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## Development and validation of the Multidimensional Offline and Online Peer Victimization Scale



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### ABSTRACT

Peer victimization can seriously impair one's well-being. As youth spend more time on the Internet, a new form of peer victimization has emerged, namely, online peer victimization. To fully comprehend peer victimization among today's youth, there is a need for a psychometrically sound measure that can assess peer victimization occurring both offline and online. In addition, research has shown that it is also important to distinguish between direct and indirect peer victimization. Thus, the aim of this study was to develop and validate the Multidimensional Offline and Online Peer Victimization Scale (MOOPV). The MOOPV measures how often adolescents experience direct and indirect forms of offline and online peer victimization. The four-factor structure of the MOOPV was confirmed using exploratory ( $n = 325$ ) and confirmatory factor analyses ( $n = 799$ ) among adolescents aged 9–18 years. As expected, higher scores on all subscales were related to lower levels of psychosocial wellbeing, i.e., less life satisfaction, more loneliness and less social self-esteem. In all, the 20-item MOOPV proved to be a valid, reliable and highly useful instrument. Importantly, because the MOOPV is not linked to specific technologies, it will remain viable even after new technologies for online communication become available.

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### 1. Introduction

Peer victimization is an age-old problem. It includes, but is not limited to, being kicked, shoved, bullied, gossiped about, or excluded. Peer victimization seems to peak during school transition phases, especially from primary to secondary education, while gradually diminishing during adolescence (e.g., [Hong & Espelage, 2012](#); [Pellegrini & Long, 2002](#); [Smith, Shu, & Madsen, 2001](#)). Although peer victimization can be seen as a natural and inevitable part of growing up, for some adolescents it seriously impairs their mental and physical well-being ([Hawker & Boulton, 2000](#); [Reijntjes, Kamphuis, Prinzie, & Telch, 2010](#)). Traditionally, peer victimization took place in offline settings particularly in the school or neighborhood. However, as youth increasingly embrace social media, a new form of peer victimization has emerged. This form of peer victimization, where a child or adolescent is victimized by a peer who uses an Internet-based technology, is referred to as online peer victimization.

Research on online peer victimization has been burgeoning in the last decade (e.g., [Juvonen & Gross, 2008](#); [Sabella, Patchin, & Hinduja, 2013](#); [Slonje, Smith, & Frisé, 2013](#); [Tokunaga, 2010](#); [Wang, Nansel, & Iannotti, 2011](#)). Whereas the earliest studies of online peer victimization focused mainly on prevalence rates, more studies have recently been conducted on the correlates of being victimized online ([Cassidy, Faucher, & Jackson, 2013](#)). In line with studies on offline peer victimization, these studies have shown that online peer victimization is negatively related to indicators of psychosocial well-being, including depression (e.g., [Bauman, Toomey, & Walker, 2013](#); [Chang et al., 2013](#); [Kowalski & Limber, 2013](#); [Olenik-Shemesh, Heiman, & Eden, 2012](#); [Schultze-Krumbholz, Jäkel, Schultze, & Scheithauer, 2012](#)), loneliness (e.g., [Jackson & Cohen, 2012](#); [Olenik-Shemesh et al., 2012](#)), and social anxiety (e.g., [Juvonen & Gross, 2008](#); [Navarro, Yubero, Larrañaga, & Martínez, 2012](#)).

The strength of the relationship between online peer victimization and psychosocial well-being seems to depend on the extent to which offline peer victimization is taken into account. When researchers control for offline peer victimization, the relationship between online peer victimization and internalizing problems seems to decrease. For instance, [Dempsey, Sulkowski, Nichols, and Storch \(2009\)](#) showed that online peer victimization had only a weak relationship with social anxiety and was no longer related

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to depression, after controlling for offline peer victimization. Thus, in order to fully understand how online peer victimization contributes to adolescents' psychosocial well-being, it is important to assess both types of peer victimization. In addition, the potentially detrimental effects of both offline and online peer victimization necessitate the availability of psychometrically sound measures of peer victimization in both settings.

Although a number of measures are available for both offline and online peer victimization, some important limitations have been identified. In a systematic review, [Berne et al. \(2013\)](#) identified the strengths and weaknesses of the 44 scales measuring online peer victimization that were available in October 2010. The authors of the review also provided advice and suggested criteria that should be met when developing a new measure. Moreover, the authors identified some important shortcomings of existing scales.

First, many measures include media-specific items. These items assess peer victimization via a specific medium or Internet platform, such as victimization via hurtful emails or a Facebook profile (e.g., [Gradinger, Strohmeier, & Spiel, 2010](#); [Menesini, Nocentini, & Calussi, 2011](#)). Due to the fast-changing media landscape, however, these media-specific measures must be updated continuously. For example, whereas a decade ago emails were very prominent among youth, they are rarely used anymore, replaced by messaging services such as WhatsApp, Snapchat or YikYak ([Bellware, 2014](#)). Medium-specific measures, therefore, become quickly outdated and are difficult to use in longitudinal studies conducted over several years.

Second, information about the psychometric properties of measures of online peer victimization is minimal because few studies have provided information about reliability or validity. For example, in one review, information about internal consistency was available for only 18 of the 44 evaluated measures ([Berne et al., 2013](#)). Only eight studies tested the validity of their measure by investigating the relationship to psychosocial well-being. Without information about reliability or validity, it is difficult to assess a measure's quality. Thus, when new scales are developed, it is necessary to rigidly test the psychometric properties, to clearly outline the steps that have been taken when developing the measure, and to present the psychometric properties in detail.

Third, not only do few studies report internal consistency, statistical support for a measure and its subscales has been limited. When subscales have been distinguished in online peer victimization assessment, authors clustered items based only on theoretical assumptions. Of these 18 studies that provided information about internal consistency, only 11 also reported factor analyses. Furthermore, only one of these studies conducted both an exploratory and confirmatory factor analysis. When subscales are distinguished, it is crucial that researchers "confirm or dismiss theoretically based items through statistical analysis such as factor analysis" ([Berne et al., 2013, p. 329](#)).

Fourth, measures of online peer victimization have not yet distinguished between direct and indirect forms of peer victimization. This is problematic because research on offline peer victimization has shown that it is important to make this distinction. Direct peer victimization is usually the result of aggressive acts during which the victim is physically harmed or verbally threatened. These experiences often involve a direct confrontation between the perpetrator and the victim. Indirect peer victimization, on the other hand, is the result of more covert forms of aggression, such as relational aggression ([Grotperter & Crick, 1996](#)), reputational aggression ([De Los Reyes & Prinstein, 2004](#)) and social exclusion ([Lopez & DuBois, 2005](#)). Although the distinction between direct and indirect aggression is common for offline peer victimization, it has not been made for online peer victimization.

Differentiating between direct and indirect offline and online peer victimization is important for three reasons. First, indirect off-

line peer victimization typically occurs more often than direct offline peer victimization ([Carbone-Lopez, Esbensen, & Brick, 2010](#); [Woods & White, 2005](#)). If a scale does not strike a balance between indirect and direct peer victimization, the reported prevalence rate of peer victimization may be biased toward the dominant form of peer victimization that is measured. Second, a uni-dimensional approach may obscure gender differences. Gender differences in direct offline aggression are typically robust, with boys showing more direct aggression than girls ([Card, Stucky, Sawalani, & Little, 2008](#)). In online peer victimization, however, gender differences are less consistent ([Tokunaga, 2010](#)). Distinguishing between indirect and direct online peer victimization may improve our understanding of gender differences in online peer victimization. Finally, a distinction between indirect and direct peer victimization enables us to more precisely predict the psychosocial consequences of peer victimization. Whereas direct peer victimization has negative consequences for boys and girls, indirect peer victimization seems to affect girls more strongly than boys ([Storch, Nock, Masia-Warner, & Barlas, 2003](#)).

Experiences of peer victimization have often been studied in the context of bullying (e.g., [Olweus, 1997](#)). Researchers in the field of bullying emphasize that aggressive acts should only be considered bullying when they meet the following three criteria: (1) the perpetrator intends to hurt the victim; (2) the aggressive behaviors occur frequently; and (3) there exists a power imbalance which is often related to differences in physique between the victim and his/her perpetrator ([Smith & Brain, 2000](#)). However, these specific characteristics of bullying do not easily transfer to online peer victimization in which face-to-face contact is absent (e.g., [Smith, 2012](#)). For instance, an insulting comment posted on a social network site is a onetime act by the perpetrator but is viewed and possibly commented on many times after the original posting. We are also primarily interested in the victim's perspective, for which a perpetrator's intent-to-harm is less relevant. Although these three criteria have often been used to differentiate bullying from more general experiences with aggression, this distinction is not unanimously accepted neither by traditional nor cyberbullying researchers (e.g., [Dooley, Pyżalski, & Cross, 2009](#); [Smith, 2012](#)). For these reasons, the terms "offline" and "online peer victimization" more closely reflect the negative experiences that we are interested in studying than bullying does.

### 1.1. The current study

In light of the limitations of existing measures of peer victimization, several authors have argued that the assessment of offline and online peer victimization must be systematized (e.g., [Berne et al., 2013](#); [Crothers & Levinson, 2004](#); [Elinoff, Chafouleas, & Sassu, 2004](#); [Tokunaga, 2010](#)). This study aims to address this call by developing a sound measure of direct and indirect offline and online peer victimization, the Multidimensional Offline and Online Peer Victimization Scale (MOOPV). The MOOPV, a self-report measure developed for children 9 years of age and older, is meant to allow for reliable and direct comparisons between youth's offline and online experiences with peer victimization, and should be relatively robust to the ever changing digital media landscape by including items that are not media-platform specific.

All items that were used to create the MOOPV were drawn from previous studies on offline and online peer victimization. In line with [Berne et al.'s \(2013\)](#) advice and recommended criteria for developing new measures of peer victimization, the MOOPV had to meet several quality standards. As such, the development of the MOOPV followed a systematic approach. The four MOOPV subscales (offline and online direct and indirect victimization) had to meet standards of reliability (i.e., high internal consistency,  $>.70$ ; [Nunnally, 1978](#)), utility (i.e., smallest number of items that cover

the scope of the construct, maximum of 5 items), and validity (i.e., cross-population and construct validity).

To create the MOOPV, we followed three steps. First, we conducted a pilot study to reduce the number of initial items. Second, exploratory and confirmatory factor analyses were conducted with the main study sample. Third, we investigated the MOOPV's construct validity by looking at the relationships among the four subscales and measures that were expected to relate to peer victimization: age (e.g., [Hong & Espelage, 2012](#); [Pellegrini & Long, 2002](#); [Smith et al., 2001](#)), gender (e.g., [Card et al., 2008](#)), life-satisfaction (e.g., [Martin & Huebner, 2007](#)), loneliness (e.g., [Hawker & Boulton, 2000](#)), and social self-esteem (e.g., [Card et al., 2008](#); [Hawker & Boulton, 2000](#); [Tokunaga, 2010](#)). We chose these specific measures of psychosocial well-being because they have been previously shown as being associated with peer victimization and allow us to compare our results with previous research.

## 2. Methodology

### 2.1. Pilot study

The initial item pool for the MOOPV included 20 items pertaining to offline victimization (10 direct/10 indirect). These 20 items had all been used in previous research (see [Hawker & Boulton, 2000](#) for an overview of available measures of offline peer victimization). Additionally, we included 33 items reflecting online victimization (15 direct/18 indirect). These items were created to mirror the offline victimization items and were supplemented by items that had also been used in online peer victimization scales available in March, 2010 (e.g., [Huang & Chou, 2010](#); [Juvonen & Gross, 2008](#); [Sourander et al., 2010](#); [Ybarra, Diener-West, & Leaf, 2007](#)). All items in the initial item pool are reported in [Appendix A](#). References for each item are available upon request from the first author.

After receiving approval from the ethics committee of the authors' university, these items were administered to 401 Dutch youth 10–17-years of age via an online survey fielded by a research agency in January 2011 ( $M_{\text{age}} = 13.44$ ,  $SD_{\text{age}} = 2.31$ , 51% boys). To shorten the scale, we excluded items that were endorsed by less than 10% of the sample because the MOOPV should be able to identify differences in victimization patterns in non-clinical populations. As a consequence, two items were excluded for offline victimization and 13 items for online victimization. To limit or avoid (a) overlap between items measuring the same subscale, (b) items that were linked to specific technologies, and (c) items that could not be applied to both offline and online settings, we excluded four additional offline items and six online items (see [Appendix A](#) for a detailed description of this exclusion procedure). As a result, the scale that was used in the main study included 14 offline and 14 online peer victimization items.

### 2.2. Main study

#### 2.2.1. Sample and procedure

Data for the main study were collected at three primary and three secondary schools in both rural and urban areas of The Netherlands in early 2012. Participants included 1124 students between 9 and 18 years of age ( $M_{\text{age}} = 13.28$ ,  $SD_{\text{age}} = 1.90$ ; 48% boys). All parents received a detailed information letter about the study and passive consent was obtained. Students completed informed consent forms and were compensated with a small gift (approximately 1 US dollar). A paper-pencil questionnaire was completed during class under the supervision of a researcher and teacher.

To examine cross-population validity, we divided the main study's sample into two sub-samples. Because confirmatory analy-

ses require larger sample sizes ([Noar, 2003](#)), we used a random 30/70 split to create two subsamples, i.e., sample A,  $n = 325$  and sample B,  $n = 799$ . We conducted an exploratory factor analysis on sample A. The factor structure that emerged from this analysis was then validated by a confirmatory factor analysis using sample B.

#### 2.2.2. The MOOPV

The MOOPV subscales included eight direct and six indirect offline items, and six direct and eight indirect online items. Students rated their victimization experiences by another child or youngster during the past six months along a six-point scale (see [Appendix C](#) for questionnaire instructions). Response categories were (1) *never*, (2) *once in the past six months*, (3) *2–3 times in the past six months*, (4) *about once a month*, (5) *about once a week*, and (6) *almost every day*. In the instructions to the participants, we explained that the items are about their experiences with peers and not with adults. Moreover, as the Internet is more frequently accessed from mobile devices, we made no distinction between access from personal computers, laptops or mobile phones ([Lenhart, Purcell, Smith, & Zickuhr, 2010](#)).

#### 2.2.3. Construct validity

To assess construct validity, we incorporated age, gender, and three measures of psychosocial well-being; these measures included life satisfaction, social self-esteem, and loneliness. Life satisfaction was assessed using the 5-item Satisfaction with Life Scale ([Diener, Emmons, Larsen, & Griffin, 1985](#)), Cronbach's  $\alpha = .87$ . Social self-esteem was assessed with the 5-item social acceptance subscale of the Self-Perception Profile for Adolescents, Cronbach's  $\alpha = .79$  ([Harter, 1988](#); [Valkenburg, Peter, & Schouten, 2006](#)). Loneliness was assessed with five items from the UCLA Loneliness Scale, Cronbach's  $\alpha = .79$  ([Lemmens, Valkenburg, & Peter, 2009](#); [Russell, 1996](#)). Items in each scale were rated along a five-point scale ranging from 1 to 5.

## 3. Results

### 3.1. Exploratory factor analysis (sample A)

The 28 items that were retained after the pilot study were included in the exploratory factor analysis (EFA) using oblique rotation ([Floyd & Widaman, 1995](#)). The initial EFA (EFA1) resulted in a six-factor structure of which the first four factors reflected the hypothesized subscales: direct offline, indirect offline, direct online, and indirect online victimization. The explained variances of each of the first four factors were 38.47%, 8.17%, 7.15%, and 5.73%, respectively. The last two factors were not hypothesized and included miscellaneous items, which were either a mix of online and offline items, or a mix of direct and indirect items. These four offline and three online items were excluded from further analyses. An overview of all factor loadings, explained variance and eigenvalues of EFA1 can be found in [Appendix B](#).

We ran a second EFA (EFA2) using the 21 remaining items that loaded onto the first four factors. This second EFA revealed the four expected factors and no additional factors (see [Table 1](#)). Based on this second EFA, we excluded one item from the direct online victimization factor ("*on the Internet another peer threatened to beat me up*") because its mirror item for offline victimization failed to load onto the direct offline victimization factor. In addition, we retained one item from the indirect online victimization factor ("*another teen acted like I did not exist*"), which loaded more weakly while its mirror item loaded well (.61) onto the indirect offline victimization factor. Furthermore, including this item broadened the scope of the indirect online victimization subscale. As a result, each

**Table 1**  
EFA pattern matrix loadings for MOOPV items (second EFA).

New item #	Initial item #	Item	Factor loadings			
			1	2	3	4
<i>Factor 1: Direct offline peer victimization</i>						
1	off1	Kicked or hit	.88	-.05	.02	-.09
2	off3	Called names	.86	-.05	.05	.02
3	off2	Pushed	.84	.01	.01	.06
4	off4	Insulted	.73	.08	.04	.07
5	off5	Embarrassed	.57	.20	.03	.06
<i>Factor 2: Indirect offline</i>						
6	off8	Excluded me	.09	.89	-.07	.02
7	off12	Did not let me participate	.02	.87	-.03	-.02
8	off9	Did not let me join a conversation	.08	.85	-.03	-.02
9	off14	Did not hang out with me	-.11	.83	.09	.05
10	off11	Acted like I did not exist	.07	.61	.16	.03
<i>Factor 3: Direct online peer victimization</i>						
11	on4	Nasty messages	-.11	.06	.91	-.01
12	on1	Called names	.09	.04	.86	-.13
13	on3	Aggressive messages	.07	-.01	.84	-.10
14	on2	Insulted	.11	-.001	.75	.10
15	on5	Embarrassed	.04	-.09	.61	.28
	on6	Threatened to beat up	.12	.16	.51	.10
<i>Factor 4: Indirect online peer victimization</i>						
16	on10	Did not let me participate	.06	-.07	-.07	.85
17	on9	Did not let me join a conversation	-.01	-.02	.07	.84
18	on8	Excluded me	.12	.18	-.14	.71
19	on7	Told my secrets to others	-.04	.08	.17	.65
20	on13	Acted like I did not exist	-.09	.26	.32	.39
		Eigen value	8.754	2.041	1.980	1.375
		Explained variance	41.68	9.72	9.43	6.55
		Cronbach's alpha – all items	.90	.88	.88	.82
		Cronbach's alpha – excl. item in italics			.88	
		Mean (SD) in whole sample	1.29 (0.65)	1.80 (1.01)	1.44 (0.81)	1.20 (0.53)

subscale included five items. The items and their factor loadings are listed in Table 1. As Table 1 shows, all subscales had good internal reliabilities, with Cronbach's alpha estimates above .80.

### 3.2. Confirmatory factor analysis (sample B)

We used confirmatory factor analysis to confirm whether the four-factor solution is indeed the most adequate solution (in comparison to a one or two-factor model) and to establish cross-population validity. We fitted a hierarchical model in which we expected that the two direct and indirect offline victimization subscales would load onto one latent offline victimization factor and the direct and indirect online subscales would load onto the latent online victimization factor. To evaluate model fit we used the recommended cut-off values, namely .90 for the Comparative Fit Index (CFI) along with a Root Mean Square Error of Approximation (RMSEA) close to .05 (Hoyle & Duvall, 2004; Hu & Bentler, 1999). We also report the Expected Cross-Validation Index (ECVI) to compare the different models. Because a low ECVI reflects a better model fit, we expected multifactorial models to yield a lower ECVI than a uni-factorial or dual-factor model (Hatcher, 1994).

Both the one and two-factor models showed a poor fit, respectively  $\chi^2$  ( $df = 169$ ,  $n = 726$ ) = 3598.86,  $p < .005$ , CFI = .52, RMSEA = .17, ECVI = 5.13 and  $\chi^2$  ( $df = 165$ ,  $n = 726$ ) = 2810.89,  $p < .005$ , CFI = .63, RMSEA = .15, ECVI = 4.05. The hypothesized four-factor model resulted in an acceptable fit,  $\chi^2$  ( $df = 170$ ,  $n = 726$ ) = 1238.35,  $p < .005$ , CFI = .85, RMSEA = .10, ECVI = 1.89. This suggests that the four-factor model best reflects the multidimensionality of the construct.

The fit of the four-factor model improved significantly when errors were allowed to correlate,  $\chi^2$  ( $df = 153$ ,  $n = 726$ ) = 613.02,  $p < .005$ , CFI = .94, RMSEA = .06, ECVI = 1.06. All correlated errors are specified in the note below Fig. 1. Errors were only allowed

to correlate across subscales for mirroring items, e.g., “called names offline” and “called names online.” As expected, the indirect and direct subscales loaded strongly onto the respective second-order factor. Estimates for the final twenty factor loadings are presented in Fig. 1.

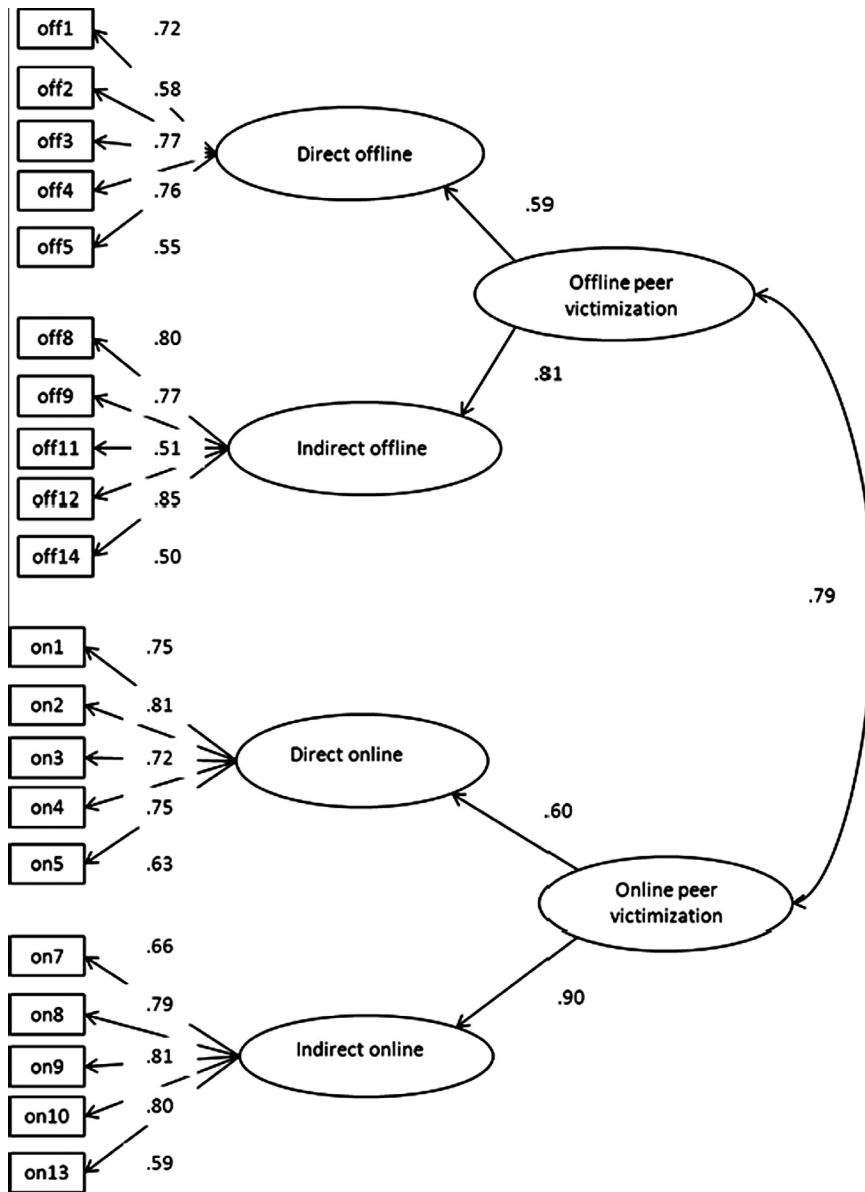
### 3.3. Descriptive statistics of the MOOPV (full main study sample)

The percentages of adolescents who reported experiencing at least one incident of a certain type of peer victimization in the past six months were: 31% (direct offline), 11% (indirect offline), 15% (direct online), and 6% (indirect online). Direct offline peer victimization  $M = 1.80$ ,  $SD = 1.01$ , occurred significantly more often than indirect offline peer victimization,  $M = 1.29$ ,  $SD = 0.65$ . Likewise, direct online victimization,  $M = 1.44$ ,  $SD = 0.81$ , occurred more frequently than indirect online peer victimization,  $M = 1.20$ ,  $SD = 0.53$ , all  $p$  values  $< .001$ . Furthermore, both types of peer victimization, direct and indirect, were more prevalent offline than online.

Inter-correlations among the four subscales ranged from .31 to .58 (see Table 2). Subscales that were congruent in modality (offline/online) or congruent in form (direct/indirect) had higher inter-correlations than non-congruent subscales.

### 3.4. Construct validity of the MOOPV

To evaluate the construct validity of the MOOPV, we investigated how the subscales correlated with age, gender and the three measures of psychosocial well-being (see Table 3). While offline peer victimization was negatively related to age, online peer victimization was either positively (i.e., direct online peer victimization) or not related to age (i.e., indirect online peer victimization). Furthermore, Table 3 shows that boys reported higher levels of direct offline peer victimization than girls. There



Note. Overview of correlated errors: on1-on2, on1-on3, on3-on4, on7-on13, off1-off2, off1-off4, off1-off5, off11-off14, on1-off3, on5-off5, on8-off8, on13-off11

Fig. 1. Confirmatory factor analysis solution for 20 item Multidimensional Offline and Online Peer Victimization Scale.

**Table 2**  
Correlations between MOOPV subscales (5 items per subscale, sample B).

	Offline victimization		Online victimization	
	Direct	Indirect	Direct	Indirect
Offline direct	1			
Offline indirect	.44*	1		
Online direct	.42*	.38*	1	
Online indirect	.31*	.58*	.33*	1

\* Significance level at least at  $p < .05$ .

**Table 3**  
Correlations between MOOPV subscales, age, gender and measures of psychosocial well-being.

	Offline victimization		Online victimization	
	Direct	Indirect	Direct	Indirect
Age	-.08**	-.17**	.11**	.08
Gender	-.20**	.05	.01	.06*
Life satisfaction	-.19**	-.17**	-.17**	-.13**
Loneliness	.29**	.45**	.17**	.28**
Social self-esteem	-.22**	-.35**	-.17**	-.24**

\*  $p < .05$ .

\*\*  $p < .01$ . Gender (0 = male, 1 = female).

were no gender differences for the other three subscales. As expected, respondents who experienced more peer victimization, both offline and online, reported lower levels of life satisfaction, higher levels of loneliness, and lower levels of social self-esteem. Notably, offline peer victimization showed stronger correlations with psychosocial well-being than online peer victimization.

To test whether the effect of different types of peer victimizations differed for boys and girls, we conducted additional partial correlations between each subscale with gender, controlling for

the equivalent subscale (e.g., the relationship between gender and direct online victimization while controlling for indirect online victimization). As expected, relative to boys, girls exhibited stronger relationships between indirect forms of offline and online peer victimization and psychosocial well-being (see Table 4).

#### 4. Discussion

With the Multidimensional Offline and Online Peer Victimization Scale (MOOPV), we set out to develop a balanced, reliable, and valid measure capable of assessing offline and online peer victimization while also distinguishing between direct and indirect modalities. Our findings have provided support for the anticipated multidimensionality of peer victimization. The scale appropriately captures the multidimensionality of offline and online peer victimization with analyses confirming the four-dimensional structure of the MOOPV. This multidimensional approach allowed us to assess specific forms of peer victimization and their relationship with age, gender, and psychosocial well-being.

##### 4.1. Reliability, validity, and utility of the MOOPV

Berne et al. (2013) called attention to the importance of investigating the reliability and validity of new measures of online peer victimization. At that point less than half of the instruments that were developed to assess online peer victimization provided information about either reliability or validity. Both aspects were investigated for the MOOPV. All subscales of the MOOPV had an adequate internal reliability, with Cronbach's alpha estimates above .80. To assess validity, we investigated whether the four forms of peer victimization were negatively related to psychosocial well-being. In line with our expectations, all subscales were significantly related to indicators of psychosocial well-being.

In addition to creating a reliable and valid measure, we also aimed to create a measure with high utility that would not be media specific. Due to the brevity of the MOOPV, it is indeed highly useful and can easily be incorporated in research among adolescents. To better understand the causes and consequences of being victimized online and how these experiences differ from being victimized offline, future research will require longitudinal designs. Studying online peer victimization over a number of years is especially challenging because the platforms that are used change rapidly. Furthermore, researchers often plan to include a wide variety of predictors, outcomes and possible underlying mechanisms. As such, researchers would prefer a limited number of items for each variable of interest. We were able to reduce the number of items to

five items per subscale, and each item that assesses online peer victimization is technology independent. Thus, the final measure is relatively short and includes items that will still be applicable even after teenagers depart today's most popular internet platforms and move on to the next big thing.

The MOOPV, therefore, addresses the most important concerns about current measures of online peer victimization in relation to psychometric properties as addressed by Berne et al. (2013). With its high reliability, demonstrated validity and high utility, the measure has the potential to capture the full range of adolescents' peer victimization experiences, whether they occur offline or online.

##### 4.2. Prevalence of offline and online peer victimization

Overall, the majority of adolescents reported that they were victimized neither offline nor online. Furthermore, in line with earlier research, online peer victimization was experienced less often than offline peer victimization (Sumter, Baumgartner, Valkenburg, & Peter, 2012; Williams & Guerra, 2007). This was the case for both direct and indirect victimization. Thus, children and adolescents are still less likely to experience peer victimization online than offline. Although offline peer victimization occurred more often than online peer victimization, both types of peer victimization were strongly related (cf. Sabella et al., 2013). This means that children and adolescents who are victimized online are more likely to be victimized offline by their peers as well.

##### 4.3. Age and gender differences

While offline peer victimization was negatively associated with age, results indicated the reverse for direct online victimization. This pattern may be reflective of psychosocial development. Advances in psychosocial development enable adolescents to better understand the consequences of their actions, including whether others are hurt. The pattern identified here also suggests that, while youth are able to understand the consequences of offline behavior earlier in life, additional advances in psychosocial development are needed in order to fully comprehend the consequences of online actions. Alternatively, this age effect may also be related to the increased time spent online (Valkenburg & Peter, 2011). As adolescents spend more time on the Internet, they encounter more opportunities to experience online peer victimization. This finding is in line with previous longitudinal research showing that offline peer victimization decreases and online peer victimization increases during early adolescence (Sumter et al., 2012). Future research is needed to test whether psychosocial development or Internet use explain the age differences in peer victimization.

In terms of gender, as expected, boys reported more direct offline victimization than girls, but similar levels of indirect offline victimization (Card et al., 2008). No gender differences were observed for online victimization. In the majority of studies on online victimization, gender differences were either absent or limited (Tokunaga, 2010). One explanation for the absence of gender differences in direct online victimization is that gender differences are mostly observed for direct physical confrontations rather than direct verbal confrontations, with the former being absent in an online setting (Tapper & Boulton, 2004).

##### 4.4. Psychosocial well-being

Construct validity analyses indicated that all forms of peer victimization were related to lower levels of life satisfaction, more loneliness and less social self-esteem in our study. Although the strength of correlations between peer victimization and psychosocial well-being differ across studies, the correlations observed in

**Table 4**  
Partial correlations between peer victimization and psychosocial well-being per gender (direct controlled for indirect, and indirect controlled for direct).

	Offline victimization		Online victimization	
	Direct	Indirect	Direct	Indirect
<i>Boys</i>				
Life satisfaction	-.17**	-.00 <sup>a</sup>	-.02 <sup>a</sup>	-.05
Loneliness	.16**	.28** <sup>a</sup>	.02	.17**
Social self-esteem	-.10*	-.20**	-.03	-.13**
<i>Girls</i>				
Life satisfaction	-.18**	-.12** <sup>b</sup>	-.24 <sup>b</sup>	-.03
Loneliness	.11**	.41** <sup>b</sup>	.05	.28**
Social self-esteem	-.14**	-.29**	-.10	-.22**

Note: Different letter superscripts indicate that correlations are significantly different for boys and girls at  $p \leq .05$ .

\*  $p < .05$ .

\*\*  $p < .01$ .

the current study seem comparable to results from earlier studies. In previous research, effect sizes ranged from small to medium, for both offline peer victimization (see review [Hawker & Boulton, 2000](#)) and online peer victimization. For example, some studies have reported small effects for online peer victimization in the areas of self-concept ([Katzner, Fetchenhauer, & Belschak, 2009](#);  $r = -.15$ ), social acceptance ([Salmivalli, Sainio, & Hodges, 2013](#);  $r = .05$ ), and depression ([Salmivalli et al., 2013](#);  $r = .14$ ). Other studies of online peer victimization observed more moderate effects for the same and other indicators of psychosocial well-being, for example, depression ([Tynes, Rose, & Williams, 2010](#);  $r = .29$ ). After more studies are published, it will be necessary to conduct a meta-analysis before drawing definitive conclusions about the expected strength of the relationship between online peer victimization and psychosocial well-being.

Indirect offline peer victimization seemed more strongly related to low self-esteem and greater loneliness than direct peer victimization. Earlier research has also showed that especially relational victimization, which overlaps with indirect victimization, reduces psychosocial well-being ([Prinstein, Boergers, & Vernberg, 2001](#)). In this context, our findings can be understood in light of the importance of social belonging and social reorientation, which play a central role during adolescence ([Nelson, Leibenluft, McClure, & Pine, 2005](#)). As social relationships are known to be of particular importance to adolescent girls ([Elinoff et al., 2004](#)), we expected indirect victimization to have a stronger effect on girls. In line with these expectations, we found that indirect offline victimization was more strongly related to loneliness and social self-esteem in girls than boys.

Although it has been previously argued that specific characteristics of online communication such as anonymity, a-synchronicity, and accessibility, would make online peer victimization particularly hurtful ([Valkenburg & Peter, 2011](#)), online peer victimization showed similar, and in some cases, slightly weaker relationships with psychosocial well-being than offline peer victimization. Future studies may directly assess how specific characteristics of online communication can affect online peer victimization. Specifically, we must address questions such as whether online peer victimization occurs on public or private online platforms, and whether the online bully is known or unknown to the victim.

## 5. Conclusions

The potentially detrimental effects of offline and online peer victimization necessitate the availability of psychometrically sound measures of peer victimization in both settings. Although there are measures available, these assessments have significant limitations as discussed in this paper. The self-report MOOPV was formed to address these limitations. Results from our study indicate that the MOOPV is a valid and reliable measure of offline and online peer victimization that can distinguish between direct and indirect modalities. Because the MOOPV covers online and offline experiences, as well as indirect and direct victimization, the research community can now answer questions regarding the unique contribution of online victimization to psychosocial well-being, the effects of co-occurring offline and online peer victimization, and how online victimization may exacerbate general peer victimization experiences. Moreover, because the MOOPV is not linked to specific technologies or applications, the MOOPV offers researchers the opportunity to study peer victimizations both currently and in the future. Finally, our study showed that for today's youth, offline and online peer victimization are related and victimization research can no longer be limited to offline experiences.

## Appendices A and B. Supplementary data

Supplementary data associated with this article can be found, in the online version, at <http://dx.doi.org/10.1016/j.chb.2014.12.042>.

## Appendix C. Multidimensional Offline and Online Peer Victimization Scale

### C.1. Description

20-item scale that measures direct and indirect forms of offline and online peer victimization. Each subscale consists of five items.

### C.2. Instructions: offline peer victimization items

The following questions are about your experiences with peers. We are interested in your experiences with peers and not with adults.

How often have the following things happened to you in the past six months?

Another child/young person. ...	
... kicked or hit me	(1)
... called me names	(2)
... pushed me	(3)
... insulted me	(4)
... embarrassed me	(5)
... excluded me	(6)
... did not let me participate	(7)
... did not let me join a conversation	(8)
... did not hang out with me	(9)
... acted like I did not exist	(10)

### C.3. Instructions: online peer victimization items

The Internet refers to Internet via a computer, laptop and Internet via your mobile.

The following questions are about your experiences with peers on the Internet. We are interested in your experiences with peers and not with adults.

How often have the following things happened to you in the past six months on the Internet?

Another child/young person ...	
... send me nasty messages	(11)
... called me names	(12)
... send me aggressive messages	(13)
... insulted me	(14)
... embarrassed me	(15)
... did not let me participate	(16)
... did not let me join a conversation	(17)
... excluded me	(18)
... told my secrets to others	(19)
... acted like I did not exist	(20)

### C.4. Response options

Never, once in the past six months, 2–3 times in the past six months, about once a month, about once a week, and almost every day.

### C.5. Subscale composition

Offline direct:	1, 2, 3, 4, 5
Offline indirect:	6, 7, 8, 9, 10
Online direct:	11, 12, 13, 14, 15
Online indirect:	16, 17, 18, 19, 20

### References

- Bauman, S., Toomey, R. B., & Walker, J. L. (2013). Associations among bullying, cyberbullying, and suicide in high school students. *Journal of Adolescence*, *36*, 341–350. <http://dx.doi.org/10.1016/j.adolescence.2012.12.001>.
- Bellware, K. (2014, March 10). Anonymous message app Yik Yak faces Backlash from an entire city. Retrieved from <[http://www.huffingtonpost.com/2014/03/10/yik-yak-app\\_n\\_4921365.html](http://www.huffingtonpost.com/2014/03/10/yik-yak-app_n_4921365.html)>.
- Berne, S., Frisén, A., Schultze-Krumbholz, A., Scheithauer, H., Naruskov, K., Luik, P., et al. (2013). Cyberbullying assessment instruments: A systematic review. *Aggression and Violent Behavior*, *18*, 320–334. <http://dx.doi.org/10.1016/j.avb.2012.11.022>.
- Carbone-Lopez, K., Esbensen, F., & Brick, B. T. (2010). Correlates and consequences of peer victimization: Gender differences in direct and indirect forms of bullying. *Youth Violence and Juvenile Justice*, *8*, 332–350. <http://dx.doi.org/10.1177/1541204010362954>.
- Card, N. A., Stucky, B. D., Sawalani, G. M., & Little, T. D. (2008). Direct and indirect aggression during childhood and adolescence: A meta-analytic review of gender differences, intercorrelations, and relations to maladjustment. *Child Development*, *79*(5), 1185–1229. <http://dx.doi.org/10.1111/j.1467-8624.2008.01184.x>.
- Cassidy, W., Faucher, C., & Jackson, M. (2013). Cyberbullying among youth: A comprehensive review of current international research and its implications and application to policy and practice. *School Psychology International*, *34*, 575–612. <http://dx.doi.org/10.1177/0143034313479697>.
- Chang, F. C., Lee, C. M., Chiu, C. H., Hsi, W. Y., Huang, T. F., & Pan, Y. C. (2013). Relationships among cyberbullying, school bullying, and mental health in Taiwanese adolescents. *Journal of School Health*, *83*, 454–462. <http://dx.doi.org/10.1111/josh.12050>.
- Crothers, L. M., & Levinson, E. M. (2004). Assessment of bullying: A review of methods and instruments. *Journal of Counseling and Development*, *82*(4), 496–503. <http://dx.doi.org/10.1002/j.1556-6678.2004.tb00338.x>.
- De Los Reyes, A., & Prinstein, M. J. (2004). Applying depression–distortion hypothesis to the assessment of peer victimization in adolescents. *Journal of Clinical Child and Adolescent Psychology*, *33*(2), 325–335. [http://dx.doi.org/10.1207/s15374424jccp3302\\_14](http://dx.doi.org/10.1207/s15374424jccp3302_14).
- Dempsey, A. G., Sulkowski, M. L., Nichols, B., & Storch, E. A. (2009). Differences between peer victimization in cyber and physical settings and associated adjustment in early adolescence. *Psychology in the Schools*, *46*, 962–972. <http://dx.doi.org/10.1002/pits.20437>.
- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment*, *49*, 71–75. [http://dx.doi.org/10.1207/s15327752jpa4901\\_13](http://dx.doi.org/10.1207/s15327752jpa4901_13).
- Dooley, J. J., Pyżalski, J., & Cross, D. (2009). Cyberbullying versus face-to-face bullying. *Zeitschrift für Psychologie/Journal of Psychology*, *217*(4), 182–188. <http://dx.doi.org/10.1027/0044-3409.217.4.182>.
- Elinoff, M. J., Chafouleas, S. M., & Sassu, K. A. (2004). Bullying: Considerations for defining and intervening in school settings. *Psychology in the Schools*, *41*(8), 887–897. <http://dx.doi.org/10.1002/pits.20045>.
- Floyd, F. J., & Widaman, K. F. (1995). Factor analysis in the development and refinement of clinical assessment instruments. *Psychological Assessment*, *7*(3), 286–299. <http://dx.doi.org/10.1037/1040-3590.7.3.286>.
- Grading, P., Strohmeier, D., & Spiel, Ch. (2010). Definition and measurement of cyberbullying. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, *4*(2), article 1. <<http://cyberpsychology.eu/view.php?cisloclanku=2010112301&article=1>>.
- Grotz, J. K., & Crick, N. R. (1996). Relational aggression, overt aggression, and friendship. *Child Development*, *67*(5), 2328–2338. <http://dx.doi.org/10.1111/j.1467-8624.1996.tb01860.x>.
- Harter, S. (1988). *Manual for the self-perception profile for adolescents*. Denver, CO: Department of Psychology, University of Denver.
- Hatcher, L. (1994). *A step-by-step approach to using the SAS system for factor analysis and structural equation modeling*. SAS Press.
- Hawker, D. S. J., & Boulton, M. J. (2000). Twenty years' research on peer victimization and psychosocial maladjustment: A meta-analytic review of cross-sectional studies. *The Journal of Child Psychology and Psychiatry and Allied Disciplines*, *41*(04), 441–455. <http://dx.doi.org/10.1111/1469-7610.00629>.
- Hong, J. S., & Espelage, D. L. (2012). A review of research on bullying and peer victimization in school: An ecological system analysis. *Aggression and Violent Behavior*, *17*(4), 311–322. <http://dx.doi.org/10.1016/j.avb.2012.03.003>.
- Hoyle, R. H., & Duvall, J. L. (2004). Determining the number of factors in exploratory and confirmatory factor analysis. *Handbook of Quantitative Methodology for the Social Sciences*, 301–315.
- Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, *6*, 1–55. <http://dx.doi.org/10.1080/10705519909540118>.
- Huang, Y. Y., & Chou, C. (2010). An analysis of multiple factors of cyberbullying among junior high school students in Taiwan. *Computers in Human Behavior*, *26*(6), 1581–1590. <http://dx.doi.org/10.1016/j.chb.2010.06.005>.
- Jackson, C. L., & Cohen, R. (2012). Childhood victimization: Modeling the relation between classroom victimization, cyber victimization, and psychosocial functioning. *Psychology of Popular Media Culture*, *1*, 254–269. <http://dx.doi.org/10.1037/a0029482>.
- Juvonen, J., & Gross, E. F. (2008). Extending the school grounds?—Bullying experiences in cyberspace. *Journal of School Health*, *78*(9), 496–505. <http://dx.doi.org/10.1111/j.1746-1561.2008.00335.x>.
- Katzer, C., Fetschenhauer, D., & Belschak, F. (2009). Cyberbullying: Who are the victims?: A comparison of victimization in internet chatrooms and victimization in school. *Journal of Media Psychology: Theories, Methods, and Applications*, *21*(1), 25–36. <http://dx.doi.org/10.1027/1864-1105.21.1.25>.
- Kowalski, R. M., & Limber, S. P. (2013). Psychological, physical, and academic correlates of cyberbullying and traditional bullying. *Journal of Adolescent Health*, *53*, S13–S20. <http://dx.doi.org/10.1016/j.jadohealth.2012.09.018>.
- Lemmens, J. S., Valkenburg, P. M., & Peter, J. (2009). Development and validation of a game addiction scale for adolescents. *Media Psychology*, *12*(1), 77–95. <http://dx.doi.org/10.1080/15213260802669458>.
- Lenhart, A., Purcell, K., Smith, A., & Zickuhr, K. (2010). *Social media & mobile Internet use among teens and young adults*. Washington, DC: Pew Internet & American Life Project, pp. 155–179.
- Lopez, C., & DuBois, D. L. (2005). Peer victimization and rejection: Investigation of an integrative model of effects on emotional, behavioral, and academic adjustment in early adolescence. *Journal of Clinical Child and Adolescent Psychology*, *34*(1), 25–36. [http://dx.doi.org/10.1207/s15374424jccp3401\\_3](http://dx.doi.org/10.1207/s15374424jccp3401_3).
- Martin, K. M., & Huebner, E. S. (2007). Peer victimization and prosocial experiences and emotional well-being of middle school students. *Psychology in the Schools*, *44*(2), 199–208. <http://dx.doi.org/10.1002/pits.20216>.
- Menesini, E., Nocentini, A., & Calussi, P. (2011). The measurement of cyberbullying: Dimensional structure and relative item severity and discrimination. *Cyberpsychology, Behavior, and Social Networking*, *14*, 267–274. <http://dx.doi.org/10.1089/cyber.2010.0002>.
- Navarro, R., Yubero, S., Larrañaga, E., & Martínez, V. (2012). Children's cyberbullying victimization: Associations with social anxiety and social competence in a Spanish sample. *Child Indicators Research*, *5*, 281–295. <http://dx.doi.org/10.1007/s12187-011-9132-4>.
- Nelson, E. E., Leibenluft, E., McClure, E., & Pine, D. S. (2005). The social re-orientation of adolescence: A neuroscience perspective on the process and its relation to psychopathology. *Psychological Medicine*, *35*, 163–174. <http://dx.doi.org/10.1017/S0033291704003915>.
- Noar, S. M. (2003). The role of structural equation modeling in scale development. *Structural Equation Modeling*, *10*, 622–647. [http://dx.doi.org/10.1207/S15328007SEM1004\\_8](http://dx.doi.org/10.1207/S15328007SEM1004_8).
- Nunnally, J. C. (1978). *Psychometric theory* (2nd ed.). New York: McGraw-Hill.
- Olenik-Shemesh, D., Heiman, T., & Eden, S. (2012). Cyberbullying victimisation in adolescence: Relationships with loneliness and depressive mood. *Emotional and Behavioural Difficulties*, *17*, 361–374. <http://dx.doi.org/10.1080/13632752.2012.704227>.
- Olweus, D. (1997). Bully/victim problems in school: Facts and intervention. *European Journal of Psychology of Education*, *12*, 495–510. <http://dx.doi.org/10.1007/BF03172807>.
- Pellegrini, A. D., & Long, J. D. (2002). A longitudinal study of bullying, dominance, and victimization during the transition from primary school through secondary school. *British Journal of Developmental Psychology*, *20*(2), 259–280. <http://dx.doi.org/10.1348/026151002166442>.
- Prinstein, M. J., Boergers, J., & Vernberg, E. M. (2001). Overt and relational aggression in adolescents: Social-psychological adjustment of aggressors and victims. *Journal of Clinical Child & Adolescent Psychology*, *30*(4), 479–491. [http://dx.doi.org/10.1207/S15374424JCCP3004\\_05](http://dx.doi.org/10.1207/S15374424JCCP3004_05).
- Reijntjes, A., Kamphuis, J. H., Prinzie, P., & Telch, M. J. (2010). Peer victimization and internalizing problems in children: A meta-analysis of longitudinal studies. *Child Abuse Neglect*, *34*(4), 244–252. <http://dx.doi.org/10.1016/j.chiabu.2009.07.009>.
- Russell, D. W. (1996). UCLA loneliness scale (version 3): Reliability, validity, and factor structure. *Journal of Personality Assessment*, *66*, 20–40. [http://dx.doi.org/10.1207/s15327752jpa6601\\_2](http://dx.doi.org/10.1207/s15327752jpa6601_2).
- Sabella, R. A., Patchin, J. W., & Hinduja, S. (2013). Cyberbullying myths and realities. *Computers in Human Behavior*, *29*, 2703–2711. <http://dx.doi.org/10.1016/j.chb.2013.06.040>.
- Salmivalli, C., Sainio, M., & Hodges, E. V. (2013). Electronic victimization: correlates, antecedents, and consequences among elementary and middle school students. *Journal of Clinical Child & Adolescent Psychology*, *42*(4), 442–453.
- Schultze-Krumbholz, A., Jäkel, A., Schultze, M., & Scheithauer, H. (2012). Emotional and behavioural problems in the context of cyberbullying: A longitudinal study among German adolescents. *Emotional and Behavioural Difficulties*, *17*, 329–345. <http://dx.doi.org/10.1080/13632752.2012.704317>.

- Slonje, R., Smith, P. K., & Frisé, A. (2013). The nature of cyberbullying, and strategies for prevention. *Computers in Human Behavior*, 29, 26–32. <http://dx.doi.org/10.1016/j.chb.2012.05.024>.
- Smith, P. K. (2012). Cyberbullying: Challenges and opportunities for a research program—A response to Olweus (2012). *European Journal of Developmental Psychology*, 9(5), 553–558. <http://dx.doi.org/10.1080/17405629.2012.689821>.
- Smith, P. K., & Brain, P. (2000). Bullying in schools: Lessons from two decades of research. *Aggressive Behavior*, 26(1), 1–9. [http://dx.doi.org/10.1002/\(SICI\)1098-2337\(2000\)26:1<1::AID-AB1>3.0.CO;2-7](http://dx.doi.org/10.1002/(SICI)1098-2337(2000)26:1<1::AID-AB1>3.0.CO;2-7).
- Smith, P. K., Shu, S., & Madsen, K. (2001). Characteristics of victims of school bullying. *Peer Harassment in School: The Plight of the Vulnerable and Victimized*, 332–351.
- Sourander, A., Klomek, A. B., Ikonen, M., Lindroos, J., Luntamo, T., Koskelainen, M., et al. (2010). Psychosocial risk factors associated with cyberbullying among adolescents: A population-based study. *Archives of General Psychiatry*, 67(7), 720–728. <http://dx.doi.org/10.1001/archgenpsychiatry.2010.79>.
- Storch, E. A., Nock, M. K., Masia-Warner, C., & Barlas, M. E. (2003). Peer victimization and social-psychological adjustment in Hispanic and African-American children. *Journal of Child and Family Studies*, 12(4), 439–452. <http://dx.doi.org/10.1023/a:1026016124091>.
- Sumter, S. R., Baumgartner, S. E., Valkenburg, P. M., & Peter, J. (2012). Developmental trajectories of peer victimization: Off-line and online experiences during adolescence. *Journal of Adolescent Health*, 50(6), 607–613. <http://dx.doi.org/10.1016/j.jadohealth.2011.10.251>.
- Tapper, K., & Boulton, M. J. (2004). Sex differences in levels of physical, verbal, and indirect aggression amongst primary school children and their associations with beliefs about aggression. *Aggressive Behavior*, 30(2), 123–145. <http://dx.doi.org/10.1002/ab.20010>.
- Tokunaga, R. S. (2010). Following you home from school: A critical review and synthesis of research on cyberbullying victimization. *Computers in Human Behavior*, 26(3), 277–287. <http://dx.doi.org/10.1016/j.chb.2009.11.014>.
- Tynes, B. M., Rose, C. A., & Williams, D. R. (2010). The development and validation of the online victimization scale for adolescents. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, 4(2), 1–17.
- Valkenburg, P. M., & Peter, J. (2011). Online communication among adolescents: An integrated model of its attraction, opportunities, and risks. *Journal of Adolescent Health*, 48(2), 121–127. <http://dx.doi.org/10.1016/j.jadohealth.2010.08.020>.
- Valkenburg, P. M., Peter, J., & Schouten, A. P. (2006). Friend networking sites and their relationship to adolescents' well-being and social self-esteem. *CyberPsychology & Behavior*, 9(5), 584–590. <http://dx.doi.org/10.1089/cpb.2006.9.584>.
- Wang, J., Nansel, T. R., & Iannotti, R. J. (2011). Cyber bullying and traditional bullying: Differential association with depression. *Journal of Adolescent Health*, 48, 415–417. <http://dx.doi.org/10.1016/j.jadohealth.2010.07.012>.
- Williams, K. R., & Guerra, N. G. (2007). Prevalence and predictors of Internet bullying. *Journal of Adolescent Health*, 41(6), S14–S21. <http://dx.doi.org/10.1016/j.jadohealth.2007.08.018>.
- Woods, S., & White, E. (2005). The association between bullying behaviour, arousal levels and behaviour problems. *Journal of Adolescence*, 28(3), 381–395. <http://dx.doi.org/10.1016/j.adolescence.2004.09.002>.
- Ybarra, M. L., Diener-West, M., & Leaf, P. J. (2007). Examining the overlap in internet harassment and school bullying: Implications for school intervention. *Journal of Adolescent Health*, 41, S42–S50. <http://dx.doi.org/10.1016/j.jadohealth.2007.09.004>.