analysis with first-level factors for negative achievement-related (school, general performance, and health and appearance) and interpersonal events (family life, close friendships, peer relations and extracurricular activities) and a second-level factor for negative events was executed. We constrained the variances of the two first-order factors to equality for model identification purposes. Maximum likelihood estimation with robust standard errors (MLR) was used to control for non-normality of the data. The model fit statistics (except for the χ^2, which is sensitive to large sample sizes) demonstrated that this measurement model had an acceptable fit in each wave: wave 1: χ^2 (df = 8) = 30.899, p < .001, RMSEA = .041, CFI = .977, TLI = .956; wave 2: χ^2 (df = 8) = 51.163, p < .001, RMSEA = .056, CFI = .962, TLI = .930; wave 3: χ^2 (df = 8) = 48.833, p < .001, RMSEA = .057, CFI = .966, TLI = .936.

Longitudinal measurement invariance across the waves was evaluated by comparing a model of configural invariance (RMSEA = .023, CFI = .978, TLI = .970) with a metric invariance (RSMEA = .022, CFI = .977, TLI = .972), and a scalar invariance model (RMSEA = .026, CFI = .967, TLI = .962). Although the scalar invariance model had an excellent absolute fit to the data, the difference in CFI with the metric invariance model was equal to the critical

value of .01 (Cheung & Rensvold, 2002) and therefore we could only establish partial scalar invariance (RMSEA = .023, CFI = .974, TLI = .970) by releasing one item intercept.

Negative Emotions

A CFA in which the four negative emotions loaded on one factor, yielded an excellent fit in each wave: wave 1: χ^2 (df = 2) = 17.549, p < .001, RMSEA = .067, CFI = .982, TLI = .945; wave 2: χ^2 (df = 2) = 2.324, p = .313, RMSEA = .010, CFI = 1.000, TLI = .999; wave 3: χ^2 (df = 2) = 2.062, p = .357, RMSEA = .004, CFI = 1.000, TLI = 1.000.

Longitudinal measurement invariance was evaluated by comparing a model of configural invariance (RMSEA = .015, CFI = .996, TLI = .994) with a metric invariance (RSMEA = .014, CFI = .996, TLI = .994), and a scalar invariance model (RMSEA = .024, CFI = .986, TLI = .983). Although the scalar invariance model had an excellent absolute fit, Δ CFI with the metric invariance model was equal to the critical value of .01 (Cheung & Rensvold, 2002). By releasing one item intercept (wave 3 jealous), we established partial scalar invariance (RMSEA = .020, CFI = .91, TLI = .988).

Affective Styles

A CFA following the authors' proposed three-factor structure yielded an unacceptable fit in each wave (wave 1: χ^2 (df = 167) = 3992.361, p < .001, RMSEA = .120, CFI = .761, TLI = .728; wave 2: χ^2 (df = 167) = 6159.380, p < .001, RMSEA = .147, CFI = .658, TLI = .611; wave 3: χ^2 (df = 167) = 6232.499, p < .001, RMSEA = .153, CFI = .676, TLI = .631), with multiple items having low and insignificant factor loadings and modification indices suggesting several cross-loadings. Therefore, instead of making numerous post-hoc adjustments based on the modification indices, we ran separate EFAs for each wave and retained only those items that had a loading higher than 0.3 on their designated factor and no cross-loadings in each wave

(Costello & Osborne, 2005). This resulted in five items for Concealing, four items for Adjusting and two items for Tolerating. A CFA with these items yielded a better fit to the data: wave 1: χ^2 (df = 41) = 514.566, p < .001, RMSEA = .086, CFI = .945, TLI = .927; wave 2: χ^2 (df = 41) = 501.668, p < .001, RMSEA = .082, CFI = .948, TLI = .930; wave 3: χ^2 (df = 41) = 454.091, p < .001, RMSEA = .081, CFI = .958, TLI = .944.

Next, we tested for longitudinal measurement invariance. The analysis revealed that longitudinal measurement invariance holds for this scale, as the model with invariant factor loadings and thresholds had a good fit (RMSEA = .038, CFI = .949, TLI = .949) and the Δ CFI for this model versus the configural model (RMSEA = .040, CFI = .953, TLI = .942; Δ CFI = -.004) and the invariant factor loadings model (RMSEA = .039, CFI = .954, TLI = .945; Δ CFI = -.005) did not exceed the critical value of .01 (Cheung & Rensvold, 2002). Thus, the measurement invariant model was used in further analysis.

Cyberbullying Victimization

Model fit statistics of CFAs in which all items loaded on one factor demonstrated that the model fit the data reasonably in each wave, although the RMSEAs were quite high: wave 1: χ^2 (df = 35) = 540.722, p < .001, RSMEA = .092, CFI = .932, TLI = .913; wave 2: χ^2 (df = 35) = 569.094, p < .001, RSMEA = .094, CFI = .920, TLI = .897; wave 3: χ^2 (df = 35) = 593.692, p < .001, RSMEA = .100, CFI = .954, TLI = .940.

We then tested for longitudinal measurement invariance to ascertain that the measurement model was equivalent over time (Coertjens et al., 2012). The analysis revealed that longitudinal measurement invariance holds for this scale, as the model with invariant factor loadings and thresholds had a good fit (RMSEA = .034, CFI = .953, TLI = .957), and the Δ CFI for this model versus the configural model (RMSEA = .039, CFI = .951, TLI = .943; Δ CFI = -.002) and the

invariant factor loadings model (RMSEA = .037, CFI = .954, TLI = .948; Δ CFI = .001) was not larger than the critical value of .01 (Cheung & Rensvold, 2002). Thus, the model with invariant factor loadings and thresholds was used in further analysis.

Footnotes

[1] Participants were nested within classes and classes within schools, which calls for a multilevel analytic strategy. However, due to some participants changing classes or schools between the data collection waves, it was not possible to carry out multilevel analysis.

[2] It must be noted that drop-out and new enrolment could in some cases also be the result of an inability to correctly link students' questionnaires to each other, based on incomplete or incorrect linking data.