

# What Explains Correlates of Peer Victimization? A Systematic Review of Mediating Factors

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**Abstract** Being accepted by peers is central to health and wellbeing among adolescents whereas being the subject of peer/bullying-victimization can be perceived as significant interpersonal stress, resulting in compromised adjustment concurrently and long-term. Unfortunately, little is known about mechanisms that explain why peer victimization goes “under the skin”. This systematic review aims to summarize the research on mediating pathways. A total of 65 articles were selected that explicitly examined mediation of associations between peer victimization in adolescence and concurrent and later outcomes. Most studies were based on North American and European samples and focused on internalizing or school-related outcomes. Mediation appears to be more stable by emotional states and symptoms than self-perceptions and attributions but results vary by outcome. Limitations concern the cross-sectional design of most studies, geographic restriction, and widespread use of self-reports for assessments of exposure, mediator, and outcome.

**Keywords** Peer victimization · Mediation · Internalizing · Externalizing · Academic · Systematic review

## Introduction

Researchers interested in adolescent development have paid sustained attention to the role of peers and the quality of adolescents’ peer relationships. This is natural given that

adolescents spend more time with age-mates than parents, both in school and in leisure activities (Larson and Richards 1991; Zeijl et al. 2000), peers are highly salient models for desirable (Fitzgerald et al. 2012) and undesirable behaviors (Fortuin et al. 2015), and peer groups provide contexts where more intimate friendships and first romantic experiences are established. Moreover, adolescence is a sensitive period for processing and handling social interactions (Blakemore and Mills 2014) and peers play a particularly influential role for emotional, social, academic, and behavioral development (Brown and Larson 2009; Steinberg and Monahan 2007; Steinberg and Morris 2001). Not surprisingly, problems in peer relationships are often linked to maladjustment and compromised well-being, both concurrently and over time. While there is little doubt that adolescents’ peer relationships are important for later development, little systematic information is available concerning the mechanisms that explain why peer experiences go “under the skin” and “into the mind”. This is unfortunate because this information is needed in order to be able to prevent potentially negative consequences of peer problems.

Like other forms of interpersonal difficulties such as divorce, workplace mobbing, or family conflict, peer problems can be a significant source of stress, broadly defined as “environmental demands [that] tax or exceed the adaptive capacity of an organism, resulting in psychological and biological changes that may place persons at risk for disease” (Cohen et al. 1995, p. 3). Peer problems originate in interactions between individuals and the peer group and are distinct from friendship problems, which occur in the dyadic relationship between two individuals. Talking to the friend and trying to come to a mutually satisfying solution are common strategies to handle friendship problems in adolescence whereas peer problems

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tend to be associated with anger, avoidance, and withdrawal (Seiffge-Krenke 2011). Thus, distinguishing between friendship and peer stress is necessary. The present review focuses on peer victimization, which constitutes not only a common problem among adolescents but also a central topic in research on peer-related precursor of development.

Peer victimization is defined as intentional and repeated infliction of harm on a person by one or more peers that are usually more powerful in some regard, with studies reporting prevalence rates of up to 45 % of adolescents having experienced peer victimization (e.g., Craig et al. 2009). Several reviews support the notion that victims of bullying fare worse in terms of emotional (Ttofi et al. 2011; Wu et al. 2015) and psychosocial adjustment (Hawker and Boulton 2000), are more likely to develop psychotic (van Dam et al. 2012), psychosomatic (Gini and Pozzoli 2009), and externalizing problems (Reijntjes et al. 2011), are at greater risk for suicidal ideation and behaviors (Holt et al. 2015; van Geel et al. 2014), and perform less well academically (Nakamoto and Schwartz 2010). Why is this the case? Which processes are at play?

## The Current Study

The central aim of this review is to contribute to a more systematic understanding of why peer victimization is linked to problems in emotional, social, academic, and behavioral development by synthesizing studies that examined mediating pathways. Mediating pathways are understood in the statistical sense, that is, variables or processes that are thought to explain a part of the variance between peer victimization in adolescence and outcomes. Studied quite frequently, no attempt has yet been made to systematize these mediation studies although they may provide insight into why peer experiences “go under the skin” and “into the mind”, thus eventually inform interventions that target the negative sequelae of peer victimization.

## Methods

### Search Strategy

Two databases (Web of Knowledge, EBSCOhost) were searched during April and May 2016, adhering to the following strategy: the string “peer victimization” OR “bullying-victimization” OR bully\* OR victim\* was entered as search term in the first step. Results were subsequently narrowed down by searching within the obtained results for the following: Adjustment OR Maladjustment OR Psychological OR Internalizing OR Externalizing OR

Outcomes. In the third step, results were further narrowed down by searching within the obtained results for the following: adolesc\* OR teen\* OR youth and in the fourth step, results were restricted by searching within results for the following: mediat\* OR indirect. Quotation marks were used around terms consisting of more than one word. This search procedure was followed by a further restriction to journal articles written in English language. No limitations with respect to publication year were applied.

Next, title scans were performed through which evidently unrelated studies or studies based on animals or on clinical samples were excluded. Studies with ambiguous titles were retained at this stage. The title scan was followed by an abstract scan in which evidently unfitting studies were excluded. Again, studies with ambiguous abstracts were retained. The remaining studies were scanned in full-text and studies that did not examine peer victimization as independent variable, its relation to an outcome, as well as mediation of this proposed association, were excluded.

### Inclusion and Exclusion Criteria

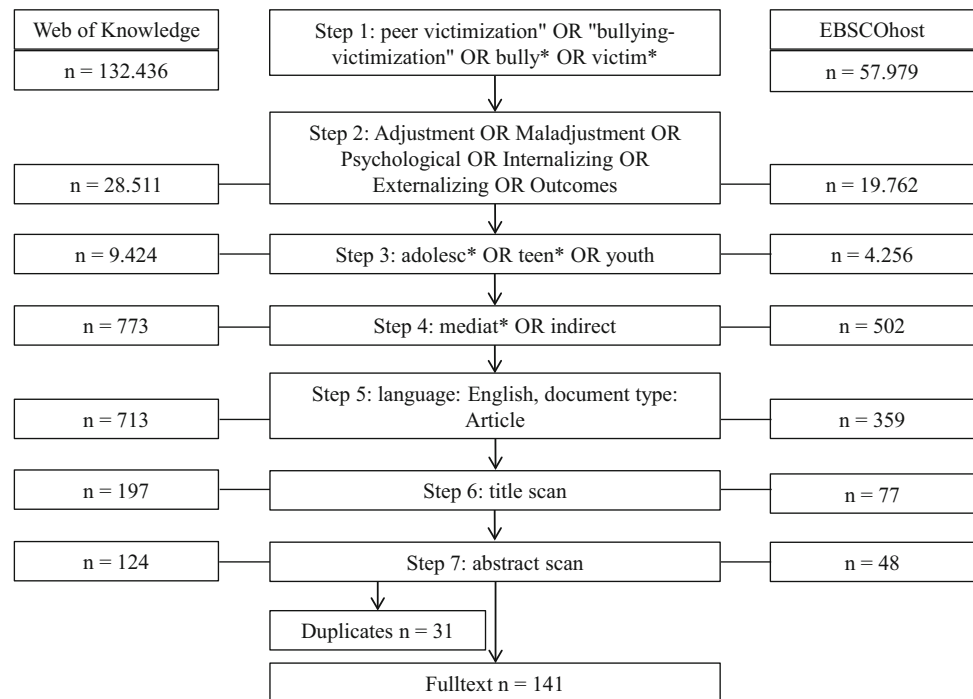
Studies were eligible for review if they focused on correlates of peer victimization and explicitly studied explanatory variables (mediators) or indirect effects through third variables. Adolescence was defined in accordance with the World Health Organization as ages 10–19 and only studies in which exposure was measured during this period were included in this review. Studies with several measurement occasions or where samples spanned many ages were included if at least one assessment was between the ages of 10 and 19 or where the mean age of the sample was reported and fell within this range. Only original empirical work was included, thus meta-analyses, annotations, comments, and reviews were excluded. Studies were also excluded if they focused on specific populations such as ethnic or sexual minorities or clinical samples, did not address the association between peer victimization and a correlate conceptualized as outcome of peer victimization, or did not study mediation of this link or indirect effects. In keeping with the statistical definition of mediation and requirements regarding formal testing, we also excluded qualitative studies from this review.

## Results

### Study Extraction

The flow diagram (Fig. 1) details the selection procedure. After removing duplicates that emerged in both databases, 141 potentially relevant results for peer victimization were obtained and were submitted to full-text study, which

**Fig. 1** Flow diagram depicting study selection. *Note* The search in Web of Knowledge was based on “all collections”, not “core collections” as is default since July 2016



resulted in further exclusion of 76 articles on the following grounds: articles were reviews, did not study peer victimization as predictor or independent variable but instead only as mediator or dependent variable, participants were too young or too old at the time of peer victimization exposure, studies focused on more general concepts such as violent victimization or negative life events and included peer victimization in addition to various other risks into one single score, or no mediation or indirect effects were tested. The subsequent detailed synthesis is thus based on 65 articles.

### Summary of Included Studies

Details about geographic region where the study was conducted, sample sizes, age group, measures of victimization, outcome, and mediator, as well as details on study and analytic design are presented in Table 1. The majority of the 65 studies that met the inclusion criteria were conducted in the United States (52 %) and other English-speaking contexts such as Canada (5), Australia (5), New Zealand (1), and the United Kingdom (4), as well as European countries (13), but there were also studies based on samples from India (Narayanan and Betts 2014) and Korea (Moon et al. 2012). Seventeen studies were based on short- and long-term longitudinal data, two studies used daily assessments over a two-week period, one study was conducted online only with participants from all over the

world, one study was based on experimental data, and one study used functional neuroimaging. The remaining studies (68 %) were based on cross-sectional data.

Measurements of peer victimization varied greatly but several studies used instruments developed by Crick and colleagues (Crick and Bigbee 1998; Crick and Grotpeter 1995; Cullerton-Sen and Crick 2005) and many authors relied on Olweus' definition and measurement of bullying (Olweus 1996). With respect to outcomes, 19 studies focused solely on facets of internalizing problems such as depression, anxiety, and loneliness, six studies examined self-harm and suicide ideation as outcomes, two studies examined substance use, five studies solely examined externalizing problems, and four studies examined outcomes related to weight and eating behavior in relation to peer victimization. School-related outcomes such as academic achievement and school adjustment were examined in 14 studies. Eight studies included a combination of the outcomes listed above and seven studies focused solely or additionally on other outcomes including somatic complaints, post-traumatic symptoms, self-esteem, self-efficacy, and young people's willingness to befriend another victim.

Studies differed in whether they reported decreasing sizes of direct effects between peer victimization and outcome under study or Sobel-z-statistics or comparable test statistics, with some studies reporting both. Some studies estimated nested path or structural equation models

**Table 1** Studies (n = 65) on which the qualitative review is based

	Setting	Sample size	Age at exposure	Victimization measure	Mediator(s)	Study design	Analytic procedure
<i>Internalizing outcomes</i>							
Baker and Bugay (2011)	Turkey	144	11–15	22-items from Life in School Checklist (Arora 1999)	Loneliness	CS	Test of indirect effect
Barchia and Bussey (2010)	Australia	1285	12–14.9	Frequency of relational, physical, verbal	Depression rumination, collective efficacy, self-efficacy	LT	Test of indirect effect
Bosacki et al. (2007)	Canada	7290	13–18	4-items from School Life Questionnaire (Marini 1998)	Self-esteem	CS	Test of indirect effect
Casement et al. (2014)	US	120	11–12	9-items from Peer Experiences Scale (Vernberg et al. 1999)	Neural response during reward anticipation	fMRI	Test of indirect effect
Chen and Graham (2012)	US	1106	M = 17.9	4-items from Peer Victimization Scale (Neary and Joseph 1994), 2 items added	Self-blame	CS	Test of indirect effect
Dao et al. (2006)	US	186	11–14, M = 12.3	2 subscales from AISS (Kerbs et al. 2005)	Perceived risk of victimization	CS	Baron and Kenny
Hamilton et al. (2015)	US	259	12–13, M = 12.9	SEQ (Crick and Grotpeter 1995) relational	Hopelessness	LT (3 TP with 9 months intervals)	Test of indirect effect
Hamilton et al. (2016)	US	410	12–13, M = 12.8	SEQ (Crick and Grotpeter 1995) relational	Depressive symptoms, social anxiety	LT (3 TP with 9 months intervals)	Test of indirect effect
Hamilton et al. (2013)	US	225	12–13, M = 12.8	SEQ (Crick and Grotpeter 1995) relational	Hopelessness	LT (3 TP with 9 months intervals)	Test of indirect effect
Hamlat et al. (2015)	US	218	M = 12.4	SEQ (Crick and Grotpeter 1995) relational	Body esteem	LT (2 TP with 8 months interval)	Test of indirect effect
Estevez et al. (2005)	Spain	983	11–16	6-items, based on Emler and Reicher (1995) <sup>a</sup>	Communication with father and mother, teacher perception of adjustment	CS	Test of indirect effect
Herrero et al. (2006)	Spain	973	11–16, M = 13.7	6-items, based on Mynard and Joseph (2000)	Communication with father and mother, teacher perception of adjustment	CS	No test of peer victimization as predictor
Hoglund and Leadbeater (2007)	Canada	337	11.5–13.9, M = 12.5	SEQ (Crick and Grotpeter 1995) relational and physical	Hostile attributions, social perspective awareness, social skills	CS	Test of indirect effect
Mathieson et al. (2014)	US	499	10.9–15.2	TR 3-item (Cullerton-Sen and Crick 2005)	Rumination	CS	Test of indirect effect
McLaughlin et al. (2009)	US	1065	6th–8th grade	18-items (Prinstein et al. 2001)	Emotion dysregulation	LT (3 TP with 3 and 4 months intervals)	Test of indirect effect
Turner et al. (2010)	US	1000	11–17	6-item peer and sibling from JVQ (Finkelhor et al. 2005)	Self-concept	LT (3 TP with 1 and 2 year interval)	Test of indirect effect

**Table 1** continued

	Setting	Sample size	Age at exposure	Victimization measure	Mediator(s)	Study design	Analytic procedure
Undheim et al. (2016)	Norway	2464	12–15, M = 13.7	3 items (Alsaker 2003)	Coping	CS	Baron and Kenny
Woodhouse et al. (2012)	US	2091	11th grade	Peer nominations (Parkhurst and Asher 1992)	Social acceptance	CS	Test of indirect effect
Zimmer-Gembeck (2016)	Australia	366	10–14, M = 12.1	7-items (SEQ, Crick and Grotpeter 1995) relational and overt	Rejection sensitivity	CS	Test of indirect effect
<i>Self-harm and suicide ideation outcomes</i>							
Claes et al. (2015)	Belgium and NL	785	7th–12th, M = 15.6	5 items (Olweus 1991)	Depressive mood	CS	Test of indirect effect
Garisch and Wilson (2010)	NZ	325 females	16–23, M = 16.7	Frequency of physical, verbal, relational, cyber	Alexithymia, depression	CS	Test of indirect effect
Hay and Meldrum (2010)	US	426	10–21, M = 15	6 items traditional, 3 items cyber	Negative emotions	CS	Test of indirect effect
Henry et al. (2014)	US	2936	6th–12th grade	5 items relational, 2 items physical, 2 items threat, 1 item cyber (Multisite Violence Prevention Project 2004)	Meaning in life	CS	Test of indirect effect
Lereya et al. (2013)	UK	4810	8 + 10	5 items physical, 4 items relational	Borderline personality disorder, depressive symptoms	LT (several assessments across adolescence)	Test of indirect effect
Litwiller and Brausch (2013)	US	4693	14–19, M = 16.1	3 items (Centre for Disease Control and Prevention 2008)	Substance use, violent behavior, sexual behavior	CS	Test of indirect effect
<i>Externalizing outcomes</i>							
den Hamer et al. (2013)	NL	892 males only	13.7,	10 items from Peer Victimization Scale (Schwartz et al. 2002)	Anger/frustration, exposure to antisocial media content	CS	Path model
Herts et al. (2012)	US	1065	11–14	18 items (Prinstein et al. 2001)	Emotion dysregulation	LT (3 TP over 4 year period)	Test of indirect effect
Hinduja and Patchin (2007)	Internet-based	1388	14.7	8 items cyber-victimization	Strain		Baron and Kenny
Moon et al. (2012)	Korea	2817	14	6 items	Anger	LT (2 TP with 1 year interval)	Baron and Kenny
Povedano et al. (2015)	Spain	1795	11–18, M = 14.2	20 items, based on Mynard and Joseph (2000)	Loneliness, non-conformist ideal reputation, transgressions of social norms	CS	Path models
<i>Substance use outcomes</i>							
Archimi and Kuntsche (2014)	Switzerland	4565	12–17	1 item ‘frequency in past couple of months’	Drinking motives	CS	Test of indirect effect

**Table 1** continued

	Setting	Sample size	Age at exposure	Victimization measure	Mediator(s)	Study design	Analytic procedure
Topper et al. (2011)	UK	324	13–15, M = 13.9	3 items (Olweus 1996)	Drinking motives	LT, (2 TP with 1 year interval)	Test of indirect effect
<i>Eating-related outcomes</i>							
Farrow and Fox (2011)	UK	376	11–14, M = 12.8	15 items experiences of bullying (own)	Emotional symptoms	CS	Test of indirect effect
Mamun et al. (2013)	Australia	1694	14	1 item (have you ever been victimized)	No path specified	LT (2 TP with 7 years interval)	
Sampasa-Kanyinga et al. (2014)	Canada	3035	11–20 years	1 item traditional, 1-item cyber	Depression	CS	Test of indirect effect
Sampasa-Kanyinga and Willmore (2015)	Canada	5145	7th–12th grade, M = 14.6	1 item traditional, 1-item cyber	Psychological distress	CS	Test of indirect effect
<i>School-related outcomes</i>							
Espinoza (2015)	US	118	9th–12th grade	5 items cyber-victimization (daily)	Distress, anger, shame	CS daily assessments	Test of indirect effect
Espinoza et al. (2012)	US	368	9th and 10th grade, M = 15	2 items school-victimization (daily)	Distress	CS daily assessments	Test of indirect effect
Galand and Hospel (2013)	Belgium	400	11–16, M = 13	10 items adaption from Mynard and Joseph (2000); Olweus (1993)	Depression, self-efficacy	CS	Path models
Graham et al. (2006)	US	1985	M = 11.5	Peer nominations	Self-blame, maladjustment	CS	Test of indirect effect
Harper et al. (2012)	US	509	6th–8th grade	12 items (Harper et al. 2012)	Coping effectiveness	CS	Test of indirect effect Bayesian approach
Hoglund (2007)	Canada	337	11.5–13.9, M = 12.5	SEQ (Crick and Grotpeter 1995) relational and physical	Internalizing, externalizing, school engagement	CS	Test of indirect effect
Jenkins and Demaray (2015)	US	140	6th–8th grade	23 items (Reynolds 2003)	Academic self-concept	CS	Test of indirect effect
Lepore and Kliever (2013)	US	498		12 items (Farrell et al. 2000)	Sleep	LT (2 TP with 6 months interval)	Test of indirect effect
Loukas et al. (2012)	US	500	10–14	7 items SEQ-PR adapted to self-report (Crick and Bigbee 1998)	Conduct problems, depressive symptoms	LT (2 TP with 1 year interval)	Test of indirect effect
Raskauskas et al. (2015)	US	231	12–15, M = 13.2	8 items based on Kochenderfer and Ladd (1996)	Social self-efficacy, self-esteem	CS	Baron and Kenny
Rueger and Jenkins (2014)	US	670	7th and 8th grade	12 items (total score and verbal, physical, relational separately)	Psychological adjustment	LT with 2 TP, 6 months interval	Test of indirect effect

**Table 1** continued

	Setting	Sample size	Age at exposure	Victimization measure	Mediator(s)	Study design	Analytic procedure
Thijs and Verkuyten (2008)	NL	1895	6th grade	4 items (Verkuyten et al. 1997)	Academic self-efficacy, global self-esteem	CS	Baron and Kenny
Totura et al. (2013)	US	469	6th–8th grade, M = 12.9	9 items based on Olweus (1996)	Psychological distress, student engagement		Test of indirect effect
Wang et al. (2011)	US	3436	7th and 8th grade, M = 13.6	6 items based on Olweus (1996), 2 added	Classmate support	CS	Baron and Kenny
<i>Several outcomes</i>							
Giannotta et al. (2012)	Italy	155	12–13, M = 12.2	SEQ (Crick and Grotpeter 1995) relational and physical	Threat appraisal	CS	Test of indirect effect
Harper (2012)	US	100 (parent–child dyads)	10–12, M = 11	SEQ (Crick and Grotpeter 1995) completed by adolescent and parent	Characterological self-blame, behavioral self-blame, peer blame	CS	Test of indirect effect
Newman et al. (2010)	US	1339	17–29, M = 18.8	2 items based on Olweus (1996)	Problem-focused coping, emotion-focused coping, avoidant coping	CS	Test of indirect effect
Perren et al. (2013)	US	478	5th–7th grade, M = 10.6	Peer nominations	Hostile and self-blaming attributions	LT, 3 TP with 1 year intervals	Test of indirect effect
Singh and Bussey (2011)	Australia	2161	10–15, M = 12.7	9 item self-report, peer nominations	Self-efficacy	CS	Test of indirect effect
Ybrandt and Armelius (2010)	Sweden	204	12–15, M = 13.9	2 items (teasing)	Self-esteem	CS	Baron and Kenny
You and Bellmore (2012)	US	414	10th grade	9 items (Prinstein et al. 2001)	Friendship qualities	CS	Test of indirect effect
Lopez and DuBois (2005)	US	508	6th and 7th grade	21 items (Lopez 1997)	Negative peer self-evaluation, global self-derogation	CS	Test of indirect effect
<i>Other outcomes</i>							
Boulton (2013)	UK	120	7th–9th grade	Peer nominations	Beliefs about befriending victims	Experiment	Test of indirect effect
Ma and Bellmore (2012)	US	831	9th–11th grade	Peer nominations physical and relational	Internalizing	CS	Baron and Kenny
Guzzo et al. (2014)	Italy	488	16–17, M = 16.6	4 items from Olweus (1993)	Alexithymia	CS	Test of indirect effect
Lodge and Feldman (2007)	Australia	379	10–13, M = 11	4 items appearance-related	Avoidant coping	CS	Test of indirect effect
Narayanan and Betts (2014)	India	393	14–20, M = 15.6	36 items verbal, social, physical (Parada 2000)	Resilience	CS	Test of indirect effect



**Table 1** continued

	Setting	Sample size	Age at exposure	Victimization measure	Mediator(s)	Study design	Analytic procedure
Herge et al. (2016)	US	1162	13–19	12 items traditional (Reyes and Prinstein 2004), 9 items cyber (Landoll et al. 2015)	Depressive symptoms	LT (3 TP with 9 months intervals)	Test of indirect effect
Guarneri-White et al. (2015)	US	108	10–15, M = 12.10	SEQ (Crick and Grotpeter 1995) relational and physical, parent and child reports DIAS-V (Björkqvist et al. 1992)	General depression, anxious depression, PTSD symptoms	CS	Test of indirect effect

CS cross-sectional, LT longitudinal, TP time points, IE indirect effect, AISS Adolescent Index for School Safety, SEQ Social Experiences Questionnaire, JVQ Juvenile Victimization Questionnaire, DIAS-V Direct and Indirect Aggression Scales, TR teacher report

<sup>a</sup> This is probably incorrect as the same measure is cited in Herrero as assessing deviant behavior. It is likely that the authors intended to refer to Mynard and Joseph (2000)

and compared changes in model fit in relation to loss or gain in parsimony. A number of recent studies made use of the PROCESS macro for SPSS (Hayes 2012), which estimates indirect effects and indicates their confidence intervals, thus allowing conclusions about the significance of mediation pathways.

In the following, studies are described as reporting mediation if the Sobel-z-statistic or other indirect effect measures are statistically significant or if systematic comparisons between model fit indices were conducted. If mediation is inferred solely from the decreasing size of the direct effect between peer victimization and outcome when controlling for the mediator (Baron and Kenny 1986) or from connecting two correlations with each other but not confirmed by calculating the significance of the indirect effect, this is pointed out explicitly.

## Results of Individual Studies

### *Mediators on Associations Between Peer Victimization and Internalizing Outcomes*

The subsequent section includes all studies that tested mediation of associations between peer victimization and internalizing problems, regardless of whether one type (usually depression or depressive symptoms) or a combination (usually depression and anxiety) of symptoms were examined. In a broad sense, emotion-related constructs, self-perceptions, and emotional and behavioral reactions to peer victimization were studied as potential explanations for internalizing problems in victimized adolescents. For instance, hopelessness was examined in two studies, one of which did not find a link between relationally oriented peer victimization and the mediator (Hamilton et al. 2013), thus did not test for mediation, whereas the second study (based on the same sample) showed that hopelessness mediated

the link between peer victimization and depression but only among adolescents with low future orientation (Hamilton et al. 2015). Other emotion-related mediators included rejection sensitivity, which describes anxious expectations of not being accepted or of being overtly rejected. Victimized adolescents scored higher on rejection sensitivity, which, in turn, was linked to greater loneliness and more depressive symptoms (Zimmer-Gembeck et al. 2014). More broadly, emotion dysregulation, a construct comprising of poor emotional understanding, dysregulated expression of anger and sadness, and rumination, mediated the association between relational and reputational victimization and internalizing symptoms (McLaughlin et al. 2009).

Separating different internalizing symptoms, Baker and Bugay (2011) showed that self-reported loneliness mediated the effect of victimization in a model with depression as outcome. Hamilton et al. (2016) explored depression as mediator between peer victimization and anxiety and, vice versa, anxiety as mediator on the link between peer victimization and depression. Only the latter was empirically supported, that is, victimized adolescents were at greater risk for depression, which, in turn, increased their social anxiety risk. This model used longitudinal data and controlled for earlier levels of maladjustment, which lends support to the strength of the association.

Self-perceptions were examined frequently but empirical support for their role in explaining associations between peer victimization and internalizing problems is inconsistent. Some studies reported mediation by self-esteem and self-evaluations (Lopez and DuBois 2005; Raskauskas et al. 2015; Ybrandt and Armelius 2010) whereas others did not formally test for mediation because of lacking direct associations between self-esteem/self-concept and peer victimization (Bosacki et al. 2007; Turner et al. 2010). One study examined body esteem as a specific facet of



self-esteem and found a mediating role among early maturing Caucasian and late maturing African American girls only (Hamlat et al. 2015).

Associations between peer victimization and internalizing problems were further mediated by cognitions and behaviors relatively proximal to peer victimization as such. For instance, Barchia and Bussey (2010) showed that victimized adolescents believed less strongly that their school was able to counter violence, which also resulted in less help-seeking. On the other hand, victimized adolescents were more likely to ruminate. These pathways (rumination on the one hand and belief in collective efficacy and enlisting help on the other) explained in this study the association between victimization and depression. As shown by Dao et al. (2006), victims of bullying perceived a greater threat of future victimization, which explained their increased risk for psychological distress, but indirect effects were not explicitly calculated in this study. Self-blame was studied by Chen and Graham (2012) and Perren et al. (2013). Chen and Graham found support for the notion that victimized adolescents often blamed themselves for what had happened, which contributed to greater risk for maladjustment. In contrast, Perren and colleagues found no support for associations between victimization and self-blame, or self-blame and internalizing problems.

Finally, three studies examined mediators reflective of adolescents' social relationships. In detail, Woodhouse et al. (2012) showed that social acceptance mediated the association between peer victimization and loneliness whereas associations between various other social behaviors and loneliness were not explained by social acceptance. The authors also reversed the model and explored whether victimization mediated the association between social acceptance and loneliness but no support was found for this model. Estevez et al. (2005) examined openness, avoidance, and offensive tone in communication with parents as well as teacher's perception of the adolescent in terms of adjustment, integration at school, and with respect to the student–teacher relationship as mediators of peer victimization effects on psychological distress. Only adolescents' communication with fathers explained this link. Somewhat puzzling, Herrero et al. (2006) tested almost the same model and based their study on the same data and as Estevez et al. (2005), but did not report or account for the previously reported indirect effect from peer victimization to psychological distress through father communication, thus it is not clear whether this mediation is stable to changes in the structure of the rest of the model.

Quite different from these mostly questionnaire based studies is a neuroimaging study by Casement et al. (2014), who showed differences between victimized and non-victimized girls in activation of the medial prefrontal cortex, which is implicated in memory and decision making. The

authors had hypothesized that individual response variation in this area would be related to depression, thus potentially constituting a mediating pathway between peer victimization and internalizing problems, but explicit mediation tests did not support this pathway.

#### *Mediators on Associations Between Peer Victimization and Self-Harm and Suicide Ideation*

Four of the six studies that focused on self-harm and suicide ideation examined depressive symptoms and similar constructs (negative affect and alexithymia, which describes difficulty in identifying one's own emotions) as mediators and all four studies reported significant effects (Claes et al. 2015; Garisch and Wilson 2010; Hay and Meldrum 2010; Lereya et al. 2013). The fifth study (Henry et al. 2014) examined meaning in life as mediator but found support only for females, whereas the sixth study (Litwiller and Brausch 2013) showed that substance use and violent behavior partly explained the association between traditional and cyber-victimization and suicidal behavior.

#### *Mediators on Associations Between Peer Victimization and Externalizing Outcomes*

Externalizing outcomes varied greatly. For instance, den Hamer et al. (2013), Moon et al. (2012), Povedano et al. (2015) examined whether victimized adolescents were more likely to become perpetrators of bullying, whereas Herts et al. (2012) examined aggression as correlate of peer victimization, and Hinduja and Patchin (2007) focussed on delinquency.

In more detail, Povedano et al. (2015) found that victimized adolescents were more lonely and less likely to comply to school norms, which explained their greater risk for violent behavior towards schoolmates, though indirect effects were not tested explicitly. Moon et al. (2012) examined whether anger explained why victims sometimes turn to bullying others but found no support for this mediator, which contrasts den Hamer et al. (2013) who did find that anger mediated the association between being a victim and being a bully. The latter study also examined another mediator—use of media with antisocial content-, arriving at a “cyclic process model” where anger and frustration were interpreted as immediate reactions to victimization that resulted in greater use of media with antisocial content, which, eventually, increased the risk to become a perpetrator of cyberbullying.

Turning to studies that explored problem behaviors as more general correlate of peer victimization, Herts et al. (2012) showed that victimized adolescents were less well able to regulate their emotions, which placed them at

greater risk for aggressive behavior, whereas Hoglund and Leadbeater (2007) found that lower social perspective awareness, that is, adolescent's awareness of their peers' thoughts and feelings, functioned as mediator between peer victimization and aggression.

Several studies (Harper 2012; Lopez and DuBois 2005; Perren et al. 2013; Singh and Bussey 2011; Ybrandt and Armelius 2010; You and Bellmore 2012) utilized Achenbach's measures (Achenbach et al. 2003), specifically the Youth Self-Report, Child Behavior Checklist, and Teacher Report to assess associations between peer victimization and externalizing problems, though studies varied with respect to the mediator tested. For instance, Lopez and DuBois (2005) and Ybrandt and Armelius (2010) found that lower levels of self-esteem partly explained why victimized adolescents showed greater externalizing problems and Harper (2012) found that self-blame was to some extent responsible for victim's higher risk for externalizing problems. The multi-outcome, multi-mediator study by Perren et al. (2013) revealed that victims were more likely to attribute the victimization event to hostile intentions in their peers. Such attributions, in turn, were linked to externalizing problems. Singh and Bussey (2011) showed that adolescents' self-efficacy for avoiding aggressive behavior, that is, their ability to forgive and avoid revenge-seeking mediated the link between peer victimization and externalizing problems. Finally, You and Bellmore (2012) found that victimized adolescents experienced more conflict in their friendships, which partly explained their greater risk for externalizing problems.

#### *Mediators on Associations Between Peer Victimization and Substance Use*

Two studies were identified that examined substance use as correlate of peer victimization and both focused on mediation by drinking motives, that is, explored whether why victimized adolescents drink and whether these reasons affected frequency, quantity, and severity of their alcohol consumption. Whereas Topper et al. (2011) tested an overall composite of enhancement, social, conformity, and coping motives, Archimi and Kuntsche (2014) examined each of the motives separately. Irrespective of approach, both studies found evidence for mediation, particularly enhancement and social motives (Archimi and Kuntsche 2014).

#### *Mediators on Associations Between Peer Victimization and Eating-Related Outcomes*

Four studies linked peer victimization to eating behavior, suggesting that victimized youth might overeat (Mamun et al. 2013) or skip meals (Sampasa-Kanyinga et al. 2014),

and aiming to elucidate underlying pathways for such associations. For girls, the association between verbal victimization and body dissatisfaction was mediated by emotional symptoms whereas this mechanisms was not observed for physical or social peer victimization or restrained eating as outcome (Farrow and Fox 2011). Similarly, psychological distress to some extent explained why verbally victimized girls skip their breakfast (Sampasa-Kanyinga and Willmore 2015) and depression mediated the association between cyber-victimization and breakfast-skipping in another study by the same group (Sampasa-Kanyinga et al. 2014). It remains unclear whether non-significant results for other forms of victimization (e.g., physical) are systematic or study-dependent.<sup>1</sup>

#### *Mediators on Associations Between Peer Victimization and School-Related Outcomes*

Fourteen studies focused solely on school-related correlates of peer victimization, specifically on academic or school adjustment, achievement, school affection/connectedness, and school safety, and Lopez and DuBois (2005) included academic adjustment in their multi-outcome study. Various mediators were tested as explanations for links between peer victimization and academic achievement, including maladjustment, self-perceptions, classmate support, and sleep problems. With respect to maladjustment, Hoglund (2007) reported mediation by externalizing problems on the link between relational victimization for boys and physical victimization for girls. Totura et al. (2013) reported mediation by psychological distress. Moreover, sleep problems (Lepore and Klierer 2013), lower levels of self-esteem and self-efficacy (Raskauskas et al. 2015; Thijs and Verkuyten 2008), and reduced classmate support (Wang et al. 2011) were found to explain why victimized adolescents fare less well with respect to academic achievement, though indirect effects via the latter three were not explicitly tested.

Turning to academic adjustment, the studies reviewed here suggest that effects of peer victimization are mediated by distress (Espinoza et al. 2012), psychological adjustment (Graham et al. 2006; Rueger and Jenkins 2014), daily emotions (Espinoza 2015), self-blame (Graham et al. 2006), and negative self-evaluation (Lopez and DuBois 2005).

Finally, conflicting results were reported with respect to maladjustment as mediator between peer victimization and

<sup>1</sup> The fourth study (Mamun et al. 2013) on eating-related outcomes did not differentiate between mediators and confounders and did not report separate effect sizes for different mechanisms. While the size of the direct effect between peer victimization and adult BMI and obesity decreased in girls when mediators were entered into the model, it is unclear which mediator played an important role.

school affection/connectedness—whereas Galand and Hospel (2013) showed that depression in combination with self-efficacy mediated this link, no support for associations between internalizing or externalizing problems and school connectedness was found by Loukas et al. (2012).

#### *Mediators on Associations Between Peer Victimization and Other Outcomes*

A small number of studies examined outcomes other than the ones reviewed above. In detail, Ma and Bellmore (2012) examined whether internalizing symptoms mediated associations between peer victimization and parental control but, different to a large body of literature on the topic, found no initial link between victimization and internalizing symptoms. Guzzo et al. (2014) showed that alexithymia mediated the association between victimization and post-traumatic symptoms and avoidant coping mediated the association between appearance-related victimization and self-esteem (Lodge and Feldman 2007). In contrast, Narayanan and Betts (2014) found no support for a mediational role of resilience in the association between victimization and self-efficacy. Finally, Herge et al. (2016) found support for mediating roles of depression and anxiety in the prediction of somatic and sleep symptoms and Guarneri-White et al. (2015) showed that general depression but not anxious depression or post-traumatic symptoms explained why victimized adolescents tend to experience more health problems like headaches, fatigue, and vomiting.

## Discussion

A total of 65 studies on mediators of associations between peer victimization and a variety of outcomes including internalizing and externalizing problems, self-harm and suicide ideation, eating and substance use behaviors, and school-related outcomes were reviewed, most of which presenting cross-sectional data of American youth. Most frequently studied outcomes concerned internalizing symptoms, which is largely in line with the literature on peer victimization as such, and school-related outcomes including achievement and adjustment. In comparison, only a minority of studies examined mediation of externalizing behavior and substance use. Most commonly studied mediators concerned emotional states or symptoms, as well as self-perceptions and attributions.

In line with other reviews, direct associations between peer victimization and emotional, social, academic, and behavioral measures were found in most studies reviewed here but the large number of outcomes of peer victimization and mediators tested makes it difficult to succinctly summarize the pathways that explain why peer victimiza-

tion in adolescence affects adjustment and well-being. There are a few exceptions to this, for instance concerning substance use, which was mediated by drinking motives in two different studies, as well as eating-related outcomes and self-harm and suicide ideation, which were relatively consistently mediated by emotional symptoms. Emotions and emotional symptoms also explained many of the associations between victimization and school-related outcomes and with respect to health problems.

A different pathway that was also tested in various studies concerned self-perceptions and attributions. Whereas negative self-evaluations and self-esteem mediated school adjustment and achievement (Graham et al. 2006; Lopez and DuBois 2005; Raskauskas et al. 2015) and externalizing problems (Ybrandt and Armelius 2010), findings were more mixed with respect to internalizing outcomes and might be dependent on other individual or contextual factors. Similarly, self-blame did not emerge as a stable mediator although tested repeatedly and with respect to different outcomes (Chen and Graham 2012; Graham et al. 2006; Harper 2012; Perren et al. 2013).

Taken together, these findings might suggest that victimized adolescents first and foremost experience change in emotions or develop emotional problems in reaction to peer victimization, which are subsequently expressed in other forms of maladjustment, such as restrained eating, self-harm, or school problems. Social-cognitive processes might be less salient than emotional processes and might be less relevant in explaining why peer victimization affects adjustment and wellbeing. The summary of the reviewed studies suggests that explanations might generally be quite complex because chain mediations are likely where, for instance, peer victimization increases loneliness (Baker and Bugay 2011), which results in more depressive symptoms, which, in turn, predict higher anxiety (Hamilton et al. 2016). Future studies are needed that elucidate the sequence of consequences of peer victimization.

With respect to methodology, the progression in analytic software is evident from analytic designs. Whereas some studies relied exclusively on the Baron and Kenny approach of mediation testing (1986) where mediation is inferred from comparing direct effect sizes with and without controlling for the mediating variable, studies increasingly used Hayes' well-documented and freely available SPSS macro PROCESS (e.g., Casement et al. 2014; Guarneri-White et al. 2015; Hamlat et al. 2015; Mathieson et al. 2014). Such novel approaches are needed to estimate possible double- and multiple-mediation, as are larger sample sizes than used in some of the studies reviewed here (e.g., Baker and Bugay 2011; Espinosa 2015; Giannotta et al. 2012; Guarneri-White et al. 2015; Harper 2012; Jenkins and Demaray 2015, who all used samples smaller than  $n = 200$ ).

In addition to small sample size in some of the studies reviewed here, other limitations need to be noted. For example, there is little geographic variation with complete absence of studies using South American or African samples. While a preponderance of North American and European samples is common in psychological research, this means that findings cannot be generalized to samples from other regions of the world.

Moreover, the majority of studies relied on cross-sectional samples. Although these are more easily acquired and thus likely allow for larger samples, tests of mediation typically require longitudinal assessments. Requiring participants to undergo assessments at two or more time points carries the risk of attrition but contemporary analytic procedures such as path models and multiple imputation can be used to lessen the impact of missing data.

Another limitation of this research is that the majority of studies relied on school samples where adolescents themselves completed questionnaires and did not collect reports from other sources (but see Boulton 2013; Graham et al. 2006; Ma and Bellmore 2012; Perren et al. 2013; Singh and Bussey 2011; Woodhouse et al. 2012 who used peer nominations for victimization). Together with cross-sectional assessments, this likely results in shared method variance, which raises doubt as to whether direct and indirect effects in the studies reviewed here are over-estimated. Well-powered longitudinal studies were not common among the studies reviewed here (but see Barchia and Bussey 2010; Herge et al. 2016; Herts et al. 2012; Lereya et al. 2013; Mamun et al. 2013; McLaughlin et al. 2009; Moon et al. 2012; Rueger and Jenkins 2014; Turner et al. 2010); however, such study designs are needed to identify replicable indirect effects of small size.

Finally, a number of limitations with respect to the selection and review procedure are noted. To begin with, there is always the possibility of incomplete retrieval though the search procedure was reviewed repeatedly throughout the process. Articles acquired from elsewhere were not included in this review to ensure objectivity and easy reproducibility of the review; this might have resulted in omitting other suited studies. Similarly, only English-speaking journal articles were included in this review, omitting the work done in other languages and studies published in dissertation or book format.

## Conclusion

Aiming to systematically summarize research into explanations for why peer victimization increases adolescents' risk for maladjustment and compromised well-being, 65 articles were selected and reviewed. Most studies examined internalizing and school-related outcomes and associations

between peer victimization and outcomes were most stably mediated by emotions and emotional symptoms. The restricted geographic range, cross-sectional designs and single-reporter bias are important limitations that need to be tackled in future studies.

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## Compliance with Ethical Standards

**Conflict of interest** The author reports no conflict of interests.

**Ethical Standard** This study itself did not involve humans and/or animals and no ethical approval was sought for this review. This article does not contain any studies conducted on animals but all studies are based on humans, some of them minors before the law. While some of the studies explicitly report having obtained approval from internal or external ethics review boards, this information is lacking in many studies, possibly because the law in some countries does not (or did not, at time of the study) require ethical approval, because ethical approval is obligatory before conducting any study anyway, or because studies were based on secondary data analyses and thus embedded in a larger project. In no case was the lack of a statement concerning ethical approval linked to unethical conduct of the study.

**Informed Consent** The vast majority of studies reviewed in this article had in place either informed consent or assent for parents and adolescents themselves, or, where the study population was older, only adolescents. One study commented that informed consent is not a legal requirement for conducting studies of this type in the Netherlands, which probably explains the absence of assent/consent in other Dutch studies. As with respect to ethical approval, studies that were based on larger data sets collected for other purposes often omitted statements concerning consent/assent.

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